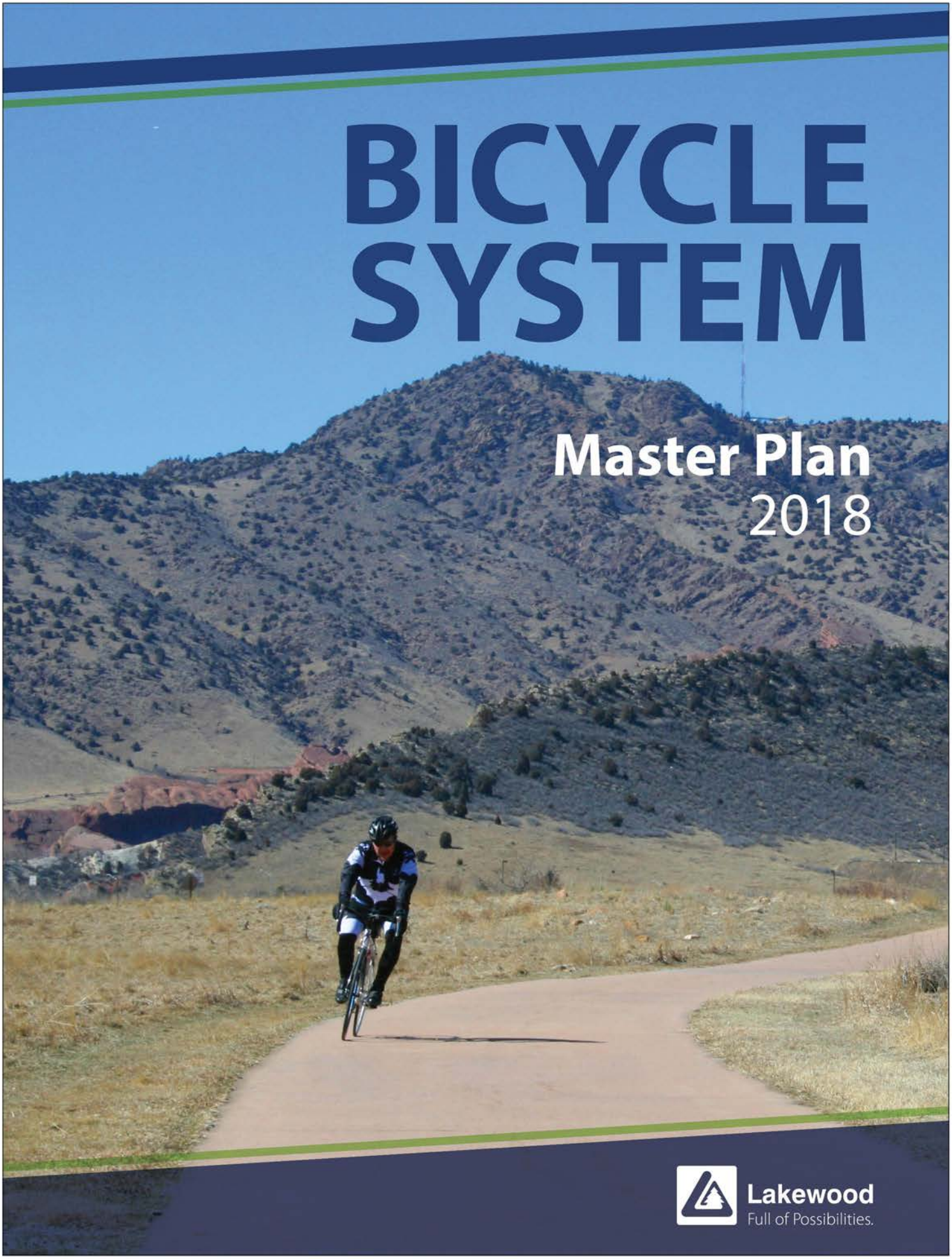
BICYCLE SYSTEM

Master Plan
2018



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AMENDED
04-23-2018

2018-23

A RESOLUTION

ADOPTING THE 2018 LAKEWOOD BICYCLE SYSTEM MASTER PLAN

WHEREAS, the City of Lakewood (the "City") is dedicated to creating a high quality, safe, convenient, continuous and accessible bicycle transportation system;

WHEREAS, in 2005, the City adopted its first Bicycle System Master Plan as a guide to the development of the City's Bicycle infrastructure;

WHEREAS, the public has participated in creating and reviewing an updated Bicycle System Master Plan (the "2018 Plan") by attending open houses, completing surveys, submitting comments and attending four Lakewood Advisory Bicycle Team meetings that were open to the public;

WHEREAS, the 2018 Plan also incorporates recommendations from the Advisory Commission for an Inclusive Community report on bicycle safety and education tasked by City Council;

WHEREAS, the vision of the 2018 Plan is to support bicycling as a mode of transportation for all ages and abilities in Lakewood; and

WHEREAS, City Council discussed the 2018 Plan during its study session of February 5, 2018.

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Lakewood, Colorado, that:

SECTION 1. The Lakewood Bicycle System Master Plan, as presented to City Council on April 23, 2018, is hereby adopted.

SECTION 2. The adoption of this resolution (a) is aspirational in nature only, and (b) does not authorize the expenditure of any public funds over $50,000 towards this plan without the authorization of council, and (c) does not authorize the acquisition of any property by eminent domain or otherwise.

SECTION 3. This resolution shall become effective immediately upon its adoption.

INTRODUCED, READ AND ADOPTED by a vote of 11 for and 0 against at a regular meeting of the City Council on April 23, 2018, at 7 o'clock p.m. at Lakewood City Hall, 480 South Allison Parkway, Lakewood, Colorado.

Adam Paul, Mayor

ATTEST:

Margy Greer, City Clerk

APPROVED AS TO FORM:

Tim Cox, City Attorney

Acknowledgements

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Planning Department
Public Works Department

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	Jacob LaBure
Ward 3	Pete Roybal
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Ward 4	Barb Franks
	David Skilling
Ward 5	Karen Harrison
	Dana Gutwein

Community Representatives

Thanks to all of the community members who attended the City's open houses and provided input to staff during the revision of this plan. A special thanks to members of the Lakewood Bicycle Advisory Team and the members of the Advisory Commission for an Inclusive Community for their valuable suggestions and feedback.

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Table of Contents

Vision

Through education, encouragement, engineering, enforcement and evaluation, the Bicycle System Master Plan takes a comprehensive approach to supporting bicycling as a mode of transportation for all ages and abilities in Lakewood

Chapter 1: Introduction

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Chapter 1: Introduction

Across the Denver metro area and in Lakewood, bicycling has become not only an important means of transportation for many residents, but also an enjoyable recreational pursuit. Some ride bicycles because of environmental concerns, knowing that a decrease in automobile use will reduce air pollution; others ride to improve both their mental and physical health; still others commute to work to reduce or eliminate the cost of owning an automobile.

The City of Lakewood has long recognized the value of bicycling and has funded many projects to improve the quality and safety of existing facilities, whether they be bike lanes, paths or trails. The City has also endeavored to increase the use of bicycles for health and recreation by sponsoring programs such as Bike to Work Day, Safer Routes to School, and the employee Bike Share program.

Lakewood 2025: Moving Forward Together, the City's Comprehensive Plan, states that a multimodal transportation system is key to ensuring good mobility and lessening reliance on the automobile. Increased options will result in cleaner air, a safer environment, an improved economy and higher quality of life for Lakewood residents.

The City's *2015 Sustainability Plan* also recognizes the value of constructing a mix of well-connected travel modes to provide access for people with different travel preferences and abilities.

In 2005 the first Lakewood Bicycle System Master Plan was adopted, and it has served as a policy document to guide the development and maintenance of the City's bicycle facilities. It has provided a framework to create a high-quality, safe, convenient, continuous and accessible bicycle transportation system for people of all ages and abilities while reducing carbon emissions and improving the health of community members.

LAKEWOOD MOVES

Guiding Principle: Lakewood will support connectivity through a variety of transportation options and encourage residents to utilize multiple transportation modes.

Lakewood 2025: Moving Forward Together

TRANSPORTATION

The City of Lakewood and its residents recognize and value the importance of multiple safe, reliable, and affordable transportation choices for all users in order to foster a healthy and thriving community. Lakewood envisions a future with a convenient and resilient transportation system that improves our quality of life by making our streets safer, our air cleaner, and our community better connected.

City of Lakewood Sustainability Plan 2015

This updated Bicycle System Master Plan highlights accomplishments since the original plan and identifies proposed facilities.

It also includes goals to increase education, encouragement, enforcement and safety for bicyclists. It was prepared by City of Lakewood staff with assistance from residents, primarily members of the Lakewood Bicycle Advisory Team (LBAT), an organization of local bicycle enthusiasts, and provides the City with the guidance to create a high-quality, safe, convenient, continuous, and accessible bicycle transportation system for people of all ages and abilities.

Accomplishments

Since the adoption of the 2005 Bicycle System Master Plan, a multitude of projects have improved bicycling in the city.

The City of Lakewood currently has approximately 141 miles of shared use paths, 110 bike lane miles and 22 miles of signed shared roadways.

This plan outlines the proposed bicycle facility improvements, including 29 miles of shared use paths, 35 miles of bike lanes and 48 miles of shared roadways.

In 2016 Lakewood was awarded bronze status in the Bicycle Friendly America Program of the League of American Bicyclists, which sets standards for communities striving to make bicycling an effective transportation and recreation option.

Master Plan Guiding Principles:

High Quality

- The City of Lakewood will strive to create high-quality facilities for its residents.

Connected

- The City of Lakewood will prioritize gaps in existing facilities and first/last mile connections to encourage multi-modal transportation options.

Convenient

- The City of Lakewood will create a continuous system that makes bicycling a convenient mode of transportation.

Safe

- The City of Lakewood will encourage education and enforcement to create a safe environment for bicyclists.

Accessible

- The City of Lakewood will build a system accessible to all of its community members.

Goals

1. Create educational materials and programs that reach all residents to better provide the skills and confidence needed to ride a bike.
2. Foster and build a culture that celebrates bicycling as an active mode of transportation and liberating form of recreation.
3. Improve safety for bicyclists.
4. Establish a connected bicycle network that allows residents to reach destinations in which they live, work and play.

Chapter 2: Planning Process

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Chapter 2: Planning Process

This section summarizes the process used to develop the Lakewood Bicycle System Master Plan.

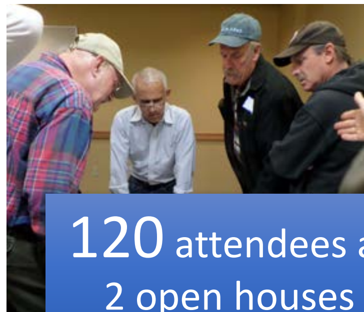
Project Management

The project management team consisted of transportation engineers and other City staff. The project management team met regularly to assess missing links in infrastructure, concerns with design and potential new investments.

Public Involvement

LBAT was a key and continuous source of public input.

The Advisory Commission for an Inclusive Community (ACIC) was tasked by Council to conduct a bicycle safety and education report.



120 attendees at 2 open houses

260 public comments received

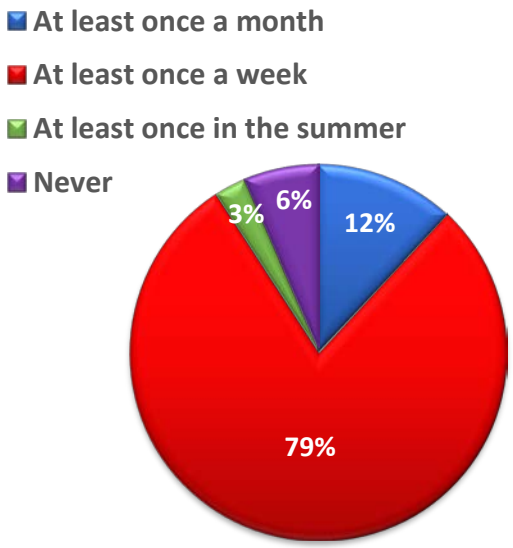
Recommendations in the report were used throughout the Bicycle System Master Plan. The City of Lakewood invited all community members to participate in the Bicycle System Master Plan Open House meetings held on Oct. 18, 2016, and Nov. 15, 2017. At the open houses, members of the public could comment on goals and objectives, plan elements, existing conditions and design concepts.

In addition, surveys were provided, giving members an opportunity to better convey their comments and concerns. Approximately 80 community members attended the October 2016 meeting and approximately 40 attended the November 2017 meeting.

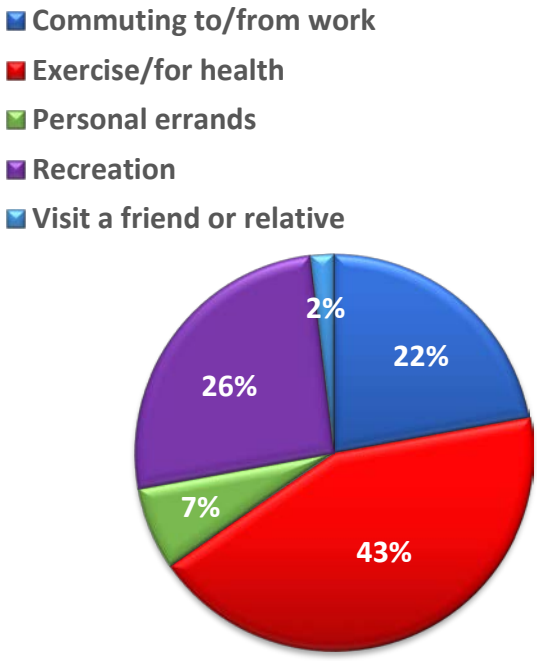
Additional methods of outreach included electronic and print newsletters, outreach materials at community events and a survey distributed to all Lakewood residents which received 109 responses. Since the first public meeting in October 2016, the City has encouraged public comments through NextDoor and email.

Survey results will be highlighted throughout the Bicycle System Master Plan.

Survey Question: On average, how often do you use a bicycle during summer months?



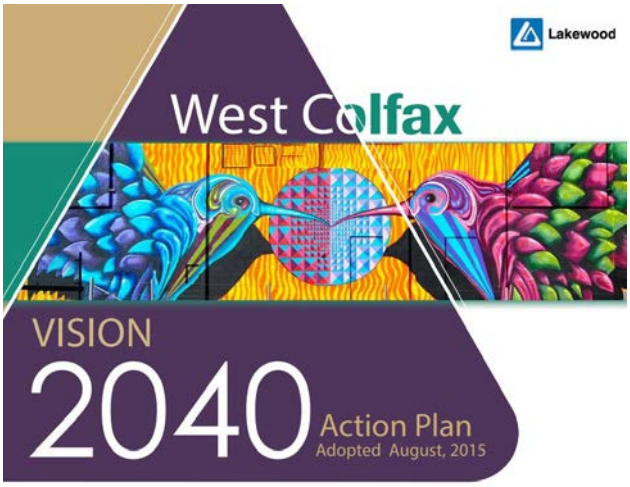
Survey Question: What was the main purpose of your last trip on a bicycle?



Plan and Policy Review

To begin, the project management team and LBAT evaluated numerous planning documents including:

- 2005 Bicycle System Master Plan
- Lakewood 2025: Moving Forward Together Comprehensive Plan
- 2015 Sustainability Plan
- Sheridan Station 20-Minute Neighborhood Implementation Strategy
- Plan Rooney Valley – A Joint Community Vision
- 2014 Traffic Safety Report
- West Colfax Vision 2040 Action Plan
- Lakewood Zoning Ordinance
- 2040 Metro Vision Regional Transportation Plan
- 40 West Arts District Urban Design and Mobility Concepts
- Station Area Plans for the five light rail stations within Lakewood city limits



Comments were received to implement bike lanes or shared use paths along all arterial streets throughout the city. Colfax Avenue between Sheridan and Quail Street has been the subject of several Lakewood planning efforts over the past 20 years, the most recent

being the 2015 “West Colfax Vision 2040 Action Plan.” With incremental development over the past 80-plus years and widening by the Colorado Department of Transportation (CDOT) in the 1950s, there is little space remaining in the public right of way. While the City plans to implement shared use paths along all arterials, Colfax Avenue will be an exception because the current development, land use and zoning inhibit such facilities. Additionally, several bicycle facilities run parallel to Colfax Avenue and through improved north-south connections, Colfax Avenue amenities will be easily accessible by bicycle.

Existing Conditions

City staff and LBAT members evaluated existing conditions for bicycling in Lakewood as a foundation for creating future infrastructure recommendations. The existing conditions analysis was based on infrastructure knowledge by City staff and field reviews conducted by LBAT members. Before each LBAT meeting, members rode on facilities in each Lakewood corridor in search of missing infrastructure links, additional needs and opportunities for design improvements. In addition, City staff utilized Geographic Information System (GIS) data to conduct spatial analysis, applied crash data software statistics and engaged in extensive outreach to get public input to better understand existing conditions.

The team considered existing bicycle infrastructure and design conditions within four distinct geographic quadrants that were defined in the 2005 Bicycle System Master Plan. Aspects of each quadrant’s existing conditions, deficiencies and needs are described below. For identification of each proposed facility, see Appendix B.

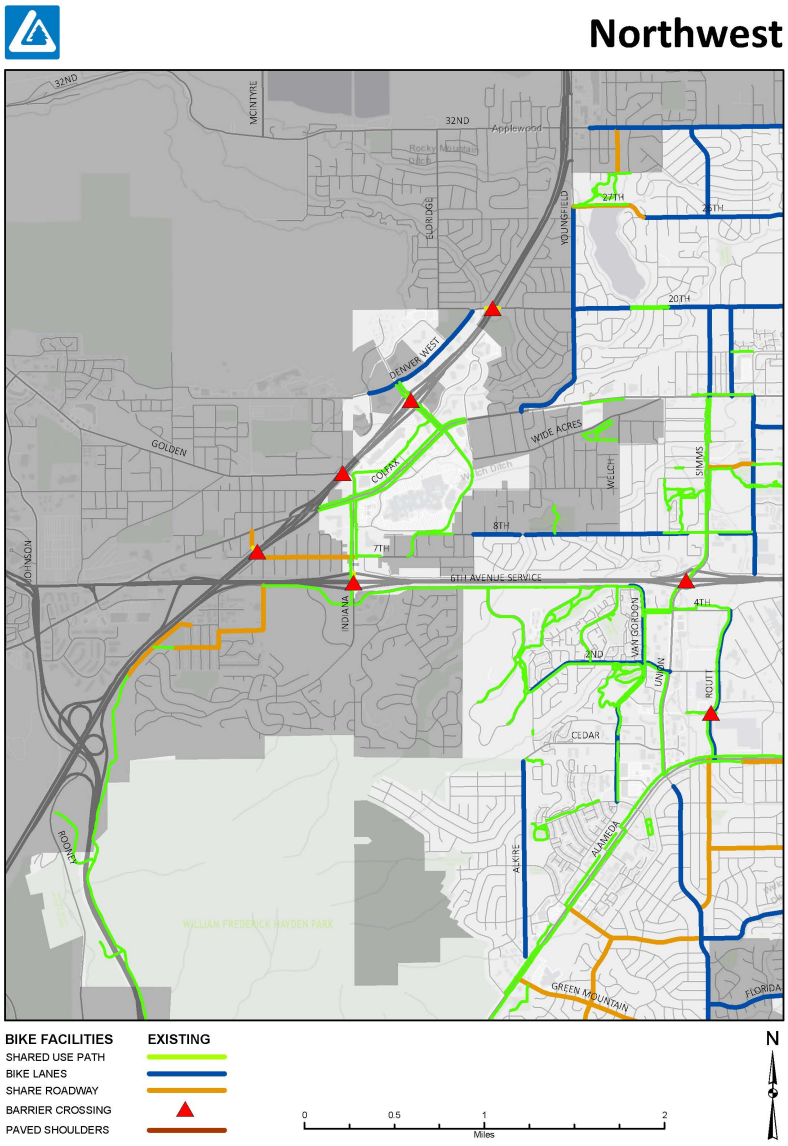
Barrier crossings are overpasses and underpasses that create a continuous, more connected bicycle system

Northwest Quadrant

Northwest Lakewood has few compact street grid systems with a predominately non-grid, sprawling street network and significant open space such as William Frederick Hayden Park.

The bicycle network has strong east-west bike lane connections along 26th Avenue and 20th Avenue. The W Line route, primarily a shared use path and a designated Jefferson County regional route, provides access into Denver and a strong multi-modal transportation option. As a designated Jefferson County regional route, 32nd Avenue provides a multi-jurisdictional connection from Golden into Denver and is managed by Lakewood from Union Street to Miller Street as a bike lane. Additionally, Union Boulevard from Jewell Avenue to Alameda Parkway provides a strong north-south bike lane connection. When the bike lane ends at Alameda Parkway, bicyclists use a combination of shared use paths and bike lanes to continue their journey north.

Public comments stated that residents want to see a painted intersection crossing at the Union Boulevard crossing at Alameda Avenue in addition to an over- or underpass at 6th Avenue and Quail Street. General comments received include creating better north-south connections, improving safety among multiple corridors and providing more bike parking at the Denver West shopping center.



Northeast Quadrant

Northeast Lakewood has a loose street grid system with relatively little elevation gain, making it a prime quadrant for major corridor connections. For this reason, the bicycle network is more extensive.

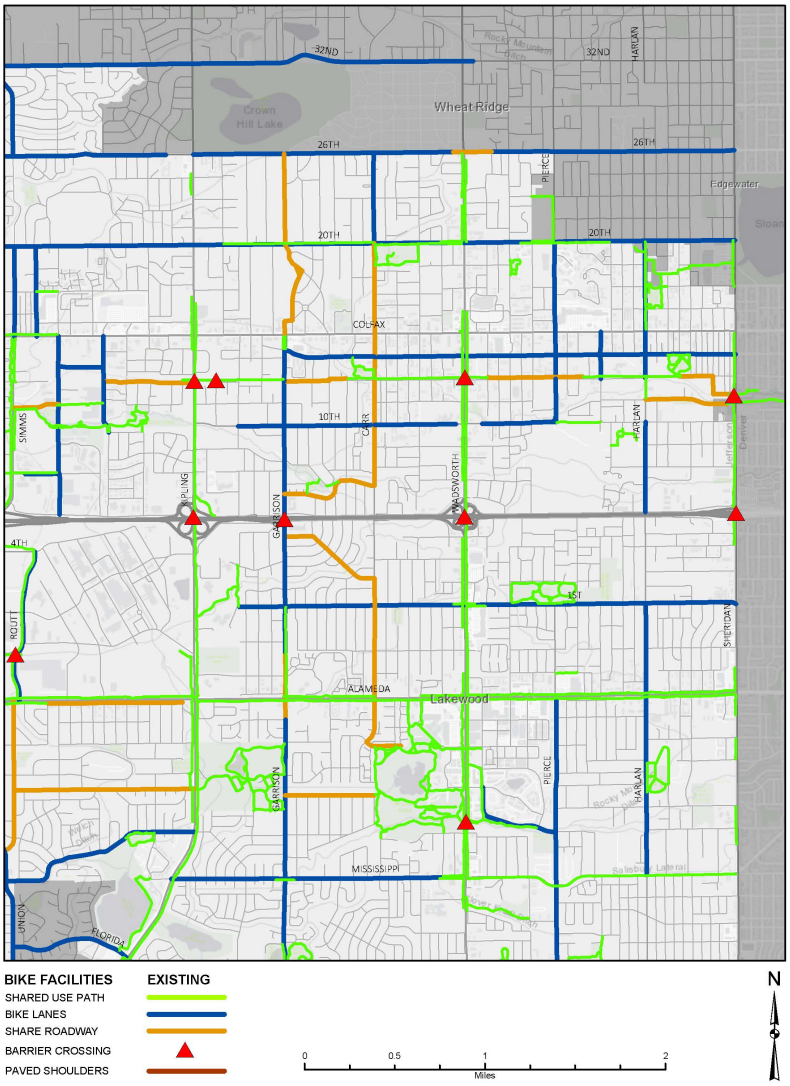
The bicycle network completes connections from Golden into Denver in conjunction with the northwest quadrant including 20th Avenue as described above. Florida Avenue is a strong east-west bike lane connection from Union Boulevard to Denver with a section of shared roadway from Garrison Street to Wadsworth Boulevard. Additionally, the bike lane on 1st Avenue connects the Federal Center at Hoyt Street to Denver at Sheridan Boulevard. Lastly, Estes Street and Garrison Street, part of the Jefferson County Regional Central Bikeway, provide a north-south bike lane connection from South Highway 285 Service Road (unincorporated Jefferson County) to Colfax Avenue, where Garrison continues north to Wheat Ridge as a shared roadway.

The northeast quadrant has multiple bicycle facility deficiencies, many of which are caused by 6th Avenue, Lakewood's largest barrier. Pierce Street contains bike lanes from Jewell Avenue to Florida Avenue; however, after Florida Avenue, it changes to a shared roadway and ends at 1st Avenue.

Pierce Street starts up again as bike lanes from 10th Avenue to Wheat Ridge, creating a major gap in the bicycle system's north-south connections between 1st and 10th Avenues.

Public comments stated that residents want to see improved crossings at major streets. A common theme heard from multiple residents included the need for more consistent and continuous routes crossing city boundaries.

Northeast

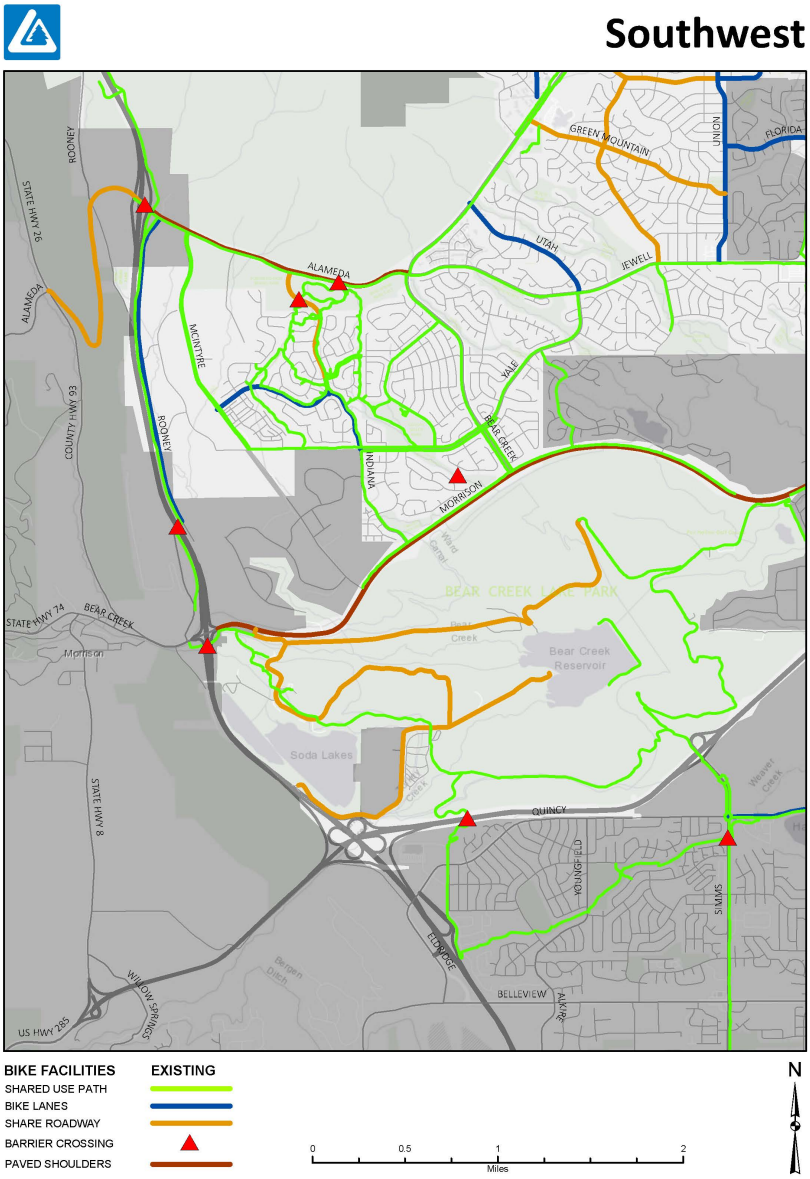


Southwest Quadrant

Southwest Lakewood has no street grid system and is designed with a sprawling street network and large amounts of open space, reducing the functionality of the bicycle system and eliminating the possibility of direct north-south connections. Elevation within the quadrant rises rapidly and major motor vehicle corridors carry high traffic volumes and speeds. Currently being completed is the Alameda Avenue shared use path connection from unincorporated Jefferson County to Bear Creek Boulevard.

The bicycle network consists of a paved shoulder along Morrison Road from the town of Morrison to Kipling Parkway and bike lanes on Union Boulevard from Jewell Avenue to Alameda Parkway.

Public comments stated that residents want to see safety improvements throughout the quadrant. Suggested facility improvements include the use of green paint to highlight conflict zones and improved crossings at major streets.



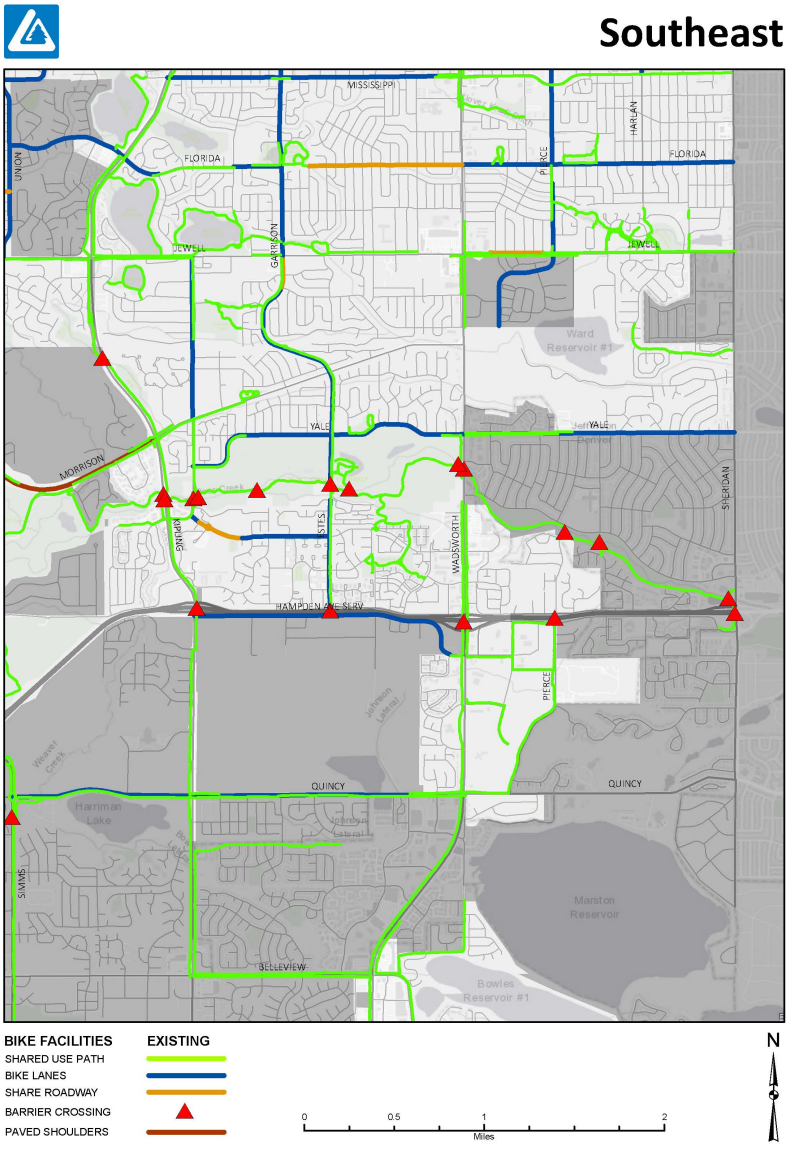
Southeast Quadrant

Southeast Lakewood has an intermittent street grid and contains relatively steep elevation gains, challenging people who ride bicycles. There are many areas in this quadrant under Denver or Jefferson County jurisdiction that require collaboration.

Bike traffic signals are separate signals at intersections that may be timed differently to create a safer bicycle environment through intersections

The bicycle network maintains a strong east-west bike lane connection on Florida Avenue from Union Boulevard to Denver with a small section from Garrison Street to Wadsworth Boulevard dedicated as a shared roadway. Yale Avenue is a frequented route for those entering Denver, containing bike lanes from Kipling Street to Wadsworth Boulevard and a newly updated buffered bike lane from Wadsworth Boulevard to Denver. As mentioned in the northeast quadrant, the Jefferson County Regional Central Bikeway, Garrison Street and Estes Street, provides a north-south bike lane connection from unincorporated Jefferson County to Colfax Avenue where it continues north to Wheat Ridge as a shared roadway. Unfortunately, no additional uninterrupted north-south connections exist east of Garrison Street.

Public comments stated that residents want to see more bicycle friendly amenities such as bike traffic signals on Garrison Street and protected bike lanes at intersections.

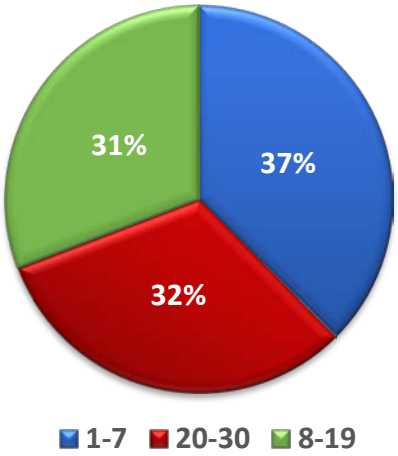


Crash Statistics and Ridership

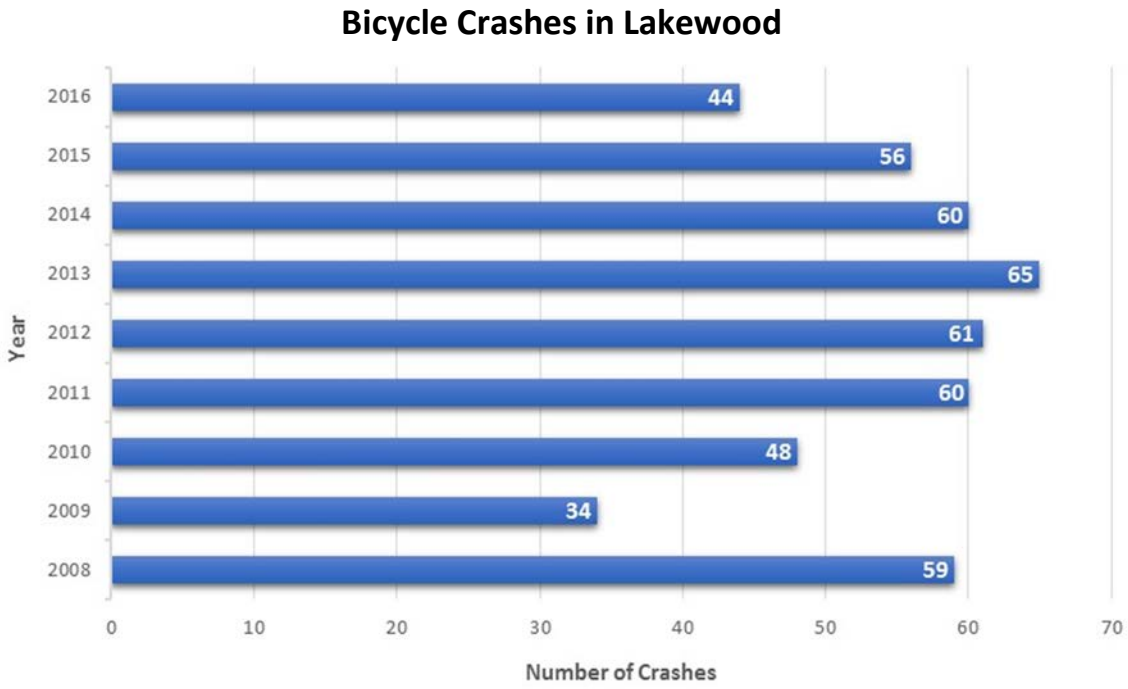
The Transportation Engineering Division completes a yearly Traffic Safety Report which includes data on bicycle crashes. The figure below shows the number of bicycle-related crashes from 2008 to 2016. Bicycle crashes have decreased consistently since 2013, which differs from national bicycle crash data. According to the Pedestrian and Bicycle Information Center, 818 people lost their lives in a bicycle/motor vehicle crash in 2015 throughout the United States. This number represents a six percent increase in fatalities since 2006 and a 12.2 percent increase from the previous year.

While national organizations are unsure as to why deaths and crashes are increasing in some areas and declining in others, the City believes motorists seem to have become more accustomed to sharing the roadways with bicyclists simply because bicyclists have become more common.

Survey Question: About how many days in the last month did you ride a bicycle?



According to U.S. Census data, 0.7 percent of the Lakewood population uses bicycles daily as a main mode of transportation. The City of Lakewood has begun obtaining some bicycle count data on a few major corridors including the W Line Path and Garrison Street. The data will become useful as it accumulates to provide reliable usage and trend information.



Chapter 3: Education

Photo: Bicycle Colorado

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Chapter 3: Education

Education plays an important role in creating a more bicycle-friendly community. Bicycle education teaches safety and handling skills, rules of the road to bicyclists and non-bicyclists alike and helps provide the confidence needed to ride. The City of Lakewood currently offers educational group rides with City staff and elected officials, community-wide public education campaigns, videos on the City website, a community bike and recreation map, and handouts and brochures. Having set a foundation for education, the City plans to expand existing education programs and to implement new ones through a variety of methods, including partnerships and outreach.

Educational group rides are led by a well-educated bicyclist to teach new riders the laws of the road, proper signaling, and safety tips

Goal, Objectives, and Tracking

The following goal and objectives were developed to improve educational programs. Performance tracking will document progress and aid in the creation of periodic tracking reports. Most objectives will be deemed successful after their implementation, while others are data-driven.

Goal 1: Create educational materials that reach all residents, specifically targeting monolingual Spanish speakers, low-income communities, and other marginalized groups, to better provide the skills and confidence needed to ride a bike.

Goal 1 Objectives:

- Collaborate with partners such as Bicycle Colorado and Jefferson County Schools to create a Safe Routes to School program.
- Create a voluntary Bicycle Friendly Driver Program for City of Lakewood employees and provide opportunities for residents to take the course and exam.
- Build a skills-training program teaching community members of all ages the rules of the road.
- Collaborate with partners such as Bicycle Colorado and West Metro Fire Rescue to expand school safety programs.
- Improve bicycle presence on City of Lakewood webpages and create a social media outreach of educational materials.
- Translate materials into additional languages.
- Hold educational and community group rides with the assistance of partners such as Lakewood Bicycle Advisory Team.

Goal 1 Performance Tracking:

Some education materials and programs will be tracked and deemed successful after their implementation. These objectives include:

- Implement Safe Routes to School program
- Improve bicycle presence on City of Lakewood webpages and create a social media presence
- Translate materials into additional languages

Other objectives will be tracked through data. These objectives include:

- Provide opportunities for community members to take the Bicycle Friendly Driver Program exam
- Build a skills training program
- Expand school safety programs
- City voluntary Bicycle Friendly Driver Program for employees
- City collaborated educational and community group rides

Education through Partnerships

Partnerships are an easy and efficient way to educate more community members. Through effective partnerships, the City will foster a more bicycle-friendly community. Current and potential partners include:

Bicycle Colorado

Bicycle Colorado is a nonprofit organization using advocacy and education to make Colorado one of the most bicycle-friendly states in the nation. Its priorities are encouraging and promoting bicycling, increasing safety, improving conditions and providing a voice for bicyclists in Colorado.

Photo: Bicycle Colorado

Jefferson County Schools

The Colorado Department of Transportation has a "Safe Routes to School" program in which they distribute grant funds for schools interested in the program. The City intends to collaborate with Jefferson County Schools to pursue Safe Routes to School grants.

Lakewood Bicycle Advisory Team

The Lakewood Bicycle Advisory Team (LBAT) is a group of residents dedicated to promoting safe, efficient and equitable bicycle transportation opportunities for all citizens in and traveling through Lakewood. This long-term partner has aided in many of the City's educational endeavors, including hosting educational and community bike rides, attending community events, participating in City-sponsored events such as Earth Day and hosting monthly meetings to discuss bicycle transportation in Lakewood.

Local Bike and Sport Shops

The City partners with several local bike and sports shops and will continue to pursue additional commercial partners that aid in creating a more bicycle-friendly community through event participation.

Red Rocks Community College and Colorado Christian University

Student-led college and university groups in municipalities across the nation have provided cities with bicycle-related data and analyses that assist cities with safety, funding and design. The City of Lakewood will establish partnerships with these schools to assist the City in various projects.

Education through Outreach

Education is only effective if it is consistent and reaches a diverse set of residents that reflect the demographic and socioeconomic make-up of the Lakewood population. The City of Lakewood will focus on the following education areas:

Youth Bicycle Education: Youth education is currently offered at schools by CDOT "Safe Routes to School" grant. In addition, courses are offered by West Metro Fire Rescue at local elementary, middle and high schools.

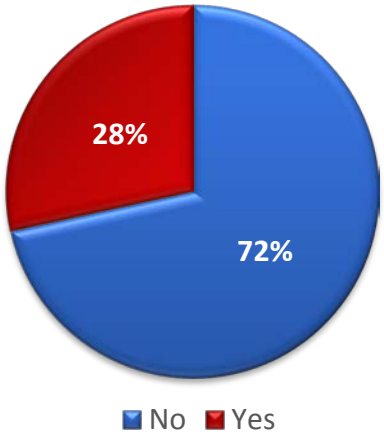
- **Improving Youth Bicycle Education:** Surrounding municipalities have created bike skills training courses. These courses are designed to mimic local streetscapes with the addition of obstacles to teach children better handling skills. The City of Lakewood intends to launch a bike skills training course program to better educate our youth on the laws of the road while also improving skills and confidence.

Photo: Bicycle Colorado

Adult Bicycle Education: Adult education is currently offered sporadically at community events by members of the Lakewood Bicycle Advisory Team. For adults looking for more intensive education, classes are offered by Bicycle Colorado. These courses include Confident Commuting, Bike Maintenance, and Adult Group Bike Rides. These courses are offered based on requests and Bicycle Colorado can create programs catered to businesses and other organizations.

- **Improving Adult Bicycle Education:** The City of Lakewood intends to launch a bike skills training course program to better educate our adults on the laws of the road while also improving skills and confidence.

Survey Question: In the past five years, have you received any training in bicycle safety?



Motorist Education: Roads are spaces for all modes of transportation and it is vital that all users understand the laws of the road. The Lakewood Bicycle Advisory Team and Bicycle Colorado have offered a Bicycle Friendly Certified Drivers class and exam which the City will continue to provide. The class is approximately an hour long and teaches motorists and bicyclists alike the rules of the road.

Additionally, the City of Lakewood will improve motorist education through brochures and a strong presence at community events.

Communication & Outreach: An important part of education is to more effectively communicate bicycle-related information and make bicycle-related materials more available.

The City of Lakewood will actively communicate about bicycle-related news and issues with a diverse community, using the City's various communications channels including publications, social media, Lakewood 8 TV and the Lakewood.org website.

Bicycle-related materials may include motorist and bicycle educational tools, gear buying guides, theft prevention measures and more.

- **Potential Improvements:** Implementing permanent signage or information kiosks can lead community members to bicycle materials.

Chapter 4: Encouragement

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Chapter 4: Encouragement

Lakewood has the potential to become a community with outstanding bicycle infrastructure. There are opportunities to create improved policies, programs and partnerships that encourage residents to use bicycles as a main mode of transportation. Examples include community bike rides and a bike share system.

Goal, Objectives, and Tracking

The following goal and objectives were developed to improve encouragement programs. Performance tracking will document progress and aid in the creation of periodic tracking reports. Most objectives will be deemed successful after their implementation, while others are data-driven.

Goal 2: Foster and build a culture that celebrates bicycling as an active mode of transportation and liberating form of recreation.

Goal 2 Objectives:

- Install permanent bicycle count stations in high-use corridors.
- Promote community and regional events including Bike to Work Day, GoTober, Bike and Walk to School Day, and more as opportunities arise.
- Collaborate to create a bike share system while continuing to promote City of Lakewood employee bike share.

- Encourage bicycle vendors and organizations to participate in City-sponsored events such as Earth Day and Cider Days.
- Promote the 40 West ArtLine, which encourages active modes of transportation to reach some of Lakewood's public art and creative enterprises.
- Install additional ancillary facilities such as bike racks, lockers, fix-it stations and pumps.

- Promote "Cycling Without Age" operated by LBAT.
- Collaborate with West Metro Chamber, businesses and universities to create "Bicycle Friendly Universities and Businesses" through the League of American Bicyclists.

The 40 West ArtLine is a walking and biking arts route in the heart of the 40 West Arts District. Please visit 40WestArtLine.org for more info!

Goal 2 Performance Tracking:

Some objectives will be tracked and deemed successful after their implementation. These objectives include:

- Installing permanent count stations
- Promoting and partaking in community and regional events
- Successfully collaborating to implement a citywide bike share system

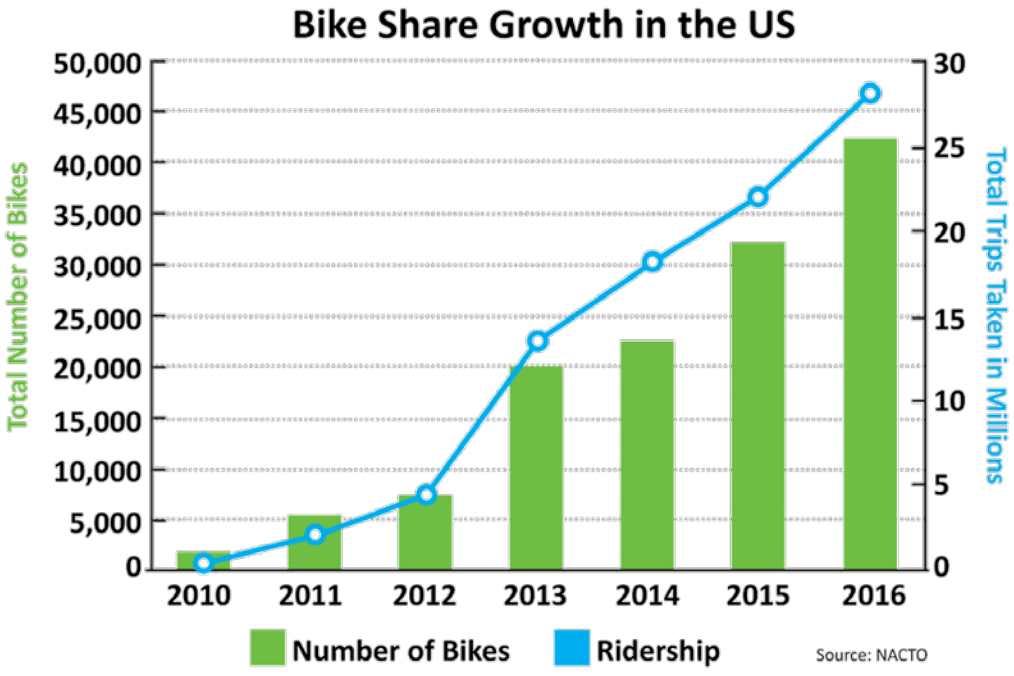
Other objectives will be tracked through data. These objectives include:

- Collaborate with West Metro Chamber, businesses and universities to create "Bicycle Friendly Universities and Businesses"
- Install additional ancillary facilities.
- Encourage and track participation in City-sponsored events
- Promote and track the use of the 40 West ArtLine through the use of bicycle counters
- Promote "Cycling Without Age"

Policies, Programs and Partnerships

Opportunities to create improved policies, programs and partnerships that encourage residents to use bicycles as a main mode of transportation include:

Trip reduction program: Trip reduction programs encourage the use of alternate modes of transportation by encouraging businesses to set goals, objectives, policies and procedures for employees. Businesses typically designate an employee to oversee the program while using surveys to identify methods to increase overall effectiveness of the program.



Bike Share: Bike share is a rapidly expanding industry because of its great success in providing people with easily accessible bicycles for short trips.

The City is pursuing opportunities to partner with bike-share companies to help create a multimodal transportation network.

Guaranteed Ride Home: Guaranteed Ride Home ensures individuals who use alternative transportation to commute to work have access to a car in the case of an emergency. WaytoGo through the Denver Regional Council of Governments (DRCOG) has a program in place providing a free taxi ride to get people to their emergency destination, which the City hopes to expand on.

Local Business Incentive Programs: This program allows employers to provide transportation benefits to employees including transit passes, vanpooling and bicycling.

Local Business Recognition for Bicycle-Friendly Businesses: This program encourages businesses to become "bicycle friendly" through the League of American Bicyclists.

Bicycle-Friendly District: Bicycle-friendly districts consist of bicycle-friendly businesses that encourage visitors to shop and dine locally, providing ample bike racks and the appropriate infrastructure to support bicycling as a main mode of transportation.

Maintenance: Maintenance of bicycle facilities is critical in maintaining bicycle ridership. The maintenance items listed below are a compilation of City and National Association of City Transportation Officials (NACTO) standards and guidance.

- All lane lines and stencil markings should be maintained to clear and visible standards
- Facilities should be maintained reasonably clean of hazards
- Frequent, visible placement of sharrow markings in common conflict zones
- Provide plenty of trash receptacles on shared use paths to prevent the spread of garbage

Lakewood Bicycle Advisory Team: LBAT hosts community bike rides and provides route-finding assistance, which helps new bicyclists build their confidence.

Cycling without Age: Cycling without Age is a program operated by LBAT that provides people, who cannot power a bike on their own, a ride on a trishaw. Trishaws are three-wheel

bicycles consisting of a bench-like seat able to hold two people. The City of Lakewood will continue to build facilities compatible with the program.

Improved Ancillary Facilities: Ancillary facilities include bike racks and lockers, pump stations and fix-it stations. These facilities help ensure that bicyclists are able to reach their destination and find sufficient and safe parking when they arrive.

First and Last Mile: The construction of the W Line light rail has made commuting to and through the city more viable for Lakewood residents as well as for regional community members. Unfortunately, many of our light rail station areas lack the necessary bicycle infrastructure for completing the first and last mile of their commute, such as Lamar Street south of the Lamar Station.

Route-Finding Support

As the City of Lakewood increases facilities for bicycle infrastructure, it will find better ways to support residents in finding the proper route before their journey, such as a web-based service that would find the most convenient route from point A to point B.

Wayfinding Signage: Wayfinding signage provides bicyclists with seamless navigation along routes and to destinations, taking the guesswork out of traveling by bicycle. The City of Lakewood has two types of wayfinding signage: signage for regional routes and signage for local routes. Both are distinct in nature and help bicyclists make travel decisions.

Bicycle Culture and Promotion

The City of Lakewood currently promotes bicycling as an active mode of transportation through a variety of events including community and neighborhood rides, mayor-led rides, Bike to Work Day, Earth Day and Cider Days. Many of these events offer bicycle valet to provide a convenient and safe form of bicycle parking. But opportunities for improvement exist. The City will continue to promote a positive bicycle culture through future events including Bike to School Day, car-free days, bicycle-themed festivals, and programs for under-represented groups.

Chapter 5: Enforcement & Safety

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Chapter 5: Enforcement & Safety

There are four types of bicyclists: the strong and fearless, enthused and confident, interested but concerned, and "no-way, no-how." The "interested but concerned" group is the largest of the four, and their hesitation usually stems from a concern for safety. Through improved education and the methods below, the City plans to improve enforcement and safety.

Goal, Objectives, and Tracking

The following goal and objectives were developed to improve bicycle safety. Performance tracking will document progress and aid in the creation of periodic tracking reports. Most objectives will be deemed successful after their implementation, while others are data-driven.

Goal 3: Improve safety for bicyclists.

Goal 3 Objectives:

- Reduce the number of bicycle/automobile conflicts and crashes.
- Improve educational programs to better inform residents of laws of the road for both motorists and bicyclists.
- Encourage and expand the Bicycle Friendly Driver Program.
- Collaborate with Jefferson County Schools, West Metro Fire Rescue and Lakewood Police Department to create improved safety measures and enforcement.
- Collaborate with Colorado Department of Motor Vehicles (DMV) to provide educational materials to visitors.
- Create a social media presence to provide safety tips, measures and laws.

Goal 3 Performance Tracking:

Some objectives will be tracked and deemed successful after their implementation. These objectives include:

- Collaborate with Jefferson County Schools, West Metro Fire Rescue and Lakewood Police Department to create improved safety measures and enforcement.
- Collaborate with DMV to provide educational materials to visitors.
- Create a social media presence to provide safety tips, measures, and road laws.

Other objectives will be tracked through data. These objectives include:

- Review yearly Traffic Safety Report to determine if crashes are declining.
- Track the number of participants and success of educational programs for both motorists and bicyclists.

- Track the number of employees and residents completing the Bicycle Friendly Driver Program.

Public Outreach

Residents that are subscribed to the City's transportation newsletter receive updates on transportation issues, although outreach will be expanded and include educational materials related to the laws of the road. This will be accomplished through the use of all City communication channels and collaboration with various groups.

Bicycle-Related Laws

In general, road laws apply to all modes of transportation, including bicycles. Specific bicycle-related laws include no harassing, safe passing distance and failing to yield. States and municipalities throughout the country are approving additional policies, such as a vulnerable road-user law, which the Transportation Engineering Division keeps abreast of and, when appropriate and after collaboration with the Police Department, makes recommendations.

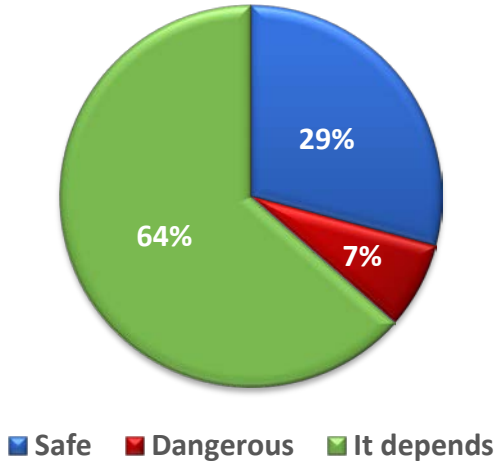
See Appendix D for additional laws and safety tips.

Bicycle Safety Policies and Programs

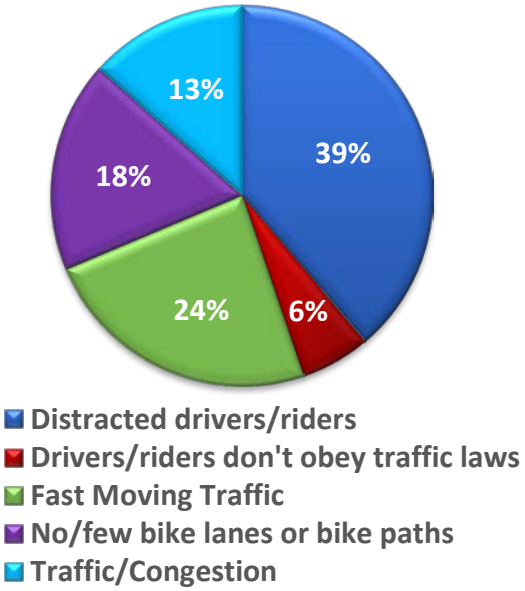
The City of Lakewood Police Department uses traffic violation data to assign enforcement officers to the streets

In addition to a yearly Traffic Safety Report completed by the Transportation Engineering Division, the Lakewood Police Department provides a yearly Traffic Safety Plan used to identify opportunities to improve safety.

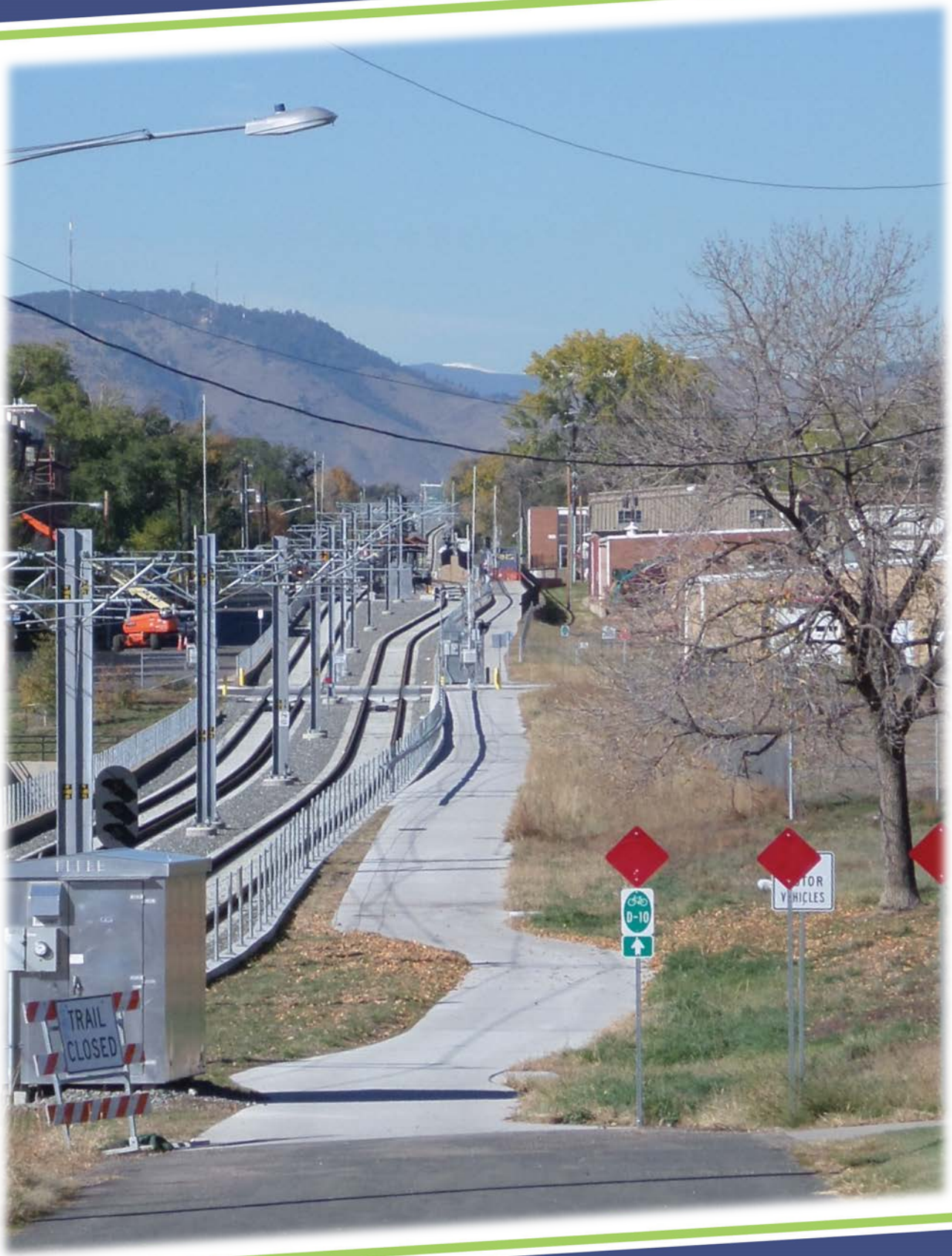
Survey Question: Is it safe or dangerous to ride a bicycle in your neighborhood?



Survey Question: Why do you feel it is dangerous to ride a bicycle in your neighborhood?



Chapter 6: Evaluation & Planning



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Chapter 6: Evaluation & Planning

The City of Lakewood has set a plan and created a methodology to evaluate success throughout the implementation of the Bicycle System Master Plan. In order to improve the City's plan and to find efficient ways to evaluate success, the Lakewood Transportation Engineering Division will actively expand City staff involvement in programs such as GoTober and Bike to Work Day, in addition to encouraging individuals to take on active roles in the bicycle community through webinars, conferences and more.

The Lakewood Bicycle Advisory Team has indicated interest in assisting with an Equity, Diversity and Inclusion (EDI) initiative to reach groups that are often not prioritized, including low-income and minority communities. An EDI initiative is an important part of ensuring that community bicycling investments and practices work for all groups of people. Every individual deserves safe streets, enabling mobility and equal access to community resources and opportunities.

47% of bicycle commuters in the U.S. make less than $25,000 a year*

Source: U.S. Census, 2016
**U.S. census data combines bicycle commuters with taxi and motorcycle commuters*

Evaluation

Prioritizing Facilities: Full implementation of proposed facilities will take many years to complete. As the City builds out the bicycle network and facilities are constructed or upgraded, the City will need to continuously update the priority of incomplete proposed facilities. The process for prioritization will be determined by costs, importance and connectivity to people and places (see Appendix A).

Data Collection: The City of Lakewood currently evaluates the success of the current Bicycle System Master Plan by collecting information on bicycle usage through electronic bicycle counters. See **Citywide Efforts** in Chapter 7 to understand how Lakewood plans to expand data collection.

Chapter 7: Facility Recommendations

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Chapter 7: Facility Recommendations

Recommendations for bicycle facilities were created to implement a continuous, connected, low stress and safe environment for cyclists of all ages and abilities.

Bicycle system recommendations were developed by:

- Reviewing previously proposed plans in the 2005 Lakewood Bicycle System Master Plan
- Considering recommendations and feedback provided by the Lakewood Bicycle Advisory Team
- Reviewing public comments and suggestions from the open house meetings in October 2016 and November 2017
- Reviewing public comments received from surveys, NextDoor and email
- Conducting field work and bicycle counts, reviewing and updating GIS data, and
- Refining draft proposals

Goal, Objectives, and Tracking

The following goal and objectives were developed to aid in creating a connected and continuous bicycle network. Performance tracking will document progress and aid in the creation of periodic tracking reports. Most objectives will be deemed successful after their implementation, while others are data-driven.

Goal 4: Establish a connected bicycle network that allows residents to reach destinations in which they live, work and play.

Goal 4 Objectives:

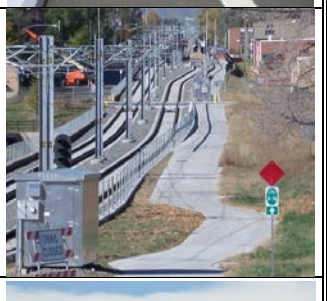
- As the City evolves, continue the completion of gaps analyses and prioritize gaps to be completed
- Continue and expand wayfinding to better connect people to places in which they live, work and play, as well as to surrounding municipalities
- Complete the **Simple, Smart and Successful** (see Appendix A) projects that can create improved connections in the immediate future

Goal 4 Performance Tracking:

- Track completion of prioritized gap-related projects.
- Document newly proposed and completed wayfinding routes.
- Document the completion of the **Simple, Smart and Successful** projects.

Facility Types

The recommended projects refer to bicycle facility types that are fully defined in Appendix C. A brief definition of each facility type and purpose is provided below.

Shared Roadway	On-street facility shared between bicyclists and motorists	
Bike Lane	Dedicated on-street facility for bicyclists	
Buffered Bike Lane	Dedicated on-street facility for bicyclists with buffer separating motorists from bicyclists	
Protected Bike Lane/Cycle Track	Dedicated on-street facility for bicyclists with permanent barrier separating motorists from bicyclists creating an off-street facility environment	 Photo: City of Boulder
Shared Use Path	Off-street facility dedicated for bicyclists, pedestrians, and other non-motorized forms of transportation	
Paved Shoulder	Wide on-street facility commonly used by bicyclists, but not a dedicated facility and therefore not maintained as one	
Barrier Crossings	A roadway design including under- and overpasses that allows users to avoid major barriers	

Street and Facility Standards

The City of Lakewood abides by the standards of the Lakewood Transportation Engineering Design Standards (Green Book). Some of these standards are derived from previous City of Lakewood regulations as well as the City of Lakewood Zoning Ordinance, the State Highway Access Code and nationally established texts and publications. Visit Lakewood.org/TransportationEngineering to obtain a copy of the Green Book for more detailed information on street and facility standards.

Proposed Bicycle System

See Appendix B for a table and maps of recommended bicycle facilities. The project list table includes project locations, limits, facility type, funding sources, implementation time, and complexity.

Shared Use Path Projects

The plan includes 29 miles of proposed shared use paths. Shared use paths were proposed where they would create a more continuous and direct connection, where they could provide recreational value, take advantage of an existing corridor, or prevent bicyclists from riding on high-speed corridors.

Bike Lane Projects

The plan includes 35 miles of additional bike lanes. Bike lanes were proposed because they completed gaps, created new connections, or provided a more direct route that commuters could take advantage of.

9 proposed over/underpasses

29 miles of proposed shared use paths

35 miles of proposed bike lanes

48 miles of proposed shared roadway

Buffered and Protected Bike Lane Projects

Buffered and protected bike lanes are not specifically proposed at any one location and will be considered for implementation in any location where there is a proposed bike lane. Buffered and protected bike lanes are contingent on traffic studies and design capabilities and will be implemented instead of a bike lane if deemed feasible.

Shared Roadway Marking Projects

The plan includes 48 miles of additional shared lane marking projects. Shared roadways are beneficial for creating shorter trips on low-stress and low-traffic-volume streets.

Intersections Recommended for Study

The City of Lakewood understands the troubles of having a major barrier, 6th Avenue, divide the city. There are multiple intersections proposed to have an under- or overpass to help create a more connected community. These proposed facilities will require studies and analysis to better understand where they will be most effective. Additional intersections that may require further studies for safety concerns due to high traffic volumes or high conflict zones include:

- All arterial/arterial crossings with free-flow right turns
- Union Boulevard

Union Boulevard has several intersections of concern including Union Boulevard at Alameda Avenue and Union Boulevard at 2nd Place. Some intersection studies have already been conducted along Union Boulevard. Those intersections and studies are identified and described in more detail in the Union Area Transportation Study.

Citywide Efforts

These are recommendations for citywide efforts that would improve the ability to bicycle throughout the city more efficiently.

Bike Parking Program: The City of Lakewood has existing bike parking standards for development throughout Lakewood to encourage the use of bicycles as a main mode of transportation. By ensuring bicyclists have a safe and convenient location to park their bikes upon arrival at their final destination, more individuals will be willing to substitute a bicycle for their automobile. These standards can be found in the Lakewood Zoning Ordinance.

Count Program: The City of Lakewood currently performs bicycle counts on an irregular basis at a variety of locations, mostly along major corridors such as the W Line shared use path and Garrison Street. In order to better understand the use of bicycle facilities, this effort should be expanded and stabilized to ensure data is collected on a regular basis in the same locations to allow for long-term evaluation of use. The result of these counts should be summarized in a periodic report.

Request Lakewood Customer Service Webpage: The City of Lakewood has the Request Lakewood Customer Service webpage where residents, businesses and visitors can submit issues and concerns. While this site is relatively intuitive, it can be difficult to find where to submit bicycle-related concerns. The City will work to create a more visible link.

20-Minute Neighborhoods: The City of Lakewood and the City of Denver approved the Sheridan Station 20-Minute Neighborhood Implementation Strategy in June of 2015. The plan encompasses an area of a 20-minute neighborhood, an area of approximately one-half mile radius around the station, and includes almost equal portions of Denver and Lakewood.

This project will provide residents in the area 20-minute walking and biking access to nearby jobs, destinations and community events, while providing easy access to other forms of mobility. In turn, residents may have more disposable income as vehicle ownership and maintenance can be a smaller expense. There is also potential for improved community health as air quality improves with reduced local emissions and more residents are partaking in active transportation.

Wayfinding and Route Signs: A bicycle wayfinding system comprises signs and markers that create awareness of the bicycle systems and improves navigation along the bikeways and to destinations. The City of Lakewood, in collaboration with consultants, CDOT, DRCOG, Jefferson County and adjoining cities has worked diligently to complete the JeffCo Regional Bikeways Wayfinding Guide, which serves as a toolkit for the development of a regional wayfinding network. With the completion of the guide, the City has already started laying the foundation for ample wayfinding signage, not only on regional routes, but local routes as well, and will continue to improve wayfinding efforts. A map of the JeffCo Regional Bikeways Wayfinding routes is included in Appendix B.

Appendix A: Implementation

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Appendix A: Implementation

This plan outlines bicycle infrastructure improvement projects that will help people make trips by bicycle more often. Completion of projects depends on a variety of factors, including scheduled overlay projects, budget and grant availability, community support and City policies.

The City of Lakewood will revisit the proposed project list to find the most viable projects for success. A variety of factors can impact project implementation, including:

- Any overlay paving projects where proposed bicycle facilities can be installed simultaneously
- Any changes to existing grants, or the creation of new funding programs, that impact potential large-budget projects that can be implemented
- Changes to zoning and land use that will impact where and how development occurs in Lakewood
- The speed of development, which will impact which projects are implemented
- Community input (e.g. through the Lakewood Bicycle Advisory Team or neighborhood groups)
- Directives (policy or otherwise) from City Council
- Interest from partners (such as Jefferson County and CDOT) in implementing projects that are partially or entirely within their jurisdiction
- Usage and anticipated future usage
- Property acquisition
- Environmental impacts

Simple, Smart and Successful

One of the keys to successful implementation is starting early to capitalize on the momentum and energy generated by developing this plan. Implementing a few relatively easy and visible projects signals this is a plan that people can invest in and count on. Such potential facilities from the project list in Appendix B include:

Project #	Project Location and Limits
4a	Miller Street shared roadway from Colfax Avenue to Wheat Ridge
8c	5th Avenue shared roadway from Harlan Street to Denver
8e	6th Avenue North Frontage Road shared roadway from Harlan Street to Denver
8f	Harlan Street shared roadway from 1st Avenue to 5th Avenue
10b	Collaborate with Jefferson County to create shared roadway signage on Wide Acres Road to link Colfax Avenue and Colorado Mills Mall
23b	10th Avenue bike lane completion from Lamar Street to Denver
26a	Zinnia Way shared roadway from Cedar Avenue to 2nd Place
26b	Cedar Avenue bike lanes from Alkire Street to Zinnia Way
62	Vance Street bike lanes from Ohio Avenue to Virginia Avenue

Many of these projects complete loops and create connections between neighborhoods, goods and services.

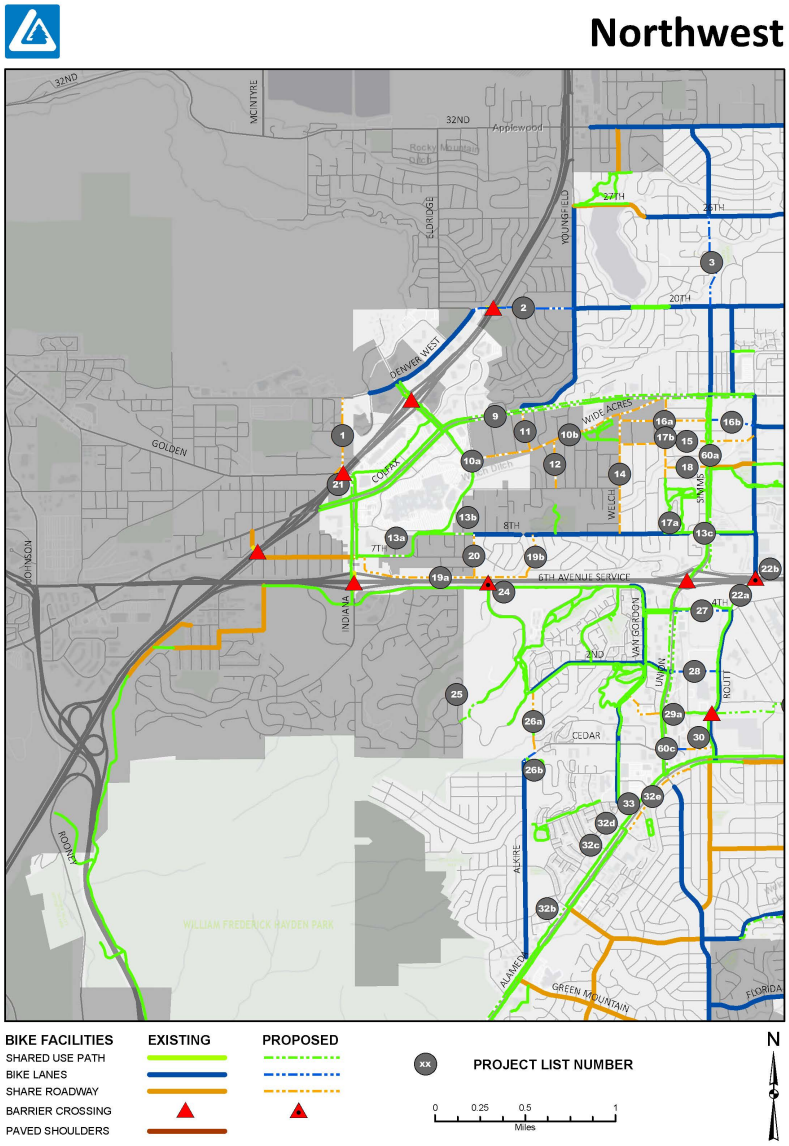
Key Investments

Each quadrant has strong existing connections that create bicycle routes that have become more accessible to people in varying neighborhoods, but there are several key facilities missing that would create a more connected, continuous and accessible network. Those needed facilities are described below. Appendix B includes nine enlarged maps showing the same information in greater detail than the following four quadrant illustrations.

Northwest Quadrant

Major activity centers in the northwest quadrant include Denver West, Colorado Mills, the west side of the Denver Federal Center and more. New facilities at these locations will enhance connectivity between people and the major activity centers in the quadrant. These connections include:

- **Wide Acres Road:** In collaboration with Jefferson County, sign Wide Acres Road from Colfax Avenue to Hawthorne Road as a shared roadway, providing a connection to Colorado Mills by the Colorado Mills Parkway shared use path.
- **Union Corridor**: Implement proposed facilities within the Union Area Transportation Study to create greater connectivity throughout the Union Corridor.
- **Red Rocks Station:** Construct an overpass above 6th Avenue to improve north-south connectivity.
- **Quail Street and Routt Street:** Construct an overpass across 6th Avenue to improve safe crossings of 6th between Kipling Street and Union Boulevard.



There are other opportunities to create important connections to surrounding communities. The northwest quadrant borders Golden, Wheat Ridge and Jefferson County – communities Lakewood residents work and recreate in. New connections to these communities include:

- **8th Avenue:** Encourage Jefferson County to complete an existing gap near Coors Street.
- **20th Avenue:** Encourage Jefferson County to complete an existing gap between Youngfield Street and Denver West Parkway, creating a connection to Golden.
- **Miller Street:** Encourage Wheat Ridge to complete an existing gap from Colfax into Wheat Ridge.
- **Red Rocks Community College:** Encourage Red Rocks Community College and Jefferson County to construct a shared use path from Maple Place to Campus Loop Drive.

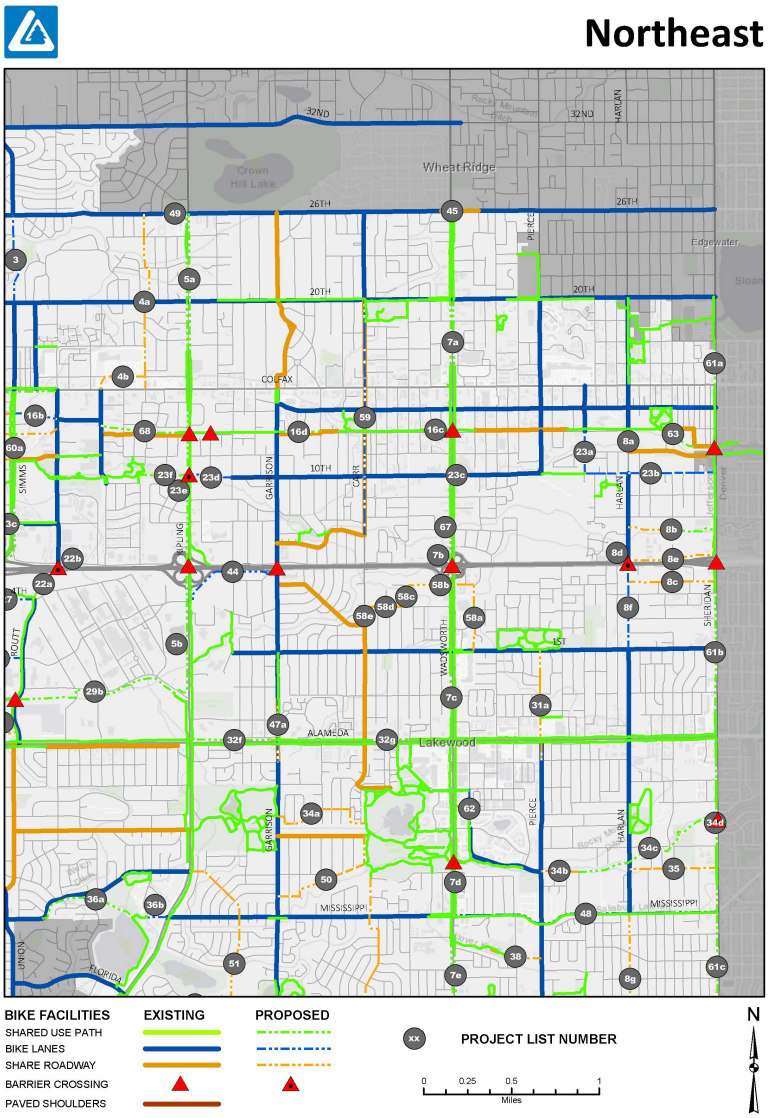
Additional important connections include:

- **Simms Street:** Fill an existing gap between 20th Avenue and 26th Avenue.
- **Alameda Parkway:** Fill existing gaps along the corridor.

Northeast Quadrant

There are a variety of active areas missing vital connections, including Belmar, the Denver West Corridor, City Commons and the east side of the Denver Federal Center. To improve connectivity to multiple major activity hubs, key connections include:

- **Kipling Street:** Complete existing gaps to improve connection to the Denver Federal Center.



- **Alameda Avenue:** Complete existing gaps to improve connections to the Denver Federal Center, Belmar and City Commons.

There are other opportunities to create important connections to surrounding communities. The northeast quadrant borders Denver, Wheat Ridge and Edgewater – communities Lakewood residents work and recreate in. New connections to these communities include:

- **10th Avenue:** Complete bike lanes from Lamar Street to Denver for improved Denver and Sheridan Station connections.
- **Weir Gulch Trail:** Complete shared use path from Pierce Street to Denver.
- **Wadsworth Avenue:** Complete shared use path from Colfax Avenue to Wheat Ridge.
- **Sheridan Boulevard:** Complete shared use path from Colfax Avenue to Edgewater.

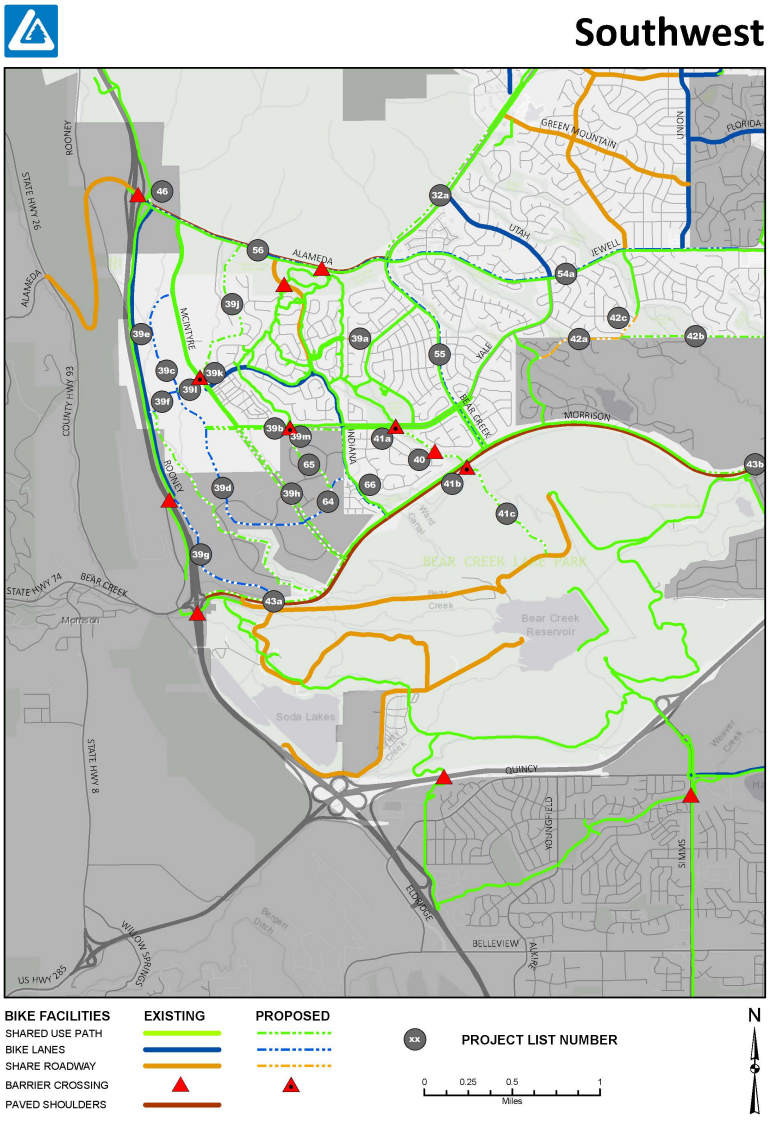
Additional important connections include:

- **Garrison Street:** Complete bike lanes through the Alameda Avenue intersection.
- **Mississippi Avenue:** Add bike lanes from Wadsworth Boulevard to Denver.
- **Carr Street:** Convert shared roadway facilities to bike lanes from 7th Avenue to 20th Avenue for improved north-south connection.

Southwest Quadrant

The southwest quadrant is dominated heavily by parks and open spaces that are major recreational areas, including Bear Creek Lake Park and William Fredrick Hayden Park. To enhance connectivity to these large recreation areas, connections are needed, including:

- **Bear Creek Lake Park:** Construct a shared use path from Kumpfmiller Drive to Morrison Road.



- **Rooney Valley:** The development of Rooney Valley will create improved connections between Lakewood and other jurisdictions as well as between Bear Creek Lake Park and Green Mountain area.
- **Alameda Parkway:** Complete a shared use path from Jewell Avenue to Foothills Drive for better access to William Frederick Hayden Park.
- **Morrison Road:** Fill gaps in shared use path from Kipling Street to C-470 for better access to Bear Creek Lake Park.

There are other opportunities to create important connections to surrounding communities. The southwest quadrant borders Denver, Morrison and Jefferson County – communities Lakewood residents work and recreate in. New connections to these communities include:

- **Rooney Road:** Continue bike lanes from C-470 overpass to Morrison Road to enhance connections into Jefferson County and the town of Morrison.
- **Rooney Valley:** The development of Rooney Valley will provide improved connections into town of Morrison and Jefferson County.

Additional important connections include:

- **Alameda Parkway:** Create a direct connection on the north side of Alameda Parkway to the C-470 trail.
- **Jewell Avenue:** Add bike lanes from Bear Creek Boulevard to Pierson Street for improved east-west connection.
- **Coyote Gulch:** Construct a shared use path from Yale Avenue to Kumpfmiller Drive for improved access to facilities and parks.

Southeast Quadrant

There are a variety of recreation and activity centers within the southeast quadrant, including the Bear Creek Greenbelt, the intersection of Wadsworth Boulevard and Jewell Avenue, and Wadsworth Boulevard at Hampden Avenue. To enhance connectivity to these areas, connections are needed, including:

- **Wadsworth Boulevard:** Complete shared use path along Wadsworth Boulevard to create an important north-south connection.
- **Carr Street:** Complete shared roadway facilities to create important north-south connections into various parks.
- **Old Wadsworth:** Completed shared roadway facility for an improved connection from Grant Ranch Boulevard to Hampden Avenue.
- **Estes/Garrison Street:** Convert shared roadway to bike lanes at Jewell Avenue and Cornell Avenue.

There are other opportunities to create important connections to surrounding communities. The southeast quadrant borders Denver and Jefferson County – communities Lakewood residents work and recreate in. New connections to these communities include:

- **Lamar/Pierce Street:** Coordinate with Denver to sign shared roadway from Yale Avenue to Hampden Avenue for improved connectivity into Jefferson County and Denver.

- **Quincy Avenue:** Complete signing shared roadway facility for improved access into Jefferson County.
- **Jewell Avenue:** Complete shared use path for improved access into Denver.
- **Teller Street:** Sign shared roadway facility from Jefferson Avenue to Pierce Way for improved access into Denver.

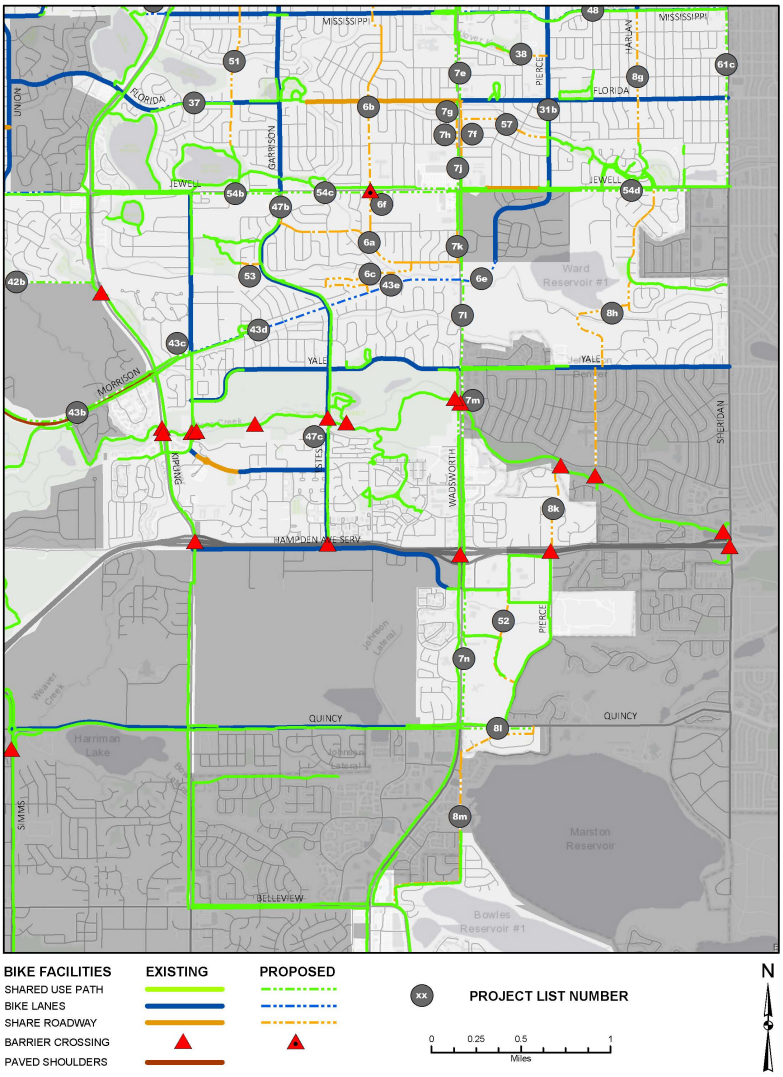
Additional important connections include:

- **Harlan Street:** Sign shared roadway facility from Mississippi Avenue to Wilson Family Park.
- **Morrison Road:** Complete bike lanes from Kipling Street to Wadsworth for improved access to other facilities.

Process for Future Prioritization

The City of Lakewood will review bicycle project prioritization periodically. The City will assess staff resources, upcoming available funding sources, and updated cost estimates to outline potential near-term projects. This outline should be refined with input from the community to address prioritization. Criteria used to develop a list of project priorities include extensive public input and combined knowledge from city staff.

Southeast



Cost Estimates and Funding Strategies

Appendix B includes a *Planning Level Cost Estimate* for each potential project. These estimates will primarily be used as a starting point when considering project prioritization during the coming years. In that sense, they are considered more valuable comparatively than as absolute costs, in part because they are based on 2017 construction cost experience and this plan will be in place for many years.

They do not include certain costs such as acquisition of property, landscaping, or utility relocation and they assume the City installs all signage and pavement markings.

The following discussion of various facility types identifies current conceptual costs for installation and maintenance of bicycle facilities.

Shared Roadway

The City of Lakewood estimates $1,600 per mile for the implementation of shared roadways. Cost estimates include signage and street markings which occur every 1,600 feet and 300 feet respectively, in addition to labor associated with implementation processes.

Aside from the additional wayfinding needed to guide bicyclists, shared roadways are maintained in conjunction with the street network.

Bike Lanes

Bike lanes are generally implemented during a transportation engineering overlay project and therefore are a relatively inexpensive facility to implement at an estimated $35,000 per mile in a single direction. This cost would rise slightly in the event a buffered bike lane is implemented as the preferred facility.

Bike lanes with no adjacent sidewalk also serve as a pedestrian facility and are maintained as part of the street network and therefore require little additional maintenance.
Bike lanes adjacent to sidewalks require additional white striping of streets. Elements are replaced every ten years or as needed. Associated costs include on-street wayfinding markings which cost approximately $100 per mile and white striping which costs approximately $345 per linear foot.

Shared Use Path

Shared use facilities are the most expensive type of facility costing, on average, $345 per linear foot.

Shared use paths are enjoyed by pedestrians and bicyclists. While the City maintains some aspects of those paths, property owners maintain others. City-operated shared use path sweeping costs are approximately $15 per mile as needed. Snow removal costs are approximately $60 per mile as needed.

Funding

Projects are funded by a variety of resources including:

- Private development or private funds
- Other agency projects or joint projects with CDOT, Regional Transportation District (RTD), Jefferson County and adjacent communities
- Other public and private entities such as public improvement districts, recreation districts, metro districts, and school districts/education centers
- Direct funding from other agencies such as DRCOG, Jefferson County, State Trails and Great Outdoors Colorado
- City of Lakewood in conjunction with other capital improvement projects or bicycle-specific projects

Process for Implementation

Some facility additions can be done with minimal impact to adjacent property and other parts of the transportation network. For instance, adding a paved shoulder that could serve as a bike lane may be possible as part of overlaying a street without needing additional property and without changing the street's motor vehicle lane configuration. Such a project may happen using existing budgeted funds and adjacent owners would be notified of the street resurfacing.

Toward the other end of the spectrum, some projects may require property acquisitions, coordination with other agencies, more extensive design work and other activities. In those instances, discussions with owners of affected properties may be thorough and evolve with design work. There are a myriad of variations between these two examples.

Regardless of the complexity or simplicity of any particular project, City-initiated projects will include:

- Identifying potential effects on adjacent or nearby property owners and effects, if any, of the proposed change on other parts of the transportation network.
- Estimating conceptual costs and benefits as compared to alternative potential projects.
- Notifying owners of affected property and, when appropriate, on-going discussions with such owners. Discussions of design would commence early enough to ensure consideration of such owners' input during design.

Bicycle facilities may also be implemented as requirements of property development. Public notifications are made and public input is received as part of the development planning process as noted in the zoning ordinance and subdivision ordinance. Additions such as on-street lanes or shared use paths, when required, are integrated into the street design or open space design for the development. These facilities are generally on property dedicated by the developer to the City as public rights-of-way or other public property.

Need for Agency Coordination

Some bicycle facilities are multijurisdictional. For this reason, it is important the City regularly coordinate with Jefferson County, the State of Colorado, and other neighboring communities such as Denver, Golden and Wheat Ridge for project opportunities.

Measuring Progress

The City will publish a periodic report to share progress on the master plan with the community. The report will highlight new educational and encouragement programs, as well as the number and types of facilities completed within each year. Additionally, the report will include new data on ridership numbers.

Compliance

During development and implementation of all projects, the City of Lakewood will abide by all applicable federal, state, and local laws including the Americans with Disabilities Act (ADA) and the National Environmental Policy Act (NEPA).

Appendix B: Engineering

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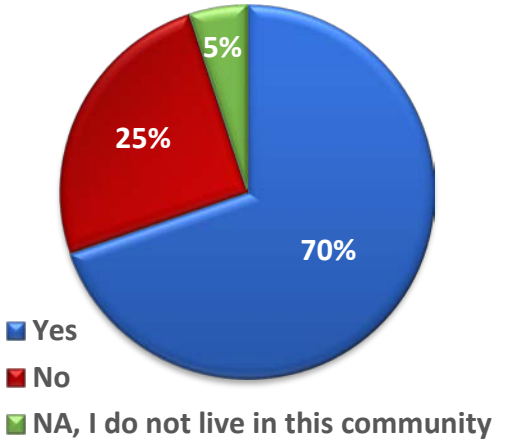
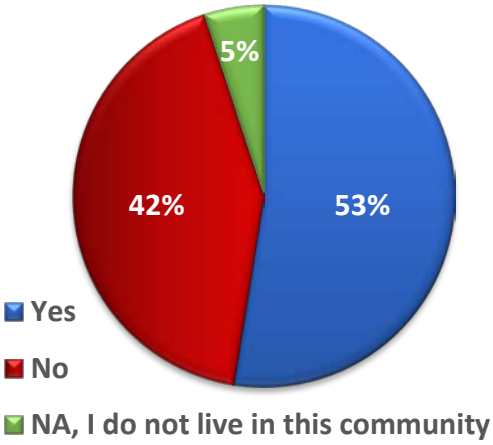
Appendix B: Engineering

Engineering is about creating safe and convenient places to ride and park your bike. This means creating continuous and connected facilities that provide residents access to the full bicycle network. Additionally, maintenance is a key component in ensuring residents feel confident once they begin riding. This section outlines existing and proposed facilities.

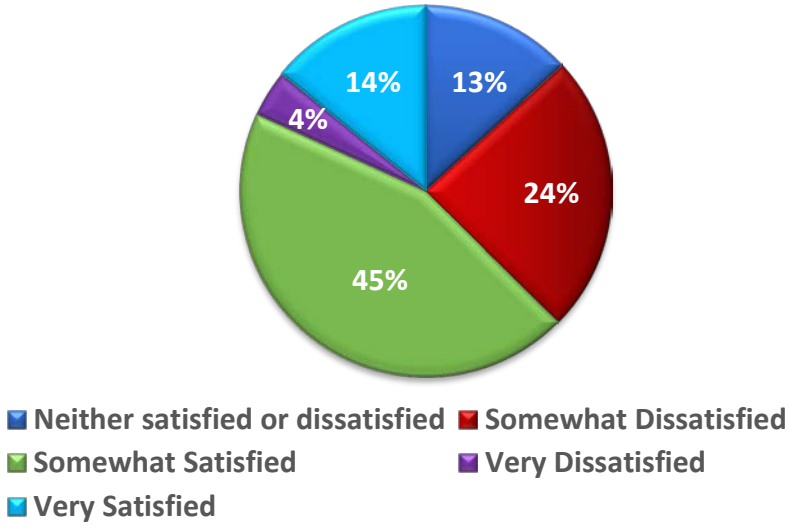
Survey Question: Are bike lanes available within a quarter mile of where you live?



Survey Question: Are shared use paths available within a quarter mile of where you live?



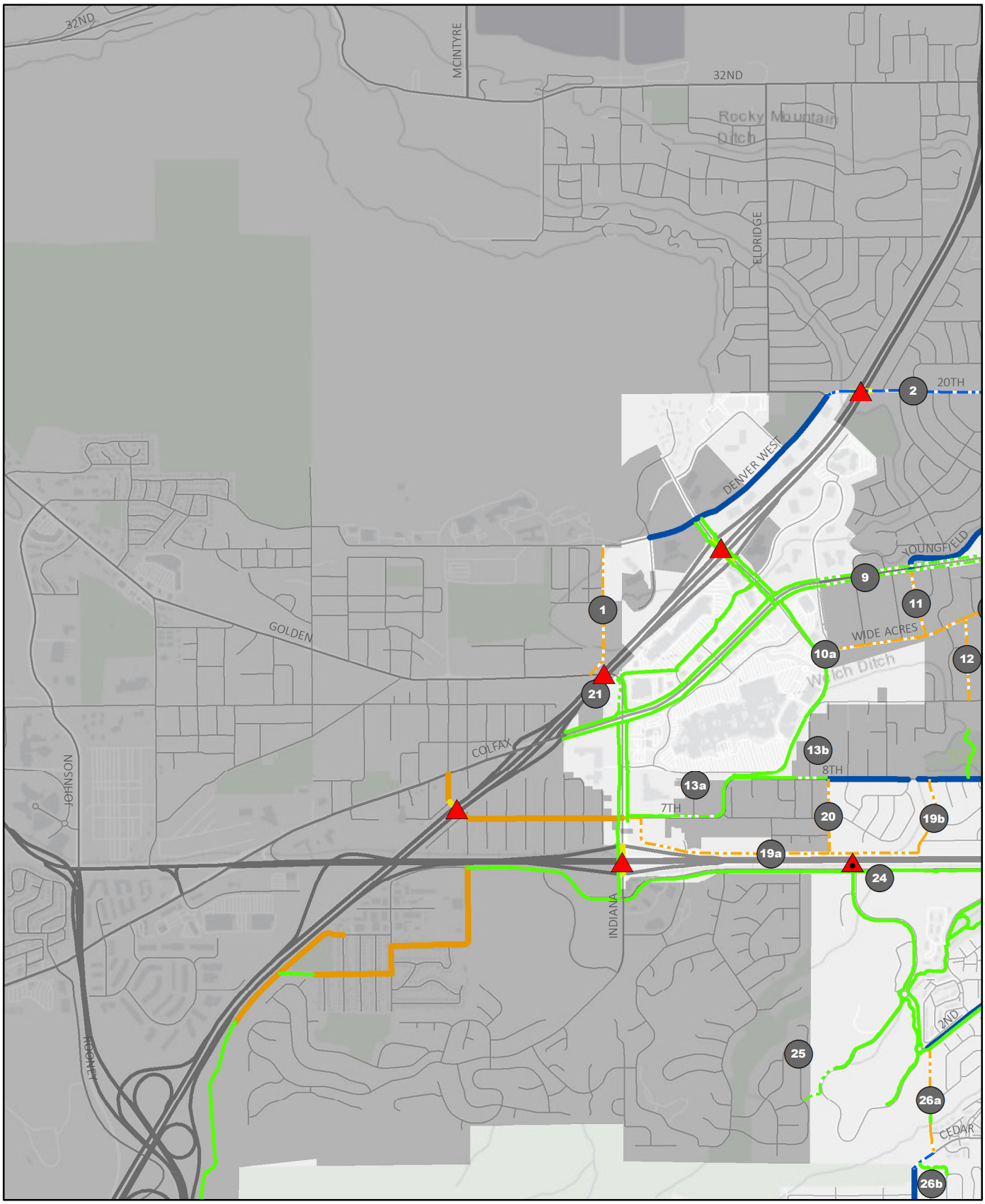
Survey Question: How satisfied are you with how your local community is designed for making bicycling safe?



Project List

The project list follows facility maps on the pages below and provides proposed facility information including the project location, limits, type of facility, implementation time, project importance, complexity and cost.

Map 1



See Map 2

BIKE FACILITIES

	EXISTING	PROPOSED
SHARED USE PATH		
BIKE LANES		
SHARE ROADWAY		
BARRIER CROSSING		
PAVED SHOULDERS		

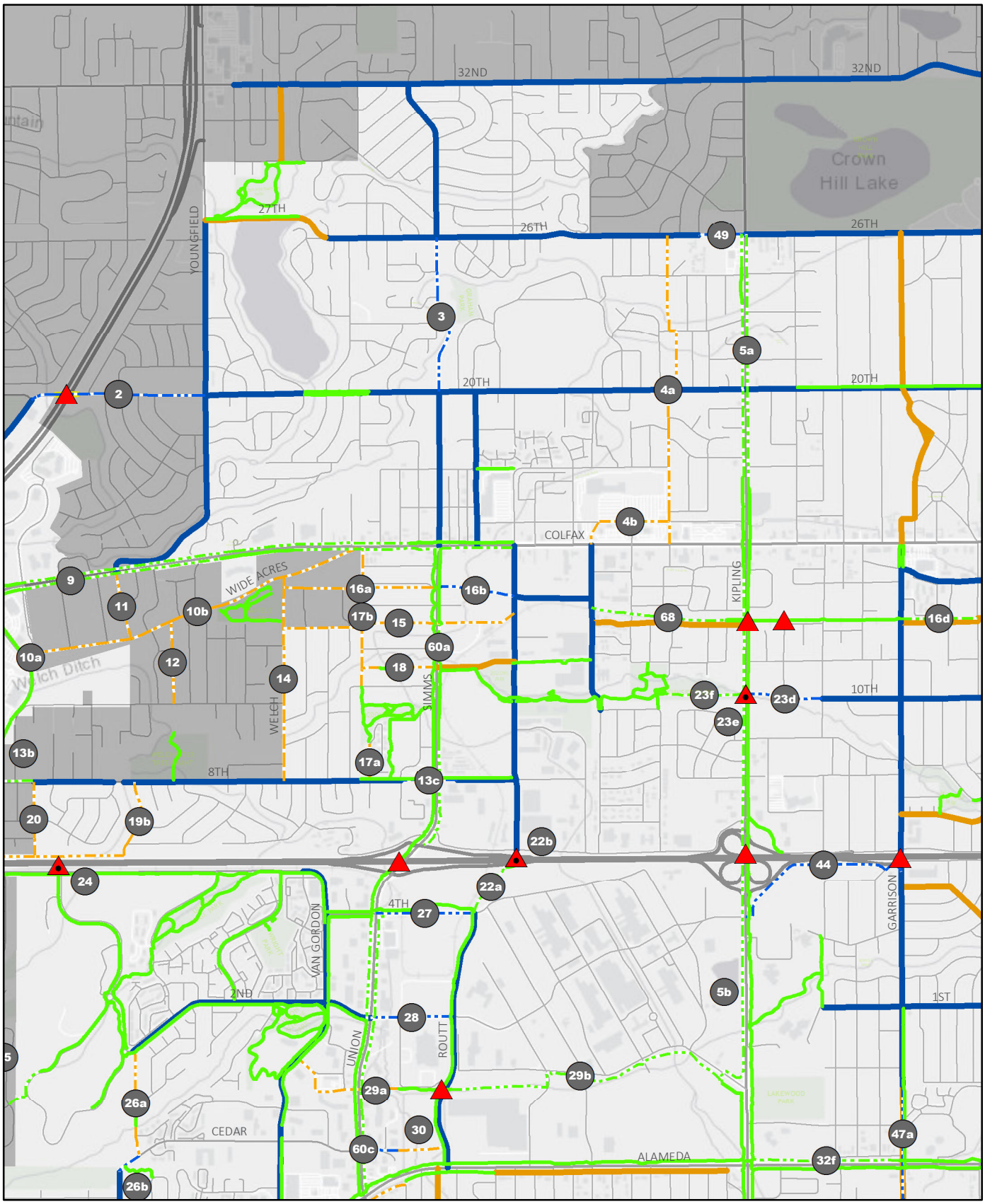
See Map 4

xx **PROJECT LIST NUMBER**

0 0.25 0.5 1
Miles

N

Map 2



See Map 1

See Map 3

See Map 5

BIKE FACILITIES

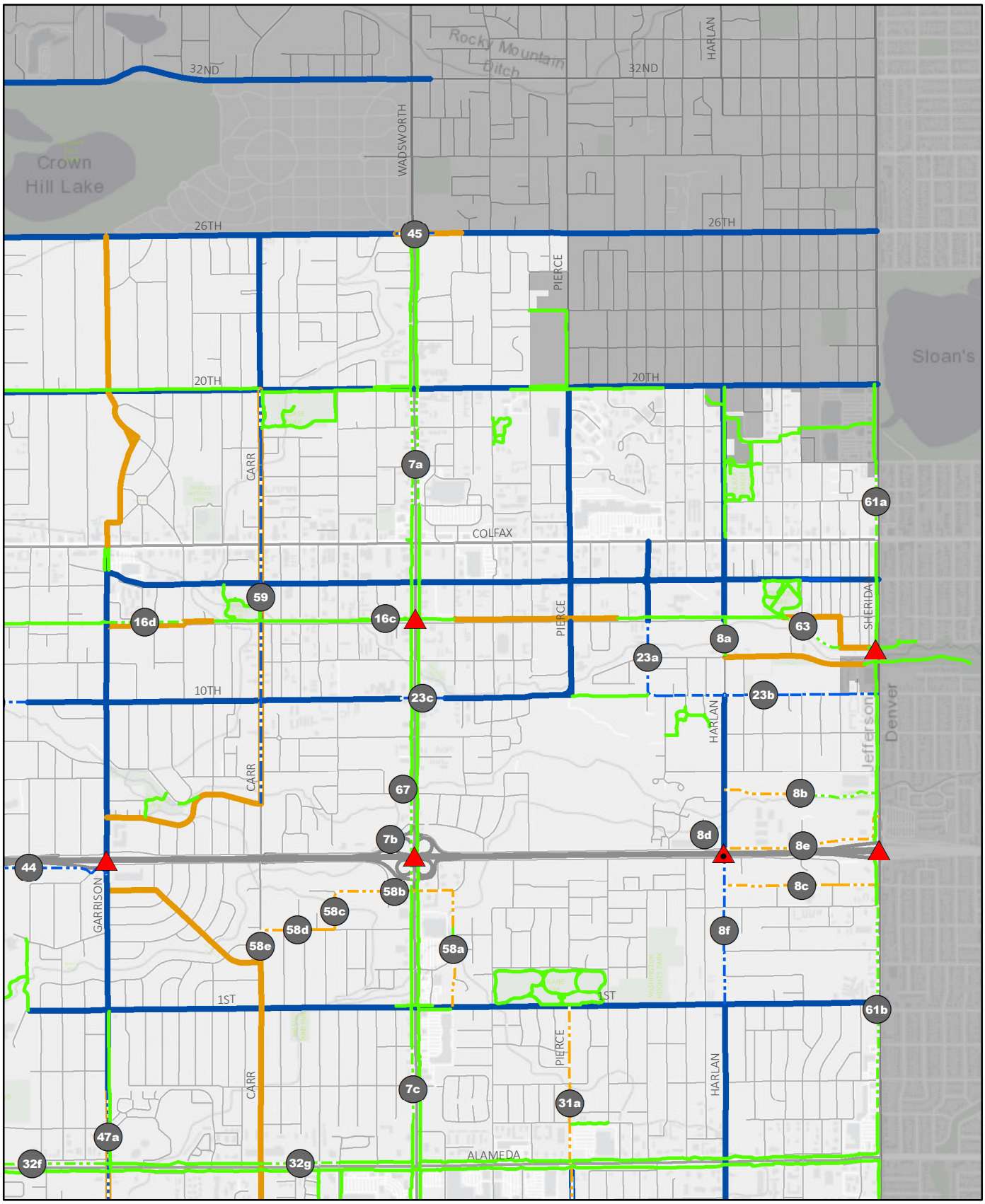
	EXISTING	PROPOSED
SHARED USE PATH		
BIKE LANES		
SHARE ROADWAY		
BARRIER CROSSING		
PAVED SHOULDERS		

xx **PROJECT LIST NUMBER**

0 0.25 0.5 1
Miles

N

Map 3



See Map 2

BIKE FACILITIES

	EXISTING	PROPOSED
SHARED USE PATH		
BIKE LANES		
SHARE ROADWAY		
BARRIER CROSSING		
PAVED SHOULDERS		

See Map 6

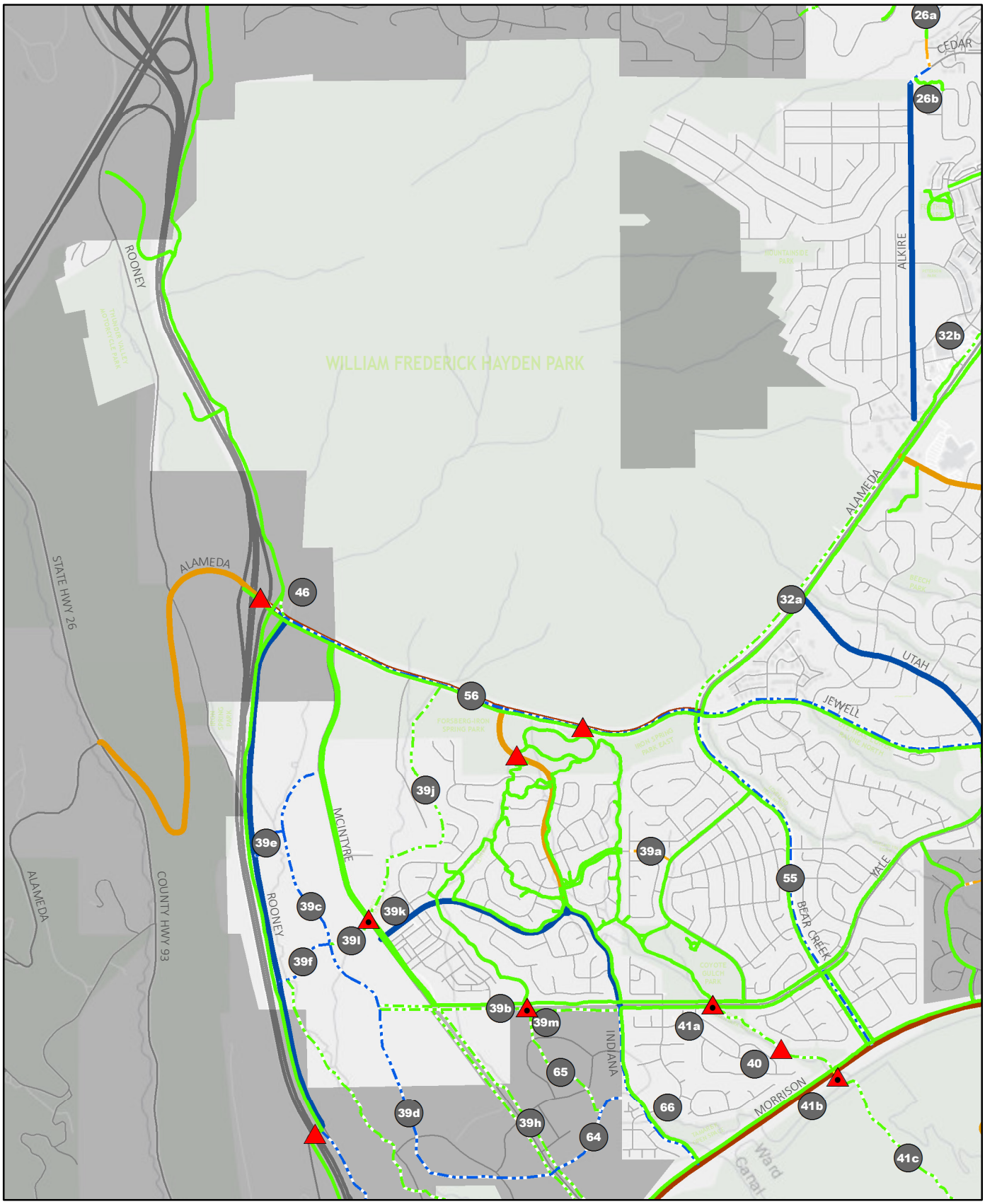
xx **PROJECT LIST NUMBER**

0 0.25 0.5 1
Miles

N

Map 4

See Map 1



See Map 5

See Map 7

BIKE FACILITIES

	EXISTING	PROPOSED
SHARED USE PATH		
BIKE LANES		
SHARE ROADWAY		
BARRIER CROSSING		
PAVED SHOULDERS		

xx **PROJECT LIST NUMBER**

0 0.25 0.5 1
Miles

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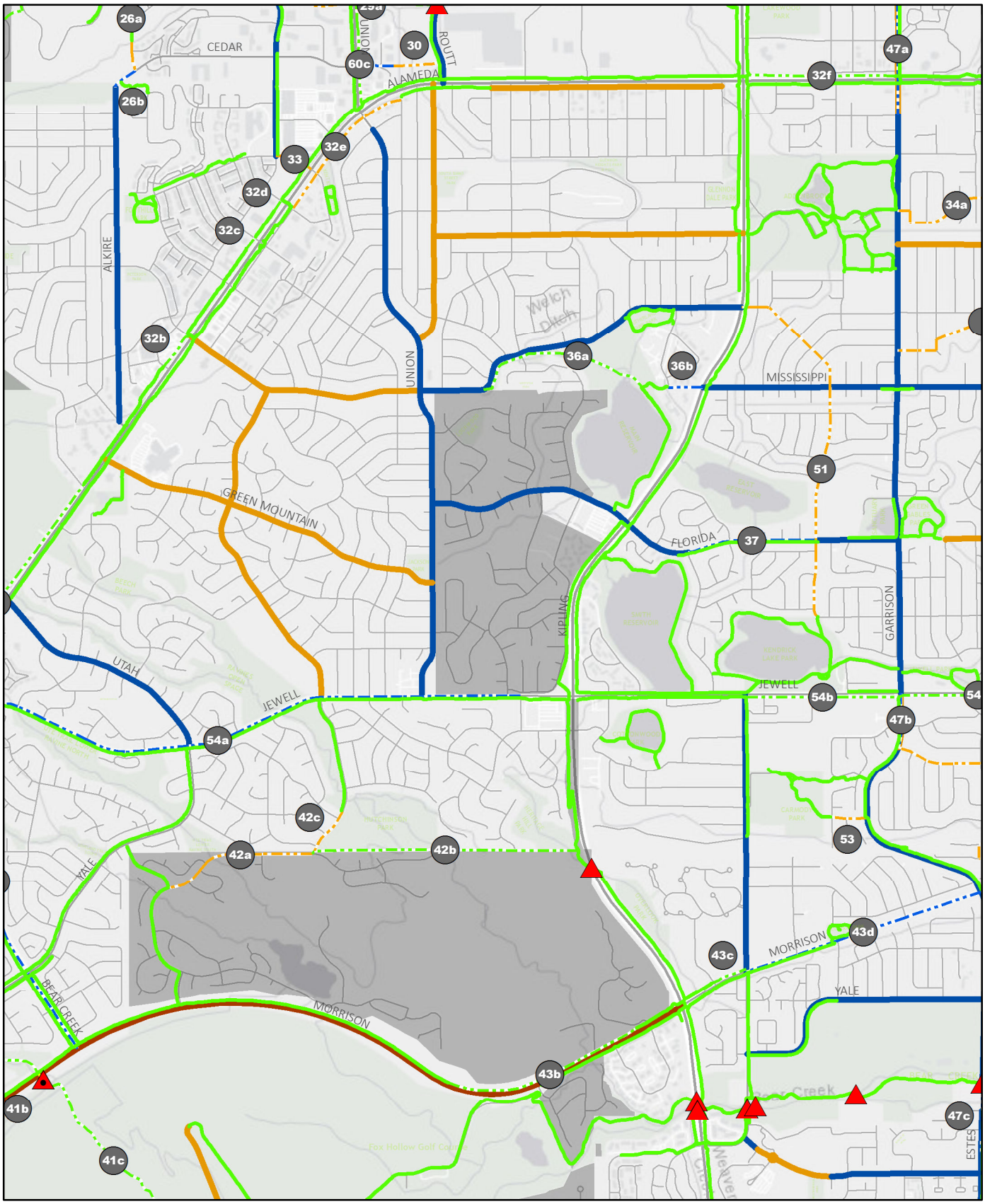
Map 5

See Map 2



See Map 4

See Map 6

See Map 8

BIKE FACILITIES

	EXISTING	PROPOSED
SHARED USE PATH		
BIKE LANES		
SHARE ROADWAY		
BARRIER CROSSING		
PAVED SHOULDERS		

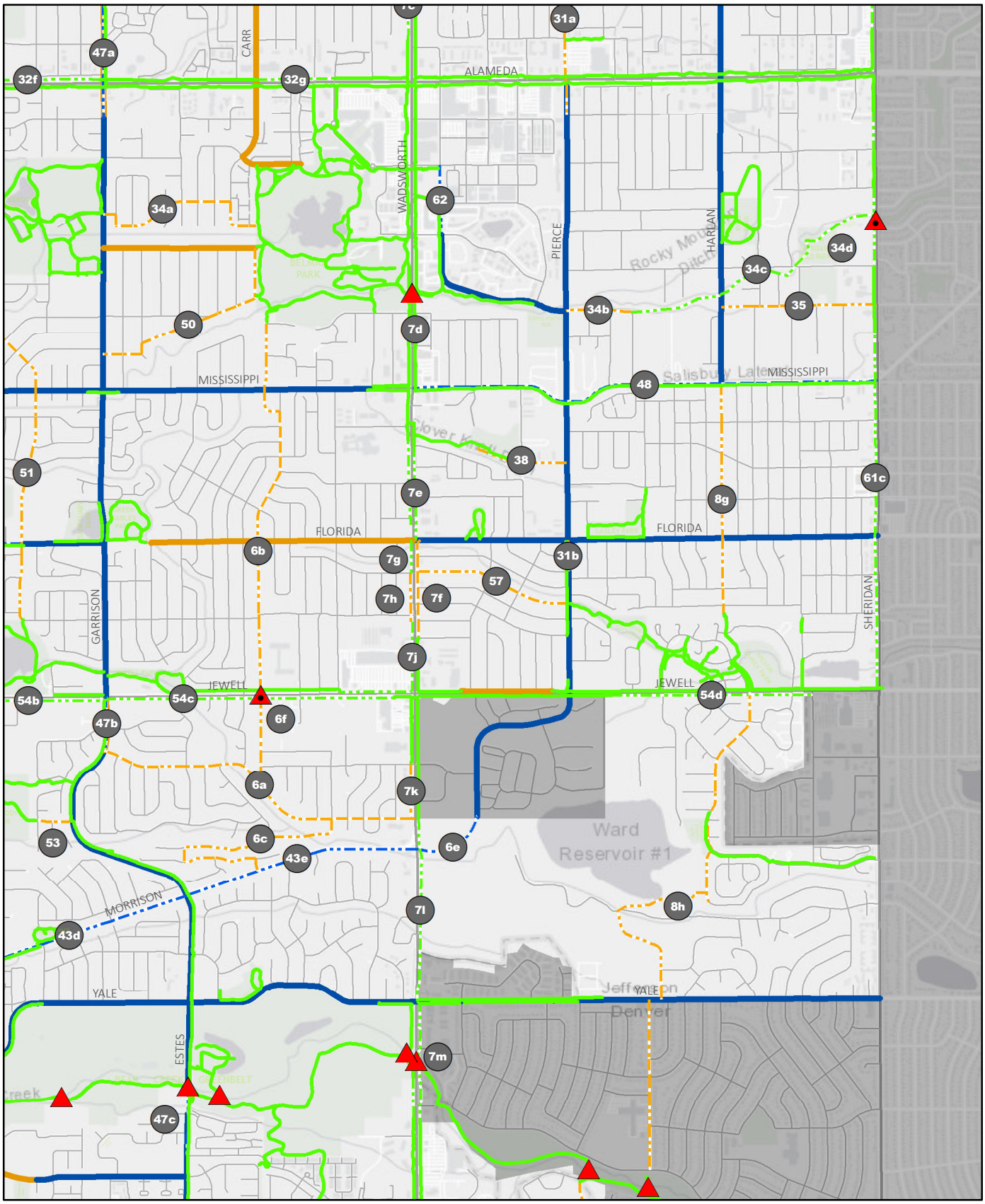
xx **PROJECT LIST NUMBER**

0 0.25 0.5 1
Miles

N

Map 6

See Map 3



See Map 5

See Map 9

BIKE FACILITIES

	EXISTING	PROPOSED
SHARED USE PATH		
BIKE LANES		
SHARE ROADWAY		
BARRIER CROSSING		
PAVED SHOULDERS		

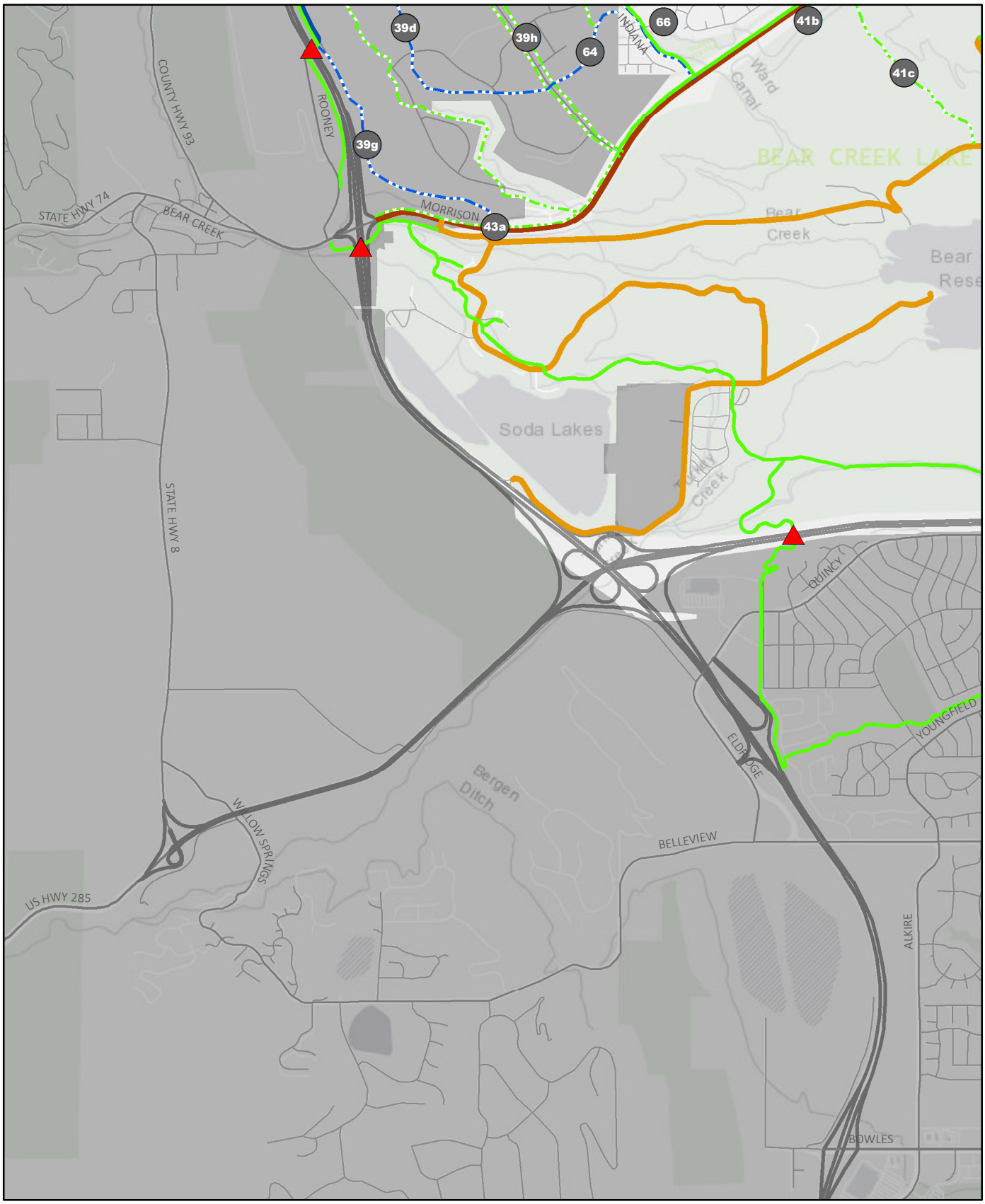
xx **PROJECT LIST NUMBER**

0 0.25 0.5 1
Miles

N

Map 7

See Map 4



See Map 8

BIKE FACILITIES

	EXISTING	PROPOSED
SHARED USE PATH		
BIKE LANES		
SHARE ROADWAY		
BARRIER CROSSING		
PAVED SHOULDERS		

xx **PROJECT LIST NUMBER**

0 0.25 0.5 1
Miles

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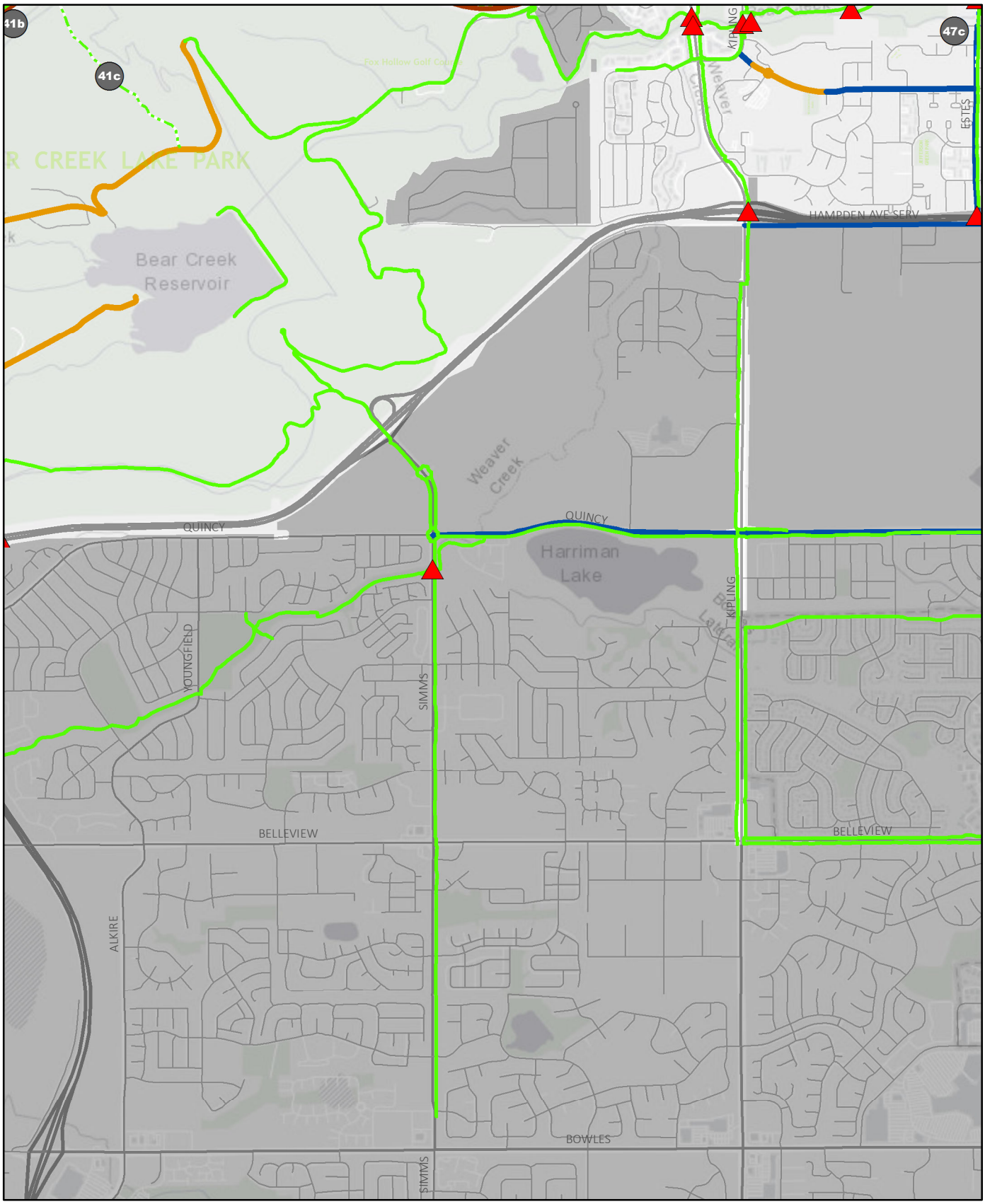
Map 8

See Map 5



See Map 7

See Map 9

BIKE FACILITIES

	EXISTING	PROPOSED
SHARED USE PATH		
BIKE LANES		
SHARE ROADWAY		
BARRIER CROSSING		
PAVED SHOULDERS		

XX **PROJECT LIST NUMBER**

0 0.25 0.5 1
Miles

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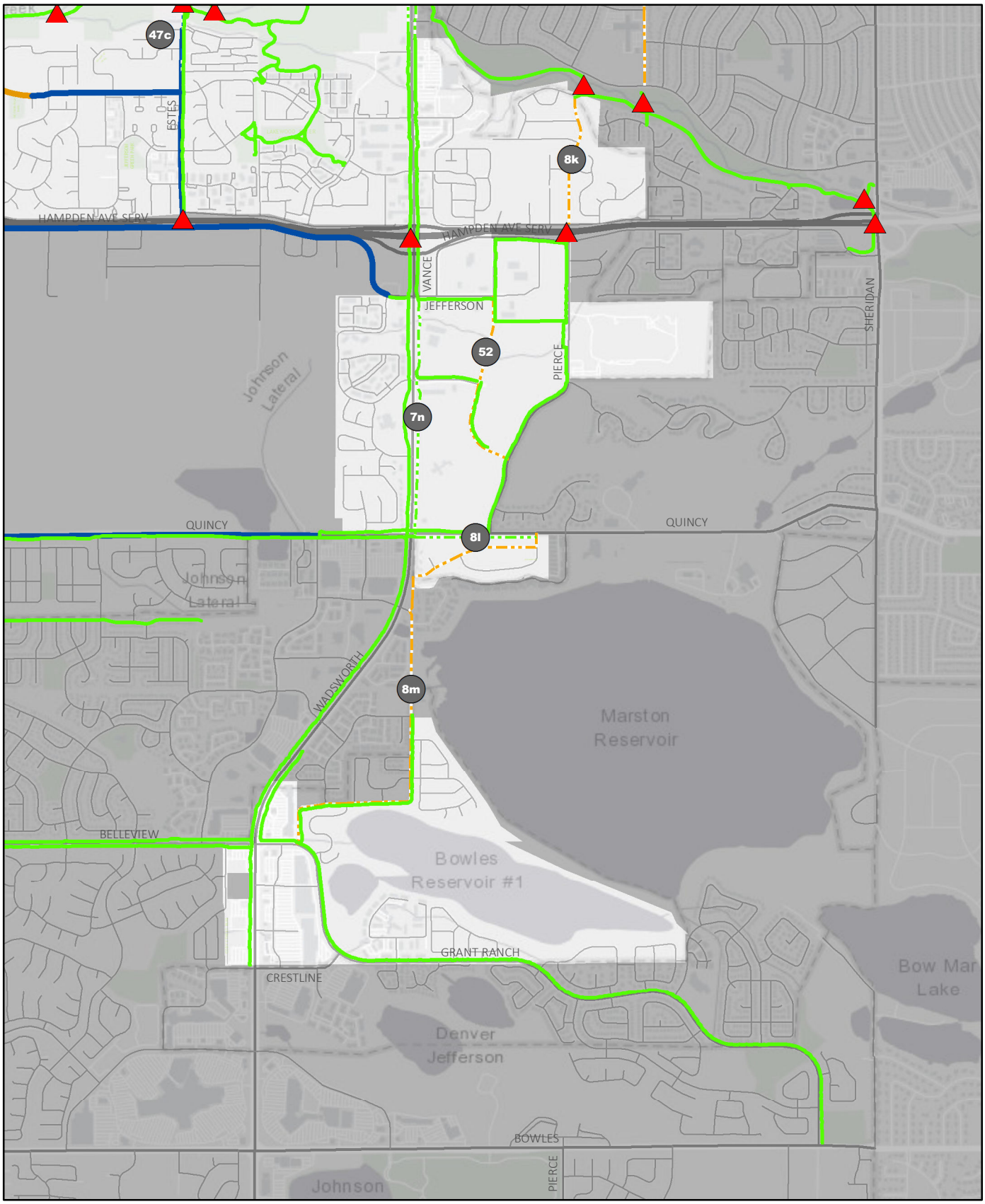
Map 9

See Map 6



See Map 8

BIKE FACILITIES

	EXISTING	PROPOSED
SHARED USE PATH		
BIKE LANES		
SHARE ROADWAY		
BARRIER CROSSING		
PAVED SHOULDERS		

xx **PROJECT LIST NUMBER**

0 0.25 0.5 1
Miles

N

Lakewood Bicycle System Master Plan

Project List

Project #	Sub	Project Location	Project Limits	Map Page	Project Type	Project Import.	Implement. Complexity	Implement. Time	Factors Potentially Affecting Implement.	1 way Linear Feet	Total Linear Feet	Planning Level Cost Estimate	Notes
1		Isabel St	Old Golden Rd to Denver West Pkwy	1	Shared Roadway	Medium	Medium	Medium	Need concurrence from NREL and County	2,275	4,550	$ 1,400	Need 400' of road constructed
2		20th Ave	Denver West Pkwy to Youngfield St	1,2	Bike Lanes	Medium	Low	Short	Requires Jefferson County to re-stripe the road to connect two section of Lakewood with Bike Lanes	2,750	5,600	$ 38,000	Striping
3		Simms St	20th Ave to 26th Ave	2	Bike Lanes	High	High	Long	Constrained due to alignment and irrigation ditch.	2,700	5,400	$ 2,700,000	Land acquisitions required
4	a	Miller St	26th Ave to Colfax Ave	2	Shared Roadway	High	Low	Short		4,475	8,950	$ 2,700	
4	b	Westland Parking Lot	Oak St to Miller St	2	Shared Roadway	Low	Low	Short	Permission required to sign route thru Westland (15th Pl)	1,500	3,000	$ 900	
5	a	Kipling Pkwy	26th Ave to 17th Ave	2	Shared Use Path	Medium	High	Long	This section of Kipling is proposed as 6 lanes	4,000	8,000	$ 2,700,000	Cost does not reflect widening. Land acquisitions required
5	b	Kipling Pkwy West Side	14th Pl to Fed Gate 1	2	Shared Use Path	Medium	Medium	Long	This section of Kipling is proposed as 6 lanes	7,870	7,870	$ 2,700,000	Land acquisitions required
6	a	Woodard Dr	Garrison St to Wadsworth Blvd	6	Shared Roadway	Low	Low	Short		5,770	11,540	$ 3,500	
6	b	Carr St	Woodard Dr to Belmar Park	6	Shared Roadway	Low	Low	Long	Don't install until Morrison Road has facilities	8,440	16,880	$ 5,000	
6	c	Iliff LN/Ave	Woodard Dr to Morrison Rd	6	Shared Roadway	Low	Low	Short		4,390	8,780	$ 2,700	
6	d	Morrison Rd	Estes St to Wadsworth Blvd	6	Bike Lanes	High	High	Long	Cost, funding	4,040	8,080	$ 4,000,000	
6	e	Morrison Rd	Wadsworth Blvd to Upham St	6	Bike Lanes	Medium	Low	Medium	Construct new street	1,275	2,550	$ 4,000,000	
6	f	Jewell Ave/Carr St	Intersection	6	Barrier Crossing	High	Low	Short		N/A	N/A	$ 4,000,000	
7	a	Wadsworth Blvd	26th Ave to Colfax Ave	3	Shared Use Path	Medium	High	Long	This section of Wadsworth is proposed as 6 lanes	4,190	4,190	$ 1,500,000	Cost does not reflect widening. Land acquisitions required
7	b	Wadsworth Blvd	Highland Dr to 5th Ave	3	Shared Use Path	High	Low	Medium	Constructed with 6th Ave interchange	1,600	3,200	$ 1,200,000	Cost does not reflect interchange improvements
7	c	Wadsworth Blvd West Side	Ellsworth Ave to W Byers Ave	3	Shared Use Path	Low	Low	Medium	Replace 5' walk with 10' shared use path	540	540	$ 200,000	Land acquisitions may be required
7	d	Wadsworth Blvd	Kentucky Ave to Tennessee Ave	6	Shared Use Path	Low	Medium	Medium	This section of Wadsworth is proposed as 6 lanes	530	1,060	$ 400,000	Cost does not reflect widening. Land acquisitions required
7	e	Wadsworth Blvd	Alabama Dr to Florida Ave	6	Shared Use Path	Medium	Medium	Long	This section of Wadsworth is proposed as 6 lanes	1,500	3,000	$ 1,100,000	Cost does not reflect widening. Land acquisitions required
7	f	Wadsworth Blvd East Side (Ser. Rd)	Florida Ave to Bails Ave	6	Shared Roadway	Medium	Low	Short		1,600	1,600	$ 500	Cost does not reflect widening. Land acquisitions required
7	g	Wadsworth Blvd West Side	Florida Ave to Iowa Dr	6	Shared Use Path	Medium	Low	Medium	This section of Wadsworth is proposed as 6 lanes	355	355	$ 12,000	
7	h	Wadsworth Blvd West Side (Ser. Rd)	Iowa Dr to Mexico Pl	6	Shared Roadway	Low	Low	Short	This section of Wadsworth is proposed as 6 lanes	840	840	$ 500	
7	j	Wadsworth Blvd West Side	Mexico Pl to Shopping Center Driveway	6	Shared Use Path	Medium	Low	Long	This section of Wadsworth is proposed as 6 lanes	445	445	$ 150,000	Cost does not reflect widening. Land acquisitions required
7	k	Wadsworth Blvd West Side (Ser. Rd)	Evans Ave to Woodard Dr	6	Shared Roadway	Low	Low	Short		890	890	$ 500	
7	l	Wadsworth Blvd	Woodard Dr to Yale Ave	6	Shared Use Path	High	High	Long	This section of Wadsworth is proposed as 6 lanes	2,600	5,200	$ 1,800,000	Cost does not reflect widening. Land acquisitions required

Lakewood Bicycle System Master Plan

Project List

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7	m	Wadsworth Blvd	Amherst Ave to Hampden Ave	6, 9	Shared Use Path	Medium	Low	Long	Small sections of unimproved and 5' walk that needs replaced	2,455	2,455	$ 900,000	Land acquisitions may be required
7	n	Wadsworth Blvd East Side	Jefferson Ave to Quincy Ave	9	Shared Use Path	Medium	Medium	Long	Cost	3,980	3,980	$ 1,400,000	Land acquisitions may be required
8	a	Harlan St	13th Ave to 10th Ave	3	Bike Lanes	High	Medium	Medium	Road width at Gulch	1,200	2,400	$ 16,000	Land acquisitions may be required
8	b	7th Ave	Harlan St to Sheridan Blvd	3	Shared Roadway/Shared Use Path	High	High	Long	Gulch Crossing	2,700	5,400	$ 500,000	Land acquisitions may be required
8	c	5th Ave	Harlan St to Sheridan Blvd	3	Shared Roadway	Medium	Low	Short		2,700	5,400	$ 1,600	
8	d	Harlan St	6th Ave	3	Barrier Crossing	High	High	Long	Grade and utilities	N/A	N/A	$ 10,000,000	Land acquisitions may be required
8	e	6th Ave Frontage Road North side	Harlan St to Sheridan Blvd	3	Shared Roadway	Medium	Low	Short	CDOT approval	2,700	5,400	$ 1,600	
8	f	Harlan St	1st Ave to 6th Ave	3	Bike Lanes	High	Low	Short		2,000	4,000	$ 8,000	
8	g	Harlan St	Mississippi Ave to Mexico Ave	6	Shared Roadway	High	Medium	Medium		3,980	7,960	$ 2,400	
8	h	Iliff Dr/Lamar Way	Jewell Ave to Bear Creek Trail	6	Shared Roadway	Medium	High	Long	Planned roadway from Fenton to Yale is not built. Yale to Bear Creek is in Denver.	5,900	11,800	$ 4,000	Need to coordinate with neighborhood and developer. Creates connection from Bear Creek Trail to Neighborhood and Yale
8	k	Pierce St	Bear Creek Trail to US 285	9	Shared Roadway	Medium	Low	Short		2,150	4,300	$ 1,300	
8	l	Quincy Ave South Side	Wadsworth Blvd to Radcliff Ave	9	Shared Use Path	Medium	Medium	Medium		750	750	$ 300,000	Land acquisitions may be required
8	m	Radcliff Ave/Old Wadsworth Blvd/ Grand Ave/Balsam St	Quincy Ave to Grant Ranch Blvd	9	Shared Roadway	Low	Low	Short		8,500	17,000	$ 2,000	
9		Colfax Ave	Cole Blvd to Quail St	1, 2	Shared Use Path	Medium	High	Long	A portion is in Jefferson County and connects Lakewood	1,600	3,200	$ 1,100,000	Land acquisitions may be required
10	a	Wide Acres Rd (extended)	Colorado Mills Pkwy to Hawthorne Rd	1	Shared Use Path	Low	Low	Medium	Potential path link between Wide Acres/Hawthorne intersection and Mills ring road path	150	150	$ 45,000	Land acquisitions may be required
10	b	Wide Acres Rd	Hawthorne Rd to Colfax Ave	1, 2	Shared Roadway	High	Low	Short	Bike route signs will need to be installed by Jefferson County	8,100	16,200	$ 5,000	
11		Normandy Rd	Colfax Ave to Wide Acres Rd	2	Shared Roadway	Low	Low	Short	Bike route signs will need to be installed by Jefferson County	1,100	2,200	$ 700	
12		Zang St	Wide Acres Rd to 10th Ave	2	Shared Roadway	Low	Low	Short	Bike route signs will need to be installed by Jefferson County	1,330	2,660	$ 500	
13	a	7th Ave	Near Gladiola St	1	Shared Use Path	Medium	Medium	Medium	Contingent on development.	820	820	$ 300,000	Land acquisitions may be required
13	b	8th Ave	Devinney St to Coors St	1	Shared Use Path	Medium	Low	Medium	Contingent on development.	580	580	$ 200,000	Land acquisitions may be required
13	c	8th Ave	Simms Intersection	2	Shared roadway	Medium	Low	Short		800	800	$ 1,600	Add sharrows at intersection
14		Welch St	Wide Acres Rd to 8th Ave	2	Shared Roadway	High	Low	Short	Bike route signs will need to be installed by Jefferson County/Lakewood	8,110	16,220	$ 1,500	
15		13th Ave	Welch St to Quail St	2	Shared Roadway	Low	Low	Short		4,000	8,000	$ 2,400	
16	a	14th Ave	Simms St to Welch St	2	Shared Roadway	Low	Low	Short	Coordinate with Jefferson County	2560	5120	$ 1,600	

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16	b	Extension of West Rail Road	Quail St to Simms St	2	Bike Lanes	Medium	Low	Medium	Requires development of RTD property	1100	2200	$ 100,000	
16	c	W Line Bikeway	Zephyr St to Wadsworth Blvd	3	Shared Use Path	High	Medium	Short	Land Acquisition	815	815	$ 400,000	Grant secures in 2014
16	d	13th Ave north side of tracks	Garrison St to Estes St	2	Shared Use Path	High	High	Medium	Land Acquisition	900	900	$ 320,000	Work with developers to acquire land
17	a	Union St	8th Ave to Gary McDonnell Park	2	Shared Roadway	Medium	Low	Short		670	1,340	$ 500	
17	b	Union St	Colfax Ave to Katherine Ave	2	Shared Roadway	Medium	Low	Short		2365	4730	$ 1,500	
18		12th Ave	Gary McDonnell Park to Quail St	2	Shared Roadway	Medium	Low	Short	Coordinate with Gambro to place signing thru campus	1,475	2,950	$ 1,000	
19	a	6th Ave Frontage Road North	Indiana St to Alkire St	1,2	Shared Roadway	Low	Low	Short		5,000	10,000	$ 3,300	Route provides access to LRT station
19	b	Alkire St	6th Ave to 8th Ave	2	Shared Roadway	Low	Low	Short		1,300	2,600	$ 800	
20		Coors St	6th Ave to 8th Ave	1	Shared Roadway	Low	Low	Medium		1,300	2,600	$ 800	Route provides access to LRT station
21		Indiana St/Colfax Ave	NW corner of Colorado Mills Pkwy	1	Shared Use Path	Medium	Low	Medium	Redevelopment	1,560	1,560	$ 500,000	Land acquisitions may be required
22	a	Routt St	4th Ave to 6th Ave	2	Bike Lanes	Medium	High	Medium	Coordination with GSA and developer	1,100	2,200	$ 800,000	Land acquisitions may be required
22	b	Quail St	6th Ave	2	Barrier Crossing	High	High	Medium	Cost/Funding source. Coordinate w/ Federal Center Redevelopment.	N/A	N/A	$ 15,000,000	Land acquisitions may be required
23	a	Lamar St	13th Ave to 10th Ave	3	Bike Lanes	Medium	Low	Short		1,300	2,600	$ 18,000	
23	b	10th Ave	Lamar St to Sheridan Blvd	3	Bike Lanes	High	Low	Medium	Coordinate w/ street re-surfacing	3,860	7,720	$ 53,000	
23	c	10th Ave	Wadsworth Blvd Intersection	3	Bike Lanes	Medium	Medium	Medium	Coordinate w/ street re-surfacing	830	1,660	$ 3,300	Asphalt widening may be necessary. Shared roadway may be alternative to Bike Lanes
23	d	10th Ave	Kipling St to Independence St	2	Bike Lanes	Low	High	Medium	Coordinate w/ street re-surfacing	1,220	2,440	$ 25,000	Land acquisitions may be required
23	e	10th Ave	Kipling Pkwy	2	Barrier Crossing	Low	High	Long	Cost, ROW, drainage requirements	N/A	N/A	$ 3,000,000	Barrier crossing would only be constructed when Kipling St. or gulch culvert is reconstructed.
23	f	Lakewood Gulch	Sunset Park to Kipling Pkwy	2	Shared Use Path	Low	High	Long	Cost, ROW, barrier crossing at 10th//Kipling	1,470	1,470	$ 500,000	Path extension to Kipling has little benefit w/o barrier crossing at Kipling. Somewhat redundant to West Corridor
24		Red Rocks 6th Ave Crossing	6th Ave	1	Barrier Crossing	High	Medium	Long	Cost	N/A	N/A	$ 10,000,000	Coordinate with RTD to make sure crossing is bike friendly
25		Neighborhood Connector	RRCC to Deframe St	1	Shared Use Path	Low	Medium	Medium	Coordination with RRCC	850	850	$ 300,000	Actual path location needs to be identified
26	a	Zinnia Way	Cedar Dr to 2nd Pl	2	Shared Roadway	Medium	Low	Short		1,775	3,550	$ 600	Improve gulch crossing
26	b	Cedar Ave	Alkire St to Zinnia Way	2	Bike Lanes	Medium	low	Medium		500	1,000	$ 500	
27		4th Ave	Union St to Routt St	2	Bike Lanes	Low	Medium	Medium	Widening of 4th and coordination with GSA	1,600	3,200	$ 1,600,000	Land acquisitions may be required
28		2nd Pl south side	Union St to proposed Fed Center Boundary	2	Bike Lane	Low	Medium	Medium	Street resurfacing and coordination with GSA	1,350	1,350	$ 700,000	
29	a	Sere Ln	Van Gordon St to Healing Way	2	Shared Roadway	Medium	High	Medium	Gulch Crossing	690	1,380	$ 800,000	

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29	b	McIntyre Gulch	Routt St to Kipling Pkwy	2	Shared Use Path	Medium	High	Medium	Contingent upon Fed Center redevelopment	5,200	5,200	$ 1,500,000	
30		Cedar Ave	Union St to Routt St	2	Bike Lanes/Shared Roadway	High	Medium	Medium	Land acquisition, tie into existing private road	400	800	$ 40,000	Gulch crossing
31	a	Pierce St	1st Ave to Nevada Pl	3,6	Shared Roadway	Low	Low	Short		2,960	5,920	$ 1,800	
31	b	Pierce St	Florida Ave Intersection	6	Shared Roadway	Medium	Medium	Medium	Street Resurfacing. Requires removal of TWLTL	380	760	$ 500	Minor widening at intersections may be required to make Bike Lane continuous
32	a	Alameda Pkwy/Alameda Ave	Jewell Ave to Foothill Dr	4	Shared Use Path	Medium	Medium	Medium	Cost, design issues	5,000	5,000	$ 1,800,000	Land acquisitions may be required
32	b	Alameda Pkwy/Alameda Ave	Across Safeway	5	Shared Use Path	Medium	Medium	Medium	Cost, design issues	540	540	$ 190,000	Land acquisitions may be required
32	c	Alameda Pkwy/Alameda Ave	Near Xenon Ct	5	Shared Use Path	Medium	Medium	Medium	Cost, design issues	250	250	$ 90,000	Land acquisitions may be required
32	d	Alameda Pkwy/Alameda Ave	Near Center Ave	5	Shared Use Path	Medium	Medium	Medium	Cost, design issues	175	175	$ 60,000	New path along NW side of Alameda and complete gaps in system
32	e	Alameda Pkwy/Alameda Ave	Center Ave to Taft St	5	Shared Roadway	Low	Low	Short		2,650	5,300	$ 1,600	
32	f	Alameda Pkwy/Alameda Ave (North)	Kipling Pkwy to East of Garrison St to Church Access	5,6	Shared Use Path	High	Medium	Medium	Cost	3,035	3,035	$ 1,000,000	New path along north side of Alameda
32	g	Alameda Pkwy/Alameda Ave (North)	Carr St to Allison St	6	Shared Use Path	High	Medium	Medium	Cost	1,345	1,345	$ 500,000	Land acquisitions may be required
33		Virginia Ave	Alameda Ave to Alameda Dr	5	Shared Roadway	Low	Low	Short		460	920	$ 500	
34	a	Center Ave	Garrison St to Belmar Park	6	Shared Roadway	High	Low	Short		3,125	6,250	$ 2,000	Route provides key connection between Addenbrooke and Belmar park trails
34	b	Weir Gulch Connection	Pierce St to Marshall St	6	Shared Roadway	Medium	Low	Medium	Project triggered by adjacent facility improvements	1,085	2,170	$ 700	Possibility of continuing Shared Use Path through gulch on north
34	c	Weir Gulch Connection	Marshall St to Sheridan Blvd	6	Shared Use Path	High	Medium	Medium	Cost, neighborhood concurrence	4,850	4,850	$ 1,700,000	Land acquisitions may be required
34	d	Weir Gulch Connection	Sheridan Blvd	6	Barrier Crossing	High	High	Long	Cost, coordination with Denver, path continuity to NE	N/A	N/A	$ 4,500,000	Issues in Denver with crossing Sheridan and completing Weir Gulch to Platte River Trail, drainage improvements trigger project
35		Kentucky Ave	Harlan St to Sheridan Blvd	6	Shared Roadway	Medium	Low	Short		2,550	5,100	$ 1,500	Provides inexpensive, alternate route to Weir Gulch path extension
36	a	Mississippi Ave	Weir Gulch Greenbelt (Kentucky Dr to Miller St)	5	Shared Use Path	Low	Medium	Medium	Topography/constructability, Cost, ROW	2,750	2,750	$ 1,000,000	Proposed route parallels alternate on street facility but Shared Use Path is preferred solution
36	b	Mississippi Ave	Weir Gulch Greenbelt to Kipling Pkwy	5	Bike Lanes	Low	Low	Short		560	1,120	$ 8,000	Done in conjunction with Shared Use Path construction
37		Florida Ave	Lee St to Hoyt St	5	Bike Lanes	Medium	Medium	Medium	Street width	1,175	2,350	$ 16,000	
38		Louisiana Ave	Lakewood Link to Pierce St	6	Shared Roadway	Low	Low	Short		770	1,540	$ 500	

Lakewood Bicycle System Master Plan

Project List

Project #	Sub	Project Location	Project Limits	Map Page	Project Type	Project Import.	Implement. Complexity	Implement. Time	Factors Potentially Affecting Implement.	1 way Linear Feet	Total Linear Feet	Planning Level Cost Estimate	Notes
39	a	Iliff Ave	Gladiola St to Holman St	4	Shared Roadway	High	Medium	Medium	Development	2,150	4,300	$ 1,300	Needed to make area bicycle friendly for all user types
39	b	Yale Ave	Indiana St to Red Rocks Business Dr	4	Share Use Path	High	Medium	Medium	Development	4,130	8,260	$ 3,000,000	Needed to make area bicycle friendly for all user types
39	c	Red Rocks Business Dr (north)	McIntyre St to Yale Ave	4	Bike Lanes	High	Medium	Medium	Development	4,850	9,700	$ 5,000,000	Needed to make area bicycle friendly for all user types
39	d	Red Rocks Business Dr (south)	Yale Ave to McIntyre St	4	Bike Lanes	High	Medium	Medium	Development	5,570	11,140	$ 5,600,000	Needed to make area bicycle friendly for all user types
39	e	Iliff Pl	Red Rocks Business Dr to Rooney Rd	4	Bike Lanes	High	Medium	Medium	Development	650	1,300	$ 650,000	Needed to make area bicycle friendly for all user types
39	f	Vassar Pl	Red Rocks Business Dr to Rooney Rd	4	Bike Lanes	High	Medium	Medium	Development	1,100	2,200	$ 1,100,000	Needed to make area bicycle friendly for all user types
39	g	Rooney Rd	C-470 Crossing to Morrison Rd	4,7	Bike Lanes	High	Medium	Medium	Development	4,350	8,700	$ 4,000,000	Needed to make area bicycle friendly for all user types
39	h	McIntyre St	Yale Ave to Morrison Rd	4,7	Shared Use Path	High	Medium	Medium	Development	5,050	10,100	$ 5,000,000	Needed to make area bicycle friendly for all user types
39	j	Central Corridor north	Alameda Pkwy to McIntyre St	4	Shared Use Path	High	Medium	Medium	Development	4,650	9,300	$ 3,200,000	Needed to make area bicycle friendly for all user types
39	k	McIntyre St	Wesley Ave	4	Barrier Crossing	High	Medium	Medium	Development	N/A	N/A	$ 500,000	Needed to make area bicycle friendly for all user types
39	l	Wesley Ave	McIntyre St to Red Rocks Business Dr	4	Shared Use Path	Medium	Medium	Medium	Development	820	820	$ 300,000	Needed to make area bicycle friendly for all user types
39	m	Yale Ave	Between Indiana St and McIntyre St	4	Barrier Crossing	High	High	Medium	Development	N/A	N/A	$ 4,000,000	Needed to make area bicycle friendly for all user types
39	n	Central Corridor south	Vassar Pl to Morrison Rd	4	Shared Use Path	High	Medium	Medium	Development	7,900	7,900	$ 2,800,000	Needed to make area bicycle friendly for all user types
40		Coyote Gulch	Yale Ave to Morrison Rd	4	Shared Use Path	High	Medium	Medium	Environmental issues, funding, barrier crossing	2,110	2,110	$ 750,000	This could be done prior to the barrier crossing being completed
41	a	Yale Ave	at Coyote Gulch	4	Barrier Crossing	High	Medium	Medium	Environmental issues, funding, barrier crossing	N/A	N/A	$ 3,000,000	Important when Rooney Valley Develops and traffic volumes grow on Yale
41	b	Morrison Rd	at Coyote Gulch	4	Barrier Crossing	High	Medium	Medium	Environmental issues, funding, barrier crossing	N/A	N/A	$ 4,500,000	Important when Rooney Valley Develops and traffic volumes grow on Morrison
41	c	Bear Creek Lake Park	Morrison Rd to Kumpfmiller Dr	4,7	Shared Use Path	Medium	High	Medium	Environmental issues, funding, barrier crossing	4,900	4,900	$ 1,700,000	This could be done prior to the barrier crossing being completed
42	a	Auburn Ave	Alkire St to Wright St	5	Shared Roadway	Low	Low	Short	Coordinate with Jefferson County	2,705	5,410	$ 1,600	

Lakewood Bicycle System Master Plan

Project List

Project #	Sub	Project Location	Project Limits	Map Page	Project Type	Project Import.	Implement. Complexity	Implement. Time	Factors Potentially Affecting Implement.	1 way Linear Feet	Total Linear Feet	Planning Level Cost Estimate	Notes
42	b	Wright St/Auburn Ave	End of path on Wright St to Kipling Pkwy	5	Shared Use Path	Low	Medium	Long	Development agreement in ODP with Jefferson County	5,220	5,220	$ 550,000	Original development plans showed a Shared Use Path on this alignment but it was never constructed. Final alignment TBD.
42	c	Wright St	End of Wright St to Auburn	5	Shared Roadway	Low	Low	Short	Development agreement in ODP with Jefferson County	870	1,740	$ 600	
43	a	Morrison Rd	McIntyre St to C-470	4,7	Shared Use Path	Medium	Low	Medium	Rooney Valley Development	5,000	5,000	$ 1,800,000	
43	b	Morrison Rd	Golf Course to Newcombe St	5	Shared Use Path	Medium	Low	Medium		3,600	3,600	$ 1,300,000	Complete Morrison road Shared Use Path
43	c	Morrison Rd (north side)	Lewis Way east to path	5	Shared Use Path	Medium	Low	Medium		260	260	$ 90,000	Land acquisitions may be required
43	d	Morrison Rd	Old Kipling St to Estes St	5	Bike Lanes	High	High	Long	Roadway section is narrow	4,145	8,290	$ 4,100,000	Continuation of Morrison Rd facilities, redundant facility
43	e	Morrison Rd	Estes St to Wadsworth Blvd	6	Bike Lanes	High	High	Long	Grades	2500	5000	$ 2,500,000	
44		6th Avenue Frontage Rd south side	Kipling Pkwy to Garrison St	2	Bike Lanes	Medium	Low	Medium		3,100	3,100	$ 21,000	
45		26th Ave	Wadsworth Blvd	3	Bike Lanes	Medium	Low	Medium	Continue Bike Lanes through the intersection	1050	2,100	$ 14,000	
46		C 470 trail	Alameda Ave Interchange down to path	4	Shared Use Path	High	High	Medium	Grades	260	260	$ 90,000	Construct on the Northeast quadrant in Jefferson County in Xcel easement
47	a	Garrison St	Dakota Ave to Bayaud Ave	6	Bike Lanes	High	Medium	Medium	May require removing median and close Frontage Road	1,400	2,800	$ 100,000	Land acquisitions may be required
47	b	Garrison St	Woodard Ave to Jewell Ave	6	Bike Lanes	High	Medium	Medium	Remove TWLT, narrow lanes	875	1,750	$ 600	
47	c	Estes St	Bear Creek Blvd to Cornell Ave	6	Bike Lanes	High	Low	Medium	Remove TWLT, narrow lanes	850	1,700	$ 8,500	
48		Mississippi Ave	Wadsworth Blvd to Sheridan Blvd	6	Bike Lanes	High	Low	Medium	Remove TWLT	8,000	16,000	$ 108,000	
49		26th Ave	Kipling Pkwy intersection	2	Bike Lanes	High	Low	Short	Restripe west leg but may need to modify signal	680	1360	$ 10,000	Cost increases significantly if the signal needs to be modified
50		Tennessee Pl/Ohio Pl	Garrison St to Belmar Park	6	Shared Roadway	Medium	Low	Short		3000	6000	$ 1,800	
51		Hoyt St/Kentucky Dr	Mexico Dr to Kipling Pkwy	5	Shared Roadway	Medium	Low	Short		4300	8600	$ 2,600	
52		Teller St	Jefferson Ave to Pierce Way	9	Shared Roadway	Medium	Low	Short	On street parking	4100	8200	$ 2,500	Coordination with Denver
53		Baltic Ave	Garrison St to Carmody Park	5	Shared Roadway	Low	Low	Shorter		700	1400	$ 600	
54	a	Jewell Ave	Bear Creek Blvd to Pierson St	4,5	Bike Lanes	High	Medium	Medium	Road Width at Intersections	12350	24700	$ 170,000	Repurpose lanes 10-11' travel lanes
54	b	Jewell Ave	Kipling St to Garrison St	5	Shared Use Path	Low	High	Long	Construct path along park on the north side.	2600	5200	$ 1,800,000	Remove existing 5' walk on the south and replace with path .. Land Acquisition may be required
54	c	Jewell Ave South Side	Garrison St to Wadsworth Blvd	6	Shared Use Path	Low	High	Long	Existing 5' walk to be removed and replaced with path	5200	5200	$ 1,800,000	Land acquisitions may be required
54	d	Jewell Ave South Side	Newland St to Depew St	6	Shared Use Path	Low	High	Long	Existing 5' walk to be removed and replaced with path	3300	3300	$ 1,200,000	Land acquisitions may be required
55		Bear Creek Blvd	Jewell Ave to Morrison Rd	4	Bike Lanes	High	High	Long	Remove median and widening	6,600	13,200	$ 1,300,000	Repurpose lanes 10-11' travel lanes

Lakewood Bicycle System Master Plan

Project List

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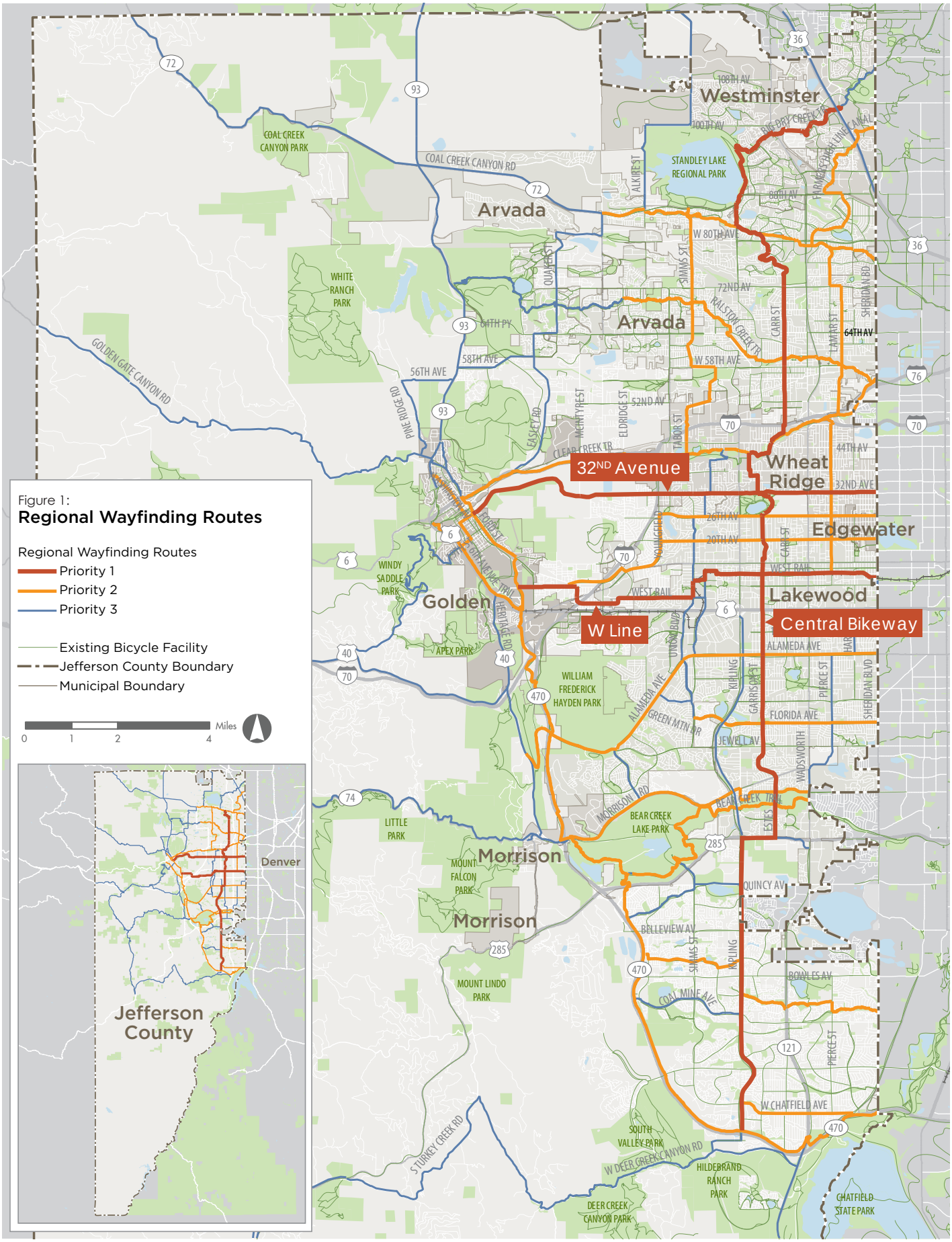
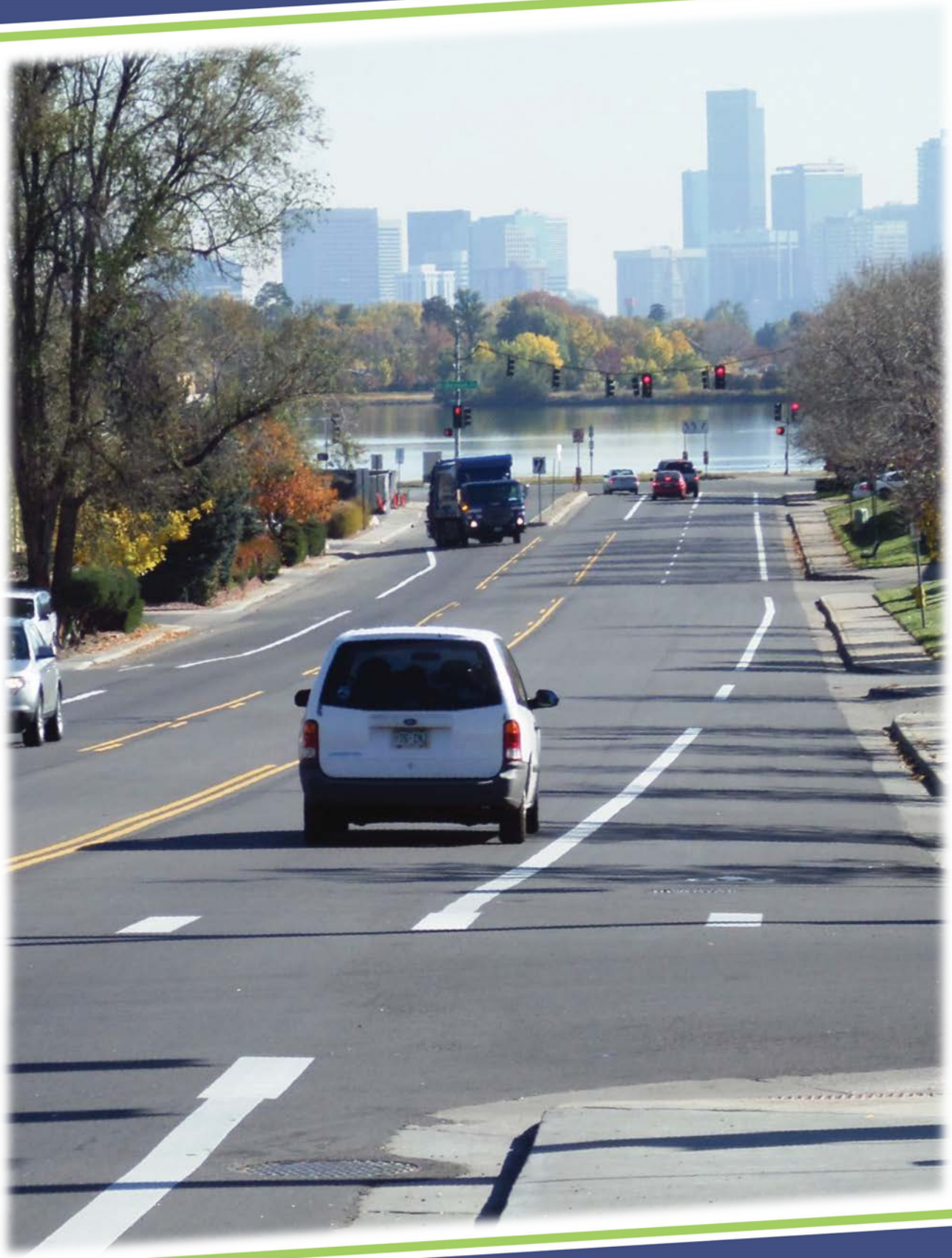
56		Alameda Pkwy	Bear Creek Blvd to C-470	4	Bike Lanes	High	Low	Short		6500	13000	$ 4,000	
57		Mexico Dr	Wadsworth Blvd to Pierce St	6	Shared Roadway	Low	Low	Short		1200	2400	$ 800	
58	a	Vance St	5th Ave to 1st Ave	3	Shared Roadway/Shared Use Path	Low	Low	Medium		2000	4000	$ 12,000	Connect to ending streets with 600' of Shared Use Path
58	b	5th Ave	Vance St to Allison St	3,2	Shared Roadway	Low	Low	Short		2000	4000	$ 1,200	
58	c	Allison St	5th Ave to 4th Ave	2	Shared Roadway	Low	Low	Short		600	1200	$ 400	
58	d	4th Ave	Allison St to Carr St	2	Shared Roadway	Low	Low	Short		1200	2400	$ 800	
58	e	Carr St	Meadowlark Dr to 4th Ave	2	Shared Roadway	Low	Low	Short		540	1080	$ 500	
59		Carr St	7th Ave to 20th Ave	3	Bike Lanes	High	Low	Medium	On street parking	7000	14000	$ 4,500	
60	a	Simms St East Side	6th Ave to 13th Ave	2	Shared Use Path	Medium	Medium	Long		3100	3100	$ 1,000,000	Remove and replace existing 5' walk and fill in gaps
60	b	Union Blvd	4th Ave to Sere Ln	2	Shared Use Path	High	High	Medium	Utility and landscaping conflicts	2000	4000	$ 1,400,000	Replace existing 5' walk and 8' asphalt path
60	c	Union Blvd East Side	2nd Pl to Alameda Ave	2	Shared Use Path	High	High	Medium	Utility and landscaping conflicts and widening of Union	1500	1500	$ 550,000	Cost does not reflect the widening of Union
61	a	Sheridan Blvd West Side	17th Ave to North of Colfax	3	Shared Use Path	Medium	High	Long		1950	1950	$ 700,000	Land acquisitions maybe required
61	b	Sheridan Blvd West Side	4th Ave to Cedar Ave	3	Shared Use Path	Medium	High	Long		3000	3000	$ 1,000,000	Land acquisitions maybe required
61	c	Sheridan Blvd West Side	Alameda Ave to Jewell Ave	6	Shared Use Path	Medium	High	Long	Remove and replace 5' walk with new facility	1650	1650	$ 600,000	
62		Vance St	Ohio Ave to Virginia Ave	6	Bike Lanes	Medium	Low	Short		1100	2200	$ 15,000	
63		12th Ave	Benton St to Mountair Park	3	Shared Use Path	Low	Medium	Medium		1150	1150	$ 400,000	
64		Rooney Valley	McIntyre St to Indiana St	4	Bike Lanes	Medium	Medium	Long	Development of the portion in Jefferson County south of Yale Ave	2275	4550	$ 31,000	
65		Rooney Valley	Yale Ave to Future St	4	Shared Use Path	Medium	Medium	Long	Development of the portion in Jefferson County south of Yale Ave	1900	3800	$ 1,300,000	
66		Indiana St	Yale Ave to Morrison Rd	4	Bike Lanes	Medium	Low	Short		3250	6500	$ 45,000	
67		8th Ave	Westview Dr to Wadsworth Blvd	3	Shared Use Path	Low	Medium	Medium	Row/easement are required	415	415	$ 150,000	Land acquisitions may be required
68		W Line Bikeway north of tracks	Kipling Pkwy to Oak St	2	Shared Use Path	High	High	Short	Grant secured in 2014	2,290	2,290	$ 2,400,000	Land acquisitions may be required

JeffCo Regional Bikeways Wayfinding Guide



Appendix C: Best Practices & Design



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Appendix C: Best Practices & Design

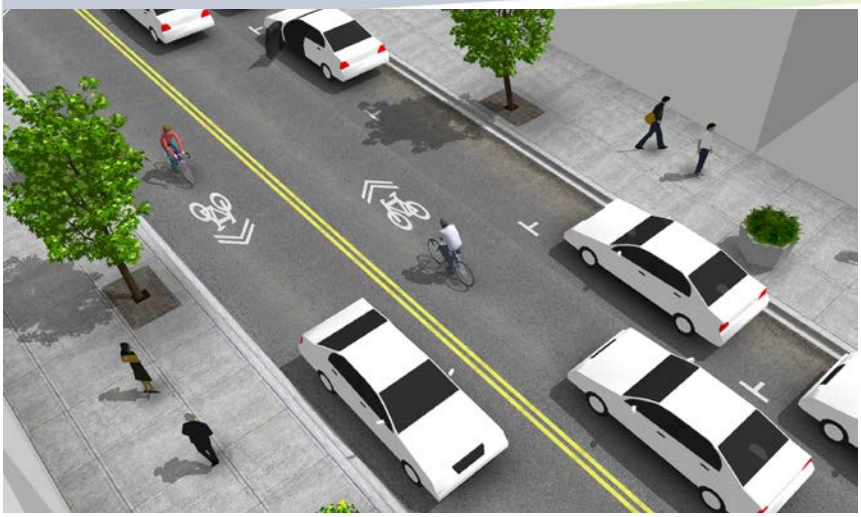
The American Association of State Highway and Transportation Officials (AASHTO) and the National Association of City Transportation Officials (NACTO) provide standards and guidance for bicycle facilities. The Guide for the Development of Bicycle Facilities (AASHTO), in conjunction with the Urban Bikeway Design Guide (NACTO), compile years of literature and professional experience from the best bicycle infrastructure in the world to create a set of "best practice" designs. Depending on the existing conditions, different types of facilities are proposed throughout the City's master plan. Below is an overview of various facility types, their benefits and application.

Shared Roadways

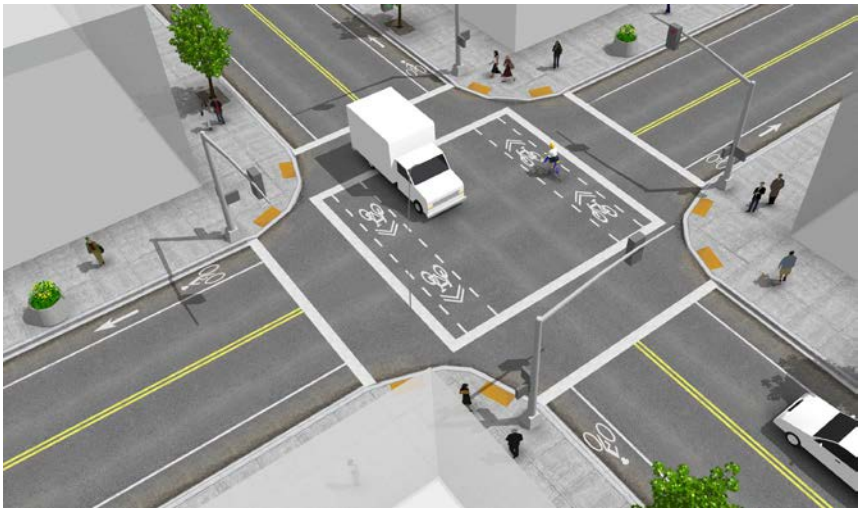
Shared roadways are streets with "sharrows" used to indicate an environment that is shared by both bicyclists and motorists. Most Lakewood shared roadways are signed clearly as bike routes without pavement symbols. Symbols are used sparingly in locations where vehicle/bicycle conflicts are common. Local streets rarely have sharrows, which are more common on collector roads.

Benefits	Typical Applications
Encourages bicyclists to position themselves safely in lanes too narrow for a motor vehicle and a bicycle to comfortably travel side by side within the same traffic lane	Shared roadways should not be considered a substitution for other facilities where space permits. Sharrows can be used as a standard element to identify streets as bikeways
Alerts motor vehicle drivers to the potential presence of bicyclists	**Desirable Shared Roadway Applications**
Indicates a proper path for bicyclists through difficult or potentially hazardous situations, such as railroad tracks	On low-volume shared streets
Advertises the presence of bikeway routes to all users	To assist bicyclists in taking the lane in the presence of double turn lanes
Provides wayfinding element along bike routes	To designate movement and positioning of bicycles through intersections and combined bike/turn lane
Demonstrated to increase the distance between bicyclists and parked cars, keeping bicyclists out of the "door zone"	To fill a gap in an otherwise continuous shared use path or bike lane, generally for a short distance
Encourages safe passing by motorists	Generally not appropriate on streets that have a high speed limits and traffic volumes
Requires no additional street space. Reduces the incidence of sidewalk riding	To transition bicyclists across traffic lanes or from bike lane or protected bike lane to a shared-lane environment

NACTO, 2014



Shared roadway on low-volume, traffic-calmed street with slow speed limit



Shared roadway through intersection to highlight conflict zone

Shared roadway to guide bicyclists through right-turn lane conflict zone

Bike Lanes

According to NACTO, a bike lane is defined as a "portion of the roadway that has been designed by striping, signage, and pavement markings for the preferential or exclusive use of bicyclists" (NACTO, 2014). Bike lanes allow bicyclists to ride at their own speed without impeding automobile traffic and allow for predictable behaviors between both bicyclists and motorists.

Conventional Bike Lanes

Conventional bike lanes are on-street facilities located adjacent to motor vehicle traffic. In Lakewood, all bike lanes flow in the same direction as traffic.

Benefits	Typical Applications
Increases bicyclists' comfort and confidence on busy streets	On street with high transit vehicle volume
Creates separation between bicyclists and automobiles	Bike lanes are most helpful on streets with a posted speed of 25 mph or greater.
Increases predictability of bicyclists and motorist positioning and interaction. Increases total capacities of streets carrying mixed bicycle and motor vehicle traffic	Bike lanes are most helpful on streets with an average of more than 3,000 motor vehicles daily.

NACTO, 2014

Conventional bike lanes with and without parking

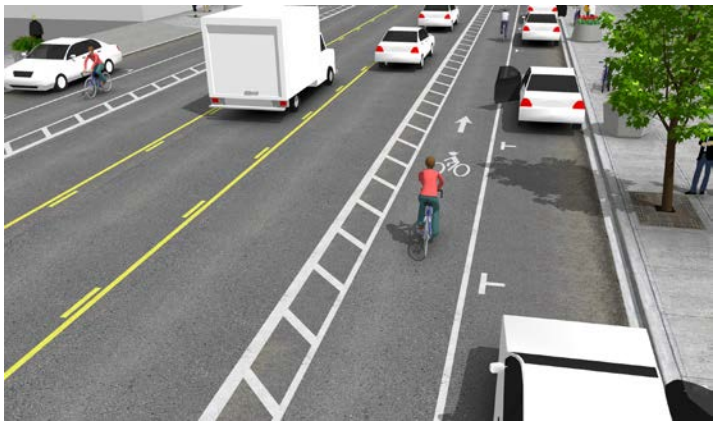
Conventional bike lane through right-turn lane conflict zone

Buffered Bike Lanes

Buffered bike lanes are conventional bike lanes with a buffered space that separates the bike lane from motor vehicle traffic. Buffered bike lanes can consist of a striped buffer or a buffer created by parked vehicles. The City intends to utilize buffered bike lanes on streets with higher speeds and where space permits.

Benefits	Typical Applications
Provides greater distance between motor vehicles and bicyclists	Anywhere a standard bike lane is being considered and roadway space is adequate
Provides space for bicyclists to pass another bicyclist without encroaching into the adjacent motor vehicle travel lane	On streets with high travel speeds, high travel volumes, and/or high amounts of truck traffic
Provides a greater space for bicyclists without making the bike lane appear wide enough for motor vehicles	On streets with extra lanes or extra lane width
Appeals to a wider cross-section of bicycle users	Special considerations should be given at transit stops to manage bicycle and pedestrian interactions.
Encourages bicycling by contributing to safety among users of the bicycle network	

NACTO, 2014



Buffered bike lane adjacent to parked cars

Buffered bike lane through right-turn lane conflict zone

Protected Bike Lanes (Cycle Tracks)

Cycle tracks are bikeways at street level and use a variety of methods for physical protection from passing traffic. A cycle track can be protected by a parking lane or other barrier between the facility and the motor vehicle travel lane (NACTO, 2014). Street level protected cycle tracks are different from raised facilities and therefore may require different designs.

Benefits	Typical Applications
Dedicates and protects space for bicyclists in order to improve perceived comfort and safety	Streets with parking lanes
Eliminates risk and fear of collisions with overtaking vehicles	Along streets with high bicycle volumes
Reduces risk of "dooring" (see Door Zone below) compared to a bike lane and eliminates the risk of a doored bicyclist being run over by a motor vehicle	Streets on which bike lanes would cause many bicyclists to feel stress because of factors such as multiple lanes, high traffic volumes and speeds, high demand for double parking, and high parking turnover
Prevents double-parking, unlike a bike lane	Along streets with high motor vehicle volumes and/or speeds
Low implementation cost by making use of existing pavement and drainage and by using parking lane as a barrier	Streets for which conflicts at intersections can be effectively mitigated using parking lane setbacks, bicycle markings through the intersection, and other signalized intersection treatments
More attractive facility for bicyclists of all levels and ages	Special consideration should be given at transit stops to manage bicycle and pedestrian interactions.

NACTO, 2014

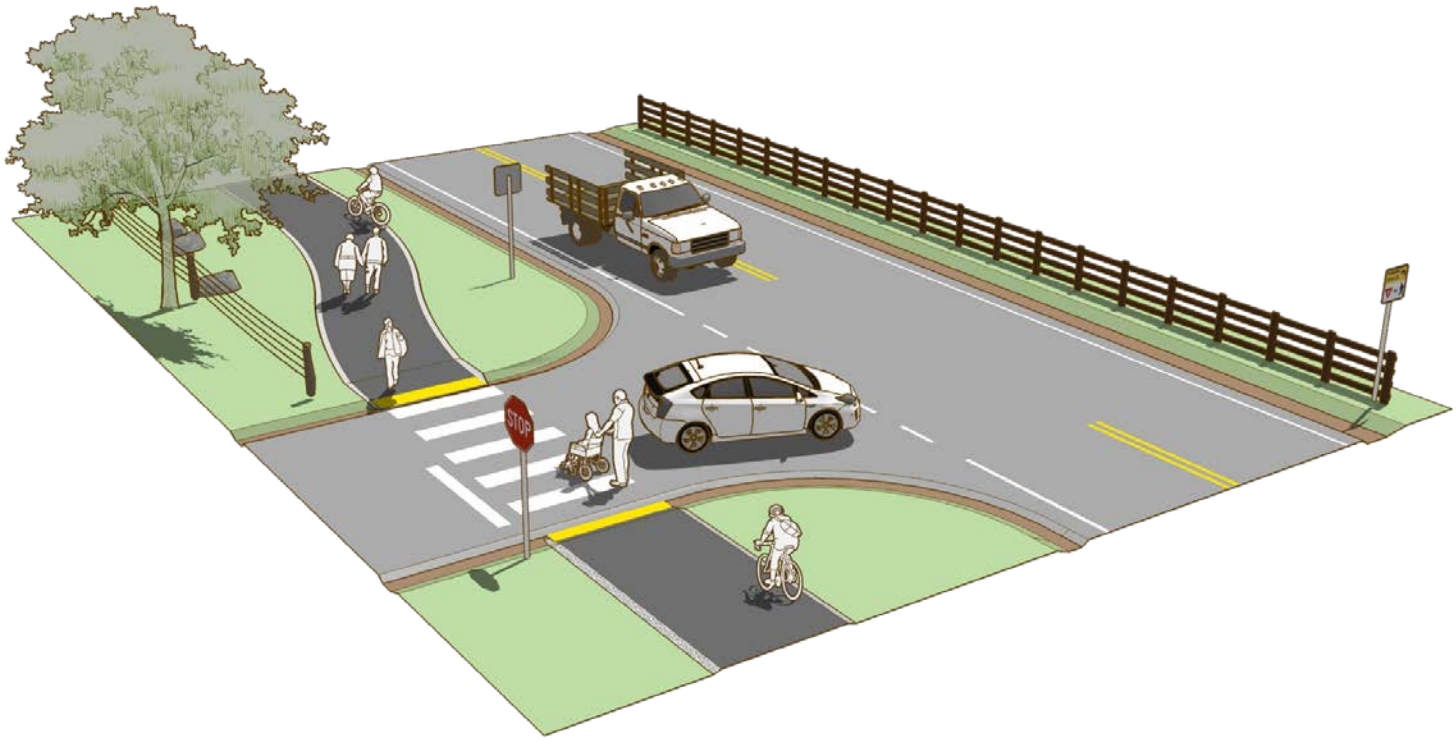
Cycle track protected by permanent raised structure

Cycle track protected by buffer and parked automobiles

Shared Use Paths

Shared use paths are off-street facilities that have a physical separation between the path and automobile traffic. Shared use paths are generally for non-motorized users, although motorized wheelchairs and some classes of electric-assist bikes are allowed on such facilities.

Benefits	Typical Applications
Protected space for bicyclists to share with others to improve comfort and safety	Along streets with high bicycle volumes
Eliminates risk and fear of collisions with vehicles	Along streets with high motor vehicle volumes and/or speeds
More attractive facility for bicyclists of all levels and ages	Through open space and parks to provide more direct routes

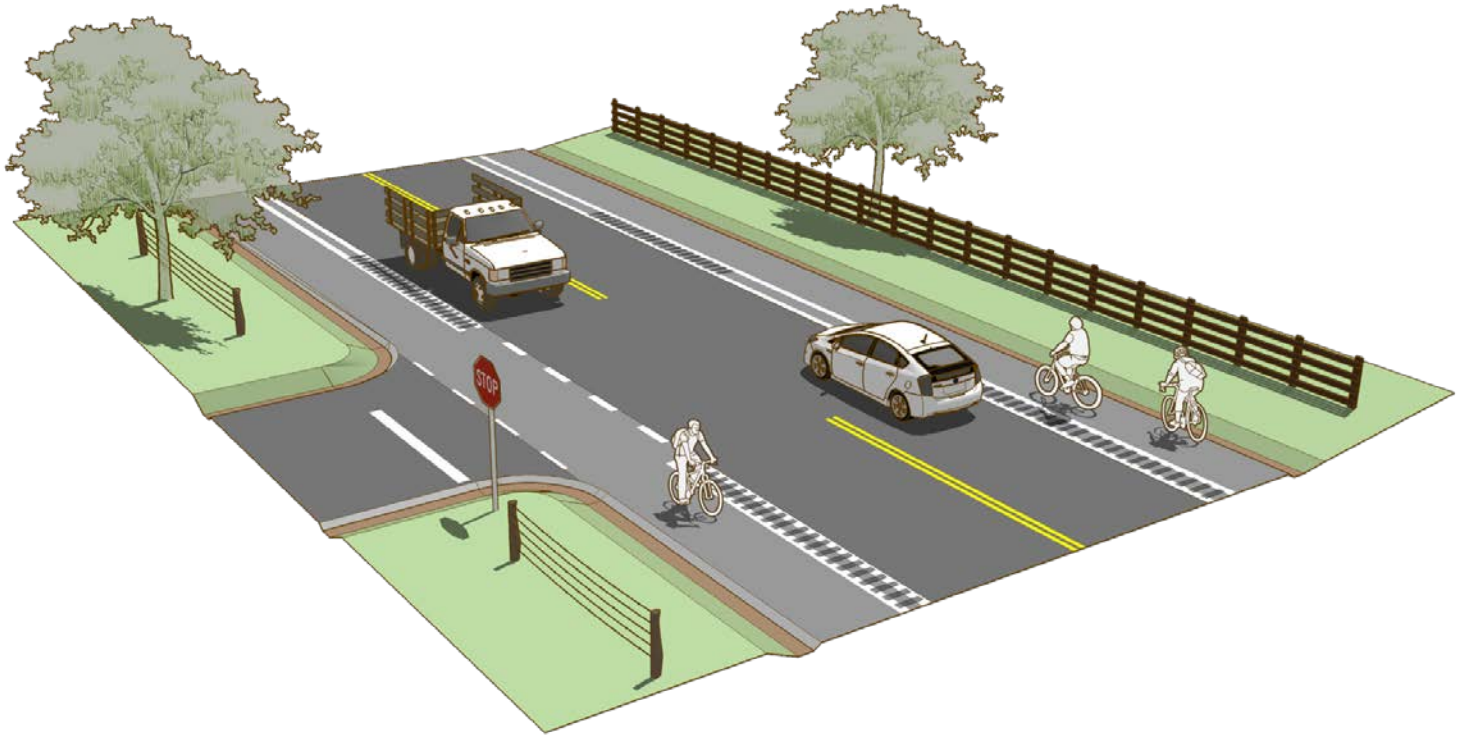


Source: Facility Types

Paved Shoulders

Paved shoulders are on-street facilities very similar to bike lanes, but are not dedicated as travel lanes and therefore are not maintained as such. These facilities are often used by commuters on some of Lakewood's roads, but are not encouraged for the average user as they may be used for temporary storage or vehicle parking.

Benefits	Typical Applications
Paved shoulders on uphill roadways provide space to give slow-moving bicyclists additional maneuvering space, reducing conflicts with motor vehicle traffic.	On uphill roadways where bicyclists may need additional space to maneuver
Paved shoulders can improve bicyclist safety on winding roads where sight distance may be limited.	On roadway sections with vertical or horizontal curves that limit sight distance
Provide separated space for bicyclists similar to a bike lane	On roadways where wide shoulders are provided and traffic volumes/speeds are high
Fewer erratic maneuvers by motor vehicles and more predictable behavior by bicyclists	



Source: Facility Types

Barrier Crossings

Overpasses and underpasses are needed to create a continuous, more connected bicycle network.

Benefits	Typical Applications
Provide bicycle crossing when no other facility is available	Over or under major highway, railroad or natural barrier

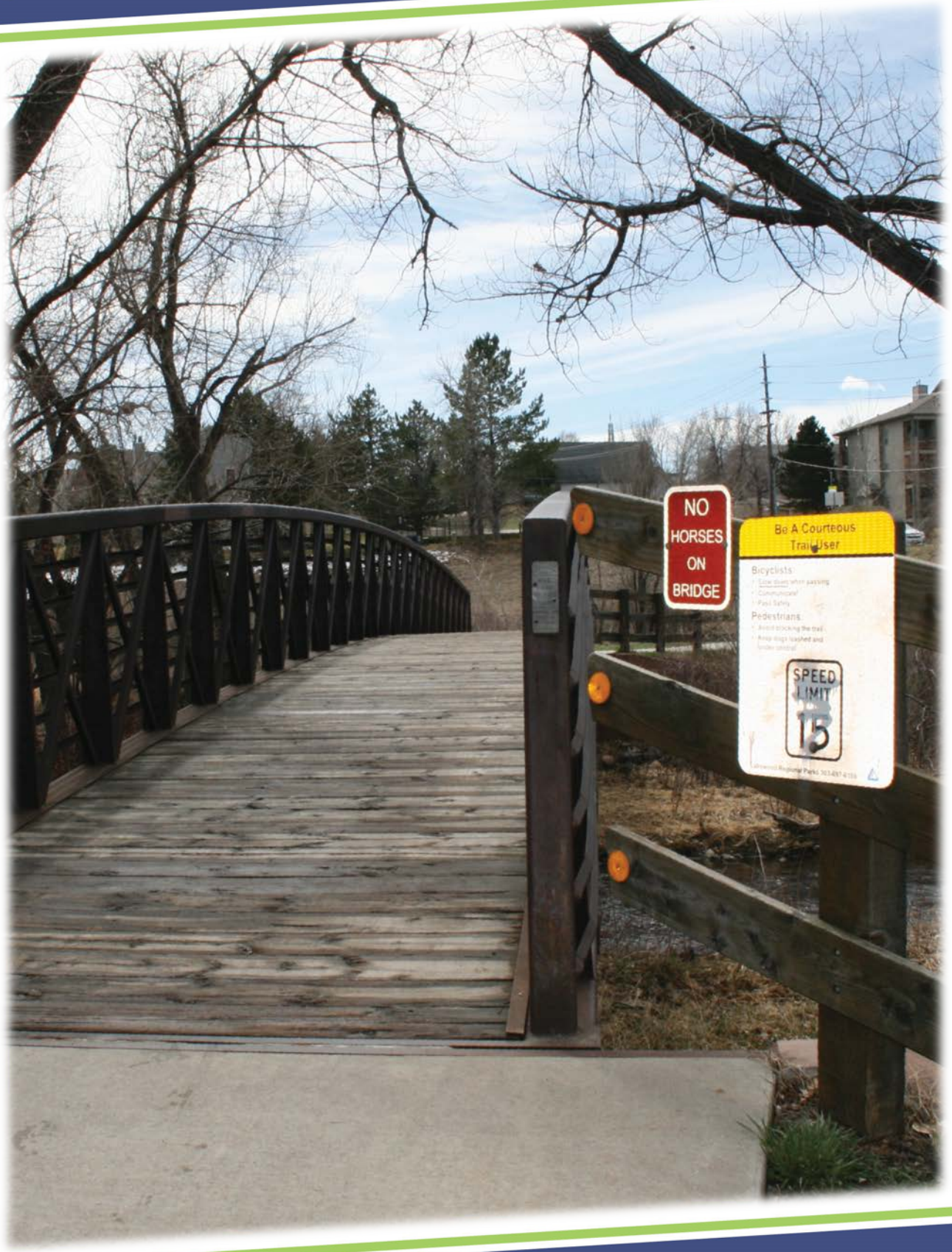
The width and height of underpasses should increase as the length of the underpass extends to create a safer environment for all users. Proper lighting and increased sight lines should be provided to increase comfort.

Source: Dakota County

Source: Virginia Department of Transportation

The Jewell Avenue and Carr Street intersection was identified by residents as an area of concern. Jewell Avenue, an arterial street, is a barrier because there are no protected crossings for a mile between Wadsworth Boulevard and Garrison Street, and Carr Street is a proposed north-south shared road facility from Woodard Avenue to Lakewood City Commons. While the location is not conducive to an overpass or underpass, the location has been included on the project list for further determination of potential solutions.

Appendix D: Laws & Safety Tips



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Appendix D: Laws & Safety Tips

An integral part of creating a bicycle-friendly community is having well-educated residents who know the laws of the road pertaining to bicyclists. Oftentimes motorists and bicyclists alike find themselves in situations where they are uncertain of what is and is not legal. Who has the right-of-way? Are bicyclists allowed to ride in the traffic lane? Can cars park in bike lanes? This section addresses those questions and discusses some laws in effect in 2018 that are enforced at the state and local levels. Additionally, this section provides residents with safety tips that will help encourage them to take their next trip by bicycle.

Laws

Taking the Lane

There are many instances in which a bicyclist is legally allowed to "take a lane," or enter a traffic lane. Scenarios where bicyclists may take a lane include:

- When there is no existing bicycle facility and therefore the bicyclist can ride on the far-right side of the lane
- When a bicyclist is approaching a right-hand turn lane, they can enter the turn lane and are required to stay to the far left of the lane
- When preparing to turn left, a bicyclist can enter the lane necessary to do so
- When a bicyclist is taking precautions to avoid hazards or poor road conditions such as debris and glass

Sharing the Road

Bicyclists are considered vehicles by law and have the right to use the road while abiding by the same laws as motorists. Motorists should provide a safe buffer space from bicyclists when passing.

Did you know? Anyone who throws an object at a bicyclist can be charged with a class 2 misdemeanor. That carries up to a $1000 fine and 12 months in jail!

Staying Visible

Riding a bicycle between sunset and sunrise, or when other conditions create decreased visibility, bicyclists must ensure they are visible. Installing a front white light and a rear red reflector is not just a safety tip, it's the law!

Riding Direction

Bicyclists are not allowed to ride against the flow of traffic unless bicycle facilities indicate otherwise. Because bicyclists travel at faster speeds than pedestrians, motorists are less able to predict maneuvers. Bicyclists can legally ride two abreast on roadways as long as they are not impeding traffic. When traffic approaches, they must ride in single file.

Shared Roadways

Shared roadways are marked with sharrows or signs that signify motorists can expect to see bicyclists taking the lane.

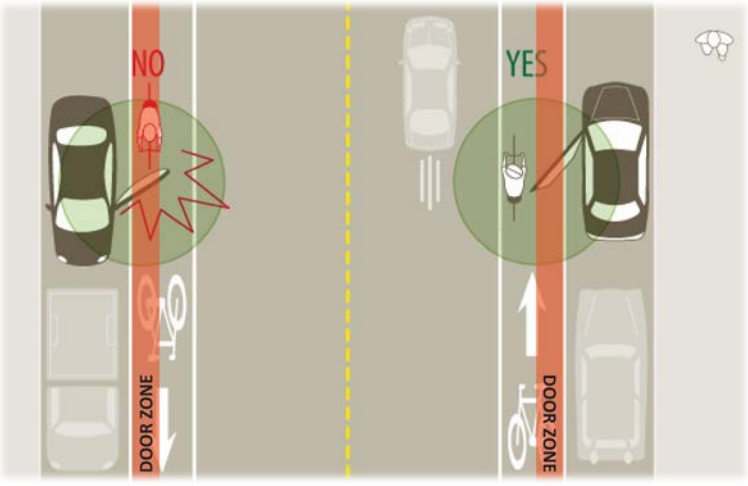
Safety Tips

Approaching Intersections

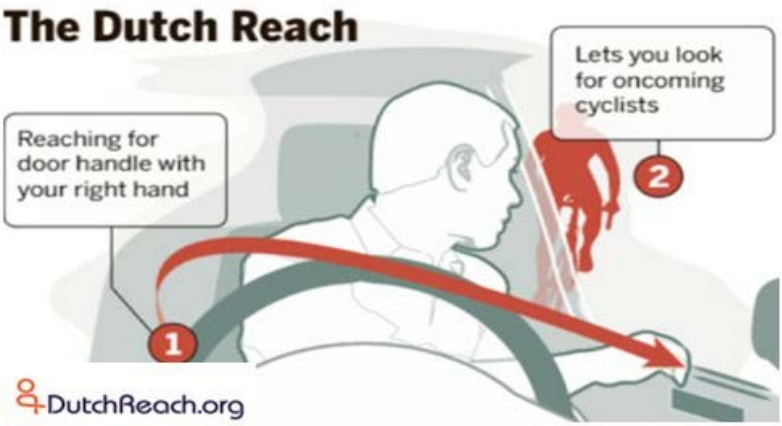
Because most crashes happen in intersections, bicyclists and motorists alike should be aware of each other at all times. Motorists making left turns should check for oncoming traffic, including bicyclists that may be more difficult to see. The best safety measure bicyclists can take is to continuously create eye contact with motorists who may pose a conflict. Additionally, motorists should be aware of bicyclists traveling in the same direction in the bike lane. As a motorist and bicyclist approach an intersection, a motorist wishing to make a right turn must slow down, keep the bicyclists in front of them, and proceed to turn right once the bicyclist has cleared the intersection.

The Door Zone

The Door Zone is the four-foot area along the side of a parked car where an opening door can hurt and seriously injure a bicyclist. When riding next to a parking lane, ride at last four feet from parked cars.



Look inside each parked car before you pass it. If you're unable to see someone inside or you spot someone inside, move outside the Door Zone or slow down and pass carefully.



Watch behind you. Keep traffic behind you so you will know whether you have enough room if you were to swerve suddenly out of the Door Zone. A mirror will help you see traffic behind you as you pedal forward.

Dutch drivers are taught to reach for the door handle with their inside hand, bringing their arm across the body to the door, effectively allowing the motorist to see if a bicyclist is approaching from behind. Motorist should be aware of oncoming bicyclists and practice the "Dutch reach."

Green Paint

Green paint on roadways is used to provide clear guidance for motorists and bicyclists as they enter conflict zones.

Communication

- **Hand Signals:** Help motorists know your next move through the use of hand signals. Signal all your turns and stops ahead of time.
- **Head phones:** Never use headphones. Using headphones is dangerous because you won't be able to hear what's going on around you.

Other Safety Tips

- Wear a helmet, eye protection and bike gloves.
- Wear brightly colored clothing to increase visibility.
- Obey all traffic signs and signals – your bike is considered a vehicle by Colorado state law.
- Ride as far to the right in the right lane as possible. Use paved shoulders and bike lanes when available.
- Do not pass on the right. Pass on the left only when safe to do so.
- Yield to pedestrians and give an audible signal when passing.
- Watch for open car doors.
- Make eye contact with drivers; never assume they see you!

Gear Tips

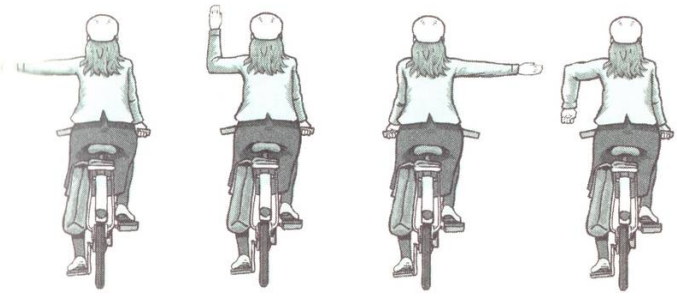
Always wear a bicycle helmet to reduce the risk of permanent injury or death from a crash.

To make sure your helmet fits correctly, put it on and use the "eyes, ears, mouth" test:

- **Eyes:** When you look up, you should see the front rim. If not, your helmet won't protect your forehead.
- **Ears:** The side straps should come to a "V" just below each ear.
- **Mouth:** When you open your mouth wide, you should feel the helmet push down on your head.

If your helmet does not pass the test, adjust the buckles.

Use lights, reflectors, a bell and a mirror to see, be seen and be heard.



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