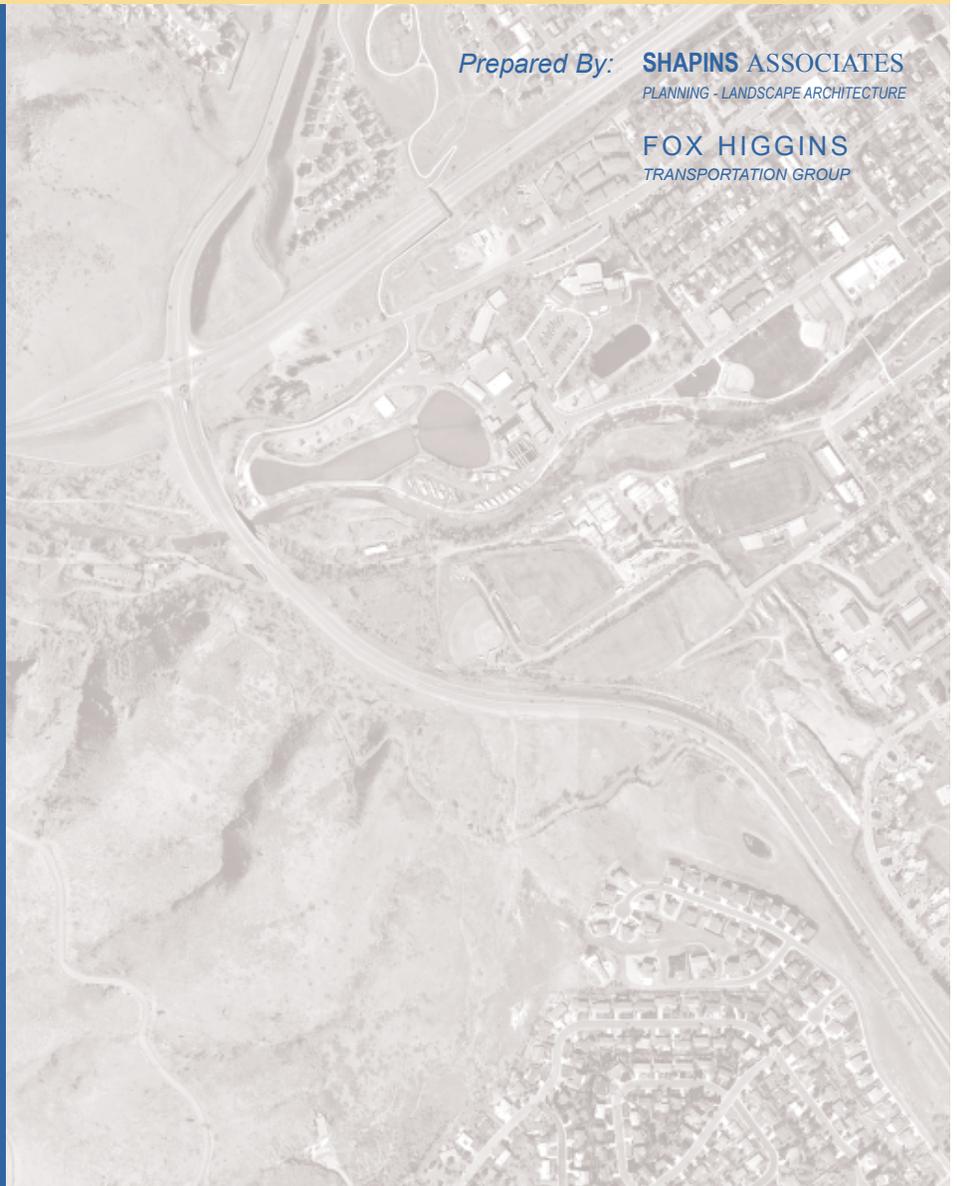




City of Golden Bicycle Master Plan

November 2003



Prepared By: **SHAPINS ASSOCIATES**
PLANNING - LANDSCAPE ARCHITECTURE

FOX HIGGINS
TRANSPORTATION GROUP

City of Golden Bicycle Master Plan

Master Plan Document: November 2003

Prepared For:

City of Golden, Public Works Department

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Chapter 1: Introduction

The City of Golden is situated in one of the most spectacular settings along Colorado's Front Range. It is located at the gateway to the Rocky Mountains surrounded by majestic mountains, steep canyons, and unusual mesas. Nestled along Clear Creek between Lookout Mountain and North and South Table Mountain, Golden maintains its small town feel while remaining only a short distance from central Denver.

This Bicycle Master Plan describes the City of Golden's vision for bicycle route development. It will serve as a 10-year plan, which will help guide the City in developing a citywide bicycle system that also links to surrounding areas. The bicycle system is defined as: *An interconnected network of roadways and pathways that are specifically designated for bicycle travel. Some of the facilities are designated for the exclusive use of bicycles while others are shared with other transportation modes.* The intention is to provide a high quality and safe bicycle system for a wide diversity of users including family oriented recreational riders, commuters, and advanced athletes.

Plan Purpose

This Master Plan is intended to guide future bicycle development in the City of Golden so that a diverse and interconnected bicycle system can be created.

Currently there is no formal plan for bicycle system development. Trail sections continue to be added without a formalized overall vision of how the entire system will function. Furthermore, there are effectively no existing designated on-street bicycle facilities. The Master Plan is based on collaboration between the City of Golden staff, its citizens, and surrounding public entities. This input combined with the extensive analysis of existing conditions helped create a functional Master Plan that resolves current issues while meeting a diversity of bicyclist's needs.

Plan Process

Numerous groups were involved in creating the plan to understand the current issues and obtain ideas on potential solutions. The planning team met with staff from Jefferson County, City of Lakewood, Colorado School of Mines, and also with local bicycle advocates. The existing situation was analyzed to understand where the system functions well and where gaps and unsafe areas exist. Extensive fieldwork was done to verify findings and to assure that each proposed element worked with existing situations. Upon completion of the draft plan, five areas were identified that required a more detailed design solution; these are described in Chapter 3: "Detail Plan Improvements".

Once the draft plan was complete, a public open house was held on Wednesday August 13, 2003, to solicit input. More than sixty people participated in the meeting to provide support and indicate where changes and additional consideration was needed. Feedback was received in the form of comment sheets and gold stars placed on the maps for elements people liked and red dots for elements they did not like. These materials are summarized in the appendix; "Public Open House Materials." Overall, the bicycle community was very pleased with the draft plan.

Chapter 2: Existing Conditions

Existing Roadway Conditions

The unique natural features and topography in Golden make the community one of the most interesting and scenic in Colorado. While the foothills, North and South Table Mountain, the hogbacks and gulches, and Clear Creek create this character, they also make Golden's transportation system extremely challenging. Few transportation corridors are direct and continuous, and only small sections of local roadway grids are possible. Local transportation is further complicated by the intercity, regional, and interstate highways that pass through Golden and create limited crossing opportunities.

Properties such as the Coors Brewery, the Colorado School of Mines, and the National Renewable Energy Laboratories (NREL) create transportation barriers by virtue of their size and desire to minimize through traffic. Also, the local roadway network of arterials, collectors, and local access roadways has evolved over time with a range of roadway widths and cross-sections, making a uniform addition of bikeways difficult.

Existing Bicycle System

The City of Golden currently has a very basic bicycle system. The majority of bike routes consist of paved shared-use trails, some over five miles in length. On-street bicycle facilities are limited to one contra-flow bicycle lane, a short section of road signed as a bike route, and shoulder roadway improvements currently underway. These do not link effectively to the paved shared-use trails, and create gaps for bicyclists.

An Existing Conditions Map (see plan) was produced to understand the location, type, and configuration of existing trails within and adjacent to the city. The following items are denoted on the plan, See Chapter 3: “Bicycle System Definitions” for a complete description of each element.

- Trailhead
- Shared-Use Underpass
- Shared-Use Overpass
- Shared-Use Paved Trail
- Shared-Use Unpaved Trail
- Shared-Use Trail- Not to Standard
- Contra-flow Bike Lane
- Shouldered Roadway

The Existing Conditions Map outlines existing trails and their types. Note the shared-use trails—not to standard. Oftentimes these trails provide a five to six-foot wide trail for bicyclists; however, they are not up to the ten-foot wide standard. Therefore, minor construction is necessary to upgrade these walks to a component of the bicycle system. Also, with respect to infrastructure the City has established over-passes and under-passes that can connect trails around roadway and drainage obstacles.

The following summarizes key points of the existing system. Supporting photos are provided following the plan to better illustrate some of the existing conditions.

Bikeway System

- Clear Creek Trail from west of Highway 6, eleven miles to the east, ending just east of McIntyre Street
- Highway 6 shared-use paved trail from Johnson Road north to 19th Street
- Tucker Gulch Trail from Clear Creek north to Highway 93
- Shared-use trail improvements taking place along 19th Street from Highway 6 east to Illinois Street
- Kinney Run Trail from Apex Trailhead north under Highway 6 towards golf course
- Shared-use unpaved trails throughout Jefferson County Open Space
- Contra-flow lane present on 10th Avenue between Ulysses Street and Moss Street in unincorporated Jefferson County
- Shoulder roadway improvements taking place along Rooney Road south of Colfax Avenue
- South Golden Road trail behind McDonalds from Ulysses Park to Summit View.

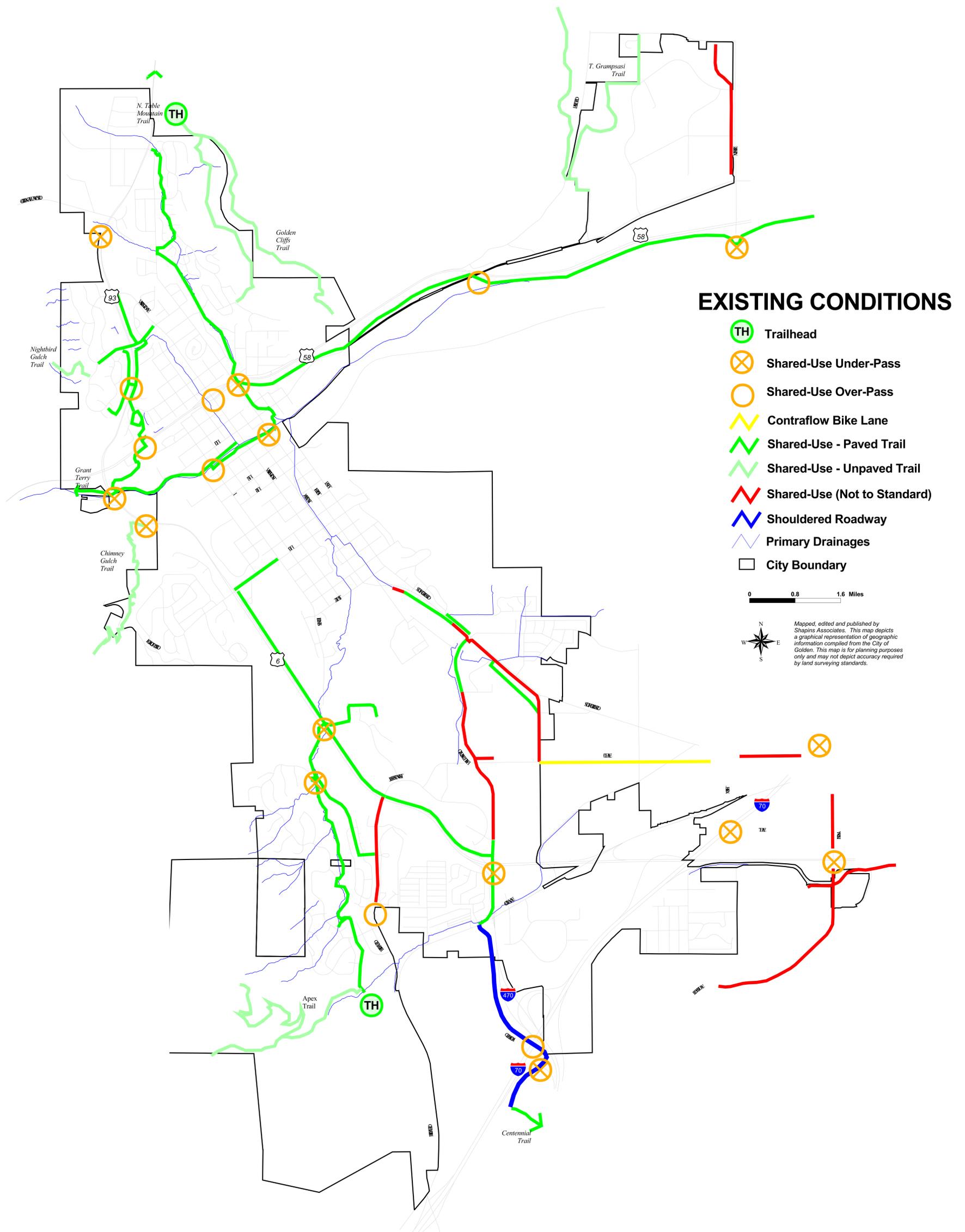
Over-passes & Pedestrian Bridges

- Existing overpasses at Highway 93 and Mitchell Elementary
- Highway 58 and Whiteash Mine
- Highway 58 and Washington Avenue
- 10th Street and Clear Creek Trail extension
- Illinois Street and Clear Creek
- Heritage Road and West 4th Avenue
- Tucker Gulch Crossings

Under-passes

- Highway 93 and Tucker Gulch
- Highway 58 and Tucker Gulch Trail
- Clear Creek Trail and US 6
- Clear Creek Trail and Ford Street
- Clear Creek Trail and McIntyre Street
- Kinney Run Trail and US 6
- Kinney Run Trail and Eagle Ridge Drive
- I-70 and 7th Avenue
- I-70 and Old Golden Road

EXISTING BICYCLE SYSTEM



City of Golden Bicycle Master Plan

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EXISTING CONDITIONS PHOTOS



Trail South of Highway 58
Tucker Gulch Trail



Crossing West 10th Street



Trail at Vanover Park



Trail Along US 6
US 6 Trail



New Underpass/Bridge



Potential US 6 Ped/Bike Crossing



Clear Creek Trail
Clear Creek Trail



Clear Creek at Jackson



Underpass at Ford Street

City of Golden Bicycle Master Plan

EXISTING CONDITIONS PHOTOS



19th Street



10th Street



View Down 24th Street



Ford at One Way/Two Way



One Way Southbound on Jackson Street



South Golden Road



East Street



Ford Street at Coors Frontage



Ford Street Bridge

City of Golden Bicycle Master Plan

Origins and Destinations

To appropriately plan for a comprehensive bicycle system, it is necessary to understand where individuals are coming from and where they are going. An Origins and Destinations Map was created to illustrate these desires (see map). In addition, "neighborhoods" of Golden were illustrated. The neighborhood boundaries are defined by major roadway and topographic separations, which divide the city into seven areas with logically related elements. These neighborhoods are described below.

The North Area: Primarily a newer residential neighborhood with a small commercial area. The area is bound on the east and west by steep slopes and bound by Highway 58 to the south.

The Northeast Area: Consists mostly of an industrial zone. A few "large lot"—rural" residences exist in the area but corporate and industrial offices are the emphasis. This area is disconnected from the downtown due to North and South Table Mountain.

The Central Area: The historic core of Golden dating back to the late 1800's. The downtown contains the vast majority of the commercial, residential, schools, and parks within the city. The Jefferson County Campus is also located in this central core. An additional commercial zone along South Golden Road is located to the east. Boundaries of this area are Highway 6 to the west, Highway 58 to the north, South Table Mountain to the east and Highway 6 to the South.

The West Area: Primarily a residential area with Colorado School of Mines student housing. The area is the gateway to Lookout Mountain, a popular scenic destination. Highway 6 separates the area from the central area.

The Southwest Area: Consists primarily of single-family and higher density residences. Highway 6 separates the area from the central area.

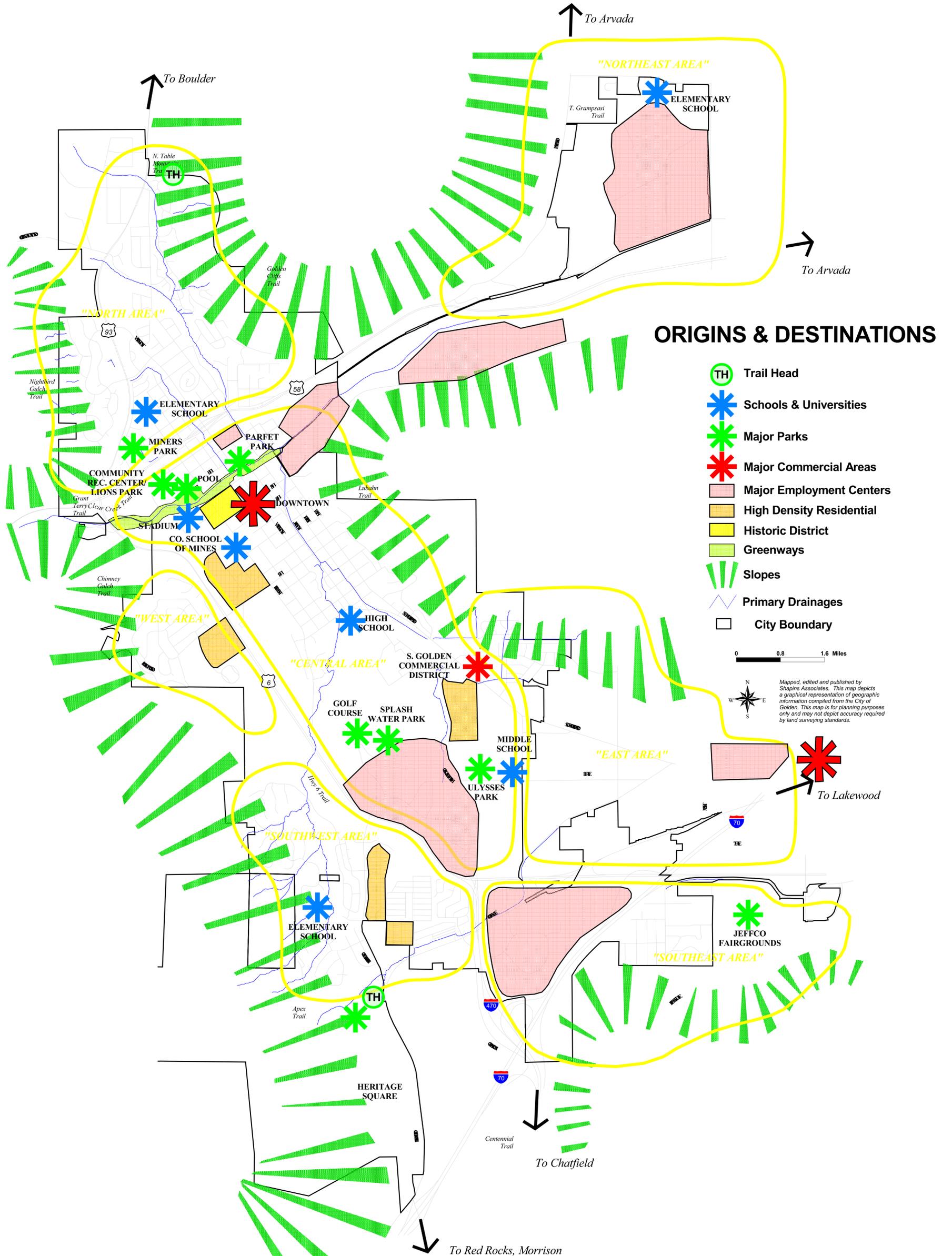
East Area: An older residential area with a large commercial zone focused along Old Golden Road. Ulysses Street defines this area on the west and 6th Avenue provides the south boundary.

Southeast Area: Consists of a large residential development, Jefferson County Fairgrounds, and a corporate office park. Highway 6 and C- 470 disconnect the area from downtown Golden. An additional separation between residences and corporate offices is caused by I-70.

The following are origins and destinations illustrated on the analysis map:

- Trailheads
- Schools & Universities
- Major Parks
- Major Commercial Areas
- Major Employment Centers
- High Density Residential Neighborhoods
- Historic Districts
- Greenways

ORIGINS & DESTINATIONS



City of Golden Bicycle Master Plan

Prepared for:



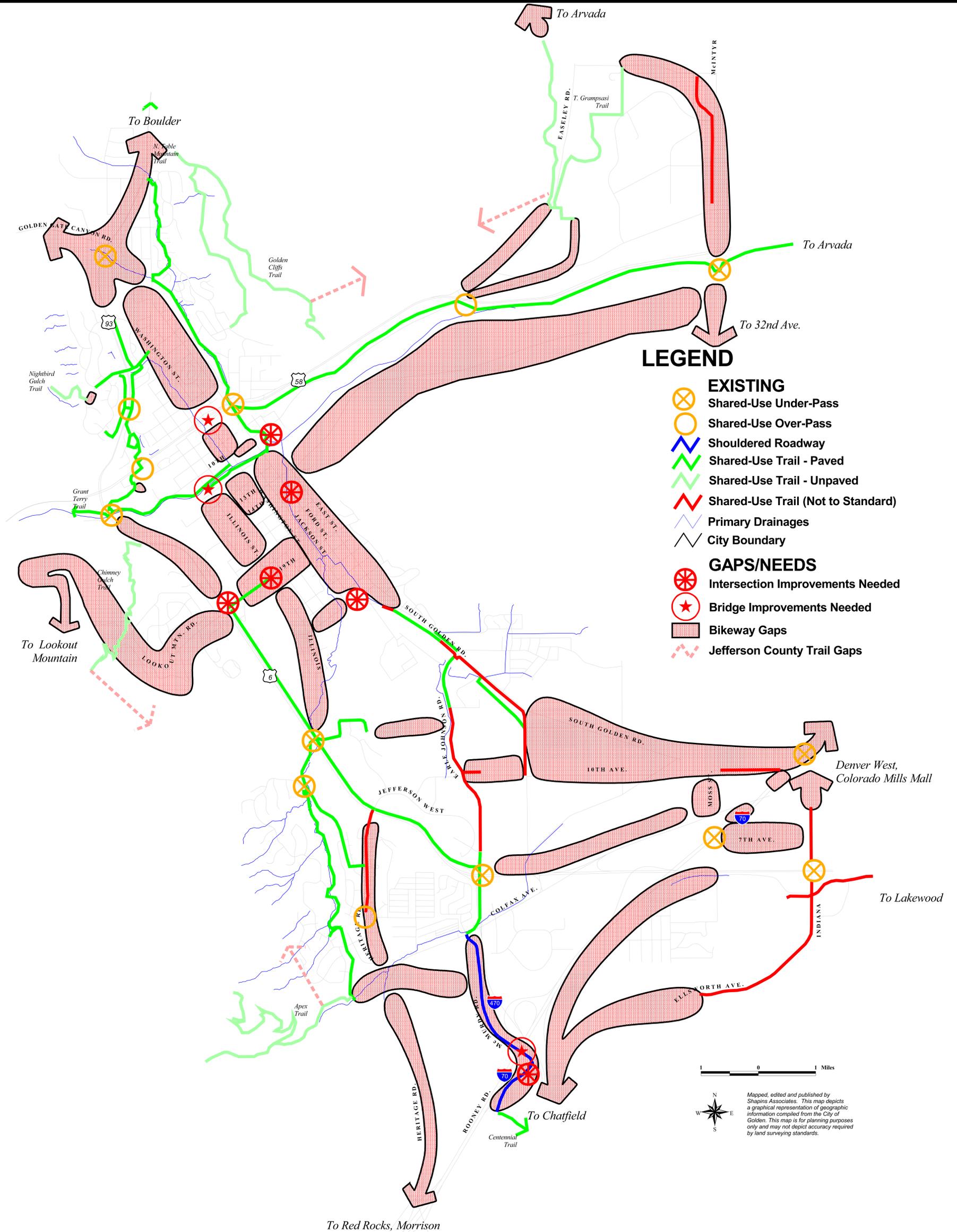
Prepared by:

Gap Analysis

To create a safe and effective interconnected bicycle system one must consider the major highways, topography, and federal land boundaries that create serious obstacles. A Gap Analysis map was created to better understand where connections are missing and where intersections and bridges need improvement within the existing system.

Major roadway barriers present serious separations within the city. Highway 6 and 93 cut the western residential neighborhoods off from the central downtown and Highway 58 separates the north and central areas. In addition, there are many gaps within the bikeway system that make it difficult for users to travel to key destinations from their neighborhood. Often, bicyclists are forced to ride on substandard sidewalks or amongst high traffic on roadways. The following are the major gaps in the bicycle system:

- Access north to Boulder
- Connection to Lakewood via 32nd Avenue
- Connection from central downtown to South Golden Road
- Gap along Highway 6 trail from existing trail at 19th Street, north to Clear Creek Trail
- Connection east to Denver West and Colorado Mills development
- Connection to C-470 trail and Chatfield reservoir
- Connection along Highway 93 to Red Rocks



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Transportation Analysis

Even though there are many gaps in the bicycle system, there are many roadways suitable for adding on-street bicycle facilities. Key roadways found suitable for bicycle facilities are discussed below.

Roadways with Adequate Width for Bike Lanes

Washington Avenue - 10th Street to Highway 93

- Importance:** A key north-south connection linking the north area of the City with the central area.
- Description:** The segment between 1st and 10th Streets currently has four through lanes of travel. Since the western bypass of Golden has been complete, Washington Avenue has carried smaller traffic volumes than in the past; four lanes of travel are no longer needed. Removing the outside travel lanes and striping on-street bicycle lanes would be a simple and inexpensive change. By eliminating these lanes, bike lanes and wider sidewalks can be accommodated. From 1st Street to Highway 93, Washington has only one travel lane in each direction and is currently wide enough to stripe on-street bike lanes.

Ford Street - S. Golden Road to 13th Street

- Importance:** A key northbound connection between the commercial and residential south of Downtown
- Description:** Northbound Ford Street in this segment is wide enough to add a bike lane on the east side while keeping two northbound traffic lanes and on-street parking along the west side.

Jackson Street - 14th Street to 24th Street

- Importance:** A key southbound connection linking the Downtown area with the residential areas and the South Golden Road corridor to the south.
- Description:** Three southbound through-lanes on this one-way portion of Jackson Street are not needed to accommodate the existing traffic volume. One southbound through-lane could be removed and a southbound bicycle lane could be added to the west side. This treatment would result in shorter crossings for pedestrians. A prior study by LSC Engineering also recommended this approach.

Roadways Important to System with Inadequate Widths

South Golden Road from Ulysses Street to Indiana Street

- Importance: South Golden Road is the only direct connection between downtown and the east I-70 and Colfax Avenue corridors.
- Description: The forty-foot street width is too narrow to allow striping of on-street bicycle lanes. Large-scale commercial redevelopment projects would be necessary to achieve this key on-street link. Even though the right-of-way is narrow and curb cuts are numerous, the south sidewalk should be considered for widening.

Roadways with Adequate Shoulders

Highway 93 north of 58th Avenue

- Importance: Highway 93 provides a regional linkage to the north of Golden with connections to Golden Gate Canyon, White Ranch Park, Arvada, and other north destinations.
- Description: Most of the roadway immediately north of Golden has wide shoulders in a rural setting. Minor widening or restriping may be needed adjacent to right turn acceleration or deceleration lanes to maintain a minimum shoulder width of five-feet.

Narrow Roadway with Bike Use

10th Street from Ford Street to Easley Road

- Importance: 10th Street from Ford Street to Easley Road is currently used by training bicyclists to connect east to Lakewood.
- Description: This road has a high traffic volume, but is an important corridor for road bikers. It is parallel to the newly complete Clear Creek Trail, which will provide an off-street choice; however, bicyclists preferring to stay on roads will continue to utilize portions of the on-street connection. It would be cost prohibitive to widen to add shoulders or bike lanes for its entire length. “Share the Road” signs would help alert motorists that bicyclists may be on the road.

Low Use Roads

Many roadways in Golden have lower traffic volumes and speeds, suitable for most bicyclists to operate in the roadway and to interact with automobile traffic. Roadways of this type that provide an appropriate connection in the bikeway grid can be designated and signed as Bicycle Routes.

Roadway Corridors Where the Best Choice is an Off-Street Shared-Use Path

Some roadways are unsuitable for bicycle travel due to a combination of factors such as high automobile travel speed, inadequate shoulders, access limitations, unusual or unsafe intersections, high traffic volumes, and poor sight distance. In these cases, where bicycle connections are needed, the best choice is usually an off-street shared-use path.

Chapter 3: The Plan

Vision and Goals

The vision establishes the basic concept of the bicycle system. Goals are broad statements that define the “desired future conditions” for the bicycle system.

Vision

Designed to access key city destinations and provide linkages to adjoining communities and open space, the City of Golden's bicycle system is a model for alternative transportation development. Bicyclists of all abilities will enjoy a diversity of scenery, natural resources, and historic places as they move along the City's comprehensive bicycle system. Safe, attractive, and convenient, the bikeways will appeal to both Golden cyclists and visitors and will create a unique image for the City.

Goals

- Create safe, efficient, and clear bike routes or trails for cyclists of all abilities to conveniently travel throughout the City of Golden whether alongside vehicles or on shared-use systems.
- Provide a bicycle system with a logical hierarchy of trails and routes that meet American Association of State Highway & Transportation Official (AASHTO) and the City of Golden's standards.
- Link major destinations within the City and tie system to adjacent bicycle systems.
- Provide clear, safe, appropriate, and attractive bicycle crossings at intersections.
- Identify and protect sensitive natural, cultural, and scenic resources when planning the system.
- Provide a clear and attractive signage system that will guide users safely throughout the city and create a unique City of Golden Bikeways image.

Bicycle System Definitions

A variety of road and right-of-way factors help determine what type of bicycle facility would be most appropriate on a given roadway. These factors include:

- Automobile traffic volume
- Automobile traffic speed/safety
- Existing and anticipated bicycle volume and user type
- Intersection and/or commercial driveway spacing and traffic activity
- Adjacent land use character (rural v. urban, residential v. commercial, etc.)
- Available R.O.W. or not
- Topography or financial limitations
- Impacts on adjacent property owners
- Roadway cross-section:
 - Width
 - Number of lanes
 - Curb and gutter or shoulders
 - On-street parking or not

Working within these factors, a quality bicycle system needs to provide facilities for a broad diversity of bicycle user groups from families to athletes. To develop an appropriate system it is important to clearly define the types of trails and routes that will be integrated into the system. The following are definitions of the various types of bicycle elements that will make up Golden's bicycle plan.

Shared-Use Trail: A bikeway physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent alignment. A shared-use trail could be used by bikers, pedestrians, skaters, physically challenged people, joggers, and other non-motorized participants. Standard cross section shall be a ten-foot wide paved path.

Bike Lane: A portion of a roadway that has been designated by pavement markings for preferential or exclusive use by bicyclists. Standard cross section shall be five-foot wide flowline to pavement marking zone.

Contra-flow Bike Lane: A one-way road with a designated bike lane that goes against the traffic flow. The lane is signed as a "Bike Lane" with directional pavement markings. Standard cross section shall be a five-foot wide flowline to pavement marking zone.

Bike Route: A bikeway, usually on low-use and low speed roads, where bikers and motorized traffic share the road.

Shouldered Roadway: A road that has paved edges that provides adequate shoulders for bike use. Typically, a shouldered roadway occurs outside of urban areas and does not have curb and gutter. Standard cross section shall be a minimum of a four-foot wide additional paved shoulder adjacent to travel lane.

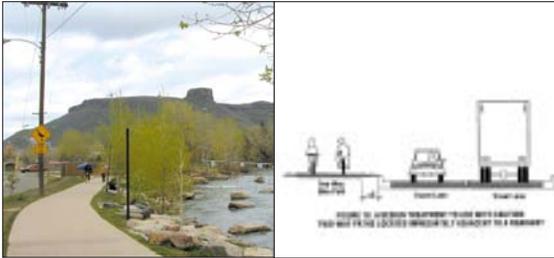
Share the Road: A road with bike demand but has inadequate shoulders for bikers. Bikers and motorized users share the road.

Shared-Use Bridge: Structured crossings over roadways or walkways for non-motorized users

Shared-Use Underpass: Non-motorized access under a roadway, railroad or other obstacle

Each of these bicycle configurations and facilities combine to make a citywide “bicycle system”. A bicycle system has been defined as the following: An interconnected network of roadways and pathways, which are specifically designated for bicycle travel. Some of the facilities are designated for the exclusive use of bicycles while others are shared with other transportation modes. Supporting photos and section graphics are provided on the following pages to illustrate each of the above definitions.

BIKEWAY DEFINITIONS



SHARED-USE TRAIL

A bikeway physically separated from motorized vehicular traffic by an open space or barrier & either within the highway right-of-way or within an independent alignment. A Shared-Use Pathway could be used by bikers, pedestrians, skaters, physically challenged people, joggers & other non-motorized participants.



BIKE LANE

A portion of a roadway that has been designated by pavement markings for preferential or exclusive use by bicyclists.



CONTRAFLOW BIKE LANE

A one-way road with a designated bike lane that goes against the traffic flow. The lane is signed as a "Bike Lane" with directional pavement markings.



BIKE ROUTE

A bikeway, usually on low-use and low speed roads, where bikers & motorized traffic share the road. The road is signed as a "Bike Route" and may have directional information.

City of Golden Bicycle Master Plan

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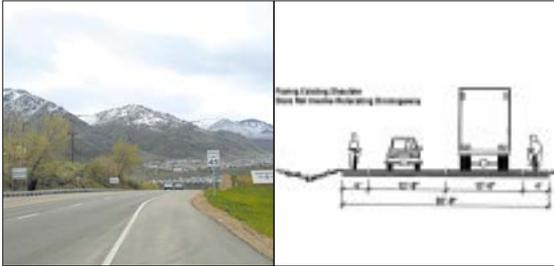


July 1, 2003

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BIKEWAY DEFINITIONS



SHOULDERED ROADWAY

A road that has paved edges that provide adequate shoulders for bike use (minimum of 4 feet). Typically, a shouldered roadway occurs outside of urban areas & does not have curb & gutter. Bicycle system signage will be posted.



SHARE THE ROAD

A road with bike demand but has inadequate shoulders for bikers. Bikers and motorized users share the road. Signs are provided that say "Share the Road."



SHARED-USE BRIDGE

Structured crossings over roadways or walkways for non-motorized users.

SHARED-USE UNDERPASS

Non-motorized access under a roadway, railroad or other obstacle.

BIKEWAY SYSTEM DEFINITION:

An interconnected network of roadways and pathways which are specifically designated for bicycle travel. Some of the facilities are designated for the exclusive use of bicycles while others are shared with other transportation modes.

City of Golden Bicycle Master Plan

Prepared for:



July 1, 2003

Prepared by:



The Master Plan

One of the most important components of improving the bicycle system in Golden is developing an integrated system of on-street and off-street bicycle facilities. Golden has a good start on off-street bicycle trails. But it is impossible to have an interconnected bikeway system without incorporating on-street linkages. Bicyclists can choose to use any combination of these different types of bike facilities to reach their destination. (See Bicycle Master Plan and Downtown Detail Map).

A comprehensive shared-use system of on and off-street bicycle facilities is proposed for north-south and east-west travel. Near downtown and within neighborhoods, a higher concentration of bike routes, bike lanes, and shared-use trails has been proposed. On the fringe of Golden a majority of the connections are made by share the road routes and shouldered roadways. This differentiation in system type reflects the factors described earlier in this chapter, and acknowledges the financial and physical limits on this Plan. The goal is to design a system that can be established by the City of Golden in the next ten years.

It should be noted that on-street bikeways tend to be the preferred type of bicycle facilities for a large portion of the bicycling community, typically bicycle commuters, who are interested in the most direct, quick, and efficient transportation connection. Therefore the plan proposes an extensive on-road system. At the same time, families with young children, recreational users, and people biking near major roads tend to prefer off road shared-use trails.

To best describe the proposed bicycle system each component of the system will be described. Paved shared-use trail, unpaved shared-use trail, bike lane, contra-flow bike lane, bike route, shouldered roadway, and share the road systems. All of these components will work together to form one interconnected system of bicycle facilities to best lead bicyclists to desired destinations within the City of Golden as well as connect to adjacent communities. The following descriptions have been divided into north and south areas of the city to make the plan more legible to the reader. The North Area contains all routes north of 24th Street, while the South Area contains those south of 24th Street.

Paved Shared-Use Trails

The majority of the existing bicycle system in Golden is on paved, shared-use trails. There are areas where connections need to be constructed or upgraded to complete this component of the system. This trail system will provide safe, off-road linkages to many key areas of the city. The following is a summary of the proposed shared-use paved trail system.

NORTH AREA

- Complete trail to north along Highway 93 to 58th Avenue.
- Complete trail on west side of Highway 6 from 19th Street north to Clear Creek Trail.
- Complete trail along south side of Clear Creek, west to Highway 6. A connection shall also be provided to the existing underpass at Chimney Gulch.
- Construct trail along west side of Highway 6 connecting Lookout Mountain Road south to underpass at Highway 6.
- Construct trail parallel to Illinois Street, south of 19th Street, connecting to underpass at Highway 6.
- Complete trail from Golf Course to the east, connecting to Johnson Road.
- Upgrade existing walk along McIntyre Street north of 44th Avenue.

SOUTH AREA

- Upgrade walks east of high school along Jackson Street to connect with railroad grade trail.
- Create trail on north side of South Golden Road completing connection between West 16th Avenue and East Street bike route.
- Upgrade existing trail along South Golden Road from RR grade east to Ulysses Street.
- Construct trail parallel to Old Golden Road, from Ulysses Street east to Indiana Street.
- Upgrade walks along Indiana Street.
- Upgrade walks east of Indiana Street along 6th Avenue frontage road.
- Create system parallel to 6th Avenue and I-70 connecting from Jefferson County fairgrounds west to C-470 Trail. A connection from the westernmost edge of the residential development down to this trail shall also be planned.
- Upgrade non-standard portions of existing system along Johnson Road.
- Upgrade existing walks along 10th Avenue between Johnson Road and Ulysses Street.
- Upgrade existing walks on west side of Heritage Road between Highway 6 and the existing overpass.
- Construct trail on east side of Heritage Road between overpass and Colfax Avenue.
- Construct trail on north side of Colfax Avenue from Moss Street west to Highway 6 interchange, following on north side of Highway 6 to Johnson Road.

Unpaved Shared-Use Trails

The majority of the unpaved trails in Golden are managed by Jefferson County, but could provide valuable connection to north and west portions of the city. Connections are encouraged between:

- Chimney Gulch and Apex Trail.
- Golden Cliffs Trail and North Table Mountain trails on east side.

Bike Lanes

Bike lanes are a key component in this system. They provide a direct and efficient way for bikers who do not mind riding adjacent to traffic to reach their destination. These lanes have been selected to provide an efficient well-linked system for north-south commuters. They are proposed along:

NORTH AREA

- Washington Avenue from Clear Creek north to Highway 93.
- 13th Street, between Washington Avenue and Ford Street.
- Jackson Street from 12th to 14th Street.
- Jackson Street (Southbound only) from 14th to 24th Street.
- Ford Street (northbound only) from South Golden Road to 14th Street.

SOUTH AREA

- Old Golden Road from Ulysses Street east to Indiana Street.
- Ellsworth Avenue from 6th Avenue south to end of the residential community.

Contra-Flow Bike Lane

Due to the disconnected roadway system in the southeast section of the city and one-way routes of surrounding major roads, a contra-flow bike lane has been proposed to help bikers in this area. A contra-flow bike lane is proposed along:

SOUTH AREA

- 10th Avenue from Ulysses Street east to Moss Street

Bike Routes

Due to the availability of low use roads with adequate width; bike routes can link the downtown, university, and several other neighborhoods. Bike routes are proposed along:

NORTH AREA

- Ford Street from Tucker Gulch Trail south to Iowa Street with route also provided along Iowa Street between Washington Avenue and Tucker Gulch Trail.
- 10th Street from Washington Avenue west to Clear Creek Trail.
- North along Cheyenne Street from 10th Street to 8th Street, connecting west along 8th Street to the City of Golden Recreation Center.
- Jackson Street between 12th and 11th Street, connecting at 11th Street west to Washington Avenue.
- 13th Street between Washington Avenue and Illinois Street.
- Maple Street between 11th and 18th Street.
- Illinois Street between 11th and 24th Street.
- 18th Street between East and Elm Street, connecting at Elm Street to the south to 19th Street.
- 24th Street from Illinois Street to East Street.

SOUTH AREA

- West 16th Avenue from South Golden Road to Quaker Street and connecting to the south along Quaker Street to 10th Avenue.
- Moss Street from Old Golden Road to existing I-70 underpass, turning east along 7th Avenue to Indiana Street.

Shouldered Roadways

Shouldered roadways are proposed along more roadways where space was available to add paved shoulders to make it safer and more comfortable for bicyclists. Shouldered roadways are proposed along:

NORTH AREA

- Highway 93 from 58th Avenue north to Boulder.
- McIntyre Street between 44th Avenue and 32nd Avenue.

SOUTH AREA

- Colfax Avenue from Rooney Road intersection west continuing along Heritage Road south along Highway 93.

Share the Roads

Share the road designations are proposed in the north, east, and west sections of the city to help ensure bicyclists are recognized by motorized vehicles and provide a connected system in that section of the city. This designation is proposed along:

NORTH AREA

- 10th Street from Ford Street east to McIntyre Street.
- Easley Road from 44th Avenue north.
- Lookout Mountain Road.

Shared-use Overpasses

Shared-use overpasses are proposed in potentially hazardous areas where grades make them feasible. They are critical to the bicycle system since they provide linkages across major city separators such as large-scale highways and creeks. In addition to existing overpasses the following are proposed:

NORTH AREA

- West side of Highway 6 at Clear Creek.
- Highway 6 and 19th Street intersection.
- Clear Creek pedestrian bridge improvements at Illinois Street.

SOUTH AREA

- Highway 6 and Heritage Road.

Shared-use Underpass

In certain areas of the city where major barriers exist, underpasses are more appropriate due to surrounding slopes and grades. In addition to existing underpasses one is proposed:

SOUTH AREA

- East of Apex under Heritage Road connecting to Colfax Avenue.

Desired Trail Connections not Completed in Master Plan

While creating the master plan, two areas where connections are desired were not included. They are as follows:

32nd Avenue East from Ford to McIntyre Street

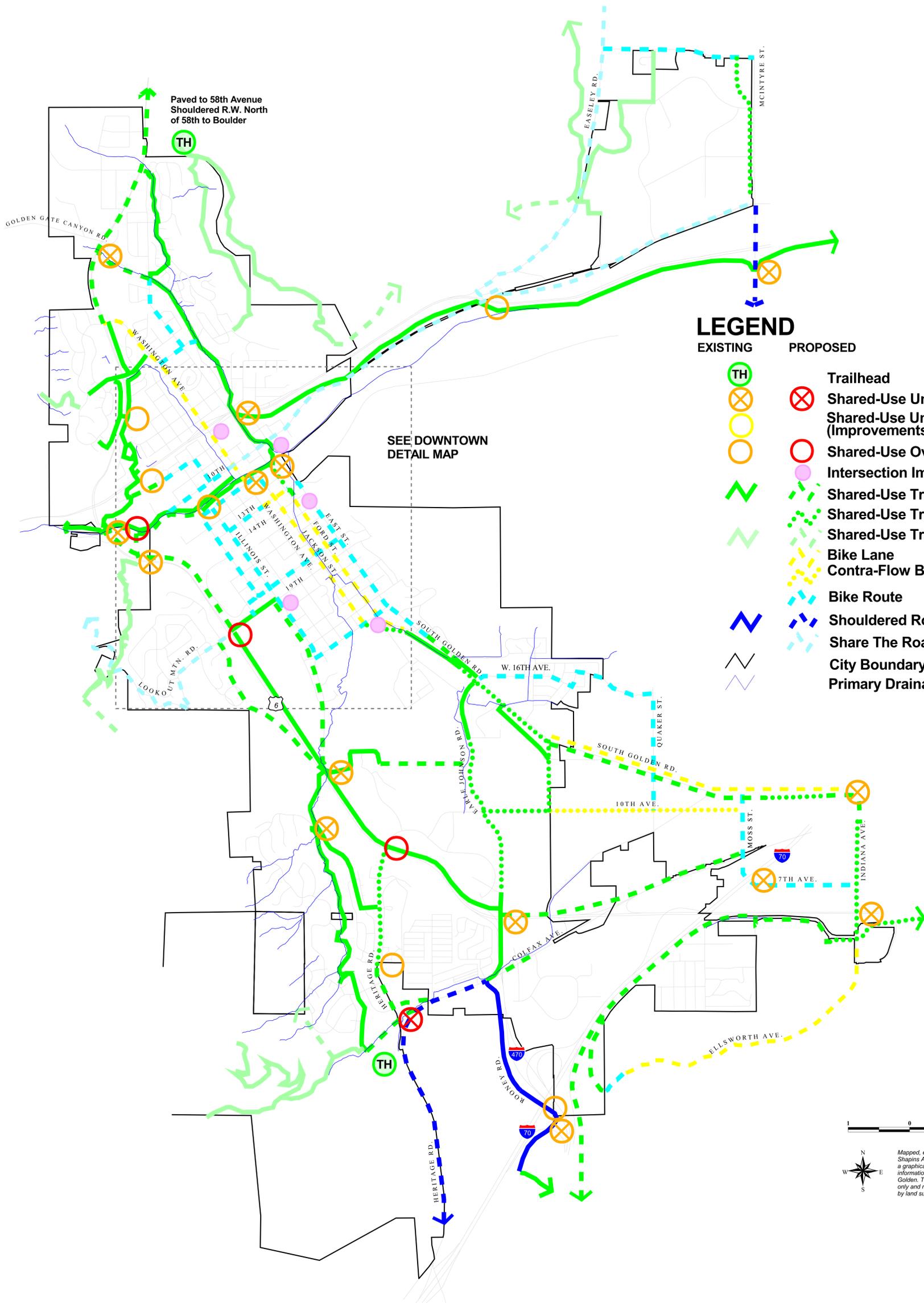
Demand is present for a bikeway connection along 32nd Avenue; however, due to the following factors this route was not planned for. Alternatives to this desired route are provided as a shared-use trail connection along Clear Creek as well as a share the road route along 44th Avenue. Issues with this area include:

- Insufficient space for shared-use trail adjacent to 32nd Avenue and high cost to stabilize slope for alternative route of shared-use trail detached from 32nd Avenue.
- Insufficient space for street widening to provide for on-street bike lanes or shouldered roadway.
- Roadway configuration and high volume of truck traffic provide safety issues for share the road route or bike route.

South Industrial Park Connection

Completing this connection would help resident commuters, however, taking into consideration the factors below, it was determined to hold off on this portion of the plan. Access to this area will be provided by a shared use trail on the south side of Colfax Avenue that enters the industrial site from the west. Future improvements will be designed in conjunction with development in this area. Issues with this area include:

- Future development of 6th Avenue and Colfax Avenue intersection.
- Future development of light rail in this area.
- Safety issues present with existing intersection configurations.



Paved to 58th Avenue
Shouldered R.W. North
of 58th to Boulder

SEE DOWNTOWN
DETAIL MAP

LEGEND

- | EXISTING | PROPOSED |
|----------|---|
| | Trailhead |
| | Shared-Use Under-Pass |
| | Shared-Use Under-Pass
(Improvements Recommended) |
| | Shared-Use Over-Pass |
| | Intersection Improvements |
| | Shared-Use Trail - Paved |
| | Shared-Use Trail - Standard Upgrade |
| | Shared-Use Trail - Unpaved |
| | Bike Lane |
| | Contra-Flow Bike Lane |
| | Bike Route |
| | Shouldered Roadway |
| | Share The Road |
| | City Boundary |
| | Primary Drainages |

0 1 Miles



Mapped, edited and published by
Shapins Associates. This map depicts
a graphical representation of geographic
information compiled from the City of
Golden. This map is for planning purposes
only and may not depict accuracy required
by land surveying standards.

BICYCLE MASTER PLAN

City of Golden Bicycle Master Plan

Prepared for:

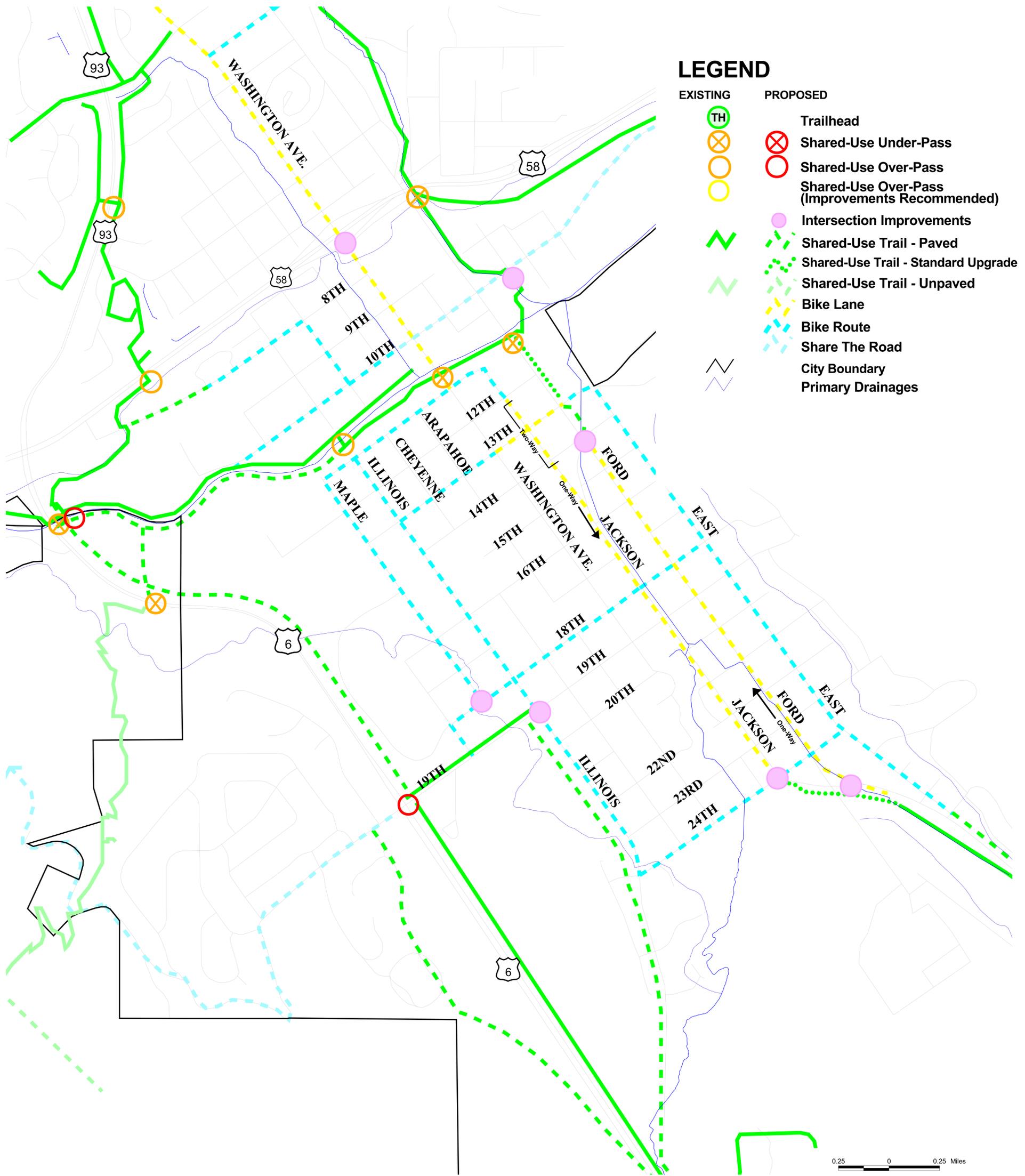
Prepared by:

November, 2003

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303.442.4568 FAX 303.786.8025 MAIL@SHAPINS.COM

FOX HIGGINS
TRANSPORTATION GROUP

DOWNTOWN DETAIL MAP



LEGEND

- | EXISTING | PROPOSED |
|----------|---|
| | Trailhead |
| | Shared-Use Under-Pass |
| | Shared-Use Over-Pass |
| | Shared-Use Over-Pass (Improvements Recommended) |
| | Intersection Improvements |
| | Shared-Use Trail - Paved |
| | Shared-Use Trail - Standard Upgrade |
| | Shared-Use Trail - Unpaved |
| | Bike Lane |
| | Bike Route |
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| | City Boundary |
| | Primary Drainages |

City of Golden Bicycle Master Plan

Prepared for:

November, 2003
 Prepared by:

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 FOX HIGGINS TRANSPORTATION GROUP

Detail Plan Improvements

There are several intersections that need to be improved for the bicycle plan to function well. The following is a description of the existing condition issues related to each intersection and proposed recommendations.

Washington Avenue Bridge Improvements (see graphic)

Existing Condition

Washington Avenue Bridge is planned to be replaced in the future. In the meantime, the current bridge needs to be re-stripped to work well for pedestrian, bicycle, and vehicular traffic. The bridge currently has two- lanes for north and southbound traffic, along with a shared turn lane. Currently a double left-turn from the westbound off ramp of Highway 58 onto southbound Washington Avenue exists.

Issues

- Substandard pedestrian walkways (approximately five-feet wide).
- Unnecessary travel lanes since Washington Avenue now handles far less traffic due to the construction of the Highway 6 bypass.
- Unsafe condition for bicyclists to share traffic lanes with automobile.

Recommendations

- Provide one southbound through lane, one eastbound turn lane, and one northbound through/westbound turn lane.
- Create a northbound and southbound bike lane.
- Widen sidewalks on each side of bridge to eight-feet.
- Maintain double left turn at westbound off ramp. Convert easternmost lane to an only turn lane for eastbound Highway 58 travelers. This will cause a merger on the bridge for motorists traveling southbound on Washington Avenue.

WASHINGTON AVENUE

EXISTING CONDITIONS



POTENTIAL IMPROVED CONDITIONS



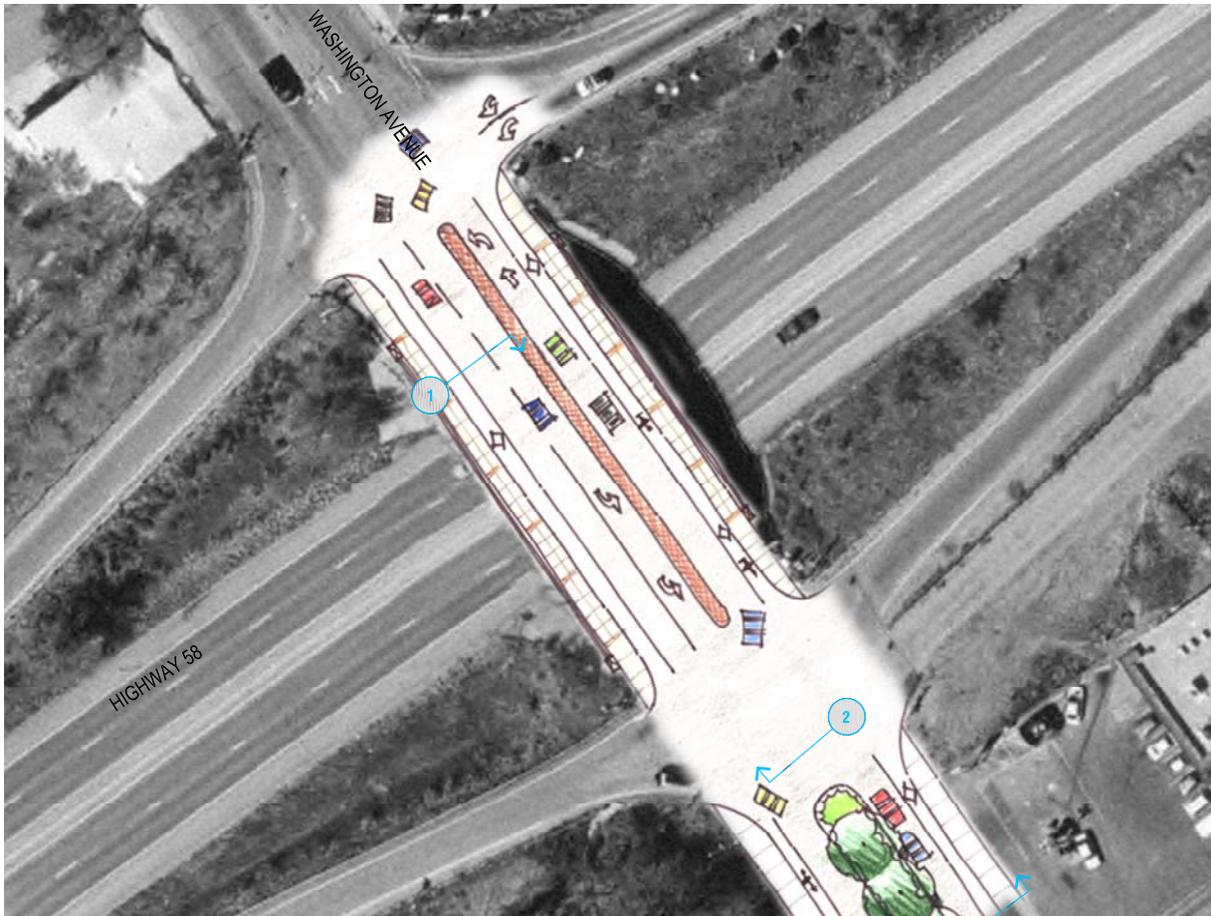
10' STANDARD WALK WITH BIKELANE ADDITION



IMPROVED SOUTHBOUND CROSS-SECTION



IMPROVED NORTHBOUND CROSS-SECTION



City of Golden Bicycle Master Plan



10th and Tucker Gulch Crossing (see graphic)

Existing Condition

10th Street is a two-lane roadway that is too wide for current traffic numbers. The at-grade crossing of Tucker Gulch Trail at 10th Street is especially dangerous due to the limited sight distance and skewed approach angle from the north. This portion of 10th Street eastbound is proposed to be a share the road route. Bicyclists traveling east to west on this portion of road will be expected to share the travel lane with the motorist.

Issues

- Inadequate rest area at 10th Street for bikers heading south to recover from the steep grade on Tucker Gulch Trail.
- Inadequate sight distance for travelers along 10th Street to see bicyclists approaching crossing.
- Unclear connection to Tucker Gulch Trail, south of 10th Street.
- Speeding vehicles along 10th Street due to excessive street width.

Recommendations

- Reduce the travel lanes on 10th Street to 12 foot maximum width.
- Provide staging space for bicyclists traveling south on Tucker Gulch Trail.
- Widen the pedestrian path on the bridge to 12-feet wide on the north and six-feet wide on the south.
- Install a pedestrian crossing on 10th Street at East Street. Utilize contrasting pavement materials and standard signage with consideration given to pedestrian activated flashing warning signs and pavement lighting to notify motorists that a pedestrian or bicyclists is crossing.
- Increase the Tucker Gulch Trail width on the south side of 10th Street to ten-feet.
- Sign 10th Street east of Washington Avenue as a share the road route.

10th STREET - TUCKER GULCH CROSSING

EXISTING CONDITIONS



POTENTIAL IMPROVED CONDITIONS



IMPROVED ACCESS OFF EXISTING TUCKER GULCH TRAIL



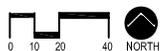
ADDITIONAL SPACE, IMPROVES CROSSING FOR BICYCLES



NARROWED LANES OF TRAFFIC WITH CLEAR CROSSING



City of Golden Bicycle Master Plan



14th Street and Ford Improvements (see graphic)

Existing Condition

Ford Street at 14th Street transitions from a one-way roadway to a two-way street. South of 14th Street, Ford Street has a width of 36 feet with two lanes traveling northbound. Ford Street, north of 14th Street has a width of 50 feet with two northbound lanes, two southbound lanes, and a center turn lane. A northbound connection along Ford Street to Clear Creek is proposed to fill a major gap in the system.

Issues

- Inadequate width of Ford Street, north of 14th Street, to add a northbound bike lane without widening the road.
- Substandard adjacent walks between 14th Street and 13th Street cannot be upgraded without providing costly grading which will cause the loss of mature vegetation.

Recommendations

- Re-stripe Ford Street to accommodate a northbound bike lane from South Golden Road to 14th Street.
- Install a shared-use trail on the west edge of Coors parking lot on the 1300 block of Ford Street. This shared-use trail shall be separated by vertical elements from the parking area.
- Provide necessary transitions at 14th and 13th Street to the proposed shared-use trail.
- Increase the existing attached walk to ten feet along Ford, between 13th and 11th Street.

FORD - 14th STREET

EXISTING CONDITIONS



POTENTIAL IMPROVED CONDITIONS



WIDENED TO 10' STANDARD WALK



10' WIDE SHARED USE TRAIL WITH BUFFER TO PARKING



BIKE LANE ADDITION ALONG FORD STREET



City of Golden Bicycle Master Plan



24th Street and Jackson Street Improvements (see graphic)

Existing Condition

Jackson Street is a one-way southbound street with two through travel lanes at the 24th Street intersection. South of 24th Street the roadway curves east to tie into South Golden Road. This turn combined with illegible turn lane configurations and high volumes of school traffic creates a dangerous situation for bicyclists. 24th Street, Jackson Street, and the surrounding connections to the south are necessary linkages for southbound travel.

Issues

- Unclear vehicular circulation for through and turn lanes traveling southbound on Jackson Street.
- Sub-standard pedestrian staging areas at corners of 24th Street and Jackson Street.
- Unsafe crossing for pedestrians on north side of 24th Street across Jackson Street due to four lanes of traffic to cross.
- Inadequate pedestrian and bicycle routes along Jackson Street.
- Poor circulation system of high school and other adjacent properties.
- Unsafe connection from railroad grade trail to South Golden Road at Ford Street.

Recommendations

- Remove one lane of traffic from Jackson Street between 14th Street and 24th Street, leaving two through lanes on Jackson Street.
- Provide southbound bike lane along Jackson Street from 12th Street to 24th Street.
- Improve pedestrian walks along Jackson Street.
- Eliminate designated left at 24th Street; create a through lane in its place.
- Create a designated right turn off Jackson Street at 24th Street. Position the proposed bike lane between the right turn lane and the two through lanes.
- Provide additional pedestrian staging areas at all four corners by providing bulb-outs.
- Realign traffic pattern of two through lanes on south side of 24th Street intersection to reflect where traffic is currently traveling.
- Provide a curb extension on the southeast corner to clearly identify two through lanes on Jackson Street and clearly indicate where the turn lane off Jackson Street begins.
- Upgrade attached walk to 10-foot wide standard on south side of Jackson Street, south of 24th Street up to existing railroad grade trail. Connect the attached walks behind the transit stop with a detached ten-foot wide trail. Provide necessary crossings on the high school property to create a linked trail to the railroad grade trail.
- Perform engineering study using ITE's Pedestrian Crossing Installation Guidelines. If warranted, create a pedestrian activated crossing utilizing the center roadway-island between Jackson Street and Ford Street as a pedestrian refuge. Utilize contrasting pavement materials for the crossing along with standard signage. Consideration shall be given to pedestrian activated flashing warning signs and pavement lighting to notify motorists that a pedestrian or bicyclists is crossing.

24th STREET - JACKSON STREET

EXISTING CONDITIONS



POTENTIAL IMPROVED CONDITIONS



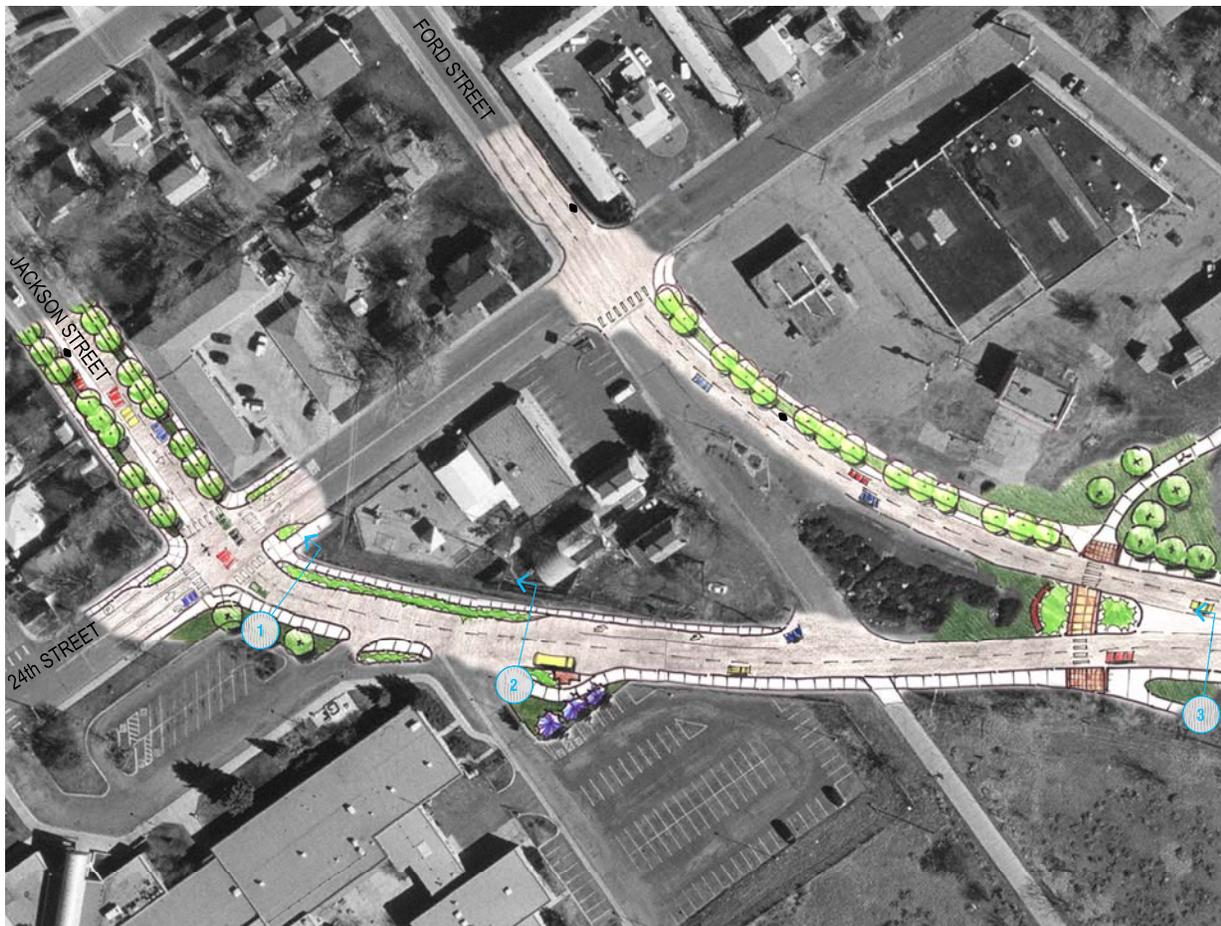
IMPROVED CROSS-SECTION AT JACKSON AND 24th



2-LANE TRAVEL AROUND CURVE AT 24th STREET



IMPROVED BICYCLE CROSSING AT JACKSON AND FORD



City of Golden Bicycle Master Plan



JACKSON STREET

EXISTING CONDITION



EXISTING CONDITION LOOKING SOUTH ON JACKSON

POTENTIAL IMPROVED CONDITION



2 TRAVEL LANES, PARALLEL PARKING, AND BIKE LANE



City of Golden Bicycle Master Plan



Bicycle System Signage

To best inform users of the bicycle system, signage shall be provided to help bicyclists determine best routes to achieve their destination. Following are standards the city should achieve when signing their bicycle system.

- Provide standard signage per the Manual of Uniform Traffic Control Devices (MUTCD).
- Create a City of Golden bikeway sign that is simple and clear and unique to Golden's bicycle system.
- Receive approval from the appropriate entity when posting desired signs not on city roadways.
- Provide directional and hazard notification signage when necessary.
- Provide a City of Golden Bikeway Map at key areas to help bicyclists determine their preferred route.
- Pursue mileage markers on longer length trails.

The following defines the signage appropriate for each component of the system. (See graphic)

Shared-Use Trail

- City of Golden Bikeway sign

Bike Lane

- MUTCD standard "Bike Lane" sign
- City of Golden Bikeway sign

Contra-flow Bike Lane

- MUTCD standard "Bike Lane" sign and "Do Not Enter" signage for vehicles
- City of Golden Bikeway sign

Bike Route

- MUTCD standard "Bike Route" sign
- City of Golden Bikeway sign

Shouldered Roadway

- City of Golden Bikeway sign

Share the Road

- MUTCD standard "Share the Road" sign
- City of Golden Bikeway sign

City of Golden Bikeway Sign Design Guidelines

Sign Size

- Shared-Use Trail: 18" x 24"
- Shouldered Roadway: 24" x 30"
- Add-On Sign: 6" x 24" or 9" x 24"

Graphic Style:

- Signs shall be rectangular with blue background
- Text shall be the reverse in white
- Graphically designed logo shall serve as identifying trademark along trail system
- Signs shall be labeled as "Golden Bikeway" with optional trail names added to sign

BIKEWAY SYSTEM SIGNS



SHARED-USE TRAIL

- Shared-use trail systems may be signed with Golden Bikeway sign with option to include name of trail



BIKE LANE

- MUTCD standard sign & pavement markings shall be utilized
- Golden Bikeway* sign may accompany



CONTRAFLOW BIKE LANE

- MUTCD standard do not enter sign for vehicles accompanied by bicycles excepted sign along with MUTCD standard pavement markings
- Golden Bikeway* sign may accompany



BIKE ROUTE

- MUTCD standard sign
- Golden Bikeway* sign may accompany



SHOULDERED ROADWAY

- Golden Bikeway* sign shall be utilized along these bikeways



SHARE THE ROAD

- MUTCD standard sign
- Golden Bikeway* sign may accompany or locate separate along roadway

City of Golden Bicycle Master Plan

Prepared for:



Prepared by:



Plan Phasing

It is anticipated that full implementation of the Master Plan could be accomplished in approximately ten years. To develop the phasing plan, cost, safety, and need were carefully considered. A majority of the system can be implemented by simply installing signage and re-stripping roads. Later phases will take more time due to acquisition of funding along with planning and design work. As items from the Master Plan are completed, other unanticipated improvements may be deemed appropriate. Trail alignments shown on the Master Plan located outside the City of Golden, will be in control of the representative jurisdiction, however, the City of Golden is encouraged to work with these adjacent communities to achieve the goals of the Master Plan.

Phase 1: Next Three Years

- Sign proposed bicycle routes, shared roadways, and shouldered roadways that are to standard.
- Re-stripe and sign roadways to accommodate proposed bike lanes and contra-flow bike lanes.
- Develop new shared-use overpass across Clear Creek at Illinois Street.
- Implement improvements to Washington Avenue Bridge.
- Create bicycle system map.

Phase 2: Three to Five Years

- Work with neighboring entities to upgrade proposed shouldered roadways and sign them.
- Complete necessary intersection improvements as noted in plan.
- Upgrade existing walks to shared-use trail standard.
- Complete Highway 6 Trail north to Clear Creek
- Construct shared-use trail from Washington Avenue to Pine Ridge

Phase 3: Five to Ten Years

- Construct remaining overpass and underpass improvements.
- Construct shared-use trail connections.
- Construct Old Golden Road bike lane and shared-use trail improvements.

Appendix A: Public Open House Materials

1. Hand-out to Public
2. Open House Comments Summary
3. “Star-Dot” Summary