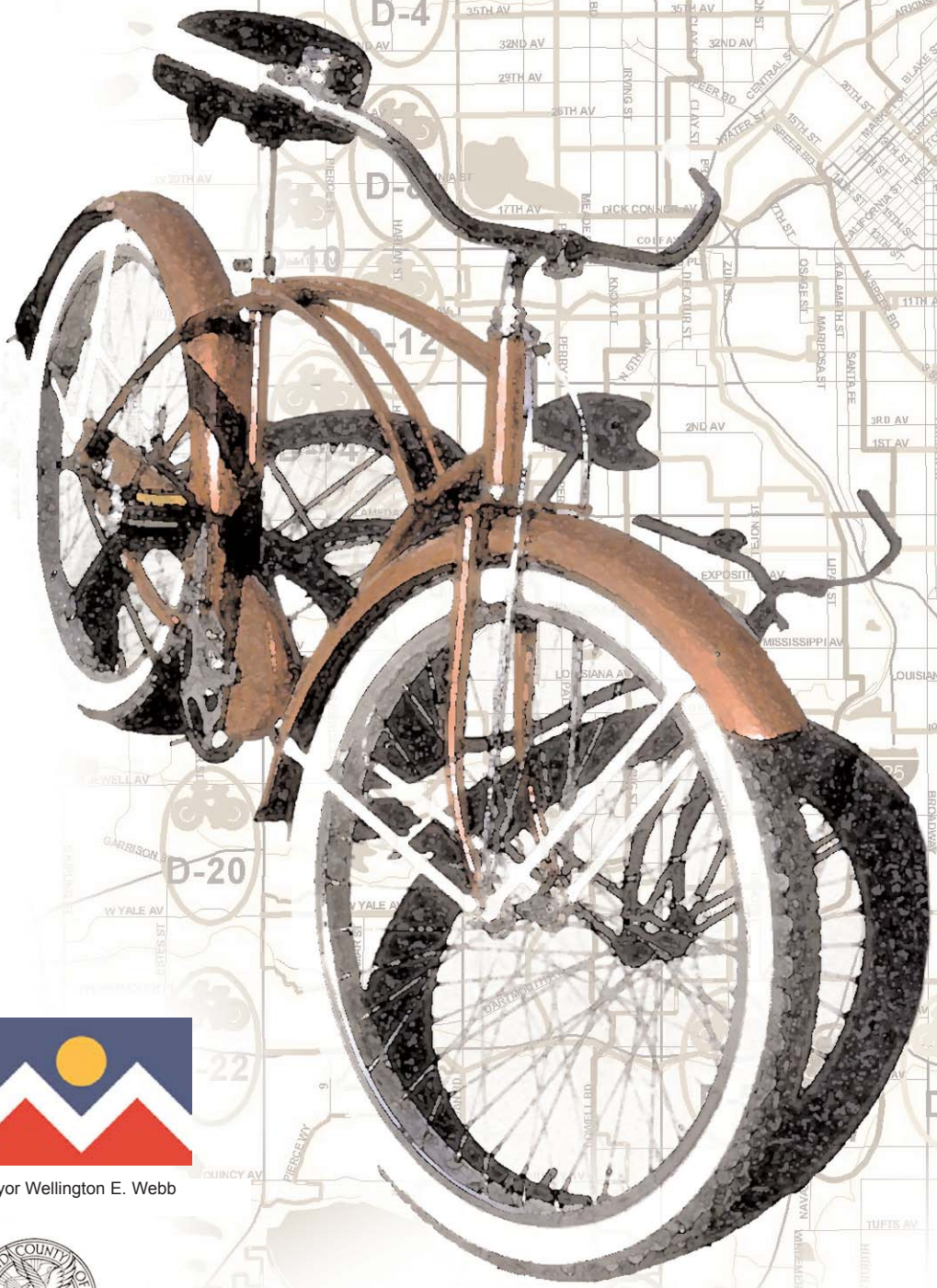
Denver Bicycle Master Plan Update 2001



Mayor Wellington E. Webb

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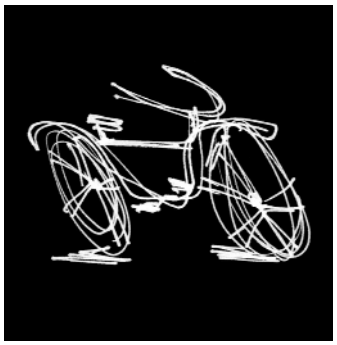
a URS Corporation Company

Denver Bicycle Master Plan Update 2001

Presented to the City & County of Denver

BRW/URS Corp
Final Draft
March 2002



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Contents

Executive Summary

Introduction
According to the Denver Comprehensive Plan (2000), Denver must address mobility in multiple ways: providing more choices, encouraging those that reduce impact on the urban environment, and cooperating with metropolitan jurisdictions and quasi-governmental agencies on mobility plans and projects. At a regional level, one of the six core elements of the DRCOG Metrovision 2020 Plan is to "enhance the attractiveness and convenience of non-motorized modes in serving non-recreational travel."

This document is an update to the 1993 Denver Bicycle Master Plan (DBMP) which sought to develop and implement a comprehensive bicycling program by developing a framework for a physical bicycle system as well as education, promotion, enforcement, public policy, and information distribution programs. The DBMP has effectively guided the implementation of bicycle facilities and program, and many of the components of the 1993 DBMP have been achieved. The following four factors drive the need for an update.

1. The population of the City and County of Denver has grown nearly 20% between 1990 and 2000. During the same period, Denver experienced substantial economic growth and increased travel demand.
2. Downtown Denver has emerged as the activity center for the Denver metro-area, while increasing the number of urban housing units. The resulting development pattern has increased the attractiveness of alternative transportation modes, including bicycling.
3. The U.S. Department of Transportation's National Bicycling and Walking Study has outlined goals for local governments:
   - To double the current percentage of trips made by bicycling and walking; and,
   - To simultaneously reduce by ten percent (10%) the number of bicyclists and pedestrians killed or injured in traffic crashes.
4. Completion of the Denver Bicycle Master Plan Update (the Update) and implementation of its major recommendations are specifically called for in the Comprehensive Plan 2000 Annual Report and in DRCOG's Metrovision 2020 Plan. The Update directly reinforces the Comprehensive Plan 2000 goals to preserve and enhance Denver's natural environment; anticipate and meet the expanding mobility needs of residents, businesses, and visitors; build on the assets of every neighborhood and foster a citywide sense of community; enhance opportunities for people in need to work and participate fully in community life; and foster cooperation and share leadership on regional issues. Implementation of the Update will address the Comprehensive Plan goals above.

Focus
The emphasis of the Update is the identification and prioritization of improvements to the city's bicycle infrastructure and programs with the goal of encouraging and accommodating bicycle usage for both recreational and transportation purposes. This document contains a review of recommendations from the 1993 DBMP that are not yet implemented and new opportunities due to development and infrastructure changes.

This document is a tool for the citizenry of Denver to advocate for and support city investments in bicycle facilities and programs. Bicycling has long been popular in Denver for recreational purposes, and many recreational facilities are also used for transportation purposes. A goal of the Update is to provide bicycle facilities to meet the recreational needs of all Denver citizens across the city, and to resolve the transportation needs of each citizen via bicycling at least one day a week.

Process and Analysis
The process for the Update began with a staff recommendation and was budgeted for in 2001. City staff put together the Update team to include Public Works Department staff, Parks and Recreation Department planners, the Community Planning and Development Agency, the Mayor's Bike Advisory Committee (MBAC)1 and the consultant (BRW). The Update team proposed dozens of potential issues for review and trimmed the list to seven key issues by prioritizing them according to system and regional implications, implementation feasibility, and funding. In addition to new bicycle traffic counts, seven key issues addressed in the Update include improvements to Denver's:

- Grid Route System
- Downtown Bicycling
- Major Missing Links
- Parks & Trails
- Recreational Bicycling
- Transit Access and Accommodations
- Advocacy

Analysis began with review of the existing conditions for each of the seven key issues of the plan and determination of the current opportunities, strengths and weaknesses of the system. The next step was a public open house in January 2001 where citizens indicated their preferences on the improvements and solutions for each of the issues. With initial priorities, identified strengths and weaknesses, public input, and best practices from other municipalities, the Update team began to integrate the recommendations. A preliminary list of recommenda-

[1]The Mayor's Bike Advisory Committee consists of many citizen members who are architects, lawyers and avid cyclists, as well as planners from the Regional Transportation District and the Denver Regional Council of Governments and city staff from the Police, Public Works, and Parks and Recreation.

tions was taken to the public in April 2001 for further input. In addition to continual monitoring and review by the Update team and the two public meetings, the Update also went through several special interest groups, internal staff review, the Planning Board, Public works Executive Management Team and finally to City Council in 2002.

Key Issues, Recommendations, and Implementation

Grid Route System

GOAL: Identify the next round of priorities for expanding the grid and neighborhood route system.

The City of Denver has used the grid route system as the focus for bicycle improvements. However, several routes have yet to be signed, are incomplete in sections or are not sufficiently bicycle friendly. The 1993 Master Plan recommended 22 routes on the grid system. Eight routes now have signage (D-1, D-4, D-6, D-8, D-10, D-11, D-12, and D-18). One route is partially signed (D-2). Route D-5 will be signed in 2002, and the central portions of routes D-16 and D-20 will be signed in 2002. Funding is in place for signage on two additional routes (D-7, D-22). The fieldwork is complete for signage of Route D-3 but no funding is in place. In addition, existing signage on routes should be checked periodically for vandalism, fading, and the need for other potential improvements.

New neighborhood routes should be developed that create connections between the existing bicycle grid route system and nearby facilities not currently on a bicycle route. More specifically, neighborhood routes from existing routes should be established that would connect to nearby parks or appropriate facilities and then return to the original route.

The Update also recommends upgrading actuated traffic signals to include devices that detect bicyclists. Signal upgrades could include microwave, video or other detection technologies for bicyclists that could prove to be a much more reliable detection.

Implementation

Responsibility	Task	Target Date	Cost
City	Improve routes and install signage for the priority routes.	2002-2012	$750,000
City	Provide additional signage for neighborhood links.	2004	$200,000

Downtown Bicycling

GOAL: Make Downtown Denver bicycle friendly.

Downtown has changed from solely a business district to a twenty-four hour a day mixed use neighborhood. This change requires that the city needs to provide more than access to the

edges of downtown. The Update recommends creation of a system of bicycle lanes on Downtown streets to provide bicycle circulation through the Downtown area and to Downtown destinations. It is also important to seek more consistent bicycle accommodations on the 16th Street Mall since it is the transportation core of downtown. Downtown also suffers from a lack of regulation of bicycle commerce.

Recommendations:

- Bicycle lanes on Glenarm from Colfax Avenue to 18th St.;
- Bicycle lanes on Arapahoe and Lawrence between Speer Blvd. and 21st St;
- Bicycle lanes on 18th St. between Glenarm and Wynkoop;
- Bicycle lanes on 19th St. between Stout and Lawrence; and,
- Designation of 14th St. as a bicycle route between Larimer and Colfax.
- Seek support from the city staff, Downtown Denver Partnership (DDP) and Regional Transportation District (RTD) to modify the existing ordinance regarding the restriction of bicycle use of the 16th Street Mall except for a connection across the southeast end of the mall between the 16th Avenue bicycle lanes and Cleveland Place, and a connection from the Commons neighborhood to the bicycle lanes on Wynkoop Street at the northwest end of the mall between Wynkoop and Wewatta.
- Pursue adoption of an ordinance to regulate operations of bicycle messengers, pedal cabs, and other commercial bicycling activities, with enforcement, in the public right-of-way.

Implementation

Responsibility	Task	Target Date
Public Works	Create a system of Downtown bicycle lanes:	Summer 2002
Public Works	Propose change to the 16th Street Mall ordinance.	Summer 2002
Public Works	Propose bicycle messenger and pedal cab ordinance to regulate, promote, and formalize these services.	Fall 2002
Public Works	Work with the Denver Police Department to increase enforcement of existing and new bicycle laws.	Winter 2002

Major Missing Links

GOAL: Close the gaps in the existing bicycle routes to complete the bicycle grid route system.

Over the last eight years, the City has made significant progress toward an aggressive goal of more than 100 miles of new bike routes by working to complete a one-mile grid system of bicycle routes. The goal of the system is to make “it possible for a person anywhere in the City to be no more than one-half mile from a designated route “(Plan, 1993). As the city nears completion of this grid, a number of major missing links have become apparent which hamper connections on the system. These missing links fall into one or more of these categories:

- improvements to the existing off-street trails system;

- preservation of drainage corridors for future off-street trails;
- problem intersections and crossings; and,
- connections across I-25, the Santa Fe Drive corridor, or railroad tracks.

Each of these links is a key element to completing the grid route system.

Recommendations:
Improvements to the following Major Missing Links (details are found in the document and appendix)

- Alameda Avenue: Platte River Trail to Cherokee Street connection (Routes D-7; D-14; D-16)
- Cherry Creek Trail (Route D-14 portion)
  - University Boulevard underpass
  - Safety recommendations for the First Avenue sidewalk
- Colorado Boulevard & 12th Ave (Route D-10)
- Grant Ranch connections into the city and Quincy Ave. Bike Trail
- Iliff Avenue/Warren Avenue/Dahlia Street at I-25 (Routes D-15 and D-20)
- Iliff Avenue at Santa Fe Drive (Route D-20)
- Iowa Avenue at Santa Fe Drive (Route D-18)
  - Acoma Street to Santa Fe Drive
  - Santa Fe Drive sidewalk: Iowa Avenue to Florida Avenue
- Leetsdale Drive at Bayaud Avenue (Route D-14)
- Leetsdale Drive at Kearney Street (Routes D-16 and D-17)
- Northeast Neighborhoods - DIA access, E-470 link, First Creek, Second Creek, 48th Avenue, High Line Canal corridor, other regional trail links, connections to Green Valley Ranch and Gateway area
- West Harvard Gulch connection to the Platte River Trail (Route D-20)
- 43rd Avenue pedestrian bridge over railroad tracks between Fox Street and Inca Street (Route D-2)
- 46th Avenue from Platte River Trail to National Western Stock Show Complex (Route D-2)
- Incorporate planning study recommendations (underway) for 38th Street connection to Platte River Trail (Route D-9)

Implementation

Responsibility	Task	Target Date
City	Pursue the necessary funding to implement the projects identified in the Major Missing Links section.	1-2 projects per year
City	Seek opportunities to eliminate major missing links as part of other projects.	1-2 projects per year

Cost of implementation is variable. The recommendation is that the City spend a minimum of $1.00 per citizen per year to assist in the implementation of the recommended improvements.

Parks & Trails

GOAL: To enhance a system of off-street, multi-use trails to allow users of all types an opportunity to recreate and commute safely without the worries of riding with motorized vehicle traffic.

This section of the Update will serve two purposes. First it will establish design and construction standards for the off-street recreational paths. Second, it will prioritize maintenance and modification of existing paths and construction of new paths. The recommended maintenance and new construction projects are listed below.

Recommendations

1. The prioritized recommendations for trail improvements are:

   Regional Trails
   - Sand Creek
   - High Line Canal through Green Valley Ranch
   - Cherry Creek - High Line Canal to I-225
   - High Line Canal - Leetsdale Drive to Florida Avenue
   - High Line Canal - Yosemite Street to Cherry Creek
   - High Line Canal - Cherry Creek Trail intersection to Iliff Avenue (west of Los Verdes Golf Course), with bridge replacements
   - Platte River - 15th Street to 19th Street (West Side)

   Minor Trails
   - Lakewood Gulch through Martinez Park to Tennyson Street
   - Lakewood/Dry Gulch through Rude Park
   - Sanderson Gulch
   - Weir Gulch

   Neighborhood Trails
   - Wagon Trail - west of Saratoga Place to east of Saratoga
   - Lake of Lakes Trail

2. The recommendations for off-street connections can be categorized as follows:
   - Pursue the completion of off-street trails along existing drainage corridors and utility rights-of-way.
   - Construct off-street trails in areas where Parks and Recreation provides maintenance.
   - Create a north-south connection from Stapleton to the Denver Tech Center along Westerly Creek, High Line Canal, and Goldsmith Gulch.

Implementation:

Responsibility	Task	Target Dates
Parks and Recreation	Improvement of selected regional trails.	Ongoing

Recreational Bicycling

GOAL: To encourage more people to ride bicycles more often.

Recreational bicycling encompasses many different types of activities. There were many competing demands for attention in the 2001 Update. The Update Team decided to focus on two aspects of recreational bicycling during this process: family bicycle loops and bicycle racing. Additional recreational bicycling topics should be the subject of future Bicycle Master Plan Update analysis.

Recommendations

- Designate family bicycle loops to encourage recreational riding. Place directional signage along the loop routes.
- Continue to improve maintenance such as pavement defects and sweeping for the on-street route system. Install signage for all routes. Ensure safe conditions for bicyclists if traffic calming measures are installed on the bicycle route system streets.
- Investigate possible locations for a BMX/Velodrome/Mountain Bike Circuit facility in vacant or redeveloping areas within the city.
- Plan bicycle racing and training routes in Denver. Develop general guidelines for acceptable street closures for bicycle races.
- Encourage the development of new bicycle racers via the juniors, seniors and citizens categories of bike racing.

Implementation

Responsibility	Task	Target Date	Cost
Public Works	Place signage to designate family bicycle loops. Maintain and improve bicycle route system.	Ongoing	$150,000
Parks and Recreation	Investigate possible locations for BMX/Velodrome/Mountain Bike Circuit facility		
Bicycle racers	Work with CCD Parks and Denver Public Schools to encourage new bicycle racers	Ongoing	

Transit Access and Accommodations:

GOAL: Make bicycling and transit work in a seamless manner.

Bicycle access to transit facilities as well as bicycle accommodations at transit facilities and on transit vehicles is crucial to maximize use of alternative transportation. These opportunities can be especially important at transit facilities that have limited car parking.

The Update recommends improving access with bike route and trail signage around light rail stations and park-n-Ride facilities as well as connections to three critical RTD facilities.

- The Broadway Station from the Platte River trail and from Washington Park/West Washington Park neighborhoods.
- The Evans Avenue Station from the Platte River Trail and Overland neighborhood.
- The Colorado Center from the Virginia Vale neighborhood.

Bicycles are already accommodated on most RTD services and this plan supports maintaining those accommodations. Additionally, the Update recommends that RTD:

- Revisit the policy of allowing bikes on light rail only on the reverse commute when the Southeast Corridor (T-REX) line begins service;
- Installing bike racks inside the current fleet of light rail vehicles;
- Procure low-floor light rail vehicles in the future that are equipped with folding seats and ceiling suspension hooks in designated areas; and
- Pursue Bikestations as a means of accommodating cyclists and attracting new users to multi-modal travel.

Implementation

Responsibility	Task	Target Date	Cost
City	Implement the identified bicycle routes to facilitate bicyclist access to transit.	Continuous	As defined above in signage and major missing links
City	Coordinate with CDOT to ensure continuous bicycle access during Southeast Corridor construction.	2002-2007	
RTD	Implement the recommendations to improve the accommodation of bicycles on new and existing light rail vehicles and at transit facilities.	Continuous	

Advocacy

GOAL: Organize bicycle enthusiasts to promote bicycling in Denver.

During the research process, the Update team noted that most cities with excellent bicycling facilities have strong bicycle advocacy groups. In polls taken at both public meetings about half of the attendees volunteered to promote advocacy in some manner. The excitement level for an advocacy effort was higher than expected, indicating that Denver bicyclists are ready and willing to get involved.

Towards the end of the update process, Bicycle Colorado and the City and County of Denver hosted an advocacy organization meeting that drew more than 100 people. The group named itself BikeDenver and has met regularly for a few months now.

Recommendations

- The City bicycle planner, Public Works Department, and MBAC should facilitate the interest and guide the energy in BikeDenver to achievable goals that will improve bicycling in Denver.
- BikeDenver should not officially be an extension of the MBAC, the City & County of Denver, or any other local government. It should function independently from formal local government with a board of directors.
- BikeDenver would be an ideal organization to define public opinion on bicycling issues and advocate for Denver, RTD and CDOT bicycle improvements.

Implementation

Responsibility	Task	Target Date
City	Coordinate the activities of bicycle groups towards achieving common goals.	Ongoing
City/Advocacy Group	Form an independent advocacy group from the bicycle community to promote bicycling in Denver.	Completed, 2001

Conclusion

Denver is a great city for bicycling due to the moderate year-round climate and the efforts made by the city and the Mayor's Bike Advisory Committee over the past 10 years. During this time, Bicycling Magazine has recognized Denver as one of the "Top Ten Cities for Cycling" three times (1995, 1999, 2001) and the League of American Bicyclists has recognized the city as a "Bicycle Friendly Community" (2001). This update is in all likelihood the first in a series of updates that will occur in the future as additional accomplishments take place, existing conditions and infrastructure change, and new opportunities present themselves. This commitment to review and update the Denver Bike Master Plan is the first step to guarantee that Denver remains one of the best metropolitan cities for bicycling in North America. The continued implementation of the recommendations made in this and subsequent updates will require funding, inter-agency cooperation, and a shared vision that bicycling can be an easy, safe, and enjoyable recreation and transportation choice.

Introduction

The 1993 Denver Bicycle Master Plan (DBMP, which was adopted unanimously by City Council) sought to develop and implement a comprehensive bicycling program by developing a physical bicycle system as well as education, promotion, enforcement, public policy, and information distribution programs. This document is an update of that plan.

The City of Denver has made great strides since the adoption of the DBMP in 1993 and has successfully implemented many of the recommendations. To ensure that Denver remains one of the best cities for bicycling in North America, it is essential that the City continue its efforts to improve the bicycle system and the necessary avenues of support.

The focus of the Denver Bicycle Master Plan Update (the Update) is to provide bicycle facilities and promote bicycle usage to meet the recreation needs of Denver citizens in all parts of the city and to resolve the transportation needs of each citizen via bicycling (at least one day a week). If all the citizens of Denver were to commute by bicycle once a week, the result would be a reduction of up to 20% in peak hour demands on the City's roadways. The capacity demands on local roadways would decrease, and there would be tremendous cost savings by not widening roads and increasing capacities.

The goals of the Update are taken from The National Bicycling and Walking Study, published by the U.S. Department of Transportation. The Study presents a plan of action for activities at the Federal, State and local levels with the following two goals:

- To double the current percentage of trips (from 7.9% to 15.8%) made by bicycling and walking, and;

- To simultaneously reduce by ten percent the number of bicyclists and pedestrians killed or injured in traffic crashes.

Recognizing the achievements of the past several years as well as the changing environment of Denver, the City determined that it was time to re-visit the DBMP with a formal update to maintain the momentum, success and excitement of implementing bicycle improvements in Denver.

About 85 million adults and children ride their bikes every year.

For children and teens, the bicycle is a primary means of transportation when traveling independently.

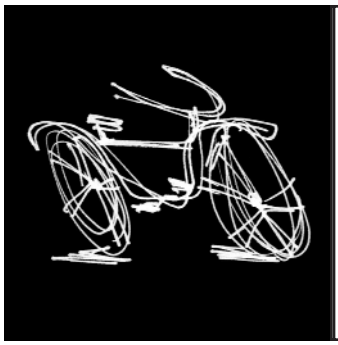
Every morning an estimated half million people bike to work in the United States.

Each year, more than 500,000 bicyclists of all ages sustain a cycling injury that requires emergency department care.

Of the approximately 800 bicyclists killed annually, about 750 are killed in traffic crashes.

Perhaps not surprisingly, more than half of the bicyclists riding in or near traffic report feeling unsafe.

From the National Strategies for Advancing Bicycle Safety



Route D-18 through Ruby Hill Park has been upgraded to become ADA compliant.

Introduction

In 2001, the Update focuses on determining the next set of solutions and recommendations to continue this effort. The initial focus of the Update is based on recommendations from the 1993 DBMP that are not yet implemented, new conditions throughout the City due to development and infrastructure changes, and new situations, opportunities and attitudes that were previously non-existent. In addition to new bicycle traffic counts, the main elements for the Update include:

Grid Route System: Increased Route Signage and Neighborhood Routes & Signage

Downtown Bicycling: How to Make Downtown More "Bicycle Friendly"

Major Missing Links: Closing the Gaps in Missing Links & Difficult Crossings

Parks &Trails: Bicycle Trail Standards, Existing Trails Analysis and Future Off-Street Connections

Recreational Bicycling: Family Bicycle Loops and Bicycle Racing

Transit Access and Accommodations: Improving Access to Light Rail Stations, Access on Light Rail Vehicles & I-25 Reconstruction Access: The T-REX Project

Advocacy: Existing Conditions & Opportunities

This Update is in all likelihood the first in a series of updates that will occur in the future as additional accomplishments take place, existing conditions and infrastructure change, and new opportunities present themselves. This commitment to review and update the DBMP over time is the first step to guarantee that Denver continues to be one of the best metropolitan cities for bicycling in North America. The next step is more challenging; it includes the continued and steady implementation of the recommendations made in this update and subsequent updates which will require funding, inter-agency

Ideals of the National Strategies for Advancing Bicycle Safety

***#1** Motorists Will Share the Road*

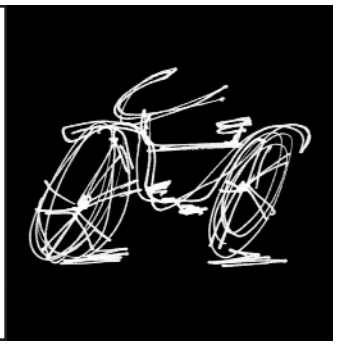
***# 2** Bicyclists Will Ride Safely*

***#3** Bicyclists Will Wear Helmets*

***#4** The Legal System Will Support Safe Bicycling*

***#5** Roads and Paths Will Safely Accommodate Bicyclists*

The City of Denver receives the League of American Bicyclist's "Bicycle Friendly Community" Award at Bike to Work Day 2001



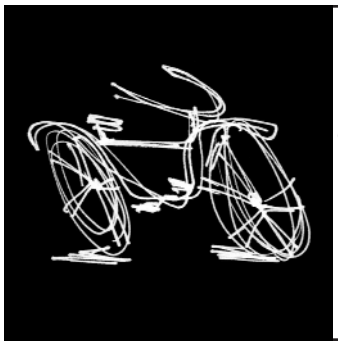
cooperation, and a shared vision that bicycling is an easy, valid, safe, healthy and fun transportation and recreation choice.

Methodology & Analysis:

The first task for the Update team was to analyze the existing conditions within each of the six elements of the plan, and determine the current opportunities, strengths and weaknesses of the system. In many cases, the focus went beyond analysis of bicycling in Denver to look at bicycling programs and trends in other metropolitan areas. More importantly, the local bicycle community provided input at two public meetings and monthly work sessions with the Mayor's Bicycle Advisory Committee (MBAC) to determine specific areas of interest, concern, and recommended priorities.

Accomplishments Since 1993:

- Top 10 Cities for Cycling Award from Bicycling Magazine - Three Times!
- League of American Bicyclists Bicycle Friendly Community Award
- Improved maintenance of trails and bike routes
- Replacement of numerous low water bridge crossings/ wooden bridge structures
- Improved Intra- and Inter-agency cooperation
- RTD buses with bike racks, bikes on light rail trains, and bike lockers at Park-N-Rides
- Establishment of grid route system and signage program
- Bicycle Parking Ordinance and City-provided bike parking racks
- "Wheels & Heels" Trails on the Downtown portion of the Cherry Creek Trail
- Wynkoop St. Bridge and Bicycle Lanes
- Bicycle connection along Peña Boulevard to Denver International Airport
- City Bike Map
- Free bicycle registration via the City website
- Bicycle provisions in the Stapleton and Lowry Redevelopments
- Lights on the Cherry Creek and Platte River Trails
- Bike lanes on numerous streets



Pavement markings can define to bicyclists where to stop to get a traffic signal "detect."

Grid Route System

Grid Route System

A one-mile grid of designated bicycle routes consisting of a combination of **on-street routes** and **off-street trails**. The Grid Route system provides a focus for implementation of roadway, signage and trail improvements, and creates a city-wide network for transportation and recreational bicycling.

Grid Bicycle Route System Issues:

The 1993 Bicycle Master Plan stated:

A major goal of the Denver Bicycle Master Plan is to provide a comprehensive bicycling network with access to all parts of the City. Completion of the one-mile grid system of bicycle routes will result in the addition of more than 100 miles of new routes. A one-mile grid makes it possible for a person anywhere in the City to be no more than one-half mile from a designated route. The designation of on-street bicycle routes can provide a focus for the implementation of improvements to make the City's streets safer for bicycling.

The scope of work for the 2001 Update contains the following tasks for the Grid Route System:

- Recommend prioritized action plan to sign the remainder of the city's grid bicycle route system.
- Recommend Neighborhood Bike Routes to provide recreation as well as access to open spaces, access to schools, recreation centers, employment sites, shopping, historic sites, etc.

In the last eight years, the City of Denver has used the grid route system as the focus for bicycle improvements. Throughout the city, many minor capital improvements have been implemented that have allowed the signage of several grid routes. The routes that have yet to be signed are incomplete in sections or are not sufficiently bicycle friendly.

The 1993 DBMP recommended 22 routes on the grid system. Eight routes now have signage (D-1, D-4, D-6, D-8, D-10, D-11, D-12, and D-18). One route is partially signed (D-2). Route D-5 and the central portions of routes D-16 and D-20 will be signed in 2002. Funding is in place for signage on two additional routes (D-7, D-22). The fieldwork is complete for signage of Route D-3 but no funding is in place. In addition, existing signage on routes should be checked periodically for vandalism, fading, and the need for other possible improvements. Beyond grid route signage, the City will install bicycle detectors to upgrade the performance of traffic signals on

Grid Route System

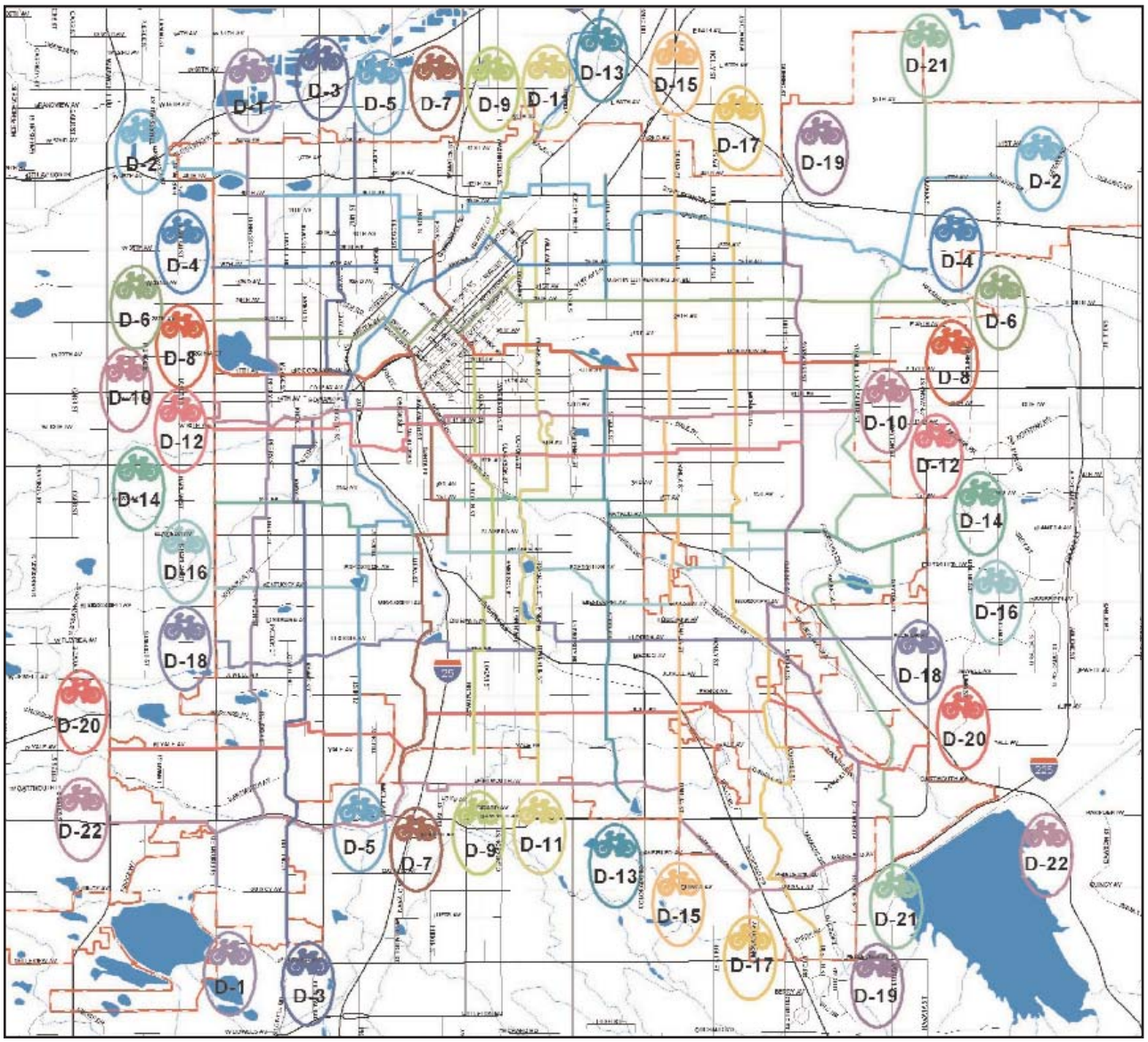
Routes with Existing Signage:

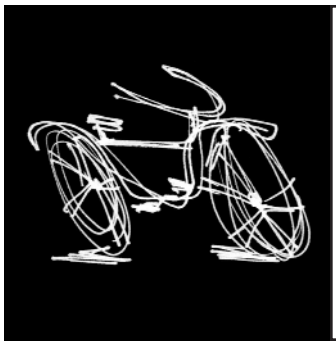
North/South Routes

D-1	Signed in 1994
D-11	Signed in 1994

East/West Routes

D-4	Signed in 1995
D-6	Signed in 1995
D-8	Signed in 1996
D-10	Signed in 1997
D-12	Signed in 1997
D-18	Signed in 2000





Temporary monitored bicycle parking corrals and racks at major events can promote bicycle usage.

Grid Route System

Routes to be Signed Immediately:

- D-3 Fieldwork for signage is complete but no funding has been secured.
- D-5 Field work is complete for signage of this route - will be signed in 2002
- D-7 Funding in place for signing in 2002, with fieldwork and plan set needed
- D-9 Immediate action for signing suggested after completion of 38th Street bikeway improvements in 2002
- D-16 The central portion will be signed in 2002
- D-17 Immediate action for signing suggested
- D-22 Funding secured for signing in 2002. No field work to date.

grid route streets. (See Appendix for details of Grid Route signage.)

Neighborhood Bike Routes

The current one-mile grid system in place within the City was developed with the intent to utilize streets and paths that are located near parks, schools, libraries, recreation centers and other similar facilities. Bicyclists are able to see these amenities while they are using the grid route system.

However, for those facilities not near a section of the one-mile bicycle grid route system, any apparent connection to the system is less evident. Conversely, for those people using the grid route system, these areas and buildings can not be easily seen (if at all).

Analysis:
A major incentive for connecting public facilities to the bicycle grid route system centers on the notion that the more people who are made aware of the system, the more people will use the bicycle route system. Therefore, new routes should be developed that create connections between the existing bicycle grid route system and nearby facilities not currently on a bicycle route. More specifically, neighborhood routes from existing routes should be established that will connect to nearby parks or appropriate facilities and then return to the original route.

Appropriate streets for these new neighborhood routes have been identified so that underserved public facilities can be connected via the bicycle grid route system. New bicycle and directional signage should be developed and erected showing the neighborhood routes, its destination and its connection back to the original trail. (See Appendix for detailed information.)

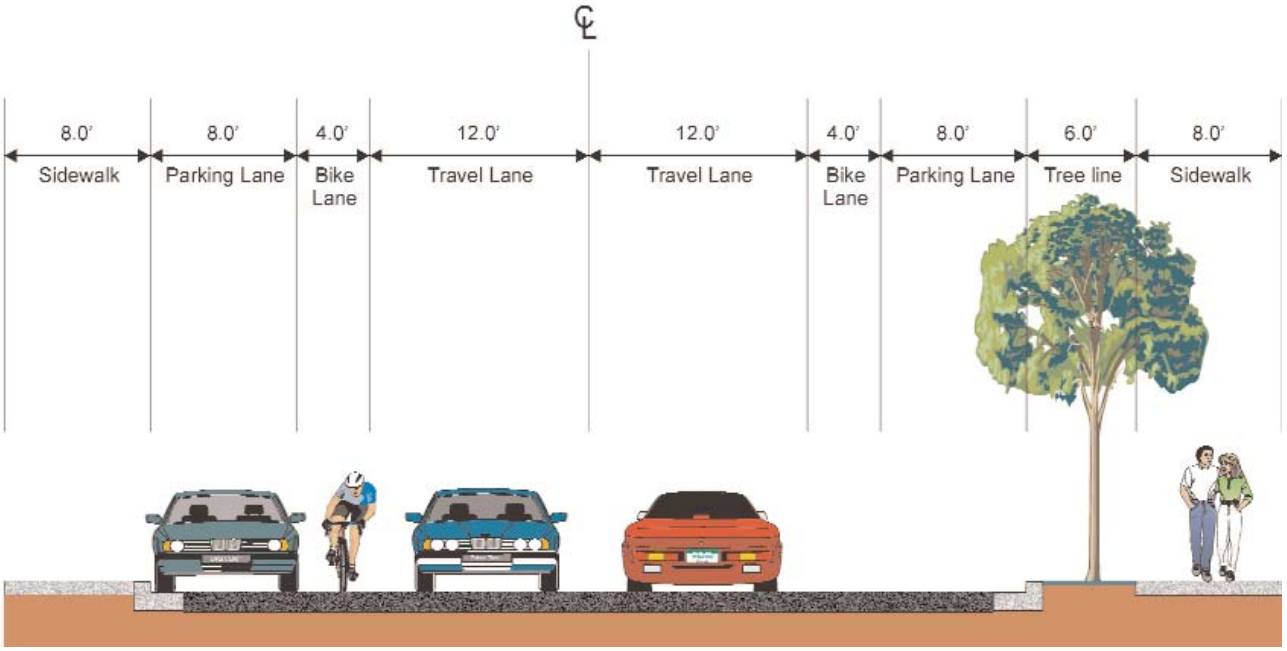
Bicycle parking in Basel, Switzerland.

Additional Routes to be Signed:

- D-2 Partially signed in 1995; signage completion over the long term
- D-13 Signage completion over the long term
- D-14 Signage completion over the long term
- D-15 Signage completion over the long term
- D-19 Signage completion over the long term
- D-20 Signage completion over the long term - the central portion will be signed in 2002
- D-21 Signage completion over the long term

Grid Route System

Grid Route System Typical Section



The 16th Street Mall is a busy corridor at all hours of the day.

Downtown Bicycling

General Background:

Downtown Denver is the center of the Denver metropolitan region, not only geographically, but also in terms of human and economic activity. The significant increase in commercial, residential and entertainment activity Downtown since the 1993 Plan provide the reason to revisit the topic of bicycle access and circulation in Downtown Denver.

Currently Downtown is headed in the right direction with the upcoming Bikestation, planned for the Denver Union Terminal (DUT), in conjunction with the expansion of the 16th St. Mall shuttle service, and Central Platte Valley light-rail extension, and the planned multi-modal transit hub at the DUT site. Now is the time to make bicycling attractive, easy and safe for travel within and through Downtown.

Since the adoption of the 1993 DBMP, Downtown Denver has continued its renaissance to become a more lively activity center for the region. The sum of these recent developments is the reason to explore the opportunities and constraints for improving bicycling to and through the Downtown area. The following recommendations will make Downtown more "Bicycle Friendly" - thereby achieving the vision of the Denver Bicycle Master Plan.

Since the adoption of the DBMP in 1993, the City of Denver has made dramatic strides in improving bicycling conditions throughout the City. This includes the installation of a substantial number of inverted-U bike racks downtown and the adoption of a bicycle parking ordinance. RTD has also increased accessibility by allowing bicycles on their buses and light rail vehicles. (See "Transit Access and Accommodations" section.)

Existing Downtown Circulation

There are a number of existing bicycle routes that run near or through Downtown Denver. The most significant of these are:

East-West Routes:

- D-4, along 20th Street past Coors Field to Curtis Street.
- D-6, along the Cherry Creek Trail and Wynkoop bicycle lanes past Coors Field to Curtis Street.
- D-8, along Auraria Parkway to the Cherry Creek Trail to

Downtown Bicycling

Wynkoop Street, past Coors Field, to 19th Avenue.
- D-10, along 13th Avenue from the west and along 11th and 12th Avenues to the east.

North-South Routes:
- D-5 Inca Street to the I-25 underpass leading to Cuernavaca Park and the Platte River Trail
- D-7, Cherry Creek Trail to Wynkoop Street, past Coors Field, to the 23rd Street viaduct
- D-9, along Sherman Street from the south to 21st Street, to Curtis Street to the northeast.

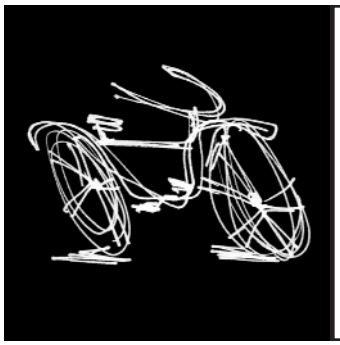
Additionally, the Cherry Creek Trail and the Platte River Trail, as separate elements of the greater Denver trail system, provide access along the western edge of Downtown, with lighting beneath street bridges that pass over these trails. Also, 16th Avenue from Broadway east to Esplanade is striped with bicycle lanes as a neighborhood bicycle route.

The seven grid bicycle routes and the Cherry Creek and Platte River Trails mentioned above, in effect, encircle Downtown. None of these routes or trails penetrates downtown within the area generally bounded by Wynkoop Street and 21st Street on the north, Sherman Street on the east, 12th Avenue on the south, and the Cherry Creek Trail on the west. As a result, getting to the edge of Downtown is relatively easy with numerous routes available for the bicyclist coming from virtually any direction. The difficulty is getting from these routes into the heart of Downtown, particularly the principal retail and office centers along the 16th Street Mall, 17th Street and 18th Street.

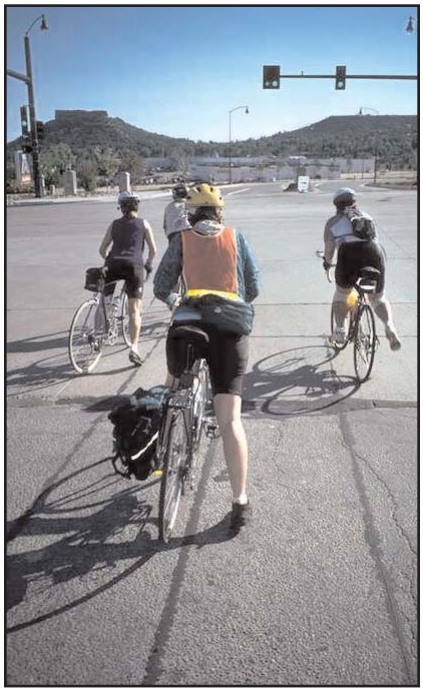
Bicycle Lane Issues:

In 1999, the City of Denver created bicycle lanes on Wynkoop Street (Routes D-6, D-7, D-8) to connect bicyclists between the Cherry Creek Trail and Coors Field. The bicycle lanes made it easier for novice and family riders to ride between the two facilities, and are a positive example for the provision of additional downtown bike lanes. The DRCOG Metrovision 2020 plan specifically

The grid route system defines bicyde access around Downtown Denver but does not designate routes within the core. Proposed bicycle lanes will address the bicycle access to and through Downtown.



Downtown Bicycling



Bicyclists can successfully use a quadrupole loop to get a signal "detect".

identifies that the provision of marked, on-street bicycle lanes "…can make bicycling more comfortable for riders of different ability levels."

Analysis

Although a few streets in the City of Denver have striped bicycle lanes, most of the on-street bicycle routes in the city are shared-use lanes without specifically designated bike lanes. The 1993 DBMP did not recommend the designation of bicycle routes on Downtown streets because of traffic volumes and the narrow traffic lanes with limited space on many streets. At the January 2001 public meeting held to initiate the Update process, there was overwhelming public interest and support for additional Downtown bicycle lanes to facilitate bicycling to and through Downtown.

There are few, if any, streets that can easily accommodate bike lanes without changes in traffic flow, lane widths, or on-street parking. To date, Wynkoop Street is the only street in the Downtown area with striped bicycle lanes. While some people would like bicycle lanes on every street, the Update recommends the strategic placement of lanes to improve access and circulation throughout the Downtown area. Just as the grid route system provides bicycle routes within a half-mile of any destination in the city, the Downtown bicycle lanes should provide safe bicycle access within a few blocks of every Downtown destination.

The following list contains some of the principles that guided the current effort to stripe bicycle lanes on Downtown streets:

- The effort to place bicycle lanes on Downtown streets is in recognition of traffic conditions in the Downtown area; the predominantly one-way street system, the mix of vehicle types and double-turn lanes which can be intimidating to many bicyclists.

- Bicycle lanes on Downtown streets can encourage bicycling for commuting and other transportation needs in the Downtown area.

A bike lane has been proposed along Glenarm Street.

- Better provision for bicycling on street can serve to reduce unlawful bicycling on downtown sidewalks (which creates conflicts with pedestrians).

- Bicycle lanes should not lead novice or family riders into unsafe bicycling conditions.

- The bicycle lanes should create a system that provides circulation to and through Downtown and safe access from the Cherry Creek Trail, the Platte River Trail and the designated bicycle routes in the surrounding neighborhoods.

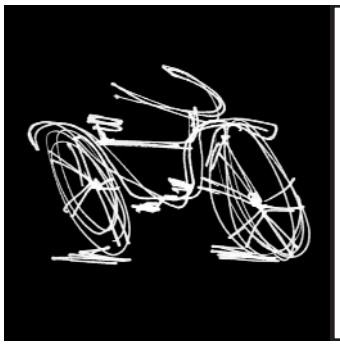
The installation of "Share the Road" signage throughout the downtown area can serve to educate and inform drivers and pedestrians that they can expect cyclists on every roadway. To ensure the utility of the signs, there must be a balance between installing sufficient signage to inform roadway users, and overwhelming roadway users with the visual clutter of too many signs. Therefore, strategic placement of "Share the Road" signage on specific streets, such as Curtis Street, Larimer Street and Wazee Street, is appropriate.

The following streets emerged with high potential for accommodating bicycle lanes. Together they create a system of bicycle lanes providing circulation on the numbered and named streets at the ends of Downtown and crossing the 16th Street Mall at the center of Downtown.

Wynkoop Street (Routes D-6, D-7, D-8)
Wynkoop Street is the location of the first bicycle lanes in Downtown Denver, providing a connection between the Cherry Creek Trail and Coors Field. Wynkoop Street also provides access to the Bikestation to be located at the Denver Union Terminal (DUT) site.

Glenarm Place
The existing layout of Glenarm Place includes one travel lane in each direction and a center turn lane for most of its length. Glenarm Place typically has a 48-foot wide roadway, except between 15th and 16th Street, where it narrows to a 41-foot width

Downtown Bicycling

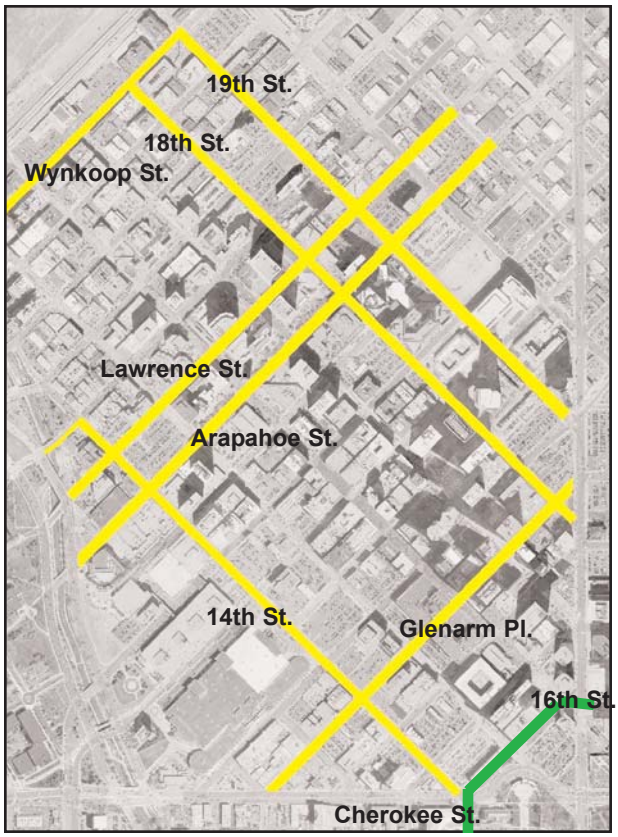


19th Street has a HOV lane in Lower Downtown

Downtown Bicycling

through the Denver Pavilions, an urban entertainment activity center. Based on analysis of traffic volumes and turning movements, Public Works staff concurred with the desire to install bicycle lanes on Glenarm Place between 18th Street and Colfax Avenue. To provide adequate space for the bicycle lanes, the center turn lane needs to be removed for most of the length of Glenarm Place with two exceptions:

Proposed bicycle lanes and routes in Downtown Denver.



- The five-leg intersection of Glenarm Place, Colfax Avenue and Fox Street requires three lanes on Glenarm approaching the intersection to handle the multiple turning movements. Bicycle lane striping on this block of Glenarm Place should begin midway between Colfax Avenue and 13th Street.

- Between 15th and 16th Street, the roadway narrows from a 48-foot width to a 41-foot width. Bicycle lane striping should end midway between 15th Street and 16th Street where the center turn lane serves as a pedestrian refuge through the Pavilions, and on-street parking and loading zones take up space alongside the curbs on the narrower roadway.

If 19th Avenue east of Broadway converts to two-way operations in the future, the Glenarm Place bicycle lanes should be extended to improve the connection to the Uptown neighborhood.

Arapahoe and Lawrence Streets

Arapahoe Street and Lawrence Street form a one-way couplet midway between Glenarm Place and Wynkoop Street. The two streets have typical 60-foot roadway sections with four through lanes and parking on both sides of the street. Traffic volumes are moderate on both streets. Changing conditions in Downtown are the reason for re-examining the roles of motor vehicle and bicycle traffic on Arapahoe Street and Lawrence Street. The placement of bicycle

Cleveland Place approaching the 16th Street Mall from the west.

lanes on Arapahoe and Lawrence Street will be accomplished best by the removal of a through traffic lane on each of these streets.

Arapahoe Street

The Update recommends removing of a traffic lane and striping a bicycle lane between 21st Street and Speer Boulevard. At 21st Street, the bicycle lane will connect to existing bicycle routes.

The City is currently pursuing renovation of Skyline Park between 15th and 18th Streets along Arapahoe Street. The City is supportive of narrowing the roadway and removing a traffic lane on Arapahoe Street as part of the Skyline Park renovation. This should result in the allocation of some of the 60-foot roadway for pedestrian and bicycle circulation.

Between 14th Street and Speer Boulevard, Arapahoe Street carries two-way traffic and provides access to a large parking garage for the Denver Performing Arts Complex. West of 14th St., Arapahoe Street should be reconfigured to provide two automobile lanes in each direction and a new bicycle lane leading to Speer Boulevard.

Lawrence Street

The Update recommends that the City remove one of the four through lanes on Lawrence Street between Speer Boulevard and 21st Street and stripe a bicycle lane on this segment. Public Works staff concurred with the removal of a traffic lane to install the bicycle lane based on the removal of State Highway designation on Lawrence Street.

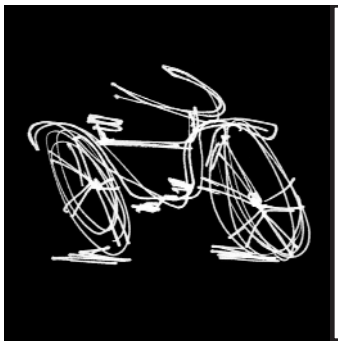
Bicyclists can easily access Lawrence Street from the Cherry Creek Trail via Creekfront Park, by using the sidewalk trail to connect directly to Lawrence and 14th Streets. Coordination with RTD could allow for bicyclists to use the bus lane on Larimer Street to connect to 14th Street, and then to Lawrence Street. Once on Lawrence Street, bicyclists can connect to 14th Street, the 16th Street Mall (including for Sunday riding), the proposed bicycle lanes on 18th and 19th Streets, or the existing bicycle routes on 21st Street.

18th Street and 19th Street

At the northeastern edge of the Downtown core, 18th and 19th Street form a one-way couplet.

Bicycle Lanes Recommendations

- Create bicycle lanes on **Glenarm Place** from Colfax Avenue to 18th Street. Remove the center-turn lane on Glenarm Place (except on the block between 15th Street and 16th Street). Maintain all three of the existing southwesterly bound lanes on Glenarm Place as it approaches the intersection at Colfax Avenue.
- Create bicycle lanes on **Arapahoe Street** and **Lawrence Street** as a one-way couplet between Speer Boulevard and 21st Street.
- Create bicycle lanes on **18th Street** between Glenarm Place and Wynkoop Street.
- Create bicycle lanes on **19th Street** between Stout Street and Lawrence Street.
- Adjust lane striping to create a wide outside lane on the right (westerly) side of the street and **designate 14th Street as a bicycle route** between Larimer Street and Colfax Avenue.
- Install **"Share the Road" signs** at strategic locations, beginning with Curtis Street, Larimer Street and Wazee Street.



Police officers on bicycles are an effective enforcement tool across the country.

Downtown Bicycling

Downtown bike lane provides a travel corridor for bicyclists.

These streets emerged as candidates for the placement of bicycle lanes because they could provide access and distribution on the northeasterly side of Downtown.

18th Street

Of these two streets, 18th Street offers the greater opportunity for the placement of bicycle lanes. The general lane layout remains consistent for the entire length of 18th Street, although the curb-to-curb width changes in two locations.

Discussions with Public Works staff led to the recommendation to remove one through lane and reapportion the roadway width for a 6-foot bicycle lane. The Bicycle Master Plan Update recommends striping bicycle lanes on 18th Street from Glenarm Place to Wynkoop Street accompanied by the removal of one through traffic lane. (See typical roadway cross-sections in the Appendix for details.)

19th Street

Partially because of its location at the edge of the Downtown core, 19th Street serves varying functions in its different segments of its length from Wynkoop Street to Broadway. Although 19th Street is one-way for most its length, between Wynkoop Street and Blake Street it carries two-way traffic. From Wynkoop Street to Arapahoe Street, the existing HOV lanes are operational from 6-9 AM on weekdays. The roadway width on 19th Street varies from 48 feet to 60 feet between Market Street and Broadway. Between Stout Street and Welton Street, light rail tracks occupy up to half of the roadway, limiting the space for through lanes. The sum of these conditions makes the placement of bicycle lanes difficult.

The Update recommends the removal of one through lane on 19th Street between Lawrence Street and Stout Street, and the placement of a bicycle lane. (Alternatively, the HOV lane could be re-defined to include bicycles, as is done in other cities.) At 19th Street and Lawrence Street, bicyclists can transfer from the Lawrence Street bicycle lanes to the lanes on 19th Street. At 19th Street and Stout Street, signage should direct bicyclists either to Share The Road with motor vehicles on 19th Street or to use Stout Street to

Blue bike lanes are typical in Denmark and have also been used in the U.S.

Downtown Bicycling

connect to the designated bicycle route two blocks northeasterly on 21st Street.

14th Street

Between Larimer Street and Colfax Avenue, 14th Street has the potential to serve as a comfortable street for bicyclists. It provides a connection between the Cherry Creek Trail via Creekfront Park and the Civic Center area with the pending Cleveland Place bikeway connection at MacIntosh Plaza (which will open in 2002). Because large activity centers such as the Denver Performing Arts Complex and the Colorado Convention Center have necessitated street closures, there are long expanses with no intersections on the westerly side of the street. For most of its length 14th Street carries moderate levels of traffic in three through lanes with parking on both sides of the street.

The Update recommends that the City designate 14th Street as a bicycle route by adjusting the existing lane striping on 14th Street to provide a 20-foot wide outside lane on the right (westerly) side of the street. The existing traffic conditions on 14th Street in conjunction with the provision of a wide outside lane would allow comfortable bicycling (without the designation of a specific bicycle lane) with no impacts to the existing, on-street parking. The City should provide directional signage for bicyclists and "Share the Road" signage to alert all road users about shared-use conditions.

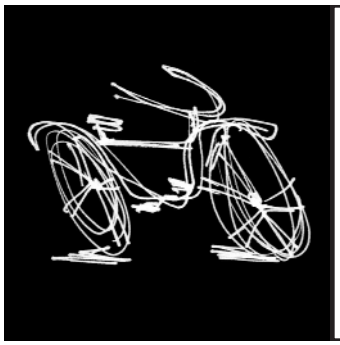
16th Street Mall Issues:

The 16th Street Mall is the spine of Downtown Denver, connecting the Civic Center to Lower Downtown. The Mall opened in 1982, and continues to be the gathering place for Downtown workers, residents, visitors and tourists. The Update addressed two issues concerning bicycles and the Mall.

- Creating a connection across the Broadway/16th Street Mall/Cleveland Place triangle.
- Creating a connection to Wynkoop Street from the northwesterly end of the mall.

Analysis:

Because of its status as an automobile-free street, the 16th Street Mall is inviting to bicyclists who



Bicycle parking adjacent to gate E at Coors Field.

Downtown Bicycling

16th Street Mall Recommendations

- Pursue City Council adoption of a change to the 16th Street Mall bicycle ordinance to allow bicyclists on the triangular plaza bounded by Cleveland Place, 16th Street and Broadway to connect 16th Avenue bicycle lanes to Cleveland Place. Conduct a monitored, six-month experiment allowing bicyclists on the 16th Street Mall on the triangular plaza, after which Council can review safety and operations on the Mall.
- Pursue City Council adoption of a change to the 16th Street Mall bicycle ordinance to allow bicyclists on the westerly Mall sidewalk between Wynkoop Street and Wewatta Street. This change will provide access from the Commons neighborhood to the bicycle lanes on Wynkoop Street and to the Bikestation facility at the DUT site.

do not feel comfortable sharing the road with traffic. RTD and the Downtown Denver Partnership have espressed concerns about pedestrian safety and RTD Mall Shuttle operations that should be weighed in combination with the promotion of alternative transportation modes, specifically bicycles. The following concepts define incremental phases for potentially allowing increased bicycle access to both ends of the 16th Street Mall.

1) 16th Avenue Bike Lane Connections to Cleveland Place via the Mall Plaza (bounded by the 16th Street Mall, Cleveland Place and Broadway

East 16th Avenue has striped bicycle lanes from the Esplanade at East High School to the block between Lincoln Street and Broadway. Many bicyclists use this facility for access to and from Downtown, even though there is a significant gap at Broadway. Eastbound bicyclists use the short one-way segment of 16th Avenue at Broadway to connect to the bicycle lanes. Westbound bicyclists have a more difficult time crossing Broadway to get to Downtown streets. It is a high priority in the bicycle community to legitimize bicycling in this area. It is therefore recommended that the existing 16th Avenue bicycle lanes must have a bicycle-friendly connection to Cleveland Place. A change to City Ordinance 54-44 regulating bicycle use on the Mall could allow bicycles on the triangular plaza at Broadway/16th Street/ Cleveland Place at all times. This Update recommends that City Council enact a monitored, six-month duration experiment with bicycle access on the plaza. The experiment could include the use of signs, pavement markings and streetscaping measures to define the bicycle travel corridor to all plaza users. If the experiment provides a positive result, the ordinance could be changed accordingly.

2) 16th Street Mall Extension to Wynkoop Street

The redevelopment of Lower Downtown and the Central Platte Valley is an opportunity to address the changes to the transportation network such as the demolition of the 16th Street viaduct. Three new bridges planned along the 16th Street

Bicycle parking at the Pepsi Center in the Central Platte Valley

Downtown Bicycling

alignment will re-establish the pedestrian and bicycle connection between the Highlands neighborhood and Downtown, and create a connection to the development in the Commons neighborhood. The three bridges include a connection over I-25, a second bridge over the Platte River, and a third bridge, the Millennium bridge, over the mainline railroad tracks.

At the southerly end of the Millennium bridge adjacent to the intersection of Chestnut and 16th Streets, bicyclists can ride two blocks to Wewatta Street then walk one block to Wynkoop Street. With the development of the Bikestation at DUT and use of the Commons area, traffic volumes on the current legal alternative along 15th St. will certainly increase.

The Update recommends a direct bicycle connection between the Millennium bridge and the bicycle lanes on Wynkoop Street, connecting with the Bikestation at the DUT site. The Plan further recommends a defined bicycle connection on the northerly end of the 16th Street Mall using the westerly sidewalk next to the Post Office Terminal Annex and continuing to Wewatta and 16th Street. From there, bicyclists could share the road with motorists on 16th Street for the two blocks from Wewatta to Chestnut Street to the Millennium bridge. This bicycle sidewalk usage will require a change to the 16th Street Mall ordinance by the City Council. The provision of a quality bicycle route on the sidewalk will avoid conflicts with Shuttle vehicles and light rail trains through the Central Platte Valley. Now is the time to provide a viable connection for bicyclists as part of the initial development for this area.

Bicycle Commerce:

Currently, pedal cabs and bicycle messengers use Denver streets for commerce. This plan recommends that any ordinance development regarding any of these categories attempt to coordinate efforts to treat these commercial cyclists equally.

Pedal Cabs

Pedal Cabs are currently regulated via City Ordinances 55-381 - 55-396. These ordinances define pedal cabs and specify that the City Traffic Engineer determine the hours of operation, streets

A Chicago messenger is ticketed for failing to display his company name and ID number.

Downtown Bicycling

Bicycle Commerce Recommendations

- Adopt an ordinance to increase downtown public safety by regulating the operations of bicycle messengers, pedal cabs, and other commercial bicycling activities in the public right-of-way. Follow the example of the City of Chicago bicycle messenger ordinance, but specify that helmets must be "properly fastened." Investigate the possibility of a citizen complaint hotline similar to Boston's.
- Increase the level of enforcement of bicycling-related laws, particularly in the Downtown area.

and areas where pedal cabs can operate. During the development of the Update, some changes to the operations of pedal cabs have been defined, including:

- Pedal cabs are permitted to operate in the Central Business District except:
  - on the 16th Street Mall from 6am to 6pm on non-holiday weekdays; and,
  - on arterials from 7am to 9am and 4pm to 6pm on non-holiday weekdays.
- Pedal cabs must remain in the roadway at all times even when loading and unloading passengers. Pedal cabs may not operate on sidewalks unless the sidewalk is a designated bike route.

(Note that Ordinance 55-383 indicates that pedal cabs are subject to all rights and duties applicable to bicycles.)

Bicycle Messengers

There are currently five or six established delivery companies with approximately 60 couriers operating in Denver. Changing technologies, such as fax machines, e-mail with attached files, paperless "E-ticketing" for airline travel, and the electronic transfer of funds and documents have reduced the number of bicycle messengers on Downtown streets.

Bicycle messenger delivery service is currently an unregulated commercial use of public streets. The Denver Police Department, Public Works Department and the Downtown Denver Partnership have all considered proposing bike messenger regulation, but, there are conflicting issues which make regulation difficult.

- Bicycle messengers have wanted to regulate themselves rather than face outside regulation.
- The employment status of messengers is not clear, nor is the accountability of the companies they represent.
- The business community is concerned that regulation would slow down service and increase costs.
- Messengers' behavior is

Chicago messengers are required to display their company name and number.

too often a bad example to potential cyclists, a safety hazard to motorists and pedestrians, and the cause of serious injury to at least one pedestrian recently and one courier.

Analysis:

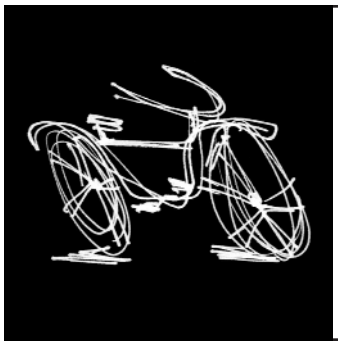
As part of the development of the 1993 DBMP there was an identified need to *"decrease dangerous (or frightening) incidents between messengers, motor traffic, and pedestrians."* At that time, messengers asked for an opportunity *"…for reinforcing a self regulating program."* Overall, the 1993 plan's recommendations reflected an intent *"…to encourage messenger services to regulate themselves, reduce illegal bicycling activity, minimize confrontations with pedestrians and motor traffic, and increase safety."* Despite the passage of time, the topic of bicycle messengers continues to be a chronic sore point in any discussion of Downtown bicycling.

A number of North American cities are already regulating bicycle messenger operations, with ordinances currently in effect in Boston, Calgary, Chicago, New York, Vancouver and Washington, D.C. In response to issues similar to those in Denver, the City of Chicago enacted an ordinance in 1992 to regulate the operations of bicycle messengers. By ordinance, the Chicago delivery companies are required to hire messengers as employees with insurance coverage and workmen's compensation benefits, not as independent contractors.

Messengers are required to wear helmets and safety vests with the company name and the individual messenger's city-issued license number, simplifying police enforcement activities. The sum of Chicago's requirements has resulted in public safety improvements and improved working conditions for messengers. This ordinance serves as a model for a corresponding ordinance in Denver (see draft ordinance in the Update appendix).

Benefits of Regulating Bicycle Messengers

- Requires that messengers be employees of the companies they work for
- Employer provided insurance, helmets and safety vests with company name for employees
- Individual employees licensing and identifying number assigned by the City
- Allows citizens to contact employer directly



Existing conditions at Evans Avenue overpass of Santa Fe Drive.

Major Missing Links

Major Missing Links:

One of the major recommendations to come out of the 1993 DBMP was the one-mile grid system of on-street routes and off-street trails. Over the last eight years, the City has made significant progress toward completing the system, using the grid route system as a framework in the implementation of bicycle improvements. Even so, a number of major missing links still exist that hamper connections on the system. Each of the Major Missing Links is a key element to completing the grid route system for the City. These missing links fall into the following categories:

- Connections across I-25
- Connections across the Santa Fe Drive corridor
- Connections across railroad corridors
- Improvements to the existing off-street trails system
- Preservation of drainage corridors for future off-street trails
- Problem intersections and crossings

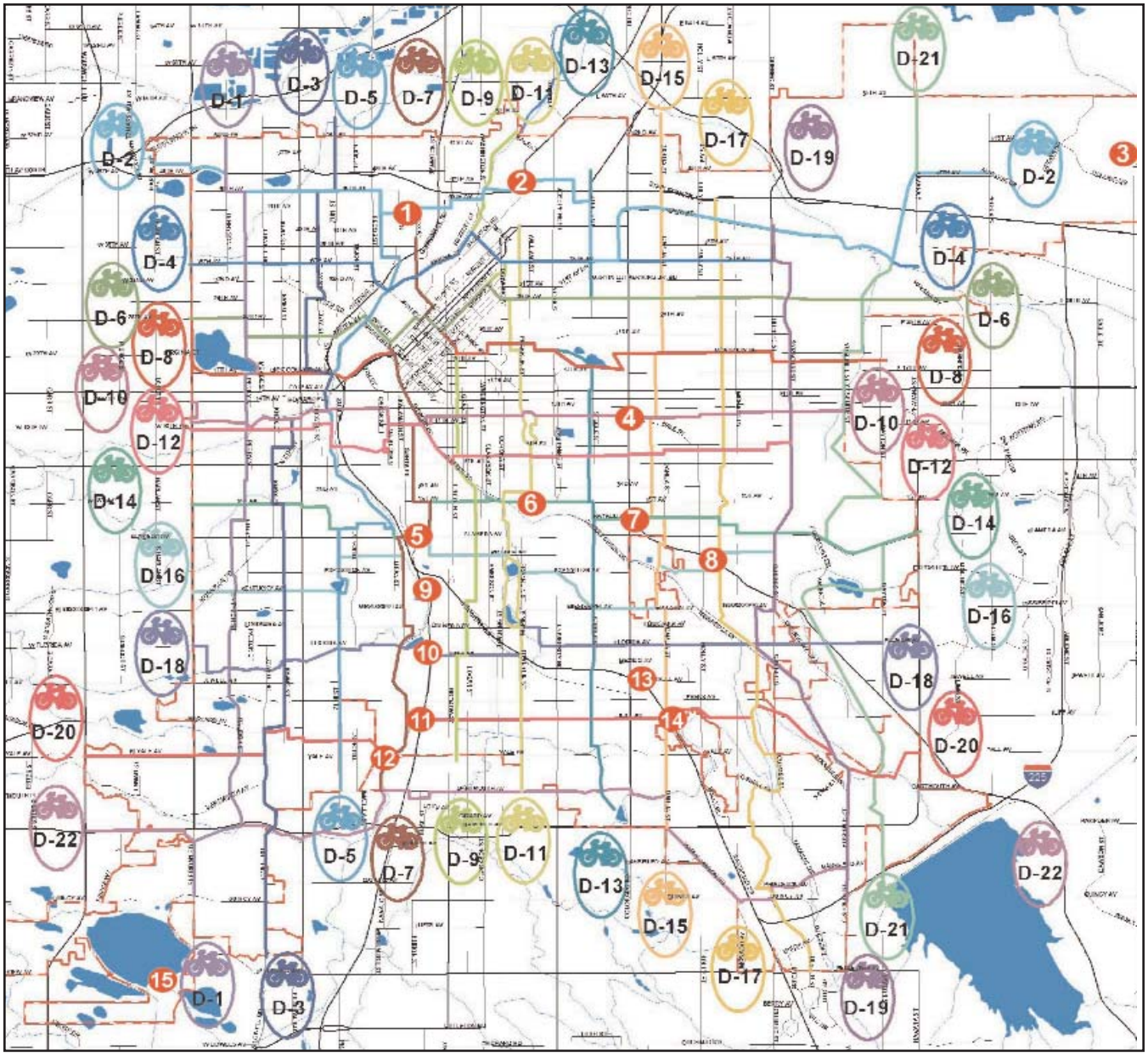
(NOTE: For detailed analysis of the missing links, listing of the alternatives under consideration and additional information, please see the Appendix to this document.)

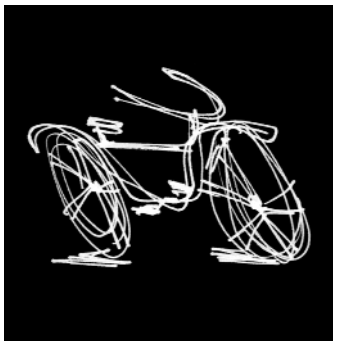
Recommended Improvements

1. 43rd Avenue pedestrian bridge (Route D-2)
2. 46th Avenue from Platte River Trail to National Western Stock Show Complex (Route D-2)
3. Northeast Neighborhoods -DIA access, E-470 link, First Creek, Second Creek, High Line Canal, other regional trais, conections to Green Valley Ranch and Gateway area
4. Colorado Boulevard & 12th Ave (Route D-10)
5. Alameda Avenue: Platte River Trail to Cherokee Street (Routes D-7; D-14; D-16)
6. Cherry Creek Trail (Route D 14 portion)
   - University Blvd. underpass
   - First Avenue sidewalk
7. Leetsdale Drive at Bayaud Avenue (Route D-14)
8. Leetsdale Drive at Kearney Street (Routes D-16 and D-17)
9. Broadway Station connection
10. Iowa Avenue at Santa Fe Drive (Route D-18)
    - Acoma St. to Santa Fe Drive
    - Santa Fe Drive sidewalk: Iowa Avenue to Florida Avenue
11. Iliff Avenue at Santa Fe Drive (Route D-20)
12. West Harvard Gulch to the Platte River Trail (Route D-20)
13. Colorado Station connection
14. Iliff Avenue/Warren Avenue/Dahlia Street at I-25 (Routes D-15 and D-20)
15. Quincy Avenue Bikeway Sheridan to Wadsworth, Grant Ranch connections to the rest of the city

Note the impact damaged fence poles along the western sidewalk of Santa Fe Drive (which is used by Route D-18).

Major Missing Links





Major Missing Links

Alameda Avenue: Platte River to Cherokee Street Connection (Routes D-7; D-14; D-16):

This section of Alameda Avenue is a central connection for three bicycle routes. The Platte River Trail connects to the north side of Alameda Avenue via a ramp. Between the ramp and Santa Fe Drive, bicyclists and pedestrians must cross three high-volume intersections complicated by turning movements at the I-25 exit ramp, Kalamath Street and Santa Fe Drive. Multiple curb cuts and an existing bus stop further complicate the route.

Between Santa Fe Drive and Cherokee Street, a sidewalk on the north side of Alameda Avenue provides uninterrupted access under the railroad tracks to the designated bicycle route on Cherokee.

The City has plans to rebuild the sidewalk portion of the Alameda Avenue underpass between Santa Fe Drive and Cherokee Street with a wider cross-section, a new profile and new railings. Reconstruction of the existing sidewalk, which is not ADA compliant, will be part of the project and is scheduled for 2005 or 2006.

In the long term, the Update recommends the construction of a bicycle and pedestrian bridge along the Bayaud Avenue alignment.

Recommendation:

- Improvements to the crosswalks at the intersections, including signage, striping and reconstruction of the northeast corner of the intersection of Santa Fe Drive and Alameda Avenue to tighten the turning radius for westbound Alameda Avenue to northbound Santa Fe Drive traffic

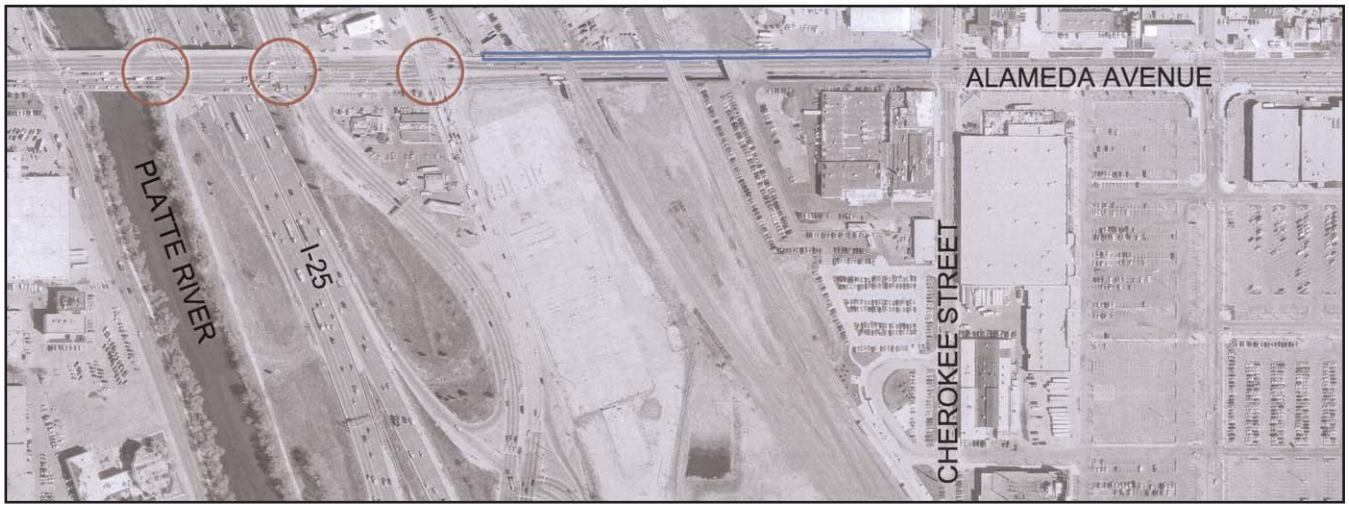
- Rebuild the sidewalk portion of the Alameda Avenue underpass with an ADA compliant profile and handrails, improved cross-section drainage, and upgraded lighting

- In the long term construct a bicycle and pedestrian bridge at the Bayaud Avenue alignment over I-25 and the Platte River

Prioritization/Implementation:

- Immediate Action Item: Alameda Avenue intersection improvements and underpass reconstruction

- Long-Term Implementation: Bayaud Avenue bridge



Alameda Avenue: Platte River to Cherokee Street Connection

Cherry Creek Trail:

The Cherry Creek Trail is the most popular trail in the state and traverses through several jurisdictions.

The University Boulevard underpass is an established location for user conflicts and crashes due to poor sight lines, approach grades (which are not ADA compliant and are conducive to excessive speeds) and the ninety-degree deflection at the base of the west approach.

Between University Boulevard and Downing Street, the Cherry Creek Trail is located on the south side of First Avenue, along the northern frontage of the Denver Country Club. There are safety concerns because of the narrow clearances and the lack of buffer between the trail users and the automobile traffic, especially for westbound trail users directly behind the curbline of eastbound First Avenue. Because of the high potential for accidents, trail users navigate this section of the trail at slower speeds and with extreme caution. The project team explored the concept of extending the Wheels & Heels trail south of Colfax Avenue to Downing Street. This concept was abandoned because of the desire to not "pave paradise."

Recommendation:

- Acquire 10 feet of right-of-way from the Denver Country Club on the south side of First Avenue directly to the south of the existing Cherry Creek Trail to bring the trail alignment into compliance with AASHTO. Reconstruct the trail with an 8-foot tree lawn as a buffer between the trail and the traffic lanes on First Avenue to bring the trail into compliance with city standards and Streetscape Guidelines.

- Reconstruct the University Boulevard underpass to improve sight lines and address the 90-degree deflection on the west side ramp. Widen the trail in the underpass towards the Creek and reconstruct the ramp on the east side of the underpass with an improved alignment and ADA compliant profile. Pursue right-of-way acquisition from the Denver Country Club to provide an ADA compliant profile and an AASHTO compliant curve at the base of the west side ramp. Provide upgraded lighting with vandal-resistant lighting fixtures.

Major Missing Links

Prioritization/Implementation:

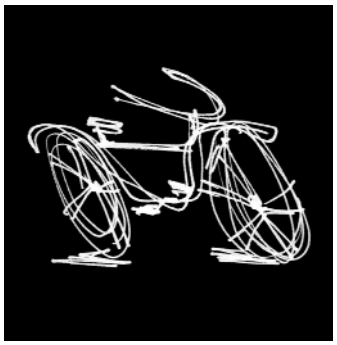
At a public meeting, proposed improvements to the 1st Avenue segment received tremendous public support primarily due to the popularity of the Cherry Creek Trail, high number of users in this section, and its central location in the City's bicycle network. Although the Bicycle Master Plan recommends that the City pursue right-of-way acquisition to implement these improvements, this segment of the trail received a low-priority improvement status in the initial prioritization rounds for a number of reasons:

- First Avenue/Speer Boulevard is a designated historic parkway, which severely limits potential alternative solutions.

- Potential cost of land acquisition.

- Politically difficult to resolve the existing conflicts of interest between the bicycling community's desire to widen the trail and the private property rights of the Denver Country Club.

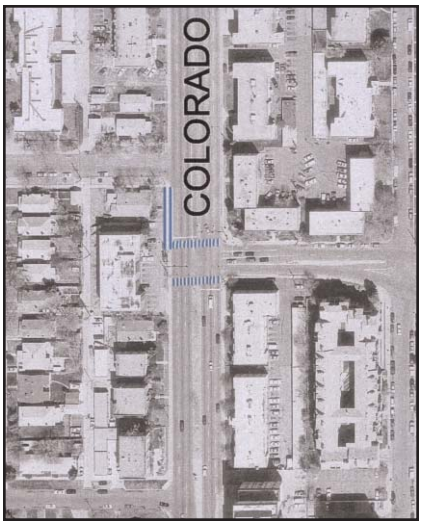
Major missing links along Cherry Creek trail



Major Missing Links

Colorado Boulevard & 12th Ave (Route D-10):

This off-set intersection currently functions as a connection on route D-10 between the Congress Park and Mayfair neighborhoods. Bicyclists must use the sidewalk on the west side of Colorado Boulevard for access between the two sections of 12th Avenue. On the east side of Colorado Boulevard the sidewalk is narrow and there are conflicts with turning vehicles from westbound 12th Avenue to northbound Colorado Boulevard.



Colorado Boulevard and 12th Avenue

Recommendation:

- Install microwave traffic signal detector to detect cyclists on 12th Avenue east of Colorado Boulevard.

- Widen the sidewalk at the northeast corner of 12th Avenue and Colorado Boulevard to provide a landing for eastbound bicyclists crossing the intersection.

- Conduct traffic impact analysis prior to installing pedestrian priority signal phasing to facilitate pedestrian and bicyclist crossing of Colorado Boulevard.

Prioritization/Implementation:

- Long-term implementation priority

Iliff Avenue and Santa Fe Drive

Major Missing Links

Iliff at Santa Fe (Route D-20):

Route D-20 extends across the southern part of the city generally along Iliff Avenue. The route has no good existing connection across the Santa Fe Drive/railroad corridor. The Evans Avenue overpass is the only access between Dartmouth and Iowa Avenues, and has numerous access and suitability issues for pedestrians and bicyclists.

The Update recommends construction of an overpass aligned with Iliff Avenue to complete the connection on Route D-20 and provide a connection to the Evans Avenue light rail station.

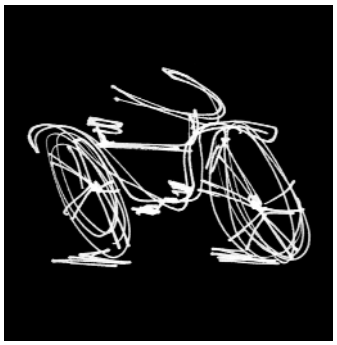
Recommendation:

- Construct a bicyclist/pedestrian bridge on the Iliff Avenue alignment over Santa Fe Drive and the railroad tracks to reach the Platte River trail at Grant Frontier Park.

- Provide access ramps that are ADA compliant.

Prioritization/Implementation:

- Immediate Action priority



Major Missing Links

Grant Ranch connections to the rest of the city/ Quincy Avenue Bike Trail - Sheridan to Wadsworth:

Grant Ranch is an outlying area located in a finger-like extension of the southwestern Denver boundaries. Its location in an outlying area of Denver limits the possible connections to the rest of the city. The boundary lines between Denver, Jefferson County, Lakewood, and Bow Mar dictate that Denver work with these jurisdictions to address bicycle connections.

The first 1,000 feet of a 10-foot bicycle trail on Quincy Avenue west of Sheridan Boulevard is scheduled to be built with 1998 City Neighborhood Bond funding. The proposed location for the Quincy Avenue trail is on the north side of Quincy Avenue, where the Pinehurst Country Club encroaches on the public right-of-way. Because of limited funding, the trail will stop abruptly with no connections at the Pinehurst Country Club golf course. Additional trail construction on Quincy Avenue west to Pierce Street will complete the Denver portion of this connection. The portion of the trail between Pierce Street and Wadsworth Boulevard lies within the City of Lakewood and is the responsibility of that city to construct. City Traffic Engineering should review any proposed trail improvements for compatibility with long-term plans to rebuild the two-lanes of Quincy Avenue as a four-lane roadway.

Recommendation:

- Construct the Quincy Avenue bicycle trail on the north side of Quincy Avenue between Sheridan Boulevard and Pierce Street.
- Work with the City of Lakewood to extend the Quincy Avenue Trail to Wadsworth Boulevard.

- Provide an on-street bicycle connection through the residential neighborhoods southeast of the intersection of Pierce Way and Quincy Avenue along Stetson Place to reach the signalized intersections of South Wadsworth Boulevard at Stanford Avenue and at Layton Avenue.

- Coordinate with the Town of Bow Mar to establish a bicycle connection from Grant Ranch south of Marston Lake through Bow Mar.

Prioritization/Implementation:

- Near-term implementation priority - Quincy Avenue Bike Trail construction

- Mid-term implementation priority - Grant Ranch connections

Grant Ranch and Quincy Avenue Bike Trail connections

Major Missing Links

Iliff Avenue/Warren Avenue/Dahlia Street at I-25 (Routes D-15 and D-20):

Route D-15 on Dahlia Street and Route D-20 on Iliff Avenue do not currently provide good access across the I-25 corridor. Bicyclists on these routes must use the Evans Avenue bridge over I-25 or the Yale Avenue underpass, options which take bicyclists through interchanges with high traffic volumes and conflicts with turning vehicles. A bicyclist/pedestrian bridge in the Iliff/Warren/Dahlia area could provide improved bicycle and pedestrian access, in addition to access to future light rail stations at Colorado Center and Yale Avenue.

The 1993 DBMP recommended a north/south bridge aligned with Dahlia Street to provide a connection across I-25 and to avoid crossing at Evans Avenue or Colorado Boulevard. The Southeast Corridor project will provide a new Evans Avenue bridge with 5-foot bike lanes and 5-foot sidewalks. While this improvement is beneficial, connections to the bicycle routes are poor on either side of the bridge and it would be difficult to make meaningful improvements.

Recommendation:

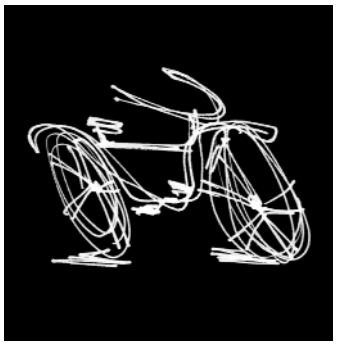
- Construct a bicycle/pedestrian bridge over I-25 to connect bicycle route D-15 on Dahlia Street and D-20 on Iliff and Warren Avenues. Re-examine the need for this improvement if a bicycle/pedestrian bridge on the Bellaire Street alignment is built across I-25 to provide access to the Colorado Center Station area (see RTD section).

Prioritization/Implementation:

- Mid-term implementation priority - Iliff/Warren/Dahlia bridge

- Near-term implementation priority - Bellaire Street bridge over I-25

Iliff Avenue/Warren Avenue/Dahlia Street at I-25



Major Missing Links

Iowa Avenue from Acoma to Florida Ave via Santa Fe Drive sidewalk (Route D-18)

Santa Fe Sidewalk/Path:
Safety issues for bicyclists and pedestrians along Santa Fe Drive are the impetus for improving this section of trail. The sidewalk/trail on the west side of Santa Fe Drive is an attached sidewalk. The potential for accidents is high and is exacerbated by the 45 MPH speed limit (with traffic, including full size trucks, frequently travelling at much greater speeds) and history of southbound traffic striking the fenceposts located behind the sidewalk. With no setback from traffic, the sidewalk is typically covered with sand, gravel, glass, and, in the wintertime, plowed snow.

All possible solutions must include provisions to increase the separation of trail users from motorized traffic. For example, a detached sidewalk/trail with jersey barriers along Santa Fe would enhance bicyclist and pedestrian safety in this area. The Florida Avenue bikeway portion of route D-18 on the northern frontage of Overland Golf Course is an example to emulate, with both an AASHTO compliant trail width and a tree lawn setback providing a buffer from traffic. To meet City of Denver Streetscape Guidelines, the more desirable solution includes the provision of sufficient right-of-way to construct an 8-foot tree lawn to serve as a buffer between the trail and the roadway.

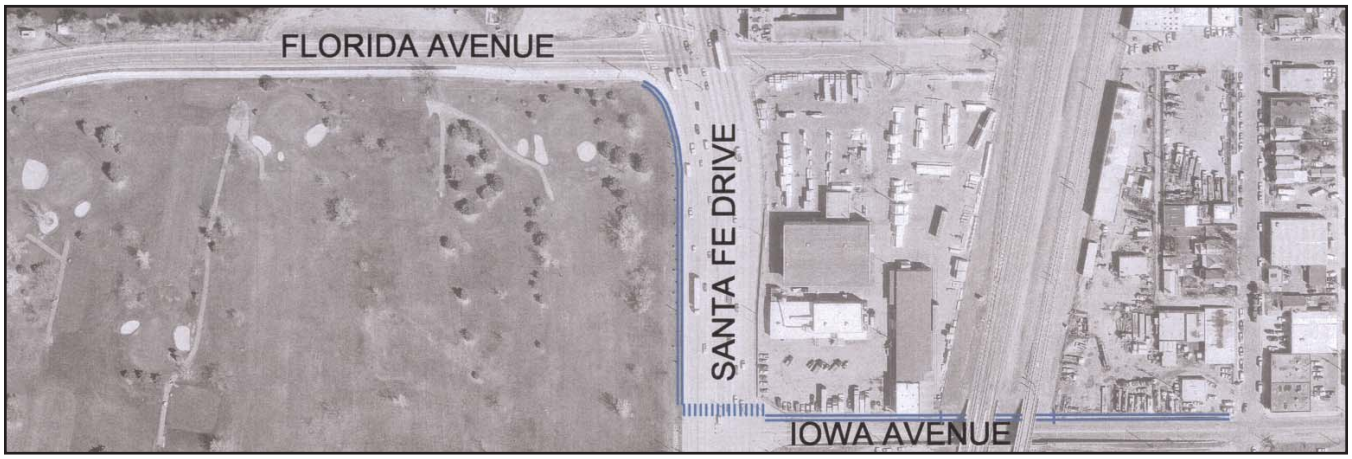
Iowa Avenue:
The Iowa Avenue underpass between Cherokee Street and Santa Fe Drive has a sidewalk only on the north side with staircases instead of ramps. Therefore, this sidewalk specifically does not meet ADA requirements for wheelchair accessibility (with bicycle, in-line skate, baby stroller, etc. usage precluded as well).

Over time, the entire Iowa Avenue underpass will need to be reconstructed and widened from two lanes to four lanes. The need for the sidewalk improvement is currently greater than the need to rebuild the entire underpass. Taking advantage of existing setback bridge abutments, the City could proceed with sidewalk improvements in the near-term, but this would create a long-term issue when complete reconstruction of the underpass to its full-width section would result in the demolition and removal of any intermediate sidewalk improvements.

Recommendations:
- Immediate action: Acquire additional ROW on the west side of Santa Fe Drive from the existing plateau area removed from and situated above a fairway of the city-owned Overland Golf Course. This plateau area is needed to provide a re-aligned sidewalk bikeway with a setback and traffic barriers to separate and protect bicyclists and pedestrians from Santa Fe Drive traffic.

- Long-term: Rebuild the sidewalk through the Iowa Avenue underpass to accommodate a wider sidewalk with an ADA compliant grade.

Prioritization/Implementation:
- Mid-term implementation priority



Iowa Avenue from Acoma to Florida Ave via Santa Fe Drive

Leetsdale at Bayaud

Major Missing Links

Leetsdale at Bayaud (Route D-14):

The 1993 DBMP recommended defining the existing, one-way westbound alley on Bayaud from Colorado Boulevard east to Birch Street as a two-way bicycle linkage. This improvement is on hold until the intersection of Colorado Boulevard/Bayaud Avenue/ Leetsdale Drive is more bicycle friendly. The City Traffic Engineer has indicated that any changes to signal timing on Colorado Boulevard must address its role as a major arterial and the maintenance of traffic flows. A traffic impact analysis must precede any requests for changes to signal timing on Colorado Boulevard.

Rather than pursue modifications to the Bayaud Avenue/Colorado Boulevard intersection, the Mayor's Bicycle Advisory Committee proposed creating a connection across Leetsdale Drive one block south on Cedar Avenue. A refuge in the median of the two-lane section of Leetsdale Drive would provide a place for pedestrians and bicyclists to wait for breaks in the traffic. A sidewalk/trail connection along the perimeter of Burns Park from Cedar Avenue to Bayaud Avenue would close the connection to the signalized crosswalk at Colorado Boulevard and Bayaud Avenue.

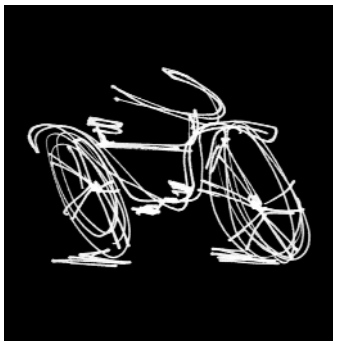
Recommendation:

- Construct a trail in Burns Park from the intersection of Colorado Boulevard and Bayaud Avenue along the south side of Bayaud Avenue and the west side of Leetsdale Drive to the intersection of Leetsdale Drive and Cedar Avenue. Construct a bicyclist/pedestrian refuge in the median of Leetsdale Drive to allow easier east-west crossings at Cedar Avenue.

- Install signage to direct bicyclists from Cedar Avenue to Birch Street to Bayaud Avenue.

Prioritization/Implementation:

- Mid-term implementation priority



Major Missing Links

Leetsdale at Kearney (Routes D-16 and D-17):

The trail provides a connection from the neighborhoods north of Leetsdale to Garland Park and the Cherry Creek Trail. The popularity of the Cherry Creek Trail and the location near the George Washington High School are two factors that will contribute the potential usage and success of this connection.

The existing trail is located in the easement for the high-tension power lines. The trail ends on both sides of Leetsdale Drive at Kearney Street where the crossing is at grade and unsignalized. The route also has significant alignment and grade change issues on the north and south sides of Leetsdale Drive that should be addressed to meet ADA requirements and improve overall safety of the route. Improved signage at the crossing, with an actuated traffic signal, pavement markings, or lights embedded in the roadway may help alert motorists to potential bicycle/pedestrian traffic.

In the long term, a bicycle/pedestrian overpass may be necessary. A bridge would need to meet ADA and maintenance vehicle access requirements. This would be costly given the substantial grade change (which would likely require switchbacks on the south side of Leetsdale Drive for the vertical transition needed).

Recommendation:

- In the near term, construct a bicyclist/pedestrian refuge in the median of Leetsdale Drive. Construct the refuge of raised concrete with a ramp in the center for access from the trail. Install signage and lighting to increase the visibility of the crossing for motorists on Leetsdale. Formally investigate the possibility of an actuated traffic signal for trail users.

- Widen the ramp and improve the landing on the south side of Leetsdale Drive to provide adequate queuing space for bicyclists traveling in both directions. Reconstruct the trail to an ADA compliant profile on this section of trail.

- Reconstruct the asphalt trail connection to provide a 10-foot concrete trail between Leetsdale Drive and the Cherry Creek Trail connection in Garland Park.
- In the long term, construct a bicyclist/pedestrian bridge over Leetsdale Drive. Provide access ramps that are ADA compliant and maintenance vehicle accessible.

Prioritization/Implementation:

- Near-term implementation priority

Leetsdale at Kearney

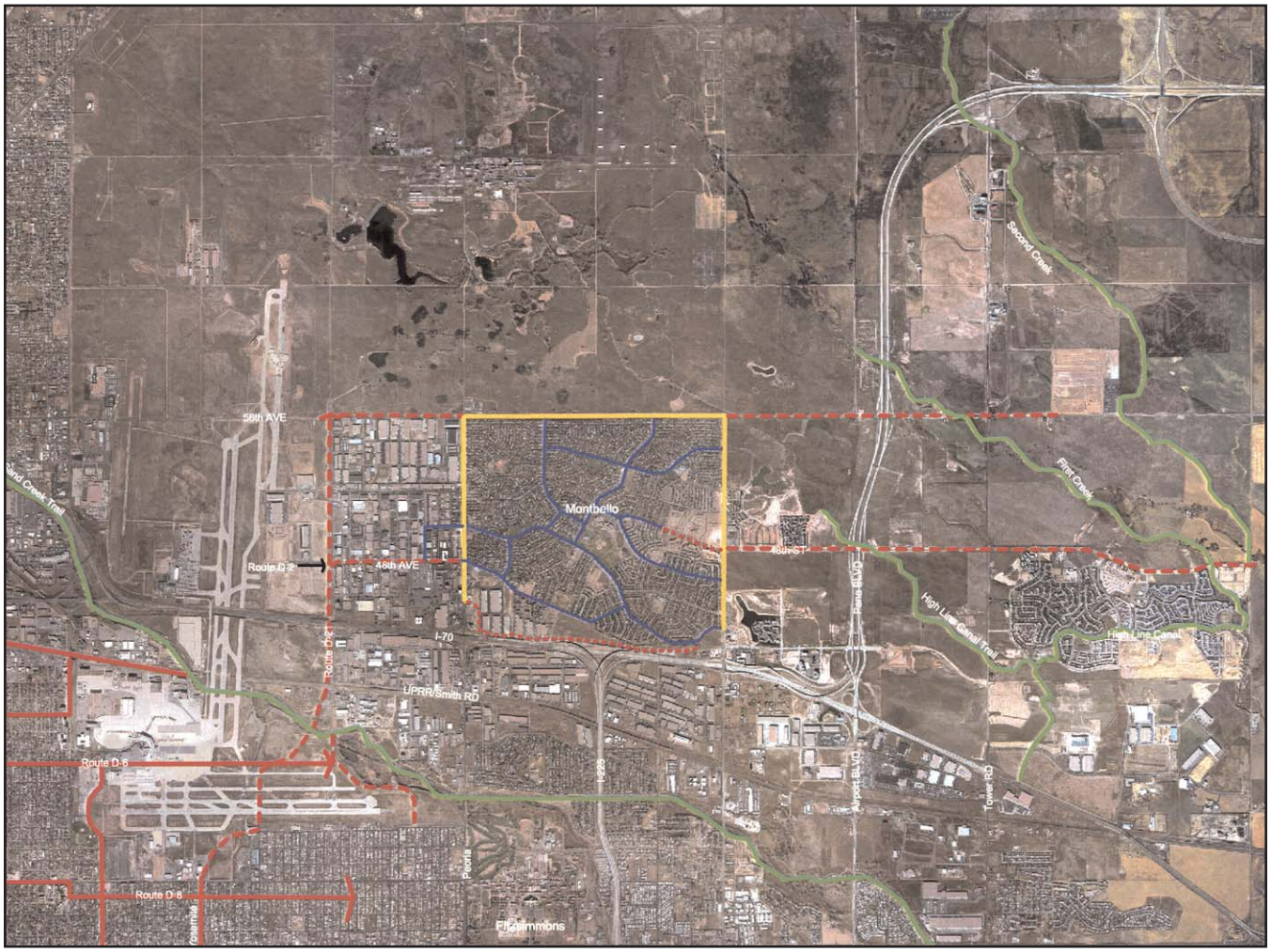
Major Missing Links

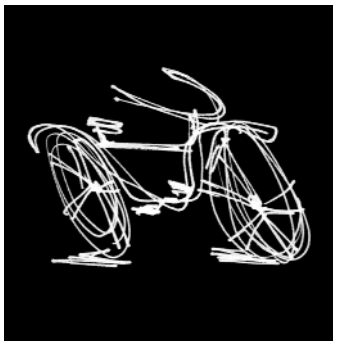
Northeast Neighborhoods - DIA access, E-470 link, First Creek, Second Creek, 48th Avenue, High Line Canal corridor, other Regional Trail Links, Connections to Green Valley Ranch and Gateway area:

Much like the Cherry Creek Trail and the Platte River Greenway, the spines of Denver's off-road trail system, the drainage corridors in the northeast neighborhoods are the foundations for trails to serve recreational bicycling and bicycle commuting from this area. The Parks and Recreation Department requested the inclusion of all proposed trail corridors in the Update since potential development threatens to absorb the right-of-way. Although development of these trails is not likely to proceed quickly, listing in the Update document prepares the way for corridor preservation and eventual construction of trail facilities.

Implementation of the Emerald Strands plan, a multi-jurisdictional planning effort, is not proceeding as it should. The public entities have competing demands for limited resources, and the private development community is not strongly behind the plan. The private sector can be instrumental in the creation of the trails system through the establishment of special districts attached to the development of residential communities and commercial areas.

Northeast Neighborhoods





Major Missing Links

DRCOG has only two of these trails included in their Metrovision 2020 Master Plan. TEA-21 funding is not available for these trails if they are not included in the regional master plan. (Additionally, the DRCOG project selection criteria places an emphasis on the population and employment adjacent to the project site - this makes it difficult to fund trails prior to the adjoining sites being fully developed and " built -out.")

Individual issues in the northeast neighborhoods are discussed below:

First Creek Crossing - from 48th Avenue and Picadilly Road to the eastern boundary of the Rocky Mountain Arsenal along the Peña Boulevard corridor.

Second Creek - from Picadilly Road north across the Peña Boulevard corridor. The main area of concentration at this time by those jurisdictions involved in the Emerald Strands Plan, including Denver Parks & Recreation.

Derby Lateral/High Line Canal - from the High Line Canal in Green Valley Ranch, across the Peña Boulevard corridor, north to the Rocky Mountain Arsenal.

High Line Canal north of I-70 - meanders through Green Valley Ranch to connect to the First Creek Trail at 48th Avenue and Picadilly Road.

Peña Blvd - In 2000, DIA granted permission for bicyclists to use the shoulders of the existing Peña Blvd for bicycle travel. An off-street trail proposed on west side of corridor.

Crossing at E-470 will probably have to jog to the north along Second Creek (East) corridor and then return to the Peña Blvd alignment.

E-470 Trail - trail ROW within highway corridor. Construction not set because no funding in place.

Sand Creek - Aurora, Denver and Commerce City constructing trail improvements.

Westerly Creek - Trail improvements proposed through Stapleton.

Peoria Street - Upgrade and extend the existing bikeway to reach 37th Avenue.

Grid Routes:

Extend the City's grid system on 40th, 48th and 56th Avenue and north/south streets parallel to Tower Road (Waco Street and Argonne Street). Create new east-west grid routes D-2A, D-2B and D-2C and new north-south grid Routes D-23 and D-25. All five of these potential routes would uphold the one-mile bicycle route grid concept in place throughout the rest of the city.

56th Avenue - An off-street route along the north side of the street in cooperation with the Rocky Mountain Arsenal. Grade-separated interchanges provide access across the Peña Boulevard corridor, connecting the neighborhoods on the east and west.

48th Avenue - Mayor's Bicycle Advisory Committee requested that 48th Avenue have an off-street bicycle trail

40th Avenue - serves as a connection from Montbello to Green Valley Ranch; there is no room to accommodate an on-street trail due to existing development and infrastructure; the existing sidewalks are wide with minimal curb-cuts.

Tower Road - This is not an appropriate street for either an on-street or off-street bike path because of continuing development as a major arterial thoroughfare.

Prioritization/Implementation:

- Near-Term implementation priority - Pursue ROW acquisition and preservation now for future improvement
- Mid-term implementation priority - Grid Route extension
- Long-term implementation priority - Drainage corridor trai construction

Major Missing Links

West Harvard Gulch connection to the Platte River (Route D-20):

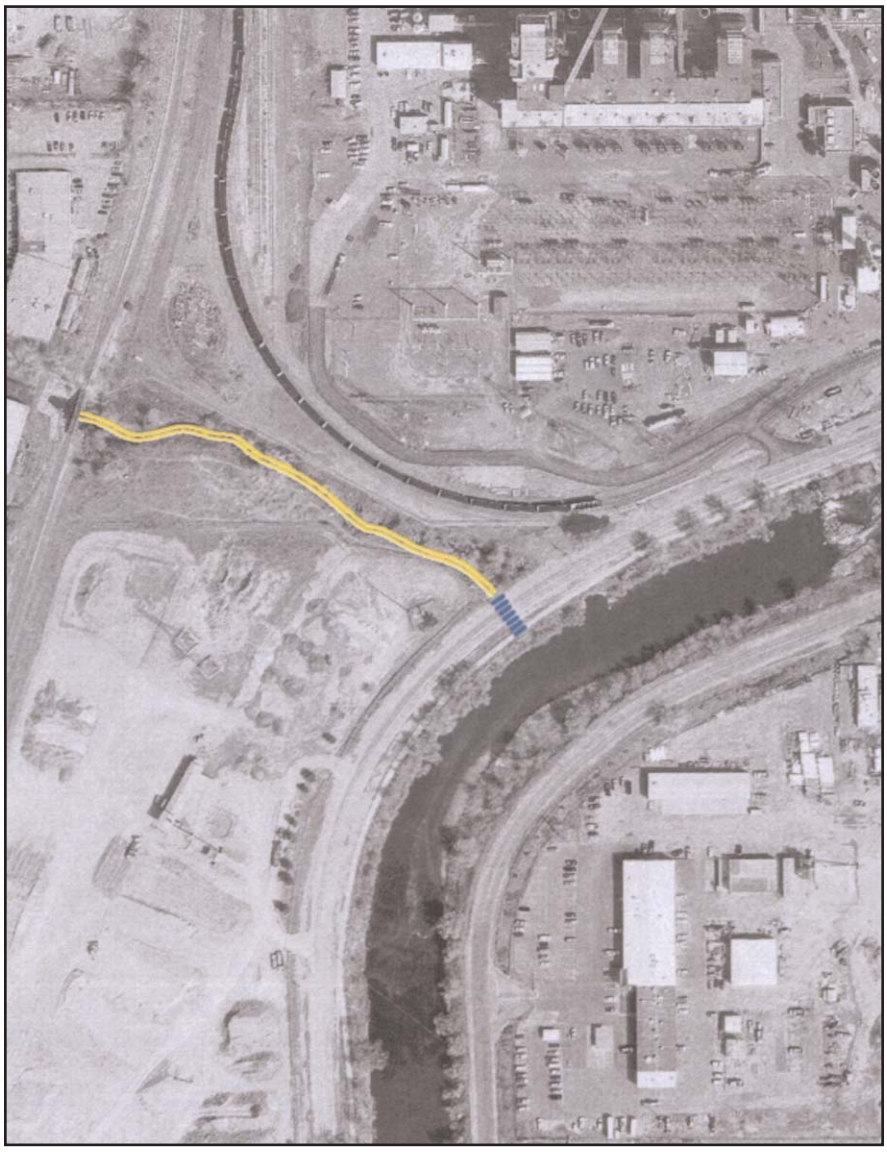
The existing West Harvard Gulch trail ends east of Pecos Street as it approaches the west side of the BNSF railroad corridor. A social trail connection is already in place passing below the existing railroad bridge, indicating the desire to travel along this path to connect to the Platte River Trail to the east.

The three main constraints are:
1) Minimizing conflicts with two existing sanitary sewer lines on the west side of the BNSF corridor

2) Designing and value-engineering an ADA compliant and maintenance vehicle accessible trail to pass below the railroad bridge, and;

3) Securing Public Utilities Commission and railroad agreement to have a public trail defined across the BNSF corridor.

The City of Englewood is working with the City of Denver Parks and Recreation Department to complete this connection.



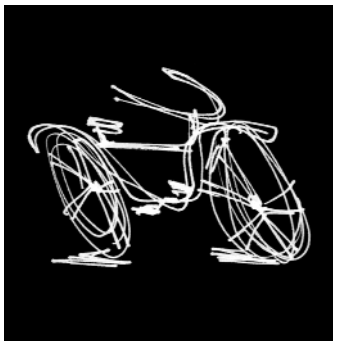
West Harvard Gulch connection to the Platte River

Recommendation:

- Fund and construct the connection between the existing terminus of the West Harvard Gulch and the Platte River Trail. Resolve the issues with the Public Utilities Commission and BNSF railroad to secure a trail easement and construction permits. Acquire needed land from the Xcel Energy power plant.

Prioritization/ Implementation:

- Near-term implementation priority



Major Missing Links

43rd Ave pedestrian bridge over railroad tracks between Fox and Inca (Route D-2):

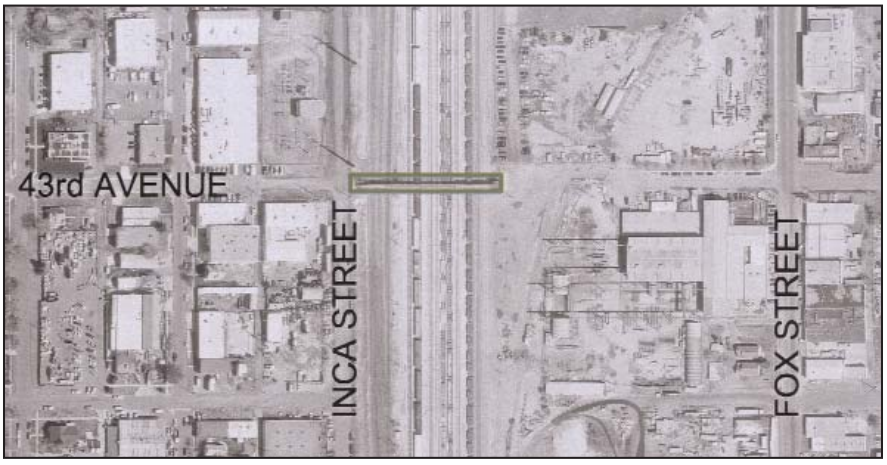
This missing link would provide east/west neighborhood and route D-2 access. It would improve bicycle, wheelchair and skate connection from the Northwest Denver neighborhood through Globeville to the Platte River trail. The wooden stair towers have been set afire at several locations and are structurally deteriorated. The existing access to the narrow bridge span is via unsheltered stairways, which, by definition, are not ADA compliant (with no possibility of maintenance vehicle access). The design and construction of any new crossing would have to be sensitive to operations in the Burlington Northern Santa Fe (BNSF) rail yard.

Recommendation:

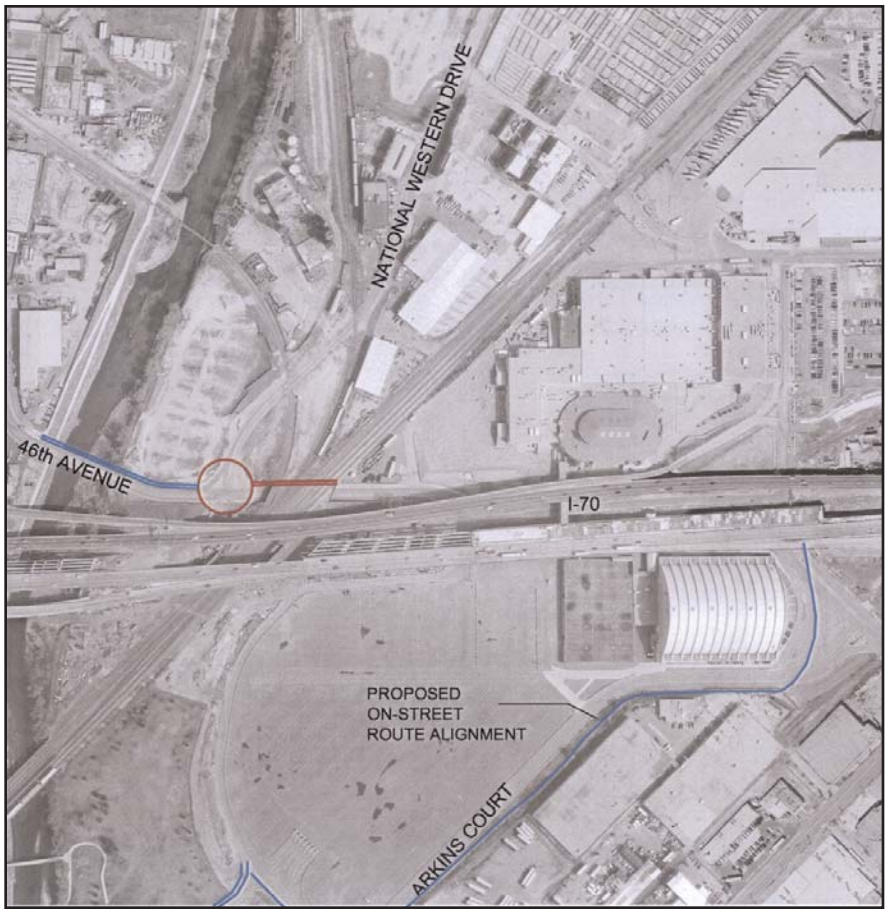
- Demolish the existing 43rd Avenue bridge. Reconstruct the bridge with access ramps that are ADA compliant and maintenance vehicle accessible. Provide a paved connection to Fox Street on the east side of the bridge.

Prioritization/Implementation:

- Mid-term implementation priority



43rd Ave Pedestrian Bridge



46th Avenue from Platte River to National Western

46th Avenue from Platte River to National Western (Route D-2):

The 46th Avenue connection on Route D-2 serves neighborhoods in the northern part of the city. The City recently built a ramp from the Platte River Trail to 46th Avenue. In the same area, the Colorado Department of Transportation (CDOT) is rebuilding the I-70 viaduct and will construct a 10-foot bicycle trail on the north side of 46th Avenue below the reconstructed viaduct, across the southern frontage of the National Western Stock Show Complex.

Between the Platte River Trail and the Stock Show Complex, the proposed bicycle connection is on the northern sidewalk along 46th Avenue. The existing sidewalk is problematic because of its narrow width, high volumes of turning truck traffic at the intersection of 46th Avenue and National Western Drive, and an underpass that is narrow, dark and uninviting. Every January during the Stock Show, the street and bicycle connections are closed.

Recommendation:

- In the near term, provide a connection from the Platte River Trail at 38th Street to Arkins Court. Construct an off-street trail connection around the gates to the National Western Complex parking lot. Route the trail along Arkins Court south of the parking lots to the eastern side of the Denver Coliseum, to the signalized intersection at 46th Avenue and Humboldt Street.

- In the long term, improve the sidewalk in the 46th Avenue underpass in conjunction with the reconstruction of the railroad overpass. Continue to improve the connection by constructing sidewalk ramps at the intersection with National Western Drive, and reconfigure the intersection to improve sight lines for motorists exiting the underpass and to encourage slower speeds for turning traffic. Investigate the possibility of widening the sidewalk on the 46th Avenue bridge over the Platte River.

- Pursue a provision with the National Western Stock Show to maintain bicycle access through the Complex during the Stock Show, either on 46th Avenue or along another route north of 46th Avenue.

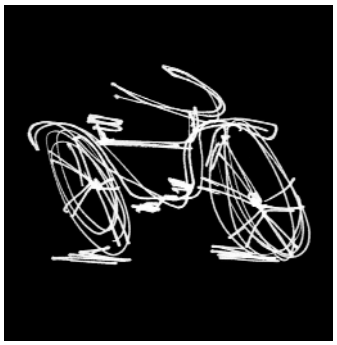
- Pursue opportunities via National Park Service planning assistance.

Prioritization/Implementation:

- Near-term implementation priority

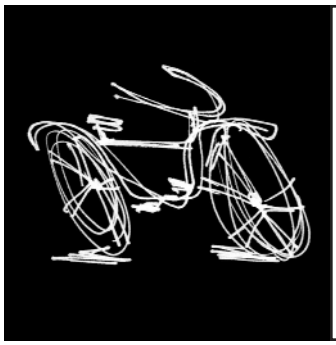
Conceptual cost estimates in 2002 dollars for the major missing links are shown in the table to the right.

Major Missing Links



Major Missing Links

Location	Conceptual Cost Estimate (in 2002 dollars)
Immediate Action Items:	
D-9: 38th St. connection (currently in design)	$690,000
D-20: Bridge at Iliff alignment over Santa Fe Drive (RTD Connection)	$3,680,000
D-16, D-17: Improved at-grade crossing of Leetsdale at Kearney	$54,000
D-2 Northeast Neighborhood: High Line Canal Trail, Darby Lateral, Pena Boulevard Trail, 40th Avenue, 56th Avenue	
D-14 Cherry Creek Trail Improvements: University Blvd. underpass reconstruction	$1,050,000
D-7, D-14, D-16: Alameda Avenue intersection improvements at Santa Fe, Kalamath and I-25 off-ramps, and underpass	$6,035,000
Near-Term Implementation:	
D-15, D-20: Bridge over I-25 at Bellaire to Connect to Colorado Blvd. Station (RTD Connection)	
Quincy Avenue Bike Trail construction - from 900 ft. west of Sheridan to Pierce	$1,080,000
D-20: West Harvard Gulch - trail connection from Englewood trail to Platte River Drive	
D-2: 46th Avenue from Platte River to National Western Complex (Arkins Court connection)	$170,000
D-18: Santa Fe Drive west-side trail improvements from Iowa to Florida	$200,000
D-7, D-14, D-16: Alameda Avenue: Bayaud Bridge	
Mid-Term Implementation:	
D-2, D-23, D-25: Green Valley Ranch/Gateway: extension of grid route system	
D-15, D-20: Bridge over I-25 at Iliff/Warren/Dahlia	$2,180,000
D-18: Iowa Avenue - Underpass reconstruction from Acoma to Santa Fe Drive	$2,000,000
Grant Ranch Connections - on-street connections	
D-14: At-grade crossing of Leetsdale of Bayaud/Cedar with Burns Park connection	$1,610,000
D-2: 43rd Ave. bridge over RR tracks from Fox to Inca	$3,010,000
Long-Term Implementation:	
D-14: Cherry Creek Trail Improvements: University to Downing - rebuild trail with buffer	$1,590,000
D-10: Colorado Blvd. at 12th - intersection improvements	$60,000
Ongoing Long-Term Implementation:	
Broadway Station (RTD Connection) - begin now for long-term results	
D-2: Northeast Neighborhood: Drainage Corridor Trails - begin ROW acquisition now	



Tinted red recovery zone increases safety for trail users.

Parks & Trails

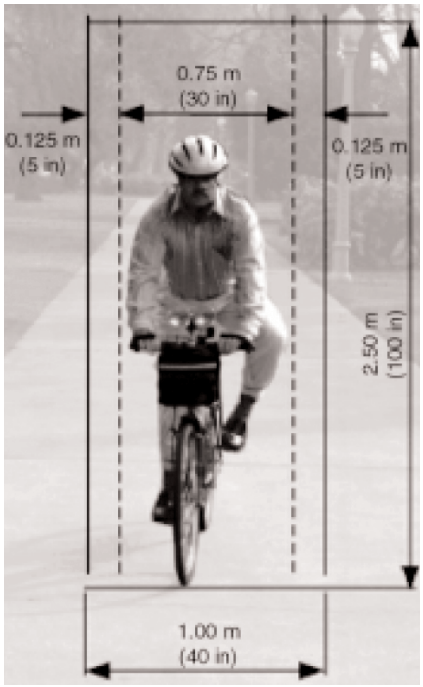


Figure 1. User Operating Space.

Introduction/Overview

The 1993 DBMP recognized the importance of the off-street, multi-use paths in the City and County of Denver. This system of trails allows users of all types, include recreational bicyclist and commuters, to ride safely without the worries of riding with motorized vehicle traffic.

The purpose of this section is to answer questions that may arise concerning safety standards when constructing and modifying bike paths. This document sets design and construction standards in the City & County of Denver (CCD) that promote the health, safety and welfare of the population who use the off-street recreational paths. The CCD Bike Path Standards conform to accessibility standards set forth by the Americans with Disabilities Act and guidelines established by the American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities. In some cases, CCD standards may override the AASHTO guidelines (which are typically requirements on federally funded projects).

This document also serves the City and County of Denver Parks and Recreation Department (CCD Parks) in the maintenance and modification of existing paths within the City's off-street system. In addition, the design and construction of new paths shall comply with the standards described in this text to ensure consistency throughout the system. Any deviations from these standards shall be subject to review and approval by the CCD Parks and Recreation Department with the advice of the Mayor's Bicycle Advisory Committee (MBAC) regarding bicycling issues.

Bicycle Trail Standards: Design Considerations

All off-street bicycle facilities shall be designed with respect to the following considerations:

User Operating Space - Figure 1 (AASHTO) shows the physical dimensions that accommodate a cyclist's comfortable operating space. This space measures 40 inches in width and 100 inches in height.

User Type Profile - In addition to the operating space required by a

Adjoinging soft surface trails are useful for runners and walkers.

cyclist, consideration must be given to the ability of the user. User type profiles were developed in a 1994 Federal Highway Administration (FHWA) report. (See Table 1.) Paths should be designed to accommodate all levels of riders.

Design Speed

The design speed for all geometrics shall be 20 mph (per AASHTO).

Horizontal

Minimum horizontal curvature along the centerline of the path shall be 90 feet. This minimum curvature applies where the cross slope of the path is 2% and the assumed lean angle of the bicyclist is 20 degrees.

At trail intersections, access ramps, etc, the minimum inside radius is 20 feet to ensure maintenance vehicle accessibility (for sweeping and snowplowing).

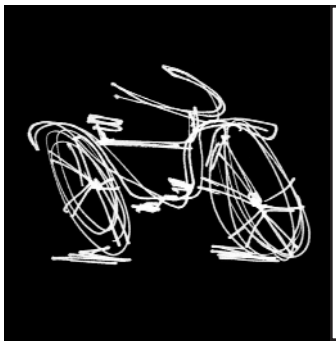
Pavement markings and signs shall be provided to alert cyclists to any possible obstructions. However, stopping sight distance is an essential design element - particularly with maintenance vehicles operating on the trail. The safety of all users depends on the ability to respond to and avoid potential path obstructions.

Per Figure 19 of AASHTO, the minimum stopping sight distance for a 20 mph design speed and 5% descending grade is 140 feet. The AASHTO guide can be used to determine the required lengths for other geometric conditions. It should be emphasized that the distances in shown in the diagram are the distances required for one-way traffic only and are minimums. Every effort should be made to provide stopping sight distances greater than the distances recommended in the diagram. Table 4 of the AASHTO guide shall be used to determine

Downtown trails provide urban bicyclists great access in Chicago.

Table 1. User Type Profiles

User Type	Description
A	Advanced or experienced riders who are comfortable with on street riding amongst motorized vehicles.
B	Basic adult riders who are comfortable riding on low-volume streets, off-street paths, and bike lanes.
C	Children, who require an adequate buffer zone or delineated path to ride along.



The Cherry Creek Corridor in Denver.

Parks & Trails

the minimum lateral clearance required to maintain the appropriate stopping sight distance for pathside obstructions.

Intersections of off-street paths and all roadways shall be designed to comply with the recommendations set forth in the AASHTO guide and City & County of Denver standards.

Vertical

Steep grades can encourage quick descents and difficult climbs for an average user. Off-street paths in Denver must conform to the accessibility standards set forth by the Americans with Disabilities Act (ADA). Therefore, the absolute maximum longitudinal grade for off-street paths shall not exceed 5% for more than 800 feet in length. Maximum grades of 3% are preferable. Additionally, the effects of grade on erosion and drainage must be addressed. Attention should be given specifically to areas of rapid grade changes, where ponding may be a problem.

The entrance/exit ramps for shared-use paths shall also comply with ADA standards. Ramps that exceed 5% in grade, up to a maximum 8.33%, shall provide 5' long rest plateaus every 30' horizontal travelled to allow users the opportunity to rest.

Typical Sections

There are optimal dimensions for safe operational conditions on shared-use paths (see pages 40-49 for typical sections). Designers must be aware of the similarities between bicycles and motor vehicles when accommodating pedestrians. In areas of heavy pedestrian traffic, specific lanes should be designated for each of the uses. Such areas are designed for two-way travel, but must include a lane specifically for walkers, joggers, and other pedestrians. In the absence of available space for divided lanes, a single paved path is acceptable, provided that standard widths are used. The minimum width for a two-directional shared-use path shall be 8 feet (preferred width is 10 feet). The minimum 8-foot width also accommodates use by maintenance and emergency vehicles with reduced risk of edge break-up.

Paths shall be constructed with a 2% cross slope, which is the maximum allowed by ADA, with the

The last remaining wooden bridge across the Platte River between Alameda and 6th Avenues.

low point on the pavement on the downhill side. This slope will help prevent ponding and ice formation on the path.

A clear zone of 3 feet (2 foot minimum) graded at 6:1 shall be provided on each side of the trail. Within the 3-foot clear zone, a vertical clearance of 8 feet, 4 inches shall be maintained.

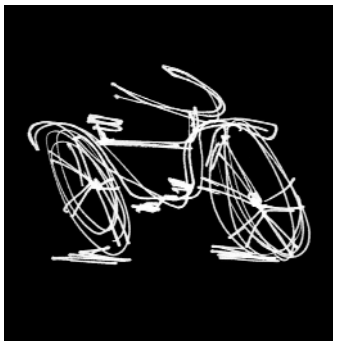
Paved shoulders shall be provided as zone of recovery for cyclists to regain their balance in areas where a maximum sideslope of 6:1 cannot be accommodated and particularly in areas where pathside obstructions are present within the established clear zone of 3 feet (retaining walls, rocky slopes, waterways, etc.). This recovery zone shall be a 3 feet in width (2 foot minimum) and shall be finished with 3/8-inch tooled joints on 1 foot centers to provide a tactile warning to users that they have strayed off the path.

The specifications for the pavement structure for multi-use paths is defined in the attached typical sections. In general, the pavement shall be 6 inches in thickness and placed over a properly compacted subgrade.

Pavement shall be concrete for all regional, shared-use paths. Other pavement types shall be approved by the CCD Parks and Recreation Department.

Surface finishes shall address two primary concerns: the maintenance and durability of the pavement, and the smoothness of the surface as it relates to comfort and safety of users. Cracks, vertical offsets and potholes create safety hazards for the users, and such surface imperfections also increase the possibility of damage due to freeze/thaw cycles. Cracks and vertical offsets can also catch the blade of a snow plow, damaging both the blade and the path surface. Control joints shall be perpendicular saw cuts 1/8-inch wide, one quarter depth of slab on 10 feet centers along the length of the path. Zip strips may be used instead of saw cuts. The surface of the pavement shall be a broom finish.

Railings shall be used only in areas where there is great concern for safety. Railings shall be provided at any location where the adjacent drop-off is greater than 30 inches. Areas with a drop-off of greater than 18 inches or



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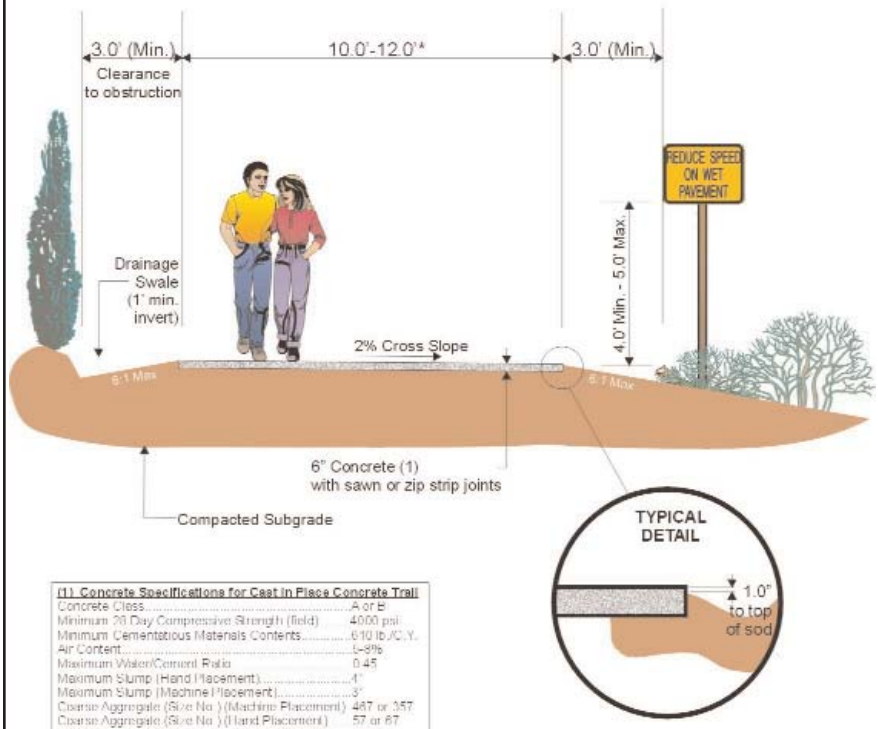
Regional Path Typical Section



(1) Concrete Specifications for Cast in Place Concrete Trail

Concrete Class	A or B
Minimum 28 Day Compressive Strength (field)	4000 psi
Minimum Cementatious Materials Contents	610 lb./C.Y.
Air Content	5-8%
Maximum Water/Cement Ratio	0.45
Maximum Slump (Hand Placement)	4"
Maximum Slump (Machine Placement)	3"
Coarse Aggregate (Size No.) (Machine Placement)	467 or 357
Coarse Aggregate (Size No.) (Hand Placement)	57 or 67
Fine Aggregate (Maximum % of Total Aggregate)	45%
* Total percent of fly ash allowable by weight of Cement plus fly ash	20%
* Fly ash may Class C or Class F	
Fibrous reinforcement	1.5 lbs./C.Y.

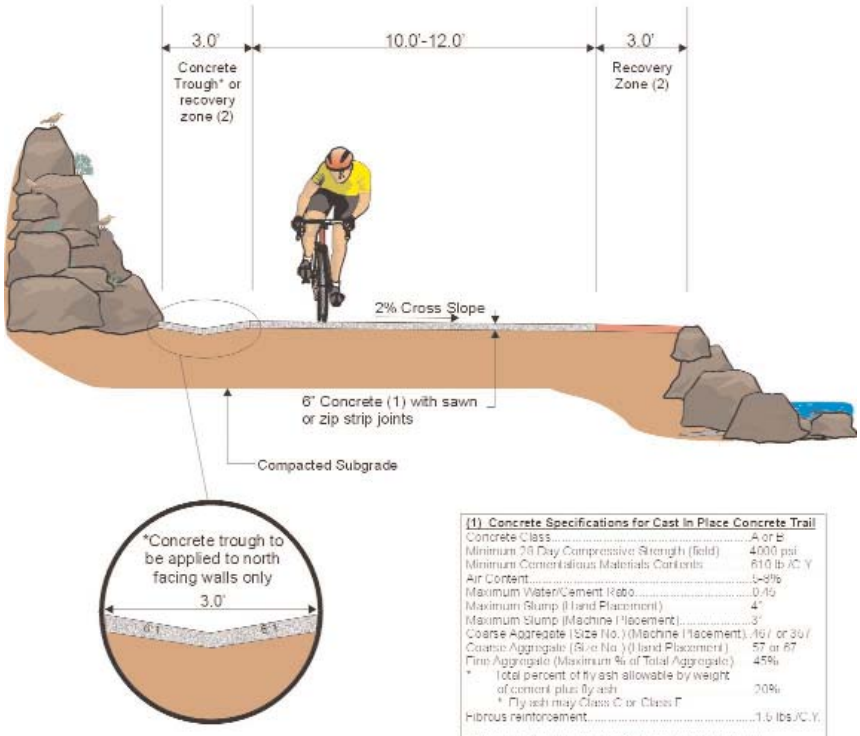
Fibrous reinforcement to be 100% virgin polypropylene fibrillated fibers containing no olefin materials.

Platte River Trail Concrete shall be tinted Davis Dye Color 5084 (Omaha Tan) or approved equal, at an addition rate of one pound per bag of Type I/II Portland Cement.

* Path width shall be 12' along Platte River from I-25 north to City of Cuernavaca Park and along Cherry Creek.

NOTE: ALL WORK SHALL BE ADA COMPLIANT

Regional Path With Recovery Zone Typical Section

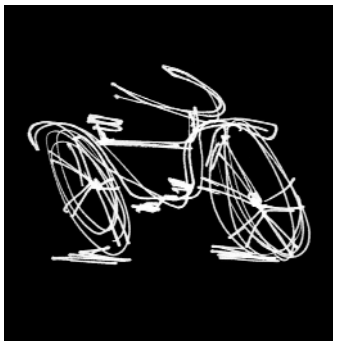


(1) Concrete Specifications for Cast In Place Concrete Trail

Concrete Class	A or B
Minimum 28 Day Compressive Strength (field)	4000 psi
Minimum Cementitious Materials Contents	610 lb./C.Y.
Air Content	5-9%
Maximum Water/Cement Ratio	0.45
Maximum Slump (Hand Placement)	4"
Maximum Slump (Machine Placement)	3"
Coarse Aggregate (Size No.) (Machine Placement)	467 or 357
Coarse Aggregate (Size No.) (Hand Placement)	57 or 67
Fine Aggregate (Maximum % of Total Aggregate)	45%
* Total percent of fly ash allowable by weight of cement plus fly ash	20%
* Fly ash may Class C or Class F	
Fibrous reinforcement	1.5 lbs./C.Y.

Fibrous reinforcement to be 100% virgin polypropylene fibrillated fibers containing no olefin materials.

(2) Recovery zones shall be tinted Davis Dye color 1117 (Tile Red) at a rate of three pounds per bag of Type I-II Portland Cement. Recovery zones shall be scored to 3/8" depth at 12" on centers.



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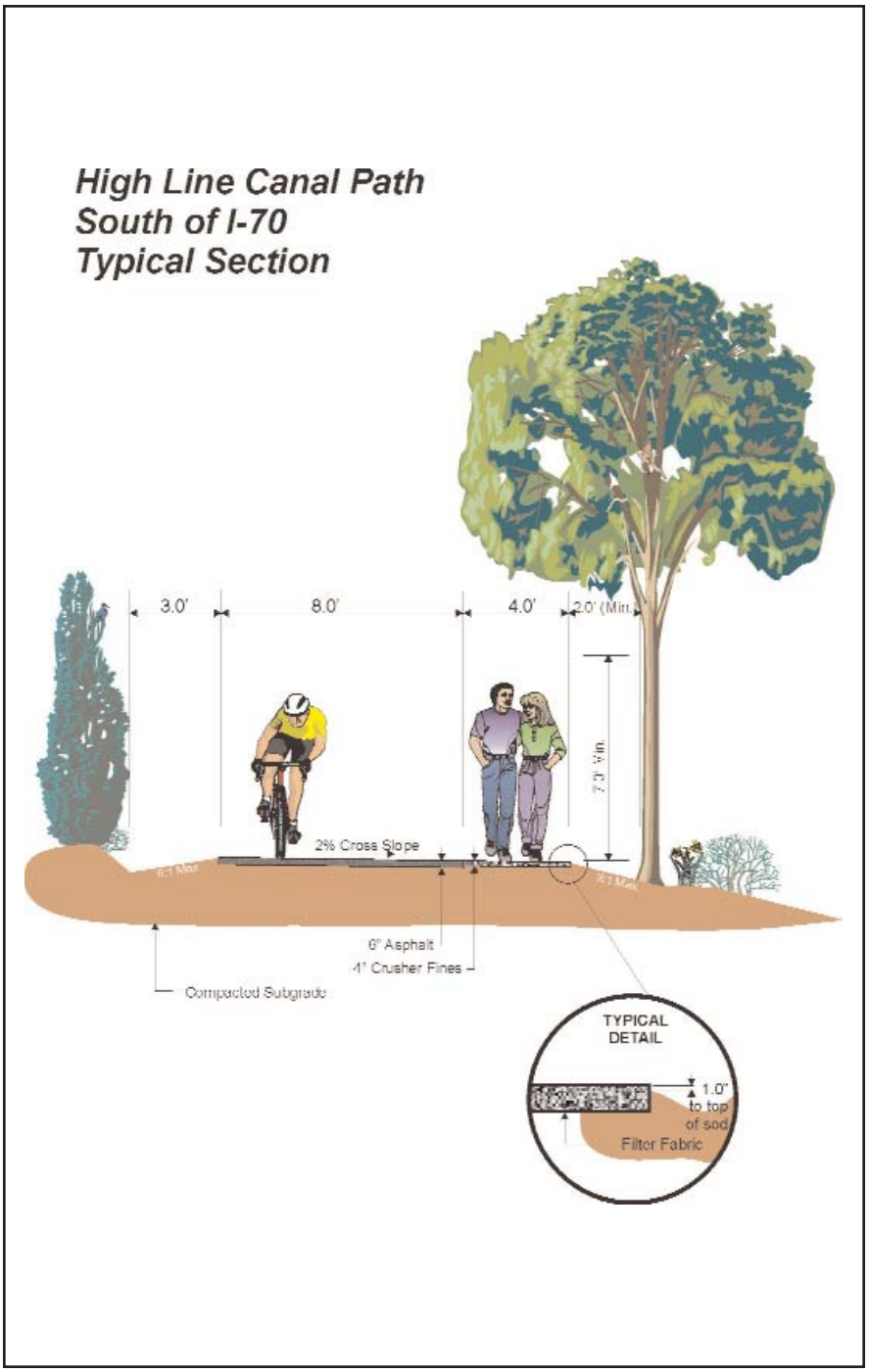
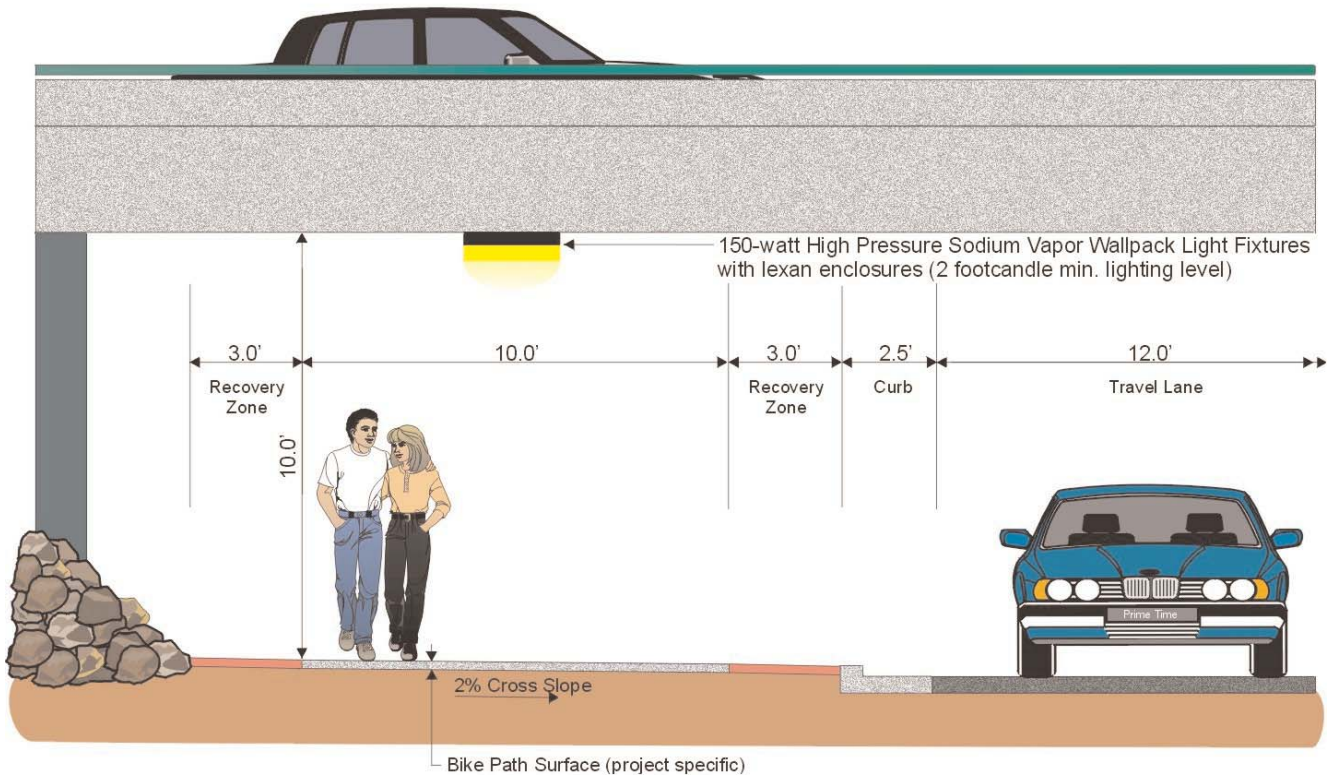
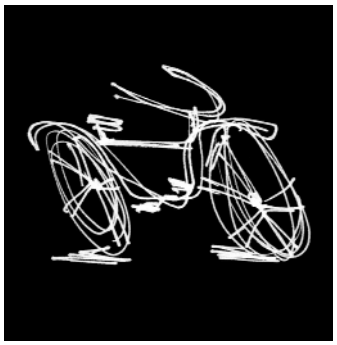


Two-Way Path -- Bridge Underpass Typical Section





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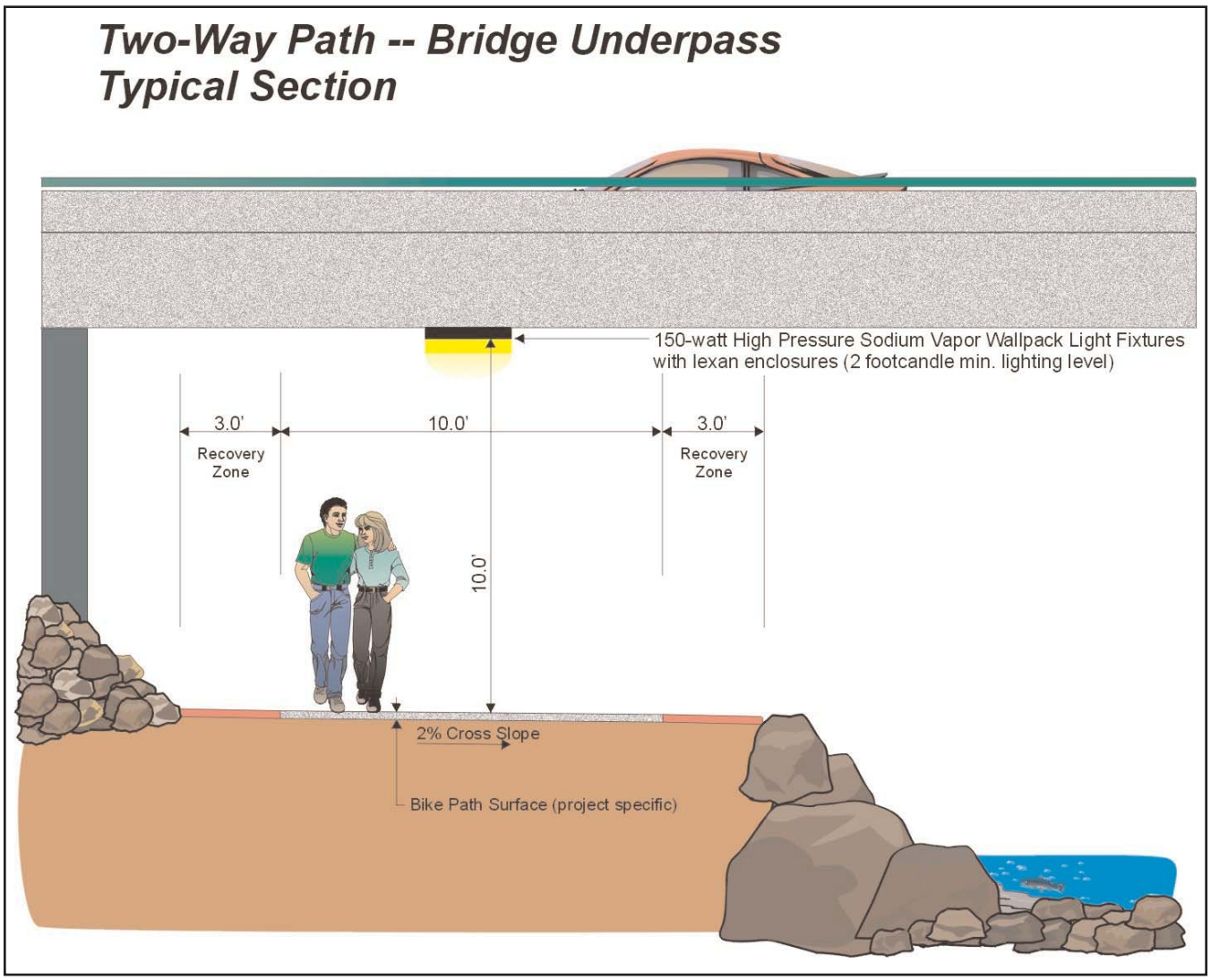
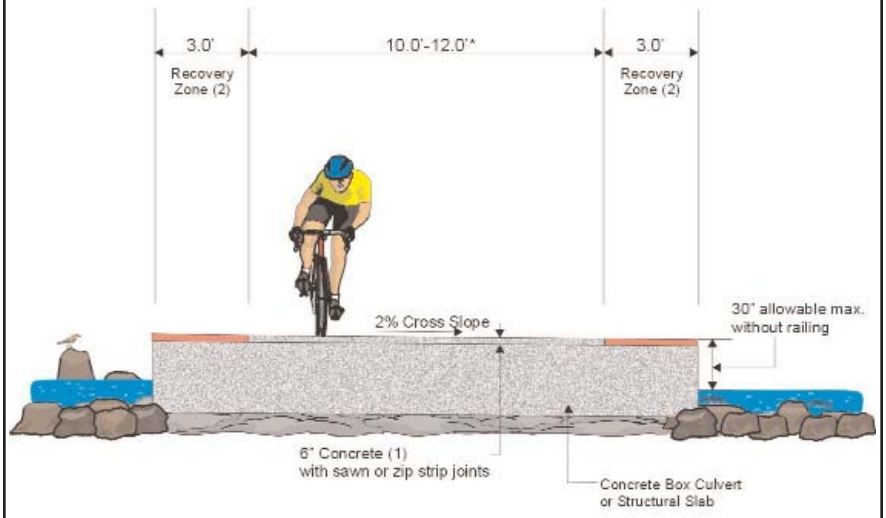


Two-Way Path -- Low Water Crossing Typical Section



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(1) Concrete Specifications for Cast In Place Concrete Trail

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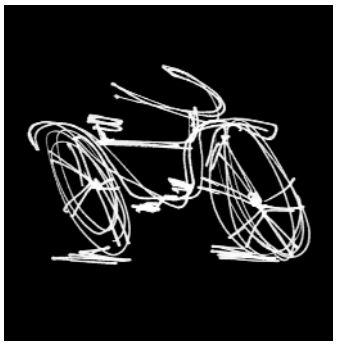

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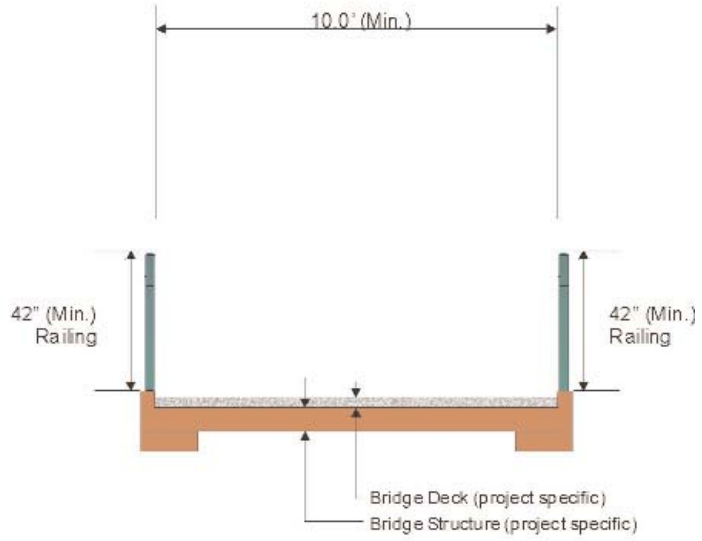
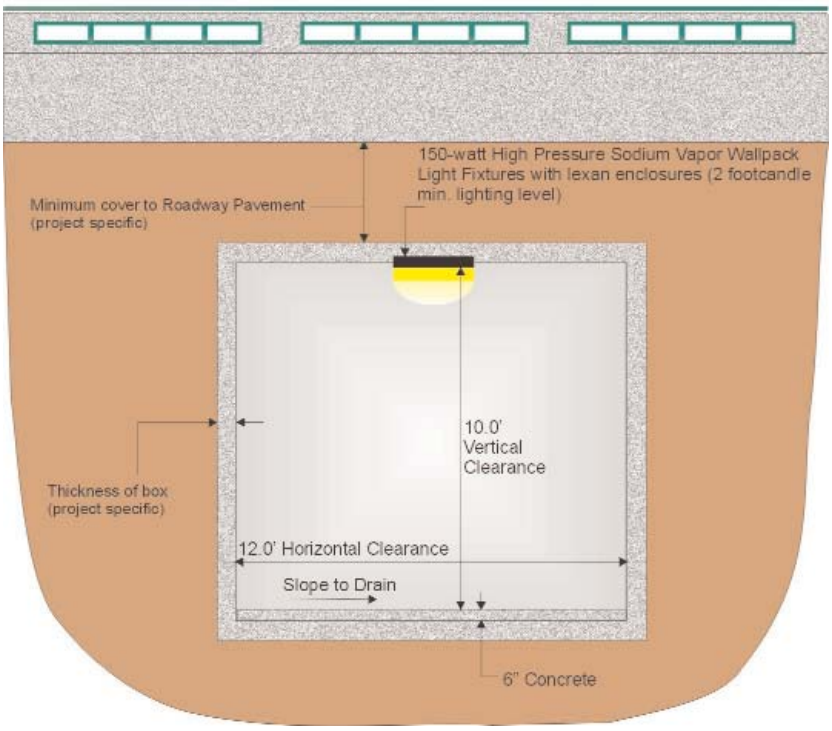
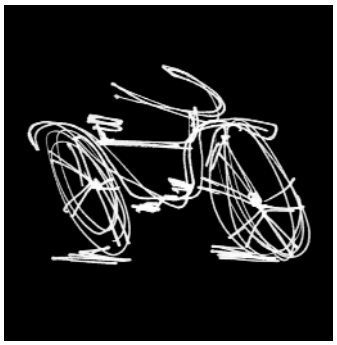
Two-Way Path -- Bridge Typical Section



Project specific design loading (AASHTO H5 loading min.)

Two-Way Path -- Tunnel Typical Section





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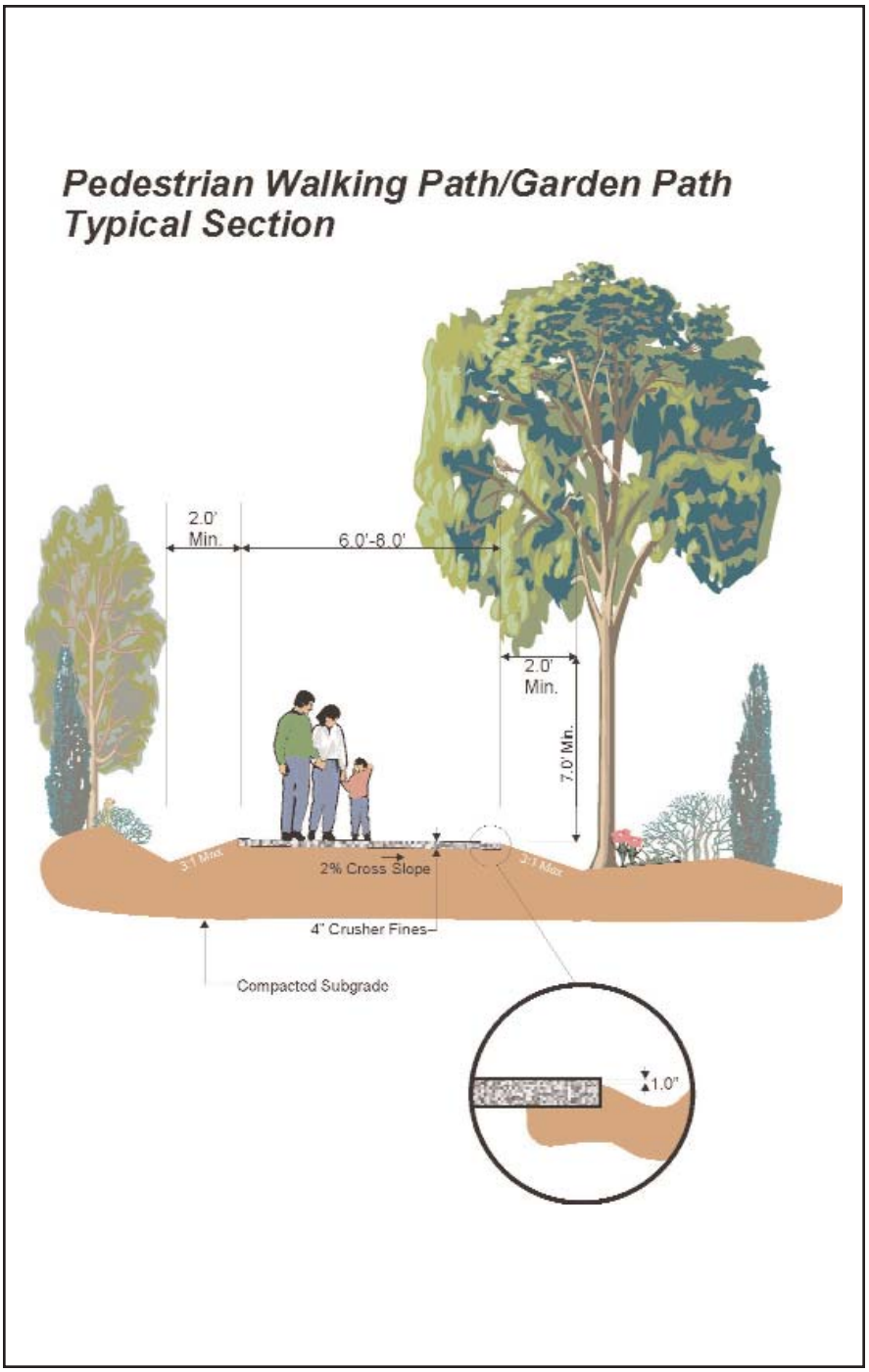
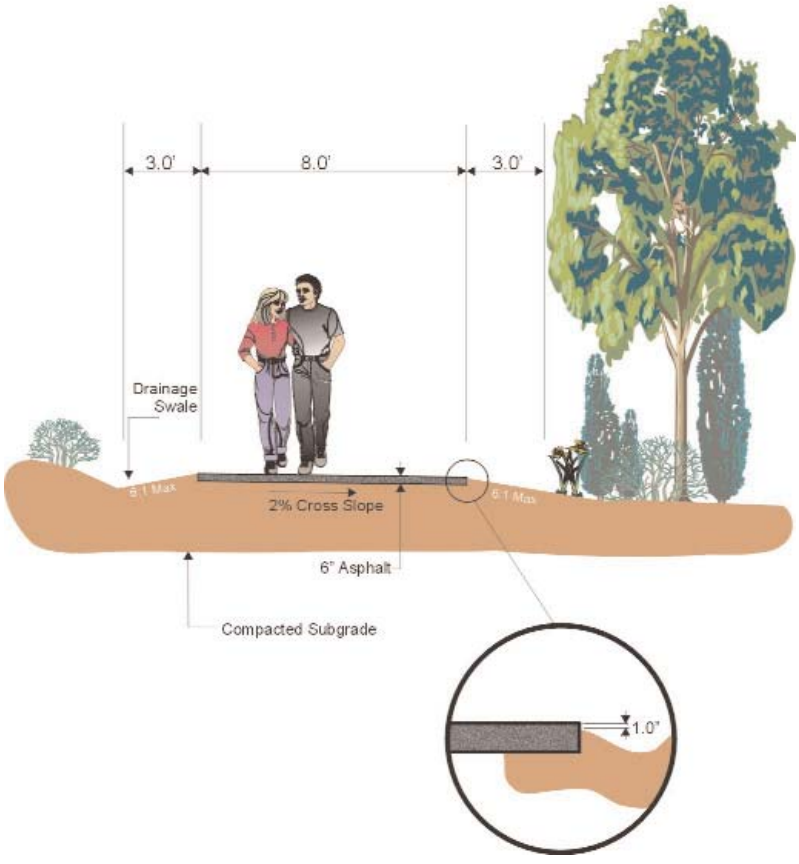
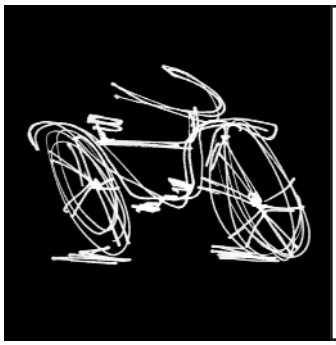


Recreational Loops/Local Parks Paths Typical Section





Improved trail geometry at the new Platte River Trail bridge at Overland Pond.

sideslopes steeper than 1:1 should be considered for railings. It should also be noted that railings can be potential obstructions for cyclists. Railings shall be designed so that the vertical posts are set back from the actual railing. Also, railings should be placed near the edge of the clear zone when possible. If the railing is to be placed at the edge of the traveled way, a taper of 9 feet shall be provided to transition the railing from the edge of the clear zone to the edge of traveled way. Railings shall be a minimum of 42 inches in height.

Drainage

Sideslope treatment shall be 6:1 maximum for 3 feet offset from the edge of the path.

In general, the high side of the typical cross section shall incorporate an interceptor ditch adjacent to the paved trail to divert the surface runoff before it reaches the path pavement. The interceptor ditch shall be a minimum of 1 foot deep. Landscaping or shoulder treatments shall be finished at 1 inch below the edge of pavement to help prevent ponding on the path.

Drainage grates and covers should be placed outside of a shared-use path (and, when possible, outside of the clear zone). Also, the ends of cross-path drainage structures shall extend beyond the edge of the clear zone so as not to present pathside obstructions.

Structures

The widths of structures (bridges, etc.) along the trails should maintain the widths of the trail segments they are connecting. Overpass structures must be a minimum of 10 feet in width. Although the design loads shall be project specific, the minimum design shall accommodate a 10,000-pound vehicle (H5 loading factor) to withstand loading from sweeping and snowplowing maintenance vehicles. In most conditions, bridge decks should be broom-finished concrete.

Underpass structures shall provide 10 feet of vertical clearance (8 foot minimum). To route base flows of drainage and reduce the formation of algae and ice on the trail, a 2-inch deep by 6-inch wide drainage gutter shall be provided at the low edge of the path through tunnel structures.

Denver trails are regularly swept and plowed.

Intersections

Where feasible, grade-separated intersections shall be provided where trails cross arterial and collector streets. When an at-grade intersection must be designed, the following issues shall be considered:

· Traffic control devices, including regulatory, warning and guide signs shall be installed per the MUTCD and per the recommendations of AASHTO.

· Stopping sight distance shall be provided per the previous discussion in this report (Horizontal design section).

· Ramps, curb cuts, and refuge islands shall be provided per City accessibility standards and AASHTO recommendations.

Paths adjacent to roadways shall be set back a minimum of 5 feet from the back of curb. If the 5 foot set back cannot be achieved, a barrier or railing shall be installed to protect users from vehicular traffic on roadways with speed limits exceeding 35 mph.

Lighting

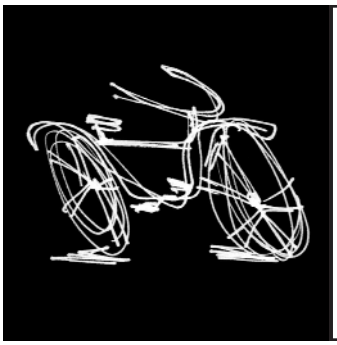
Lighting for underpasses shall consist of 150-watt, high-pressure sodium vapor light fixtures with vandal-resistant lexan enclosures. Lighting level shall be 2 footcandle minimum. To reduce glare while maximizing illumination on the trail and reducing vandalism possibilities, lighting fixtures shall be overhead-mounted wherever possible. Wall-mounted lighting is also acceptable if clearance requirements cannot be met with overhead-mounted fixtures.

Signing & Striping

All signing and pavement markings shall follow the specifications set forth by the MUTCD. A yellow centerline stripe shall be provided at all approaches to underpasses to separate opposing lanes of traffic. Yellow centerlines, used to define no-passing zones, should otherwise be used sparingly so that, when used, trail users recognize that there truly is a trail alignment condition which requires that all users keep to their right.

Environmental/Conservation Issues

Off-street trails are often built along streamways and other environmentally-sensitive corridors. A 50-foot buffer zone (10 feet minimum) shall be maintained between an off-street trail and an



Potential connection to the Pepsi Center from the Cherry Creek trail alongside the new Central Platte Valley light rail line beneath the Speer Boulevard viaduct.

Parks & Trails

adjacent sensitive conservation area. Also, trail designers should follow the guidelines described in the publication "Planning Trails with Wildlife in Mind - A Hand book for Trail Planners" (Trails and Wildlife Task Force, Colorado State Parks, and Hellmund Associates, September, 1998). Where possible, native vegetation should be used to revegetate the site following construction of new trails.

Existing Trails Analysis:

The City and County of Denver Department of Parks and Recreation is primarily responsible for the maintenance and reconstruction of off-street recreational trails within the city limits. As part of the Update, CCD Parks requested an analysis of the existing off-street trails for the purposes of prioritizing future capital improvement funds.

In 1997, CCD Parks authorized a study of the existing trail conditions and user counts for the following trails:

- South Platte River Trail
- Cherry Creek Trail
- High Line Canal Trail
- Bear Creek Trail
- Lakewood/Dry Gulch Trail
- Sanderson Gulch Trail
- Weir Gulch Trail

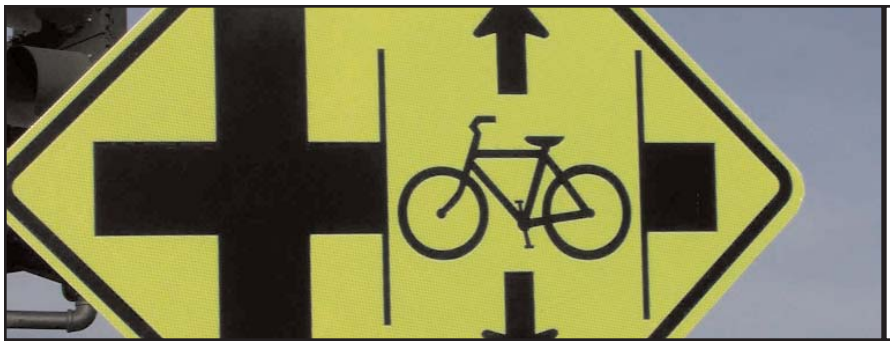
For the Update, additional surveys were collected for the trails listed below:

- Wagon Trail
- Leewood Lake of Lakes Trail
- Westwood Trail
- West Harvard Gulch Trail
- East Harvard Gulch Trail
- Clear Creek Trail
- Goldsmith Gulch Trail

Analysis Methodology:

Each of the surveyed trails was broken down into segments defined by logical break points (street crossings, boundaries, etc.) along the trail. Establishing categories of significance in the citywide system allows the Parks Department to more fairly distribute resources for maintenance and capital improvements, recognizing that each trail had a different level of importance in the citywide system. The categories were established as follows:

Regional Trails - essential routes in the citywide system, such as the Cherry Creek Trail, Platte River



Parallel bikeway warning sign.

Trail, Bear Creek Trail, High Line Canal Trail, and Clear Creek Trail

Minor Trails - links to the regional routes, such as Lakewood/Dry Gulch, Sanderson Gulch, Goldsmith Gulch, Weir Gulch, West Harvard Gulch, and East Harvard Gulch

Neighborhood Trails - recreational loops or trails through a neighborhood, sometimes linking neighborhood destinations, such as Wagon Trail, Lake of Lakes Trail, and Westwood Trail

Segments were numbered and evaluated according to seven primary criteria and eight additional conditions. The seven primary criteria are surface condition, curve radius, sight distance, recovery zone, drainage, grade, and fluidity. Scoring based on the analysis criteria served as an indication of the condition of each segment with respect to its overall safety and user-friendliness.

Recommendations:

The prioritized recommendations for trail maintenance and improvements are:

Regional Trails

Sand Creek

High Line Canal through Green Valley Ranch

Cherry Creek - High Line Canal to I-225

High Line Canal - Leetsdale Drive to Florida Avenue

High Line Canal - Yosemite Street to Cherry Creek

High Line Canal - Cherry Creek Trail intersection to Iliff Avenue (west of Los Verdes Golf Course), with bridge replacements

Platte River - 15th Street to 19th Street (West Side)

Minor Trails

Lakewood Gulch through Martinez Park to Tennyson Street

Lakewood/Dry Gulch through Rude Park

Sanderson Gulch

Weir Gulch

Neighborhood Trails

Wagon Trail - west of Saratoga Place to east of Saratoga

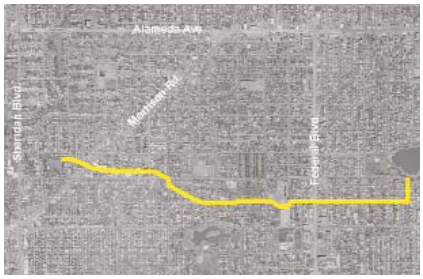
Lake of Lakes Trail

Typical Cherry Creek Corridor.

Parks & Trails

Cowell Public School to Lakewood Gulch Connection (2)

Barnum North Park Connection (3)



Westwood Trail (4)

Future Off-Street Trail Connections:
The bicycle system for the City of Denver consists primarily of on-street bicycle routes and off-street trails. The Parks and Recreation Department directs the construction and maintenance of nearly all the off-street trail system, coordinating with the appropriate City agencies. The off-street trails provide recreational opportunities and supplement the transportation emphasis of the grid bicycle route system. Off-street trails provide an inviting place for novice riders and families to get into the habit of bicycling. People who bicycle for recreational purposes are more likely to, eventually, bicycle for transportation purposes than people that never bicycle at all. Therefore trails can function as a host for all levels of recreational riders.

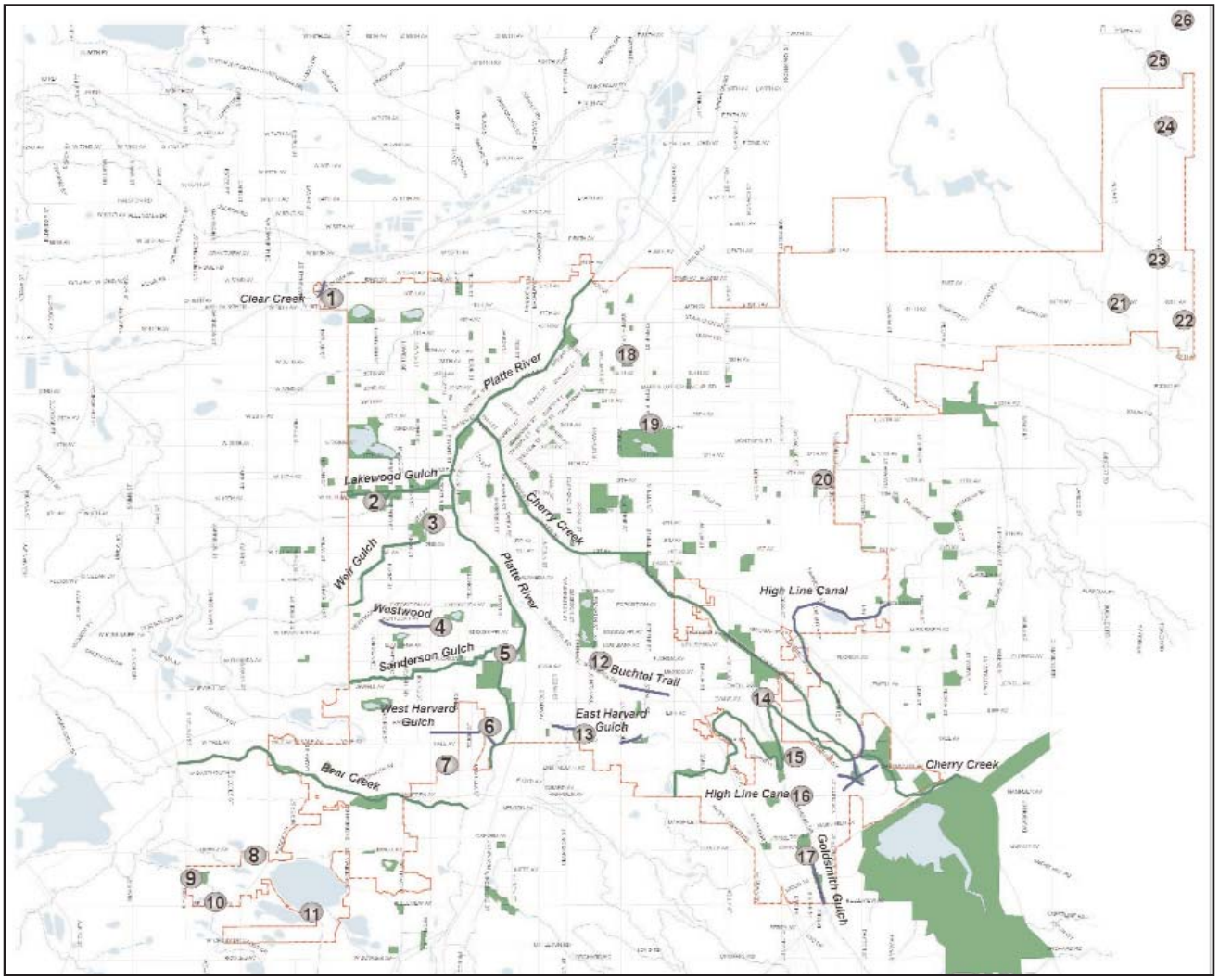
Throughout the City of Denver, there are several locations for the Parks and Recreation Department to oversee the construction of off-street trail connections. CCD Parks can partner with special districts or pursue alternate funding sources for construction and maintenance of off-street trails.

The project team examined several sources such as Parks Department maintenance maps and aerial photographs and conducted site visits to determine candidate locations for off-street trails. The criteria for placement of off-street trails included the location of undeveloped parcels, drainage corridors or open space, Parks Department ownership or maintenance responsibility, and connectivity to existing trails or public facilities such as schools, libraries and community centers.

The proposed off-street connections exhibit common characteristics. Many existing drainageways carry low water volumes in small channels that do not provide sufficient space (such as the cross-sectional width, or vertical clearance) for grade-separated street crossings. As a result these proposed trail connections do not provide the advantage of complete separation from automobile traffic. Trail users must cross neighborhood streets at grade, requiring frequent or diagonal crossings. In other locations where undeveloped parcels and open space provide space for off-street connections, trail users still must cross streets at grade. Where trail

Future Off-Street Trail Recommendations

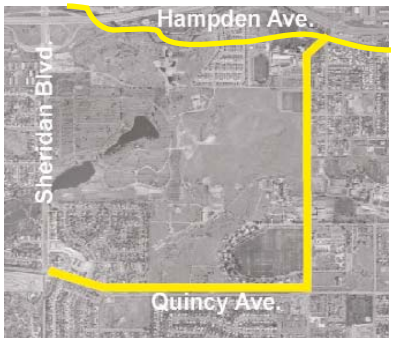
1. Clear Creek connection
2. Cowell Public School connection to Martinez Park
3. Barnum Park-Weir Gulch connection to the Platte River Trail
4. Westwood Trail connection to Huston Lake Park
5. Sanderson Gulch to Platte River
6. West Harvard Gulch
7. Dartmouth Gulch Park
8. Lake of Lakes Park connection
9. Wagon Trail to Kiping Street
10. Wagon Trail to Belleview Avenue
11. Quincy Avenue to Lowell Boulevard and Bear Creek Trail
12. Cherry Creek Trail to Washington Park to Buchtel Trail
13. East Harvard Gulch
14. Oneida Street connection to High Line Canal Trail
15. Hutchinson Park connection to Holm Public School/Hamilton Middle School
16. Goldsmith Gulch connection across Hampden Avenue
17. Goldsmith Gulch to Rosamond Park
18. Air Force Finance Center redevelopment
19. Westerly Creek
20. Derby Lateral/High Line Canal
21. High Line Canal north of I-70
22. First Creek
23. Second Creek
24. Peña Boulevard Trail
25. E-470 Trail
26. Bow Mar to Grant Ranch connection



Future upgrades are needed at Shoemaker Plaza on the Platte River Trail.

Parks & Trails

Lake of Lakes Park (8) and Wagon Trail (9 & 10)



Lowell Boulevard to Bear Creek Trail along Quincy Avenue (11)

Washington Park Connection (12)

crossings occur at grade, they should occur at established intersections and where there is adequate sight distance. Where future arterials and collectors cross existing drainageways, the design should provide adequate clearance for grade-separation of bicycles and pedestrians.

Analysis

The Appendix to this document contains the analysis leading to the following recommendations.

Recommendations

The recommended connections are numbered as shown on the Off-Street Trail Connections map on page 45. Please note that the recommendations are unprioritized.

- Construct a trail parallel to **Clear Creek (1)** to complete the connection through Denver.

- Create a trail connection from **Cowell Public School to Lakewood Gulch (2)** through the vacant land south of 9th Avenue at Vrain Street. Create an off-street trail connection along **Lakewood Gulch to Martinez Park (2)**.

- Create an off-street trail in **Barnum North Park (3)** along the improved 8th Avenue.

- Extend the **Westwood Trail (4)** via the construction an off-street connection in the utility easement between Westwood Park and the current terminus of the Westwood Trail at Kentucky Avenue near Raleigh Street.

- Complete the gaps in the **Westwood Trail (4)** between Raleigh Street and Kepner Middle School. Sign and stripe an off-street connection through the parking lot of the Westwood Library between Lowell Boulevard and Knox Court along the Tennessee Avenue alignment.

- Extend the **Westwood Trail (4)** east of Federal Boulevard by constructing an off-street connection through the utility easement along Tennessee Avenue between Federal Boulevard and Zuni Street. Improve the crossing of Federal Boulevard at Tennessee Avenue. Provide a connection to Huston Lake Park from the Westwood Trail through the alley near Bryant Street or Alcott Street between

The Cherry Creek Trail is a unique urban amenity.

Tennessee Avenue and Kentucky Avenue.

· The **Sanderson Gulch (5)** connection on the north side of Florida Avenue, while still a very viable option, is not a high priority due to the existing off-street connection on the south side of Florida Avenue (Route D-18). If redevelopment of the north side of Florida Avenue takes place, a new connection should then be established to enhance the access along this corridor.

· The **West Harvard Gulch (6)** connection is included in the Major Missing Links section of the DBMPU (see pages 20-36).

· **Dartmouth Gulch (7)** was considered to be very low on the priority list because there is currently no through-connection that can be identified. An investigation of the property ownership along the ditch to Decatur Street may help to identify a way to link Dartmouth Avenue to College View Elementary School along Decatur Street.

· Improve the existing trail in **Lake of Lakes Park (8)** as part of a loop around Little Lake Henry. Ensure the completion of the trail around Little Lake Henry and the on-street connection on Balsam Way.

· Monitor the development of the farm property between Kipling Street and Garrison Street Park south of Stanford Avenue. When the owner seeks to develop this property, pursue the acquisition of right-of-way or procure an easement to extend **Wagon Trail west to Kipling Street (9)**.

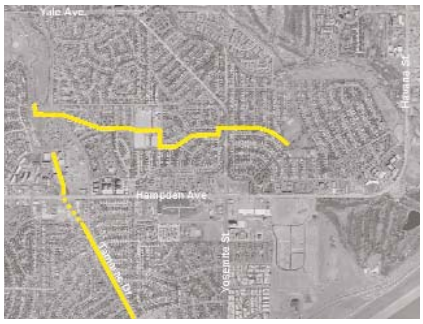
· Construct an off-street trail along the drainage corridor connecting **Wagon Trail to Belleview Avenue (10)**.

· CCD Parks and Public Works should coordinate with the City of Sheridan and the Colorado Mental Health Institute at Fort Logan to construct a planned bikeway that connects **Lowell Boulevard to the Bear Creek Trail along Quincy Avenue (11)**.

· Provide a connection from **Washington Park (12)** through the South High School/All City Stadium properties if the pro-

Oneida Street (14) and Goldsmith Gulch to Rosamond Park (17)

Parks & Trails



Hutchinson East Park (15) and Goldsmith Gulch to Hutchinson Park (16)

Air Force Finance Center (18)

posed pedestrian/bicycle bridge is built across I-25 at High Street. If this bridge is built, construct an off-street trail from route D-18 adjacent to Iowa Avenue and Vine Street through Veterans Park to connect with the University light rail station.

· Install signage to direct trail users from the end of the **East Harvard Gulch Trail (13)** at Ogden Street along the northern side of Harvard Avenue to the signalized crossing at Downing Street where the Harvard Gulch Trail begins again.

· Construct an off-street trail linking **Oneida Street (14)** south of Evans Avenue to the High Line Canal Trail.

· Construct an off-street connection through **Hutchinson East Park (15)** between Tamarac Street and Holm Public School/Hamilton Middle School.

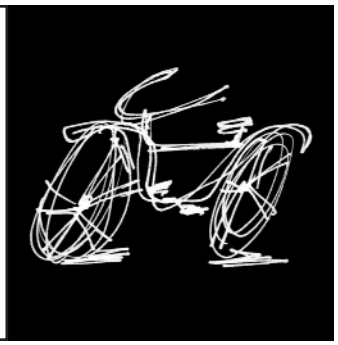
· Monitor the redevelopment of the retail centers north and south of Hampden Avenue along the Goldsmith Gulch corridor. Use the future redevelopment as an opportunity to improve the Goldsmith Gulch trail connection, eventually constructing a grade-separated crossing at Hampden Avenue. Extend the **Goldsmith Gulch trail north to Hutchinson Park and south to Rosamond Park (16, 17)**. Construct grade-separated crossings at Rosemary Way and Mansfield Avenue.

· Investigate off-street connection possibilities through **Air Force Finance Center (18)** redevelopment.

· Improve the connection between the Lowry and Stapleton redevelopment areas via the existing on-street bicycle routes on Syracuse Street (Route D-19) and Yosemite Street (Route D-21). Coordinate the connections between these routes and the **Westerly Creek Trails (19)** in Lowry and Stapleton.

Westerly Creek Trails (19)

Newly improved Platte River Trail along Overland Golf Course.



· Coordinate trail construction of the **Derby Lateral (20)** along this City-owned right-of-way.

· Coordinate right-of-way preservation and trail construction of **High Line Canal north of I-70 (21)**. Provide a safe crossing where the High Line Canal Trail crosses 48th Avenue at Picadilly Road.

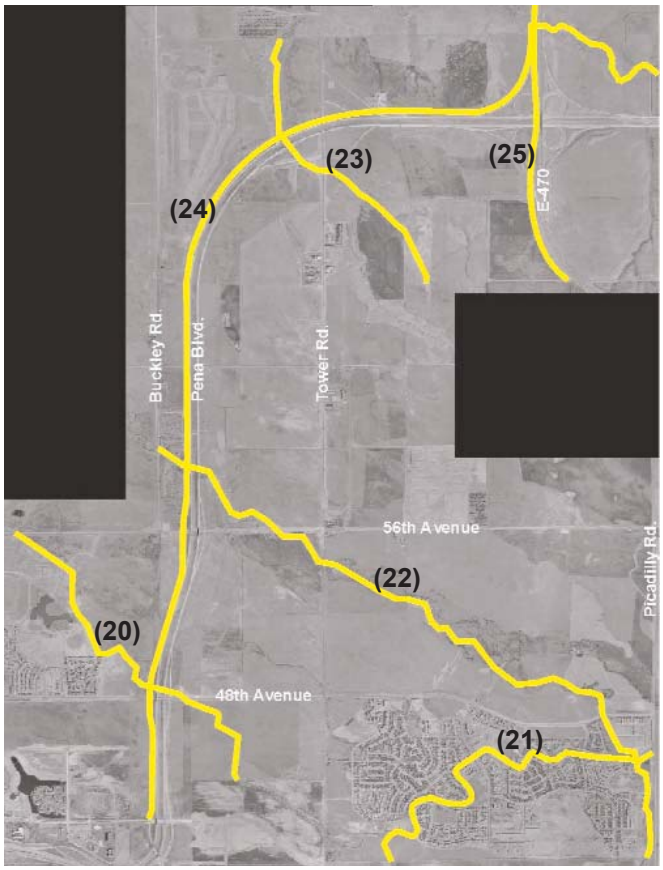
· Preserve the right-of-way along the **First Creek (22)** drainage corridor. Coordinate construction of the trail through the Gateway area. Coordinate right-of-way preservation and trail construction with City agencies, local developers and property owners.

· Preserve the right-of-way along the **Second Creek (23)** drainage corridor. Construct these trails through the Gateway area. Coordinate right-of-way preservation and trail construction with City agencies, local developers and property owners.

· Construct the recreational trail to the north and west of **Peña Boulevard (24)** to connect the First Creek Trail to the Second Creek Trail, the E-470 Trail and Denver International Airport.

· Encourage the E-470 Authority to construct the **E-470 Recreational Trail (25)** in the land acquired for the highway right-of-way.

· Pursue the trail connections from **Bow Mar to Grant Ranch (26)** south of Marston Lake, with a crusher fine trail through Mary's Meadow.



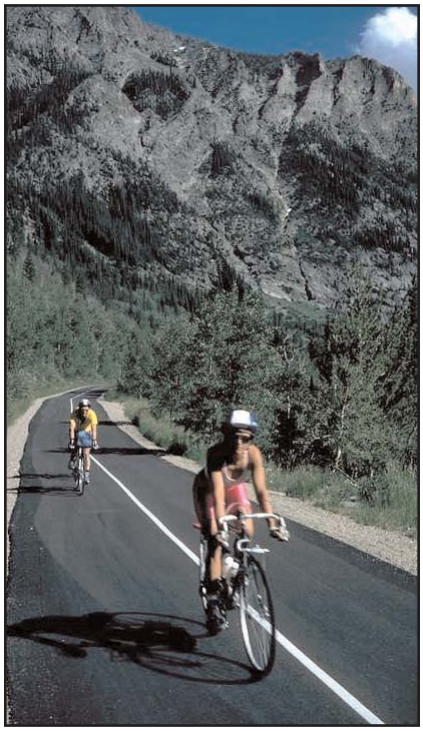
Derby Lateral (20), High Line Canal North of I-70 (21), First Creek (22), Second Creek (23), Peña Boulevard (24), and E-470 Recreational Trail (25) Connections

A favorable setback from traffic reduces user concerns on this portion of the First Avenue sidewalk used by the Cherry Creek Trail.

Recreational Bicycling

Family Bicycle Loops Recommendations

- Designate family bicycle loops to encourage recreational riding. Place directional signage along the loop routes.



Family Bicycle Loops

Although bicycle loops exist within Cheesman, Sloan Lake, and City Parks, other routes may be possible. By creating loops which incorporate existing off-street trails with designated on-street trails, possibilities for family/recreational loops can be found in most areas of the city. The following list describes loops that follow the above suggested scenario:

1. Bear Creek Loop: Bear Creek Trail to Raleigh Street (D-1) to Yale Avenue (D-20) to Lamar Street (Bear Valley neighborhood route).

2. West Harvard Gulch Loop: West Harvard Gulch Trail (D-20) to Zuni Street (D-5) to Sanderson Gulch Trail (D-18) to Irving Street (D-3).

3. Sanderson Gulch Loop: Sanderson Gulch (D-18) to Irving Street (D-3) to Westwood Trail to Raleigh Street (D-1).

4. Cheesman Park Loop: Cheesman Park Loop (D-11) to 12th Avenue (D-10) to Sherman Street (D-9) to 7th Avenue (D-12) to Williams Street (Cheesman Park/D-11).

5. Washington Park Loop: Washington Park Loop (D-11) to Exposition Avenue/Bonnie Brae Boulevard (D-16) to Steele Street (D-13) to Florida/Race/Louisiana (D-18).

6. Bible Park Loop: High Line Canal to Yale/Oneida (D-17) to Iliff Avenue (D-20) to Holly and High Line Canal.

7. High Line Canal Loop: High Line Canal (D-18) to Cherry Creek Trail/Cherry Creek Drive South (D-19) to Florida Avenue (D-18).

Mountain biking is part of the "Colorado Lifestyle."

Bicycle Racing

Bicycle racing emerged as an issue in the Update because racers and fitness riders wanted a place they could train. Users of the off-street trail system also stated this as an issue because of the potential conflicts on the trails between higher speed bicyclists and slower speed pedestrians, joggers, and recreational bicyclists.

Definition

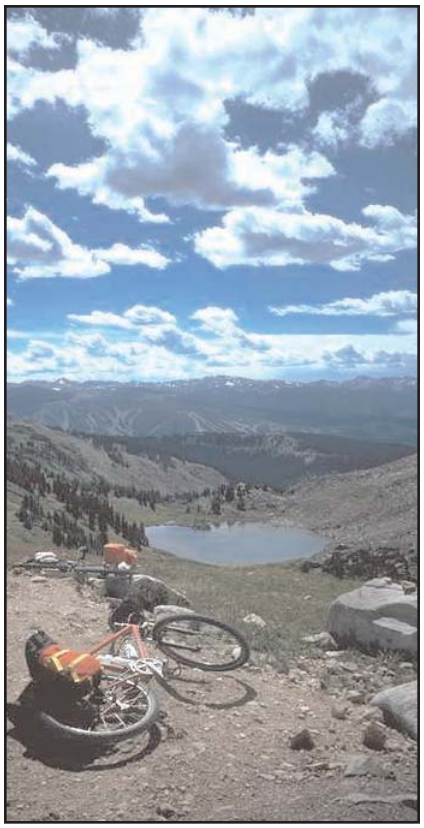
This section refers to "bicycle racing" as a competition or training for a competition. Racers want to ride at a continuous pace for a length of time without interruption or undue impediment. Bicycle racing comes in many forms including road bike racing, mountain bike racing, BMX ("Bicycle Moto Cross") racing, track racing in a velodrome, and hand bike racing for disabled athletes.

Desirable Venues

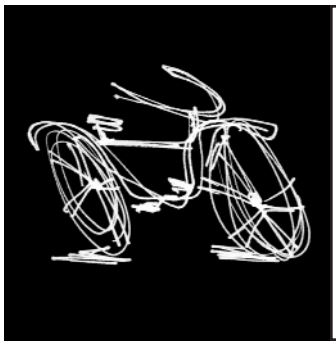
For bicycle racing and training, roads with low to medium levels of traffic and few stop signs or traffic signals are preferable. On streets with speed limits from 25 to 30 MPH, racers are traveling at speeds similar to vehicle traffic. The road should have a wide curb lane, shoulder, or bike lane, or be low speed and volume. Low volumes of turning traffic characterize favorable training routes. Often, routes with traffic calming devices such as chokers, chicanes, and traffic circles deter bicycle racers from using them.

In general, streets that are better for bicycle race training are essentially those in the Denver on-street bicycle route system. The trail system in Denver is appealing for training because it is continuous with few stop signs or traffic signals, has no vehicular traffic, and has well maintained surfaces. However, the use of trails for training should be discouraged because the bicyclists become to pedestrians what motorists are to bicyclists on the street: vehicles moving at a much higher rate of speed in the same travel area.

The best areas for racers to ride exist outside the City and County of Denver in more suburban/rural locations where traffic volumes are lower and there are few traffic signals to interrupt training. One area in Denver where these conditions exist is in the northeast. As development occurs in this area,



Mountain Biking at Corona Pass looking west towards Winter Park.

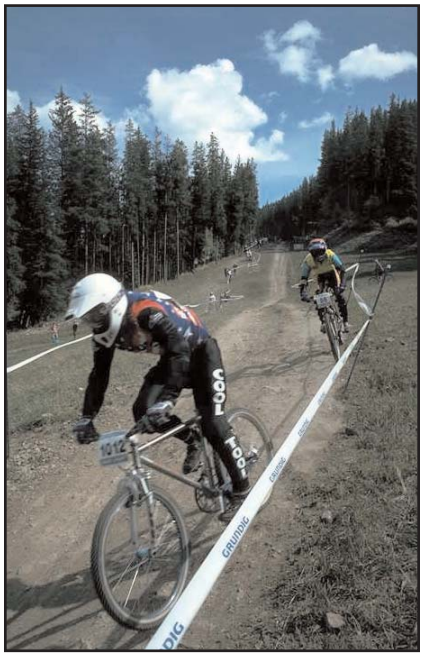


Many weekend recreational bicyclists could become weekday urban cyclists.

Recreational Bicycling

" The where is the most difficult part; to find a good velodrome at altitude. I want to do it (World Hour Record) one time, do it well and never do it again. But it's hard to find a fast indoor velodrome at altitude. One thing we've talked about is to build a track in America. It should be at about 6,000 feet altitude."

- Lance Armstrong, Tour De France winner in 1999, 2000, and 2001 expressing an interest in a velodrome around 6,000 feet above sea level in America



World Mountain Bike Championships at Vail.

the desirability of the routes for training will decrease without careful planning and consideration.

Competitive Bicycling

Road racing has several forms. Criterium racing involves racing around a short circuit as small as 3 or 4 city blocks for a specified amount of time or number of laps. This type of racing requires total road closures and strict traffic control to protect the racers from collisions with vehicles. Time trials involve racing from one point to another and generally require long sections of road that at a minimum are closed to motorists travelling in the same direction. Street sprinting is a type of road race and typically takes place on a closed road that is one to four blocks long.

Track bicyclists ride fixed gear bikes, which require that they pedal anytime that the bicycle is in motion. Track racing takes place in a velodrome - a short oval of racing surface with steeply banked curves to allow for speeds in excess of 35 MPH. A good example is the velodrome in Colorado Springs where the Olympic team trains and others race on a weekly basis. There has been some interest in creating a velodrome within the City of Denver, with specific opportunities in the Stapleton or Prospect redevelopment areas.

Mountain bike racing comes in several forms, including point-to-point cross-country racing and downhill racing. BMX racing and training requires a separate BMX track made of dirt with jumps and other terrain features. Denver could combine a BMX facility with a circuit mountain bike racing facility and even a velodrome on a relatively limited amount of land.

Obtaining Race Permits

The process of obtaining permission from the City and County of Denver to hold a bicycle race is difficult and the criteria are not well defined. The only bicycle races held regularly in the City of Denver are the City Park Criterium and the Bannock Street Criterium, with the 2001 season featuring a street sprint race in Lower Downtown. General guidelines would help applicants negotiate the process more effectively and help to further develop Denver as a racing venue.

Mountain biking amongst the aspens approaching Boreas Pass.

Development of Bicycle Racing Participation:

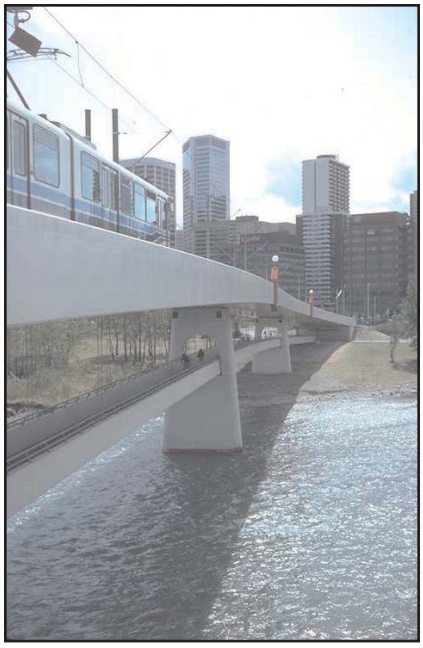
Overall, there is a large untapped potential in further developing the sport of bicycle racing in Denver. Many professional bicycle racers choose to live in Colorado. While schools and recreation centers generally offer training and facilities for a variety of other sports, allowing candidate athletes to find a sport at which they can excel, bicycle racing does not have a corresponding level of promotion.

Bicycle Racing Recommendations

- Continue to improve maintenance such as pavement defects and sweeping for the on-street route system. Install signage for all routes. Ensure safe conditions for bicyclists if traffic calming measures are installed on the bicycle route system streets.
- Investigate possible locations for a BMX/Velodrome/Mountain Bike Circuit facility in vacant or redeveloping areas within the city.
- Plan bicycle racing and training routes in Denver. Develop general guidelines for acceptable street closures for bicycle races.
- Encourage the development of new bicycle racers via the juniors, seniors and citizens categories of bike racing.

A new bike/pedestrian bridge on the Iliff Ave. alignment would connect the Platte River Trail to the Light Rail Station at Evans Ave.

Transit Access and Accommodations



Light rail and trail bridge in Calgary. Good planning resulted in accommodating both light rail and trail users.

Overview:

The Regional Transportation District (RTD) is the Denver metropolitan area's local mass transit provider. RTD understands that one of its great opportunities is the bicycle / pedestrian element, since these patrons have already begun their trip without the use of their automobile and therefore could rely on transit more than those commuters who began their trip in their personal automobile. Although the City's Bicycle Master Plan Update process is a separate effort from RTD's bicycle planning, the two must work in unison to facilitate a modal shift.

In the 1993 DBMP, there were several issues that related to transit, transit stations, and RTD in general. The Plan stated the following regarding light rail:

RTD- Light Rail Line:

Develop safe bicycle access to, and parking at light rail stations. (Ongoing)

Explore the possibility of accommodating bicycles on trains. (Ongoing) Future improvements could be made, including rolling stock that will carry bikes without creating vestibule conflicts. While the T-REX extension will continue to operate with high-floor vehicles, future light rail vehicle purchases could be low-floor models (that include folding seats as well as suspension hooks from the ceiling.)

Provide lockers and racks for long-term parking at intercept stations at the transit stations. (Ongoing)

Provide directional information, including bicycle route information, to major civic attractions. (Ongoing)

In the downtown area, reduce bicycle hazards at non-perpendicular bicycle crossings of light rail tracks through use of warning signs. (Ongoing. Future rail stations should make necessary rail crossings as smooth as possible for both pedes-

Typical valet bicycle parking at a Dutch commuter rail station.

trians and bicyclists.)

Many of these issues have been implemented as part of the light rail station construction and station upgrades, but this must be an ongoing process.

Bicycle Connections to RTD Facilities

Bike access to transit facilities is a key component of RTD's future development. As RTD's service increases within neighborhoods, there is an opportunity to increase non-motorized trips to transit stations and local bus stops. The full value of these transit services will not be realized without bicycle and pedestrian friendly connections around new and existing transit stops.

Established in 1998, RTD's Bike on Bus program provides bus-mounted bike racks to serve the bicyclist market, which increase the distance that bicyclists can travel. Today RTD's bike racks can carry two bikes on every RTD Local, Limited, Express, and Regional bus. RTD estimates that their buses carry more than 500,000 bikes a year or about 1.4% of all summer weekday bus boardings.

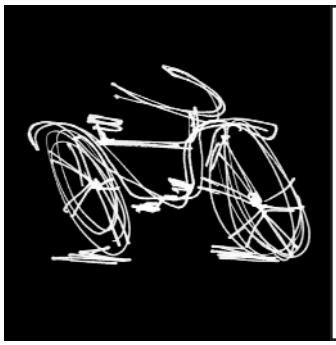
Because of the location of the light rail stations and park-n-Rides along major arterials and railroad corridors, bicycle access can be difficult. RTD has built pedestrian bridges/underpasses at the Westminster park-n-Ride, the Mineral Avenue Light Rail Station and the Thornton park-n-Ride. Bike/pedestrian bridges were initially requested and considered for several T-REX Stations but due to financial constraints were not included in the final alternative. The Nine-Mile Station at I-225 and Parker Road is currently the only proposed location for a pedestrian/bicycle underpass in the entire T-REX project area.

Several important connections are missing in the City's bicycle grid route system which are also bicycle and pedestrian connections to light rail stations (as defined by both the City of Denver's Bicycle Master Plan as well as by RTD). These include the following:

- The Broadway Station from the Platte River trail and from Washington Park/West Washington Park neighborhoods: A

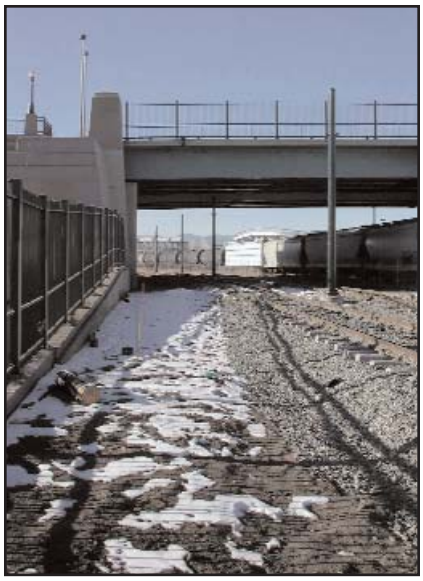
Transit Access and Accommodations

Bicyclists must obtain an RTD Bike Permit to bring their bikes on board the light rail vehicles.



Temporary bicycle parking at community events.

Transit Access and Accommodations



The constuction of the Central Platte Valley light rail tracks leaves space for a bicycle connection under the Speer viduct to reach the Pepsi Center from the Cherry Creek Trail

bicycle/pedestrian bridge at East Ohio Avenue across Lincoln Street and Broadway, or at East Mississippi Avenue across I-25 should be constructed to connect to and from the east. From the west, a connection on Acoma Street parallel to the light rail tracks, between the existing buildings to the east and the tracks could provide direct bicycle access to the station; access across or under the light rail tracks is necessary just south of the station. Station area redevelopment plans should include a bicycle/pedestrian bridge to carry people over the BNSF and UP railroad tracks and connect with the Platte River Trail adjacent to Vanderbilt Park and the West Mississippi Avenue commercial district.

The Evans Avenue Station from the Platte River Trail and Overland neighborhood: A new bicycle/pedestrian bridge across Santa Fe Drive on the Iliff Avenue or Warren Avenue alignments should be built to connect Overland neighborhood residents to the Evans Avenue Station. Additionally, this bridge would connect residents from the Rosedale, University and University Park neighborhoods to the Platte River Trail. Overall, this bridge would resolve a major missing link in bike route D-20.

The Colorado Center from the Virginia Vale neighborhood: A new bicycle/pedestrian bridge crossing I-25 on the Bellaire Street alignment should be built, as discussed in the major missing links section. Connection to the south would require upgrading the existing traffic signal at Evans and Birch to a four-way signal with bicycle detection.

T-REX Construction Bicycle Strategies

Bike access to transit is a component of the T-REX project that

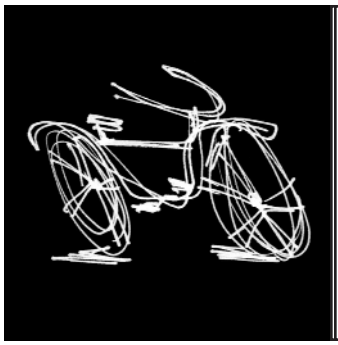
Denver invented the bike/ped detour sign.

Transit Access and Accommodations

needs to be resolved in the long term. In the near term, the immediate issue is how to accommodate bicyclists throughout the area during construction. The T-REX team is currently developing the construction phasing plans for the project. The Southeast Corridor EIS: Bicycle and Pedestrian Plan (which was prepared prior to the project being renamed as the T-REX project) acknowledges that during construction, there will be street closures and detours, particularly between Logan Street and Evans Avenue where bridges will be replaced.

With the phasing plans in place, a major emphasis will be handling emergency vehicles that must traverse I-25 in a timely manner. This will be a great benefit for bicycle connections, as two nearby bridges will likely remain open at any one time and no two adjacent bridges will likely be replaced concurrently. The Southeast Corridor EIS: Bicycle and Pedestrian Plan suggests that detours during construction should be well marked and as much advance notice as possible should be given to insure the safety of both bicyclists and motorists. More importantly, a detour plan must be laid out that will ensure that bicyclists do not have to travel a great distance out of their way to cross over I-25.

Northern Portion of I-25: The northern segment which stretches from Broadway to University Boulevard is depressed for much of its length with bike route D-9 crossing on Logan Street and bike routes D-11 and D-18 crossing on Franklin Street (both of which are non-interchange bridges). This section of the I-25 corridor will be the greatest challenge during construction due to the many bridge structures that must be replaced within a very short distance. Two adjoining bridges should remain open at any one time and no two adjacent bridges should be replaced concurrently. The possibility of a phased demolition of the Franklin Street bridge should be considered (corresponding to the phased demolition of the Steele/St.



RTD provides bicycle racks on the front of its buses with space for two bicycles.

Transit Access and Accommodations

Bicyclists and light rail share the road in Basel, Switzerland.

Paul Street bridge). Advance warning signage along the route should extend well beyond the construction area to give bicyclists ample warning of the detour around the construction areas.

Central Portion of I-25: The central portion of the corridor, which stretches from University Boulevard to Evans Avenue, has only bike route D-13 that crosses I-25 at Steele Street (a non-interchange bridge). The phased demolition of the Steele/St. Paul Street Bridge resolves the need for any bicycle and pedestrian detour.

Southern Portion of I-25 (including I-225): The southern portion of the corridor has a suburban character, as highway exits and the associated overpasses and underpasses are generally spaced at least a mile apart. This portion includes the proposed bicycle/pedestrian bridge connection adjacent to Iliff Avenue and Dahlia Street for routes D-15 and D-20, the High Line Canal Trail underpass between the Yale Avenue and Hampden Avenue interchanges, and bike route D-22 crossing at Quincy Avenue (a non-interchange bridge).

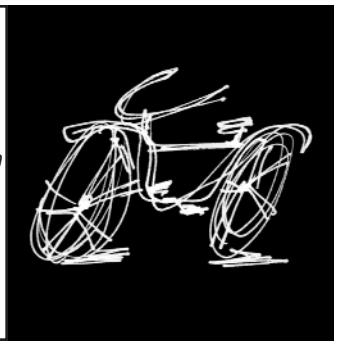
Recommended Details:

The following temporary detours should be used during construction of the T-REX project:

High Line Canal Underpass: During construction, the Yale Avenue interchange should be used as the temporary detour to cross I-25 when the High Line Canal Underpass is reconstructed.

Quincy Avenue (Route D-22): The likeliest detour will be via Monaco Street, Union Avenue and Quebec Street. Bicyclists who feel comfortable using Happy Canyon Road and Quincy Avenue under current conditions

The original Bikestation in Long Beach, California.



may not be willing to use this detour route. As part of the detour, signage should be installed to remind motorists to "Share the Road".

Quebec Street (Route D-17): Quebec Street is the best link to the Denver Tech Center but Yosemite also offers very good access. The Yosemite and Quebec Street Bridges should not be replaced concurrently.

Yosemite Street (Route D-19): The Yosemite and Quebec Street Bridges should not be replaced concurrently.

Goldsmith Gulch Trail: The Goldsmith trail provides access to the Denver Tech Center and should serve as an alternate route if both Quebec and Yosemite Street bridges are reconstructed concurrently.

Light Rail / Bicycle Accommodations

Currently, 24 cities in North America have light rail systems, including eighteen in the United States. Each light rail system has its own rules to accommodate bicycles on trains. Because of high passenger volumes on light rail vehicles, in many cases bicycle access to trains is secondary to function and efficiency for other users.

RTD rules permit two bicycles per train. Originally, RTD allowed bicycles on trains only during off-peak times; it now also allows bicycles on light rail vehicles during the peak period, but only in the reverse peak direction. This should be revisited when service along I-25 begins in 2008, especially if the reverse commute to the Denver Tech Center becomes significant, as is currently the case with automobile traffic.

Bike Racks on Light Rail Vehicles

RTD should consider installing bike racks inside the current fleet of light rail vehicles. Future light rail vehicle procurements should be low-floor models (like those in Portland) that are equipped with

Solid color bus and bike lanes in Austraila.

Transit Access and Accommodations

folding seats and ceiling suspension hooks in designated areas. These modifications will benefit multiple users, as passengers with baby strollers or other larger items will be able to fit them more easily on the light rail vehicles, as well as for bicyclists.

Currently, bicyclists must carry their bicycles up the stairs, then stand and hold their bicycles in the vestibules at the end of cars. Bicycles are not allowed in the front vestibule of the train near the driver. This creates conflicts with other passengers who need to pass through the vestibules when entering and exiting the light rail vehicle. Additionally, RTD requires bicyclists to carry a permit while riding on light rail with their bicycles. These permits are available for free at several locations as well as on the RTD website: www.RTD-Denver.com.

Signage

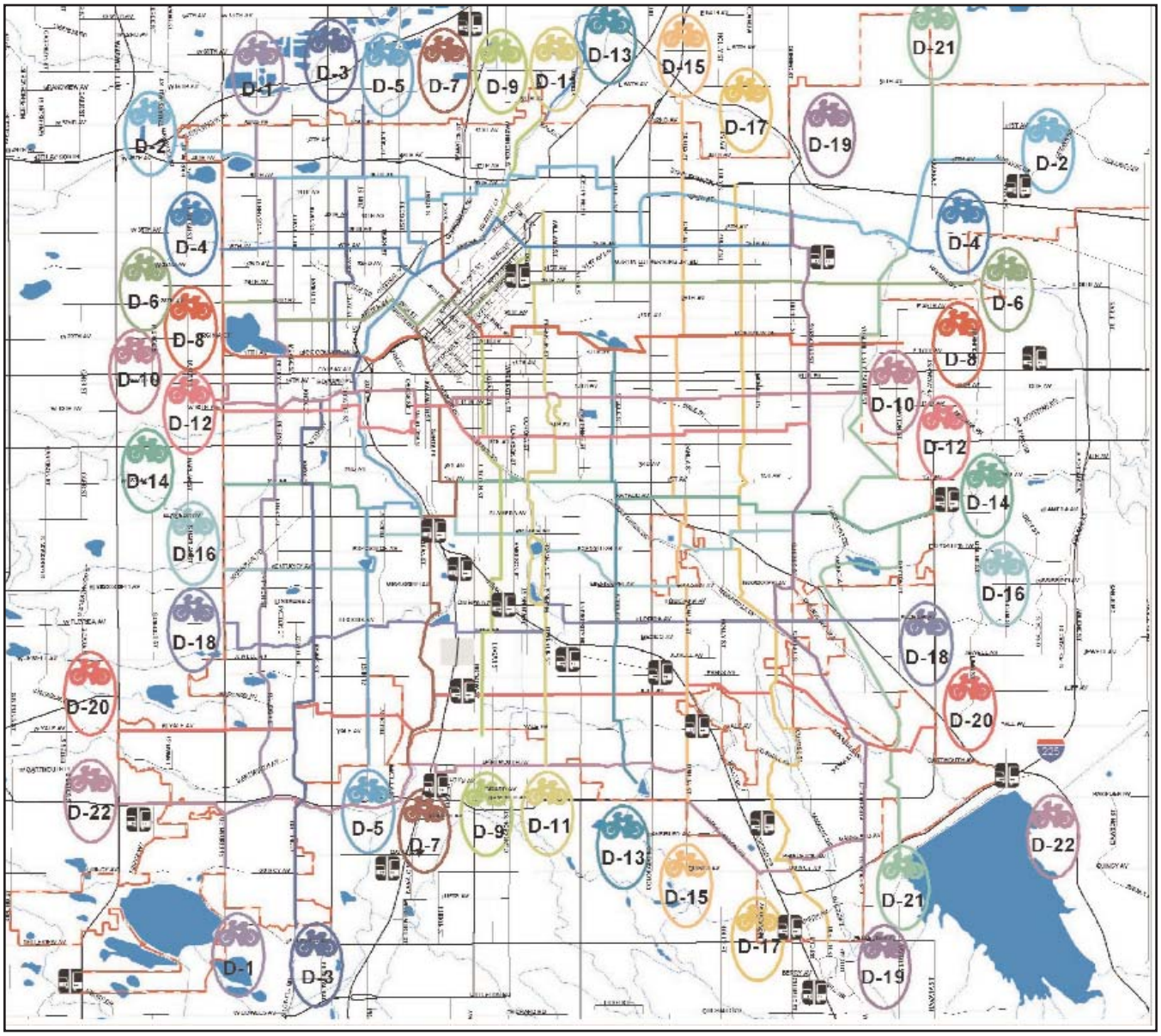
Signage should be placed around all existing and future light rail stations and park-n-Ride facilities. The signage should be consistent with existing directional signage. These signs should be placed in locations that make them obvious to bicyclists and pedestrians, as well as to motorists. Currently the signage that defines connections to the bike route and trail system is poor or non-existent at many stations.

Extensive work is needed to better connect light rail stations and park-n-Ride facilities with the City's bicycle route and trail system. For on-street routes, signage should be placed so that motorists can see it to increase their awareness of the likely presence of bicyclists. Signage assemblies with station name destination plaques included can also act as a marketing device to encourage and facilitate a modal shift from driving to bicycling and transit.

Parking

Bicycle parking at light rail stations, park-n-Rides and bus stops has become a central element of RTD's bike plan since many bike/transit passengers do not need their bike at their final destination. For these passengers, safe and convenient bike parking is needed at their origin light rail station, park-n-Ride or bus stop. RTD has offered bike racks at

Transit Access and Accommodations



The location of RTD Park-n-Rides in relation to the grid routes.

Proposed Bikestation design for Denver Union Terminal location.

Transit Access and Accommodations

Bicycle accommodations on board Amtrak.

most park-n-Rides since the 1980's, and bike lockers at various locations since the 1990's.

RTD's bike plan categorizes bike parking into two tiers of security: Tier 1 includes bike racks and bike lockers, and Tier 2 includes Bike Corrals and Bikestations. RTD currently has approximately 500 "Inverted U" type bike racks located at 76 different locations throughout the District. There are also more than 500 bike lockers available at 42 park-n-Rides and Stations district wide.

Bikestations

Bike Corrals or Bikestations are two innovative approaches to park a large number of bikes commonly used in Europe, Japan, and California. A Bike Corral is a fully secured enclosure that is designed to offer access to a limited number of people via a "smart card" (or electronic card key). Bikes can be secured on the inside with the use of individual locks for added security. Bikestations, first developed in Long Beach in 1996, are staffed facilities that offer services and amenities such as bicycle parking, bicycle repair, bicycle rentals, bicycle accessories, restrooms, changing facilities and snack bars.

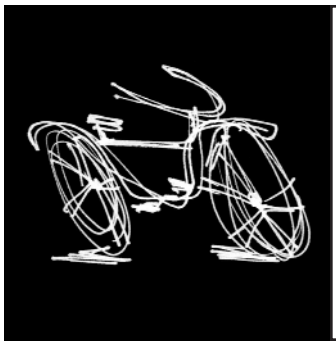
RTD has approved the construction of a Bikestation at Union Station (DUT), and is considering additional facilities in Boulder and Cherry Creek North. The Union Station Bikestation (also referred to as "The Hub") is currently programmed and budgeted for an anticipated opening date of 2003. The Hub will include bike parking, bike repair, bike rentals, a commuter store, and alternative modes information. Additional services such as showers and lockers, food vendors and a patio seating area, electric vehicles, and ski rentals may be included.

A second Bikestation is envisioned for the Boulder Terminal at 14th and Walnut in downtown Boulder. Transportation Solutions, the TMA for the Cherry Creek area is sponsoring the Cherry Creek North Bikestation, scheduled to open in 2002. Several other locations for Bikestations have also been identified, including the University Boulevard station, the Colorado Center light rail station, and the Broadway and I-25 light rail station/park-n-ride. Outside of Denver, the Mineral Avenue

Central Platte Valley light rail crossing of the Cherry Creek Trail.

Station is a good candidate also. Bikestation use should be monitored and if patronage is significant, others should be implemented especially as the future light rail stations along the T-REX project are constructed. These Bikestations should be a joint venture between the City of Denver, RTD, developers, and the local business community.

Transit Access and Accommodations



Bike to Work Day events are held annually at Civic Center Park.

Advocacy

"Share the Road" signage alerts motorists to the likely presence of bicyclists and encourages cooperation between modes.

Denver is a great city for bicycling due to the moderate year-round climate and efforts made by city staff and the Mayor's Bicycle Advisory Committee (MBAC) over the past 10 years. This is a critical and exciting time for bicycling in Denver - the ground work has been done, now is the time to expand and promote bicycling in Denver as a viable, safe and convenient mode of transportation for the 21st Century.

In 1993 the Denver Bicycle Master Plan (DBMP) noted, that there was "no organized entity that serves as the voice of the bicycle community in Denver." At that time the MBAC, established in 1990, had begun to fill this advocacy role. The recommendations of the DBMP were to:

- Further strengthen the role of MBAC
- Encourage more public inclusion in the process
- Create and distribute a newsletter

The MBAC continues to work with the city's bicycle planner and various city departments and city officials to review systemic and programmatic bicycle improvements. Other bicycle groups exist in Denver but are social in nature, primarily focused on recreational riding. As the Update process began, there was not a bicycle group in Denver actively involved in bicycle advocacy.

Advocacy in Other Municipalities

Bicycle advocacy groups are active in other municipalities within the United States. Some exemplary groups include the Cascade Club in Seattle, WA; Bicycle Transportation Alliance, Portland, OR; Washington Area Bicycle Association, Washington, D.C., the San Francisco Bicycle Coalition; and Transportation Alternatives in New York City. (See Appendix for additional information.)

Strategy to Increase Advocacy Efforts in Denver

The public meetings held during the Update process were opportunities for local bicyclists to sign up as participants in advocacy efforts. The excitement level for advocacy efforts at both public meetings was higher than expected, with more than 50% of the attendees at the first public meeting signing up, and an additional

20% of attendees at the second public meeting. The advocates indicated their areas of interest, resulting in the formation of five groups:

- Access
- Communication/PR/Safety
- Events
- Education
- Youth

The advocates held an open-house meeting and organized themselves as Bike Denver. They continue to meet on a regular basis and have already proven to be critical in the process of RTD Board approval of the Bikestation funding.

www.bikedenver.org

BikeDenver recently organized to give bicyclists in Denver a unified voice.

Advocacy Recommendations and Next Steps:

An organized advocacy group should spur increased interest and participation by the bicycling community and other alternative transportation mode commuters to make bicycling in Denver a safe, convenient, desirable and healthy mode of transportation.

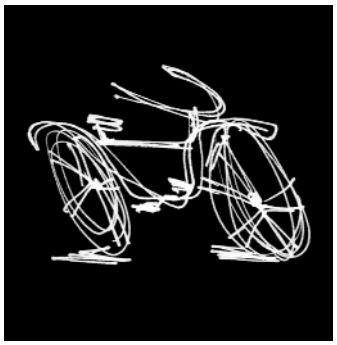
-The advocacy group should actively advocate and support bicycle/alternative transportation plans in the Denver metro-area, such as the recommendations of this Update and other plans.

-The advocacy group should not be an extension of the MBAC, the City & County of Denver, or any other local government. The group should function independently.

Ideally, BikeDenver should define and champion:

- Collaborative program development
- Potential bicycle/alternative transportation day promotions
- Education efforts, such as collaborative efforts with the Denver Public Schools and the Cycle Safety Circus for Kids
- An action plan for public/private promotions of bicycling/alternative modes
- Public and private funding roles and opportunities

The City & County of Denver and MBAC as well as other metro-area local governments should work collectively with the advocacy group to foster and develop programs, coordinate planning efforts and support alternative transportation in general.



Implementation

Grid Route System

GOAL: Identify the next round of priorities for expanding the grid and neighborhood route system.

Responsibility	Task	Target Date
Public Works	Complete signage on D-5 and D-22. Sign the central portions of routes D-16 and D-20.	2002
Public Works	Sign D-3 and D-7.	2003
Public Works	Seek funding to complete signage of the rest of the route system.	2004-2012
Public Works	Seek opportunities to work with neighborhoods to identify and sign neighborhood bike routes.	Ongoing
Public Works	Work with maintenance to improve checks for vandalism, fading, and other sign improvements.	Ongoing

Downtown Bicycling

GOAL: Make Downtown Denver bicycle friendly.

Responsibility	Task	Target Date
Public Works	Create a system of Downtown bicycle lanes.	Summer 2002
Public Works	Propose changes to the 16th Street Mall ordinance.	Summer 2002
Public Works	Propose bicycle messenger and pedal cab ordinance to regulate, promote, and formalize these services.	Fall 2002
Public Works	Work with the Denver Police Department to increase enforcement of existing and secure city council approval of proposed, new bicycle-related ordinances.	Winter 2002

Major Missing Links

GOAL: Close the gaps in the existing bicycle routes to complete the bicycle grid route system.

Responsibility	Task	Target Date
City	Pursue the necessary funding to implement the projects identified in the Major Missing Links section.	1-2 projects/year
City	Seek opportunities to eliminate major missing links as part of other projects.	1-2 projects/year

Parks & Trails

GOAL: To enhance a system of off-street, multi-use trails to allow users of all types an opportunity to recreate and commute safely without the worries of riding with motorized vehicle traffic.

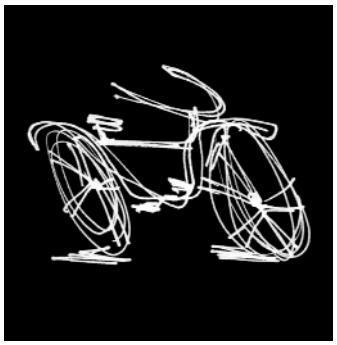
Responsibility	Task	Target Dates
Parks and Recreation	Communicate regularly with Public Works and the MBAC about upcoming projects and funding opportunities	Ongoing
Public Works	Seek funding and partnership opportunities with parks and private developers to establish these parks connections	Ongoing

The City of Denver has installed thousands of bike racks.

Recreational Bicycling

GOAL: Increase opportunities for recreational bicycling.

Responsibility	Task	Target Date
Bicycle Racing Community	Implement training program to attract new racers.	Ongoing
Bicycle Racing Community	Solicit funding for race events, training facilities and velodrome.	Ongoing



Implementation

Transit Access and Accommodations

GOAL: Make bicycle and transit travel work in a seamless manner.

Responsibility	Task	Target Date
Public Works	Implement the identified bicycle routes to the Broadway, Evans and Colorado Center stations.	2002-2006
Public Works	Coordinate with CDOT to ensure continuous bicycle access during Southeast Corridor T-REX construction.	Continuous 2002-2007
Public Works	Support RTD policy changes and Bikestations	As opportunities arise
RTD	Implement the recommendations to improve the accommodation of bicycles on new and existing light rail vehicles and at transit facilities.	2007

Advocacy

GOAL: Organize bicycle enthusiasts to promote bicycling in Denver.

Responsibility	Task	Target Date
Mayor's Bicycle Advisory Committee	Coordinate the activities of bicycle groups towards achieving common goals.	Ongoing
Advocacy Group	Form an independent advocacy group from the bicycle community to promote bicycling in Denver.	Winter 2001