

2008 Bicycle Plan

Update to the 1995 Bicycle Program Plan

City of Fort Collins
October 2008



City of
Fort Collins

The City of Fort Collins would like to thank the following groups and individuals. Your assistance has been invaluable.

Fort Collins City Council

Doug Hutchinson, Mayor
Kelly Ohlson, Mayor Pro Tem, District 5
Ben Manvel, District 1
Lisa Poppaw, District 2
Diggs Brown, District 3
Wade Troxell, District 4
David Roy, District 6

City Management Team

Darin Atteberry, City Manager
Diane Jones, Deputy City Manager
Wendy Williams, Assistant City Manager
Mike Freeman, Chief Financial Officer
Dennis Harrison, Chief of Police
Brian Janonis, Utilities Executive Director

Citizens Advisory Committee:

John Clark	Greg McMaster
Dot Dickerson	Jeff Morrell
Dan Gould	Rick Price
John Holcombe	Mick Vermuellen
John Homan	

Boards & Commissions:

Air Quality Board	Natural Resource Advisory Council
Bike Fort Collins	Parks & Recreation Board
Downtown Development Authority	Senior Advisory Board
Economic Advisory Commission	Youth Advisory Board

City of Fort Collins Staff:

David Averill	Rick Richter	Rich Brewbaker
Denise Weston	Larry Schneider	Katie Carpenter
Dan Holland	Ward Stanford	Gary Diede
David Kemp	Timothy Wilder	Dan Eybs
Holli Keyser	Kristin Kirkpatrick	Craig Foreman
Victoria McKennan	Polly Bennett	Nicole Hahn
Ryan Mounce	Eric Bracke	Mike Herzig
Kurt Ravenschlag	Kathleen Bracke	

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Chapter 1: Introduction & Overview



This *2008 Bicycle Plan* has been prepared to update and expand upon the *1995 Fort Collins Bicycle Program Plan (1995 Bike Plan)*. The *1995 Bike Plan* was developed by a group of citizens in conjunction with City staff and outside consultants. The goal of the *1995 Bike Plan* was to create a community wherein choosing bicycling as transportation is an easy choice. The purpose of the *2008 Bicycle Plan* is to maintain that goal, while expanding opportunities for the residents and visitors to Fort Collins to incorporate bicycling into their daily lives.

As in the *1995 Bike Plan*, the *2008 Bicycle Plan* covers the traditional four “E’s” – engineering, education, encouragement, and enforcement as well as three additional components – economy, environment and community, specifically targeting the values expressed by Fort Collins’ residents.

The *2008 Bicycle Plan* was created with input from many community stakeholders, including neighborhood residents, business leaders, parents, educators, bicyclists, and individuals who wish to bicycle more often. A Citizens Advisory Committee was formed, and provided significant input. Additional input came from City staff in the following departments: Transportation Planning, Traffic Operations, Engineering, Parks and Recreation, Natural Resources, Streets, and Transfort.

Colorado State University (CSU), and Poudre School District have also contributed to the *2008 Bicycle Plan*. To ensure sustainable efforts, input was also gathered from many City boards and commissions including, but not limited to the Air Quality Advisory Board, Downtown Development Authority, Economic Advisory Commission, Natural Resources Advisory Board, Parks and Recreation Board, Senior Advisory Board, Youth Advisory Board, Transportation Board, and City Council.

It is through this comprehensive outreach process undertaken for the Bicycle Plan that the topics of Economy, Environment and Community are added to the *2008 Bicycle Plan*. It is apparent that these issues are of value to the citizens of Fort Collins.

The bicycle is the primary means of transportation for thousands of Fort Collins’ residents, a desired means of transportation for many, and a form of recreation for many more. Bicycling in Fort Collins accommodates and encourages all ages and all levels of cycling ability. According to the United States Census of Population 2000, Journey to Work Data, the bicycle-share of work-related trips in Fort Collins is 5.8 percent. The energy and commitment of the City departments, as well as local organizations and businesses, are primary forces behind local bicycle efforts. The entire bus fleet for the City’s

transit service, Transfort, is equipped with bicycle racks, and bicycle parking is available at numerous locations throughout the City. Several Fort Collins Police Officers use bicycles, as do some of the inspectors for Neighborhood Services. Fort Collins' Transportation Planning Department and Parks Planning and Development Division continue to develop multi-use paths for bicycle use. Numerous local bicycle shops provide ongoing support and crucial services to Fort Collins' bicyclists. In addition, there are various advocacy, education, and riding organizations enhancing community efforts.

The *2008 Bicycle Plan* presents information on existing conditions as well as recommendations for improvements targeted at the next 5 years, that will result in a more efficient and effective bicycle network, with the intent of supporting existing bicyclists and encouraging more people to ride more frequently. These recommendations, as well as information on existing conditions, are presented in detail in the individual chapters, with a summary provided below.

Engineering and the Proposed Bikeway Network

The current bikeway network consists of approximately 280 miles of bicycle lanes, 30 miles of hard-surfaced, multi-use paths, and many more miles of local-street bicycle routes. Future bike lane projects will take place with new street construction or reconstruction of existing facilities, per the City's Master Street Plan. The City will continue to explore rail and water corridors for future multi-use path development.

Recommendations

- Continued implementation of projects identified on Hot List I.
- Pursue implementation of projects identified on Hot List II.
- Identify and implement interim solutions.
- Continued implementation of the Transportation Master Plan and the Master Street Plan.
- Continue and improve maintenance of Priority Commuter Routes.
- Improve signal detection loops.
- Examine innovative bicycle traffic solutions such as bike boxes and bike boulevards.

Promoting Bicycling through Education, Encouragement

Bicycle education and encouragement is concerned with developing safe cycling skills in children, teaching adult bicyclists their rights and responsibilities, and educating motorists on how to safely and effectively share the road with bicyclists. It also includes holding community promotional events and providing information such as maps of recommended bicycling routes. Improvement to the level and

consistency of enforcement is targeted at both the vehicular and bicycle drivers and is directly linked to the education/encouragement programs.

Recommendations

- Maintain existing education and encouragement programs and solicit more participation.
- Continue to develop and implement innovative education and encouragement programs, campaigns, and events.
- Continue to foster relationships between non-profits, advocacy, and community groups and build public-private partnerships.
- Consider the implementation of Cyclovias (car-free events).
- Reinforce yield and safety education programs pertaining to bicyclists and other bike lane and trail users.

Enforcement

It is recognized in the *2008 Bicycle Plan* that enforcement is a very important part of the holistic strategy of educating people on how to bicycle and providing an environment in which they want bicycle.

Recommendations

- Work closely with local enforcement agencies to create innovative, proactive, educational campaigns.
- Bridge the gap of understanding between bicyclists and local enforcement agencies by providing current and consistent information.
- Coordinate training sessions to ensure knowledge on current local, regional, and national bicycle policies and ordinances.
- Establish enforcement techniques for handling special events and protests.
- Explore the creation of a *Share the Road Safety Class*.
- Establish “sting” operations in coordination with local enforcement agencies to address bicycle theft and traffic-law evasion by bicyclists.

Recognizing Economic, Environmental and Community Benefits

Bicycling produces no air or noise pollution, decreases traffic congestion, helps alleviate vehicular parking demand, saves energy, uses land and road space efficiently, provides mobility, saves individuals money, improves health and fitness and, most of all is fun. All of these benefits are good for the environment and provide incentives for people to visit, relocate, and establish businesses in Fort Collins, enhancing sustainable economic development. Community partnerships are crucial in maintaining and enhancing the most effective opportunities to promote bicycling.

Recommendations

- Continue to support and encourage infrastructure development, bicycle sporting events, recreational biking, and bicycle facilities.
- Use the local bicycle culture to attract employers, new residents, business, and visitors.
- Encourage bicycle-related businesses and manufacturers.
- Establish measurement methods for environmental benefits.
- Coordinate with other City initiatives to measure environmental benefits.
- Pursue the formation of a Bicycle Advisory Committee (BAC).
- Pursue the Platinum Level designation with the League of American Bicyclists (LAB).
- Establish performance measures for bicycle programs and facilities.
- Maintain support for existing programs.
- Foster communication amongst the public, non-profit, and private sector to implement the recommendations in the *2008 Bicycle Plan*.

Multi-Modal Connectivity

City-wide, transportation connectivity will benefit greatly from the recommended improvements for multi-modal connections, bicycle parking, and end-of-trip facilities.

Recommendations

- Expand opportunities for bicycle–transit/bicycle-pedestrian/bicycle-car auto linkage.
- Incorporate bicycle parking at transit stops and stations.
- Improve and expand bicycle parking throughout the City.
- Encourage installation of showers and changing facilities.

Despite the success of the 1995 Bike Plan, Fort Collins still has room for improvement toward its ultimate goal of integrating bicycles into the daily lives of Fort Collins residents and supporting the community bike culture. The bikeway network still has significant gaps and discontinuities while the quantity and quality of bicycle parking varies widely throughout the City. People of all ages, from all parts of the city and all walks of life, have requested improvements to the bicycling environment.

Bicycling, as a community value and expectation, is unique to Fort Collins and is synonymous with its identity, as seen by both residents and visitors. Many organizations throughout the city have a part to play in educational, economic, environmental and community efforts. The City will continue to build relationships and work closely with existing and future public, private, and non-profit organizations. With

established commitment from all sectors of the community, the recommended increase of bicycle facilities and encouraged use of those facilities included in the *2008 Bicycle Plan* has real potential to improve the quality of life in Fort Collins.

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Chapter 2: History of Bicycling in Fort Collins



BE SEEN
BE SEEN

Ride your bicycle at night with front and rear lights. It could save you the cost of a ticket and quite possibly your life.

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AWARENESS. PATIENCE. COURTESY.

fcgov.com/bicycling/coexist **FCBIKES**

In the United States, bicycles were a popular means of transportation in the pre-automobile age. In 1880, bicycle enthusiasts formed the League of American Wheelmen, later changed to League of American Bicyclists (LAB), and successfully lobbied for a national network of paved roads. This effort became known nationally as the “Good Roads Movement”.

Archival records from the Fort Collins Museum and Library system suggest that the bicycle has long been a chosen method of personal transportation in Fort Collins, as illustrated in the following images provided by the Fort Collins Library District.



Clara Preston Haldeman with bicycle at the Preston Farm, County Rd. 9; Fort Collins, Colorado.

Courtesy of Preston Glass Plate Collection.

Shoe Shop and Bicycles Repaired; Corner of Walnut and Pine, about 1890, Fort Collins, Colorado.



Since the time of the Good Roads Movement, the automobile has become the most popular means of personal mobility in the United States. In its infancy, it gave people the freedom to live farther from their places of work, giving way to rapid suburban development. The bicycle – ideal for short trips – lost its advantage as well as its place on the road.

Throughout the United States today, the bicycle is making a comeback. There are an estimated 100 million bicycles in the country, and 60 million riders (Bicycle Retailer and Industry News, 2007). The Front Range of Colorado is fortunate to have a climate that is conducive to bicycling year-round, whether for recreation or transportation. According to research completed for the

1995 Bike Plan, national and local surveys have found that more people would be willing to cycle more frequently if cities provided better bicycle facilities.

The increase in bicycling over the last three decades may be due to several factors. First, improvements in equipment such as fatter tires, sturdier yet more comfortable frame geometry, and more user-friendly braking/gearing systems make mountain and “hybrid” bicycles better suited to urban commuting. Second, increasing environmental awareness, together with progressive land-use and transportation leadership, has resulted in Fort Collins having one of the more respected and user-friendly bicycle transportation networks in the United States. Third, as more residents use bicycles for daily transportation, there has been increased advocacy for improved bicycling conditions. This has resulted in more miles of bicycle lanes, routes, and multi-use paths; more bicycle parking; innovative education campaigns; and enhanced maintenance of existing facilities. All of these factors have encouraged more bicycle riding.

These factors and a concurrent increase in the popularity of bicycling have led to a growing recognition among policy makers of the need to treat the bicycle as a serious mode of transportation. As early as the mid-1970’s, city staff and elected officials of Fort Collins began to adopt standards that included bikeways in road construction and reconstruction. In addition, as the City’s comprehensive plans have evolved, the bicycle has become an increasingly important component of a desired transportation system that provides safety, efficiency and perhaps most of all, choice. This is reflected in the adoption of plans and policies that are supportive of bicycle transportation.

The City of Fort Collins did not have an adopted Bicycle Transportation Plan until 1995. However, that does not mean that actions were not already being taken to facilitate bicycling for transportation in the community. As early as 1977, City staff had begun to identify and prioritize bikeways (typically in the form of on-street lanes) throughout the City. This effort was formalized with the Transportation Master Plan of 1980, which identified bicycle improvements to be completed between 1981 and 1985. The Transportation Master Plan in 1997, most recently updated in 2004, includes plans as well as financial recommendations for bicycle projects.

Through the early years, city transportation staff facilitated annual events such as Bicycle Rodeos, Safety Fairs, and Bike to Work events, the foundation for the ongoing bike events that we now enjoy year-round.

As policy and grassroots support has increased, additional funding has been made available for bicycle transportation improvements. This has been true on the local and state level, as well as the federal level through the 1990 Clean Air Act, the 1991 InterModal Surface Transportation Efficiency Act

(ISTEA), the Transportation Equity Act for the 21st Century (TEA-21), and most recently the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), which allows flexibility in spending highway funding through competitive grant processes on alternative modes such as bicycling, walking, and transit.

Fort Collins has rigorously pursued grant monies for bicycle improvements from sources such as Congestion Mitigation and Air Quality (CMAQ), Transportation Enhancements (TE), and Great Outdoors Colorado (GOCO lottery funds). Since 1995, the City has secured over \$20 million in federal grants.

The increased usage of bicycles, advocacy from the community, and increased policy and financial support from all levels of government has resulted in significant bicycle transportation improvements. The *2008 Bicycle Plan* is a direct result of these changes and is intended to set an aggressive course towards fulfilling the mission of expanding opportunities for the residents of Fort Collins to incorporate bicycling into their daily lives.

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Chapter 3: 1995 Fort Collins Bicycle Program Plan

DON'T BE THAT GUY...

Bicycling is illegal on downtown sidewalks, please walk your bicycle.

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AWARENESS. PATIENCE. COURTESY.

DOWNTOWN DISMOUNT ZONE

BICYCLE ACCESS KEY
 No bicycling on sidewalks zone.
 Recommended bicycle routes
 Experienced bicyclists only
 Rideable Alleyways

FCBIKES

The *1995 Bike Plan* was a comprehensive effort undertaken by city staff and community members with consultant assistance. The overarching goal was to bring forth goals and recommendations that aimed to help build a city where bicycling for transportation is an easy choice to make.

In the *1995 Bike Plan*, the intent of the various goals and objectives were refined into the following key recommendations:

- Hire a Bicycle Education/Encouragement Coordinator on City Staff.
- Expand the Fort Collins Bicycle Law Enforcement Program.
- Adopt or Amend applicable City Standards.
- Adopt or Amend applicable City Policies and Plans.
- Expand Efforts on Matters Involving Maintenance, Signalization and Parking.
- Implement the Fiscally Constrained Plan for Bicycle Facilities identified in the *1995 Bike Plan*.

Each of these key recommendations has been addressed, in some capacity, over the last 13 years. The following is an overview of those efforts and successes that have occurred since the implementation of the *1995 Bike Plan*. Additional information on existing conditions and future recommendations are included in the subsequent sections.

Hire a Bicycle Education/Encouragement Coordinator on City Staff

The City currently employs an Education and Encouragement Coordinator. The position was created in 1997, a direct result of the *1995 Bike Plan*. However, the position was vacant from 2003 to 2006. In addition to the coordinator position, the City of Fort Collins has marketed the bicycle education program known as FC Bikes. Further details on FC Bikes and the numerous activities pursued by the coordinator are included in Chapter 7 as well as on the FC Bikes website (www.fcgov.com/bicycle).

Expand the Fort Collins Bicycle Law Enforcement Program

Enforcement efforts have been ongoing including enhanced coordination with the City of Fort Collins Police Department. A Bicycle Registry program, available on the FC Bikes Website, was initiated to improve bicycle recovery rates and to deter bicycle theft.

Take Steps to Adopt or Amend applicable City Standards

Primary standards that apply to the development of bicycle facilities have been amended and adopted since 1995, including the following:

- The creation and adoption of joint standards between the City and Larimer County - the *Larimer County Urban Area Street Standards* (LCUASS), with relevant sections in Appendix A. These standards

include the Fort Collins Multi-Modal Level of Service Manual which is used to identify minimum requirements for bicycle level of service. LCUASS also determines criteria for bicycle facilities designed for new or reconstructed roadways as well as with proposed development.

- The Fort Collins Land-Use Code has been amended to reference LCUASS and the bicycle level of service standards, ensuring that they are applied on a consistent basis. The Land-Use Code has also been amended to require adequate, secure, and well-lit bicycle parking at all new development and redevelopment sites.

Take steps to Adopt or Amend applicable City Policies and Plans

Significant changes in City Policies and Plans have been realized since 1995:

- City Plan, updated in 2004, provides overwhelming support for the bicycle and continuation of the development of land use patterns that increase accessibility and convenience for all members of the community.
- The Transportation Master Plan of 2004 identified a comprehensive list of identified capital needs in the community.

Expand Efforts on Matters Involving Maintenance, Signalization, and Parking
Coordination on bicycle matters involving maintenance, signalization, and parking is continuously undertaken through several City departments: Streets, Traffic Operations, Engineering, and Parking Services. Maintenance concerns are more readily identified and addressed as a result of the initiation of the Adopt-A-Bikeway and Report a Bike Hazard link available on the FC Bikes Website. Signalization, signing, and striping projects have been ongoing throughout the City, with overall cumulative benefits. Bicycle parking locations with bike racks have increased to approximately 350 locations throughout the City, with a focus on downtown.

Implement the Fiscally Constrained Plan for Bicycle Facilities Identified in the 1995 Bike Plan

Many of the projects identified in the Fiscally Constrained Plan for Bicycle Facilities have been constructed. Along with the fiscally constrained recommendations, the 1995 Bicycle Program Plan provided a “Hot List” of high priority projects. These projects, a brief discussion, and current status are shown in **Table 1**.



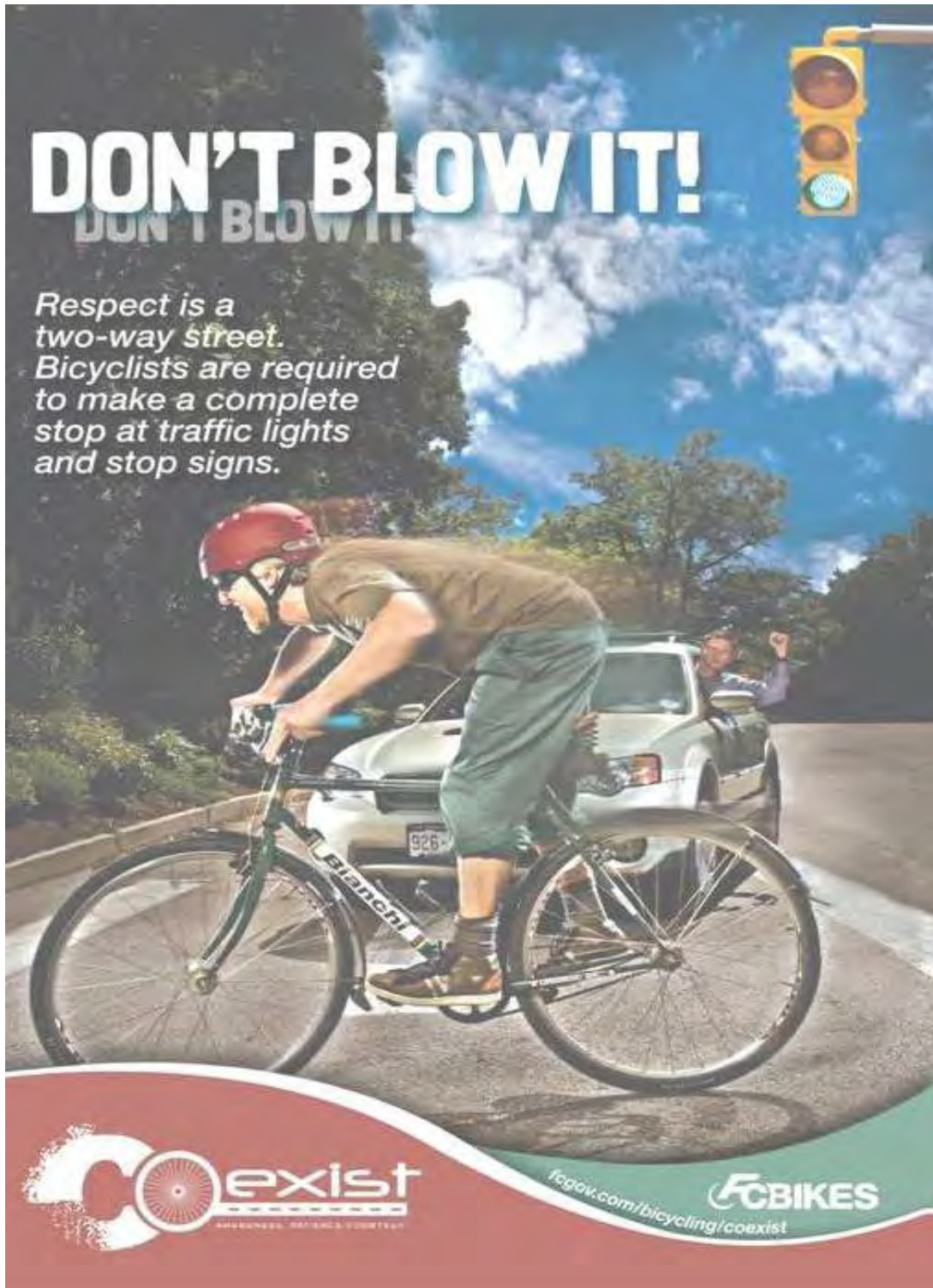
To both residents and visitors, it is apparent that great strides have been accomplished because of the quality and comprehensive nature of the *1995 Bike Plan*. It is also apparent that bicycling is a choice and priority for many residents and visitors in Fort Collins; therefore, it is imperative that the City continue developing and refining policies, expanding its efforts, and pursuing initiatives to further enhance opportunities for bicycling in Fort Collins.



Table 1. Hot List I from 1995 Bike Plan

Hot List I	Status
Harmony Road to Horsetooth Road (Mason Trail) Build underpass at Horsetooth; build new trail.	Partially Complete
Horsetooth Road to Drake (Mason Trail) Build underpass at Drake; assume use of bike lanes on McClelland.	Partially Complete
Drake to Prospect (Mason Trail)	Partially Complete
Prospect to Laurel (Mason Trail) Improve roadway paralleling railroad right-of-way; other improvements.	Not Complete / Part of Mason Corridor
Pitkin, College to Shields - Add Bike Lanes	Complete
Laurel, Shields to College - Add Bike Lanes.	Partially Complete
Horsetooth, Shields to Drake Improvements to the Mason and College intersections.	Complete
Lake, Shields to Center - Add Bike Lanes.	Complete
Elizabeth, Overland Trail to Taft Hill - Add Bike Lanes	Partially Complete / Identified in Future City Project
Laurel, Stover to Poudre River Trail - Add Bike Lanes.	Partially Complete
Linden/Redwood, Vine to Walnut - Add Bike Lanes.	Complete
Elizabeth, Remington to Lemay - Add Bike Lanes.	Partially Complete
Taft Hill, Mulberry to Prospect - Widen the Bike Lanes.	Not Complete
Shields, Spring Creek Trail to Horsetooth - Widen bike lanes north of Drake; maintenance needed as well.	Complete
Oak, College to Loomis - Improve/Add bicycle facilities, College to Howes.	Not Complete
Mulberry, College to Peterson - Add bike lanes, improve Remington, College intersection.	Not Complete
Drake, Shields to College - Improve railroad crossing, add bicycle facilities through College intersection.	Complete
Drake, College to Lemay - Add bike lanes, College to Stover.	Partially Complete
Poudre River Trail, College to Lemay - Improve tight turns at Linden; improve trail access at Lemay.	Complete
Lemay, Riverside to Prospect - Widen existing bike lanes.	Not Complete
Lemay, Prospect to Drake - Widen existing bike lanes.	Not Complete
Lemay, Drake to Horsetooth - Widen existing bike lanes.	Not Complete
Spring Creek Trail, Shields to College - Build a trail providing improved access from Shields.	Complete

Chapter 4: The Bicycle in Current City Plans



DON'T BLOW IT!

Respect is a two-way street. Bicyclists are required to make a complete stop at traffic lights and stop signs.

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Since the *1995 Bike Plan*, the City has succeeded in incorporating bicycle use and bicycle facilities in numerous City policies and plans. Specifically, this change has been integrated into the following planning documents:

City Plan (1997 & 2004)
Transportation Master Plan (1997 & 2004)
City of Fort Collins Land-Use Code
Downtown Strategic Plan
TransFort Strategic Operating Plan
Northside Neighborhoods Plan
East Mulberry Corridor Plan
I-25 Subarea Plan
Fossil Creek Area Reservoir Plan
Harmony Corridor Plan
Downtown River Corridor Plan
North College Corridor Plan
Mountain Vista Subarea Plan
Northwest Subarea Plan
Larimer County Urban Area Street Standards
Mason Corridor Vision Plan
US 287/South College Corridor Bike Plan



Each of the above-listed policies or plans, along with others, contributes to the development of opportunities for bicycling in Fort Collins. The *2008 Bicycle Plan* supports elements of these various plans while providing a strong foundation for the preparation and implementation of future bicycle-related improvements throughout the City of Fort Collins for the next 10 years.

In Fort Collins, the most important development supporting bicycling, of the last decade, is the adoption of the 2004 comprehensive plan, *City Plan*. The set of Community Values established in the *City Plan* are: Sustainability, Fulfillment, Fairness, and Choices. The Community Vision identified in *City Plan* recognized the need to address all modes of transportation and encourage development patterns that are conducive to pedestrian, bicycle, and transit travel.

Bicycle use is a critical element required to fulfill all four Community Values and this is well represented by the goals, principles, and policies established in the *City Plan*. The following excerpts from *City Plan* directly relate to bicycling through the promotion of bicycle use and the implementation of bicycle facilities is supported throughout the document.

Transportation Goal

“Our community will develop and sustain a safe, convenient, and efficient transportation system incorporating and integrating many modes of travel including automobiles, transit, bicycles, and pedestrians.”

Transportation Principle

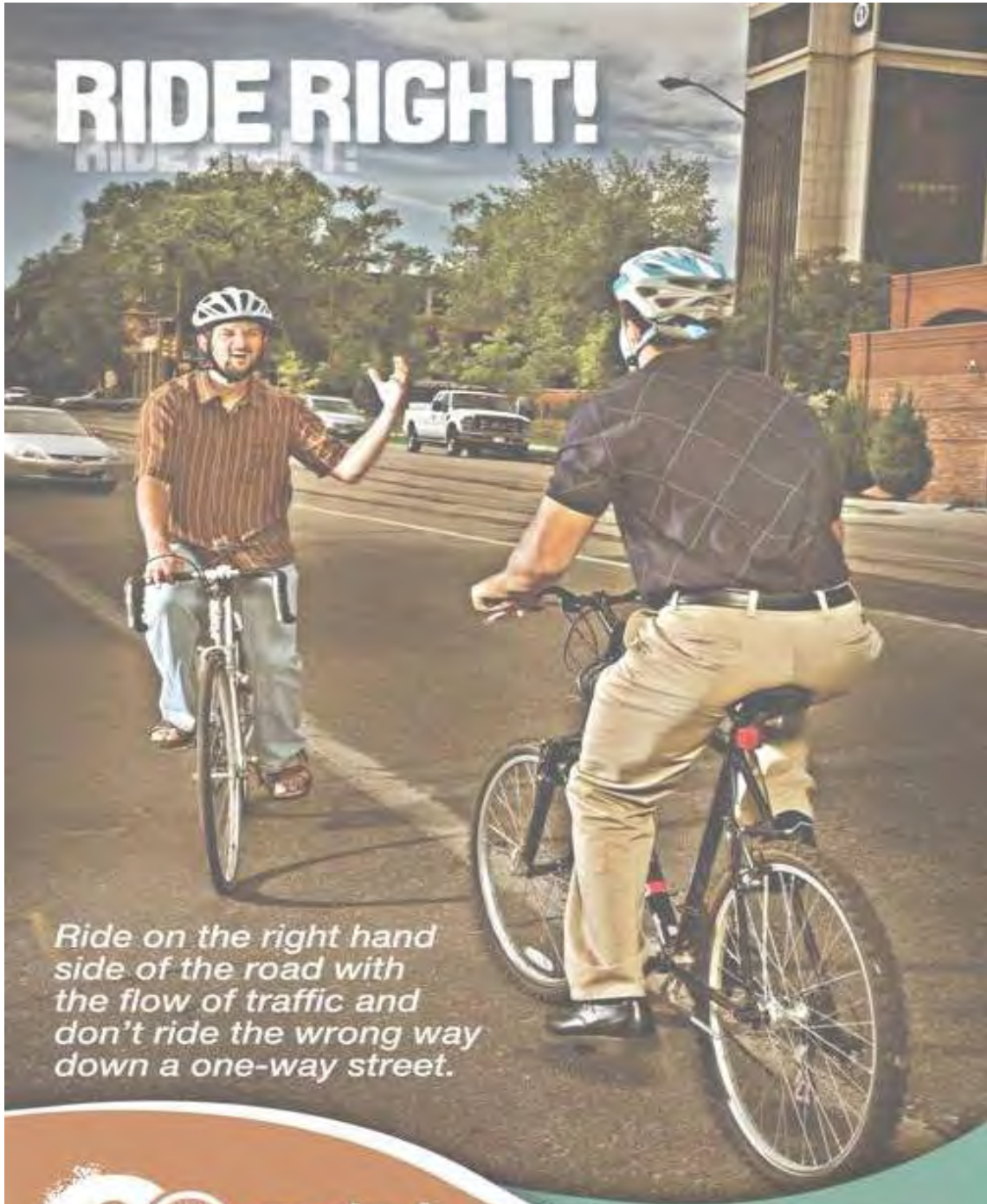
“The bicycle will be a practical transportation choice for residents and visitors.”

Transportation-related goals, principles, and policies established in the *City Plan* provide the foundation for the City’s *Transportation Master Plan*. The same goals, principles, and policies carried through both documents directly influenced the recommendations proposed in the *2008 Bicycle Plan* for all areas of concern, including engineering, education, encouragement, enforcement, environment, and economic development.

As a result of the adoption of the *2004 City Plan*, *2004 Transportation Master Plan*, and all of the other supporting plans and policies since 1995, bicycle facilities and bicyclists have been significantly integrated into the transportation network throughout the Fort Collins community.


Additionally, there are several other plans and initiatives being implemented by other departments within the City that encourage bicycling as well as measure the environmental benefits and evaluate the cost of transportation. Examples of current City initiatives include the *Climate Action Plan*, *Climate Wise*, *Mobility Plan*, and the *Sustainability Action Plan*. Coordination with these initiatives and more will continue in the local pursuit to promote bicycling as a mechanism for sustainability within the City.


Chapter 5: Local Participation



RIDE RIGHT!

Ride on the right hand side of the road with the flow of traffic and don't ride the wrong way down a one-way street.

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SHARE THE ROAD WITH BICYCLISTS

fcgov.com/bicycling/coexist  **FCBIKES**

The goal of the *1995 Bike Plan* was to ensure that bicycle transportation remained an easy choice for residents and visitors in Fort Collins. The goal of the *2008 Bicycle Plan* is to expand opportunities to incorporate bicycling into the daily lives of our residents and visitors. Active, local participation is required to accomplish this goal.

An extensive public involvement process was undertaken as part of the *2008 Bicycle Plan* preparation. It began with the development of a Citizen Advisory Committee (CAC). The CAC provided recommendations on physical improvements to our existing bicycle facility network. These recommendations are included in the *2008 Bicycle Plan* as the Hot List II in Chapter 6. After many meetings, much analysis, and numerous discussions, the CAC was able to refine the Hot List II based on safety, continuity, and overall access for the bicyclist.

In addition to the valuable input provided by the CAC, input was solicited from the entire community on many occasions and through multiple venues.

Upon request by the City Council and the Transportation Board it was suggested that further comment from local bicycle organizations, as well as City Boards and Commissions, be obtained to ensure comprehensive recommendations in the *2008 Bicycle Plan*. In response to this request, a presentation was prepared and shared with the following City Boards and Commissions, as well as local bicycling organizations, throughout the Fall/Winter of 2007.

- Air Quality Board
- Bike Fort Collins, a local bicycle advocacy organization
- Downtown Development Authority
- Economic Advisory Commission
- Natural Resources Advisory Council
- Parks and Recreation Board
- Senior Advisory Board
- Youth Advisory Board

Specific suggestions, representative of many that were heard, are provided below:

- Pursue Platinum Level Bicycle-Friendly Community Status with the League of American Bicyclists.
- Create image and campaign of a bicycle friendly place to live, work, and visit.
- Expand Hot List II to include interim solutions and far reaching visions.
- Address bicyclists of all levels.
- Emphasize the mix of all transportation modes.

- Address continuity by eliminating or signing abrupt endings of bicycle facilities.
- Evaluate economic benefits/costs of a bicycle-friendly community.
- Emphasize safety as a priority of the Bike Plan.
- Include bicycle facilities in the City's Way Finding Study.
- Support the pursuit of a downtown velodrome.
- Identify and increase bicycle parking downtown.

The above recommendations were presented at a public workshop held in December 2007. Comments, suggestions, and recommendations collected from the public as well as the above organizations were compiled and summarized. The big-picture input resulted in adding a new chapter to the *2008 Bicycle Plan* addressing the Economy, Environment and Community. Input received has been significantly beneficial in developing a bicycle plan that addresses specific community needs and provides recommendations based directly on the comments made during the public input process.

A direct benefit of the public outreach process and a positive example of community partnerships was City staff's recommendation to implement interim traffic solutions and to sign interruptions in bicycle facilities. The locations of these implemented interim traffic solutions were identified through the help of Bike Fort Collins, a local bicycle advocacy organization. Bike Fort Collins conducted a public meeting during which local bicyclists identified the top 10 dangerous spots in the City. Further information on this project is provided in Chapter 6.

The *2008 Bicycle Plan* demonstrates a concerted effort by the City of Fort Collins to be a progressive leader in establishing and sustaining a bicycle-friendly community. The plan is supported and encouraged by the people of Fort Collins.

The subsequent sections establish existing conditions, successful results from the *1995 Bike Plan* and perhaps most importantly, provide recommendations for the future based on the input shared by the public, local business community, boards and commissions, and City staff.

Chapter 6: Engineering



RIGHT HOOK

Another good reason to always wear a helmet, the Right Hook is the #1 accident between motorists and bicyclists. It is illegal for motorists to make a right-hand turn into the path of a bicyclist.

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SHARE THE ROAD SAFELY. COLLECTIVELY.

fagov.com/bicycling/coexist

FCBIKES

In order to provide a bikeway system that attracts both resident and visitor bicyclists and enhances opportunities for bicycling in Fort Collins, the City has aggressively pursued development of a comprehensive bikeway network that provides a high level of service and seamless travel.

Bikeways provide enormous benefits to both the cycling and non-cycling public. Bikeways attract more bicyclists, resulting in cleaner air, less noise pollution, and overall quality of life benefits. Bikeways use public dollars efficiently by reducing road maintenance costs and enhancing economic development. Bikeways increase the carrying capacity of the transportation system by lessening the demand for motor vehicle capacity. Well-established bicycle facilities improve safety for all users; bicyclists feel they have a secure space on the road and motorists are aware of bicyclists' presence and right to be on the road.

In general, the word "bikeway" will be used in this plan to refer to bicycle lanes, signed bike routes, trails, off-street, and multi-use paths, all of which are considered part of the bikeway network. For further clarification and to facilitate the following engineering discussions, bikeways are grouped into three broad categories: Priority Bikeways, Local-Service Bikeways, and Multi-Use Paths. These designations are based more on the intended purpose of the identified route rather than the physical treatment (trail, lane, route or otherwise) of the facility. These distinctions allow discussions on the bikeway network much like the roadway network – based on functional purpose, access to land use, and design features.

The three categories of bikeways are summarized below, followed by details of engineering design features, including examples within the existing bicycle network shown in Figure 1. Requirements and guidance on the design features for the City of Fort Collins are included in the LCUASS.

Priority Bikeways

Functional Purpose

Priority Bikeways are designed to establish direct and convenient bicycle access to all significant destinations within the City. These are usually found on streets designated as arterials or collectors within the Fort Collins street network.

Land Use and Development

Areas that are served by Priority Bikeways are employment centers, commercial districts, transit stations, institutions, recreational destinations, and local/regional centers.

Design Treatment, Traffic Operations, and Maintenance

- Design treatments that should be considered for Priority Bikeways are bicycle lanes, extra-wide curb lanes, wide shoulders, bicycle boulevards, and way-finding signs for local street connections.
- On-street motor vehicle parking may be removed on Priority Bikeways to provide bicycle lanes, except where it is essential to serve adjacent land uses.
- All destinations along a Priority Bikeway should have sufficient end-of-trip facilities (i.e. bicycle parking) to meet and support bicyclist's needs.
- Some Priority Bikeways are further designated as Priority Commuter Routes and should be maintained to minimize all surface hazards including but not limited to: grates, potholes, manholes, trash, loose sand or gravel, broken glass, other debris, and snow.

Local-Service Bikeways

Functional Purpose

Local-Service Bikeways are intended to serve as local circulation routes for bicyclists and provide access to adjacent properties and neighborhood centers.

With the exception of controlled access roadways and State Highways, all streets not classified as Priority Bikeways or Multi-Use Paths, are considered Local-Service Bikeways.

Design Treatment and Traffic Operations

Design treatments to be considered for Local-Service Bikeways are shared roadways, signed bicycle routes, traffic calming, bicycle lanes, and extra-wide curb lanes.

Multi-Use Paths

Functional Purpose

Multi-use paths are designed to establish efficient, convenient, and comfortable routes for bicycling, walking, and other non-motorized uses.

Land Use and Development

Multi-use paths are often appropriate in corridors not well served by the street system to create short cuts that link urban destinations and origins along continuous greenbelts such as rivers, park and forest areas, other scenic corridors, and as elements of a community or citywide recreational trail plan.

Design Treatment and Traffic Operations

Given specific location constraints, multi-use paths often take creativity to implement the most effective transportation system; however, general guidelines are summarized below:



- Multi-Use Paths should be designed as separate facilities that can be shared with pedestrians and other non-motorized users.
- Multi-Use Paths should be protected or grade-separated at railroad crossings, rivers, and intersections with major roadways.
- Multi-Use Paths should be identified through appropriately-placed signage.

Bikeway Design Treatments

As described above, the appropriate treatment for a bikeway depends on the street classification, anticipated bicycle destinations, motor vehicle traffic volumes, speeds, and street widths. Design treatments designating bicycle facilities in the City of Fort Collins are categorized and defined below.

Bicycle Lane

A bicycle lane is a portion of the roadway designated by roadway striping and bicycle pavement markings for the exclusive or preferential use of bicycles. Examples include Remington Street, Laurel Street, Swallow Road, and Harmony Road. The bicycle lane design treatment is used almost exclusively on all Priority Bikeways in Fort Collins.

Bicycle lanes can and have been implemented by 1) narrowing existing lanes, 2) removing a travel lane, 3) removing parking, except where it is essential to serve adjacent land uses, and 4) shoulder widening. Bicycle lanes may be implemented through stand-alone bikeway projects, through reconstruction or construction of roadways, and through routine resurfacing of roadways. However, when the street configuration requires significant modifications, a public process must be undertaken prior to the addition of bicycle lanes.

Although bicycle lanes may be the preferred treatment, City Design Standards require 6-foot to 8-foot bike lanes, and some streets contain circumstances that make installation of this standard width very difficult. These circumstances

include, but are not limited to 1) harm to the natural environment or character of the natural environment due to additional pavement, 2) severe topographical constraints, 3) economic or aesthetic necessity of retaining parking on one or both sides of the street, 4) existing buildings or development that are adjacent to the public right-of-way, and 5) high levels of traffic congestion that would result from eliminating travel lanes or reducing travel-lane widths. These circumstances, as well as public opinion, need to be evaluated carefully before a decision is made to implement bicycle lanes.

Bicycle Route

A bicycle route is a bikeway upon which signage or pavement markings are placed to indicate nearby destinations or another bikeway. Signed connections are used primarily on local, low-volume streets where bicycle lanes are not needed, as well as on or around major cycling destinations such as our neighborhood and community parks, schools, Old Town, or the campus of Colorado State University. Some examples include Mathews Street between Swallow Road and the Spring Creek Trail, Hinsdale Drive, and portions of Troutman Parkway. Bicycle routes are often the preferred method of designating Local-Service Bikeways in Fort Collins.

Local streets providing short (less than a half-mile) connections between Priority Bikeways or between a Priority Bikeway and a destination should ideally be delineated by guide signs. Some streets that are already signed as bicycle routes can be upgraded with bike lanes or way-finding aids that provide directional information about destinations and connecting bikeways. In addition, guide signs may be used to direct bicyclists to and around recreational facilities or to an alternate route where the preferred street cannot be modified due to serious financial or topographical constraints. Alternative methods, when bicycle lanes are not possible, may include but are not limited to wider outside lanes, wider sidewalks, shared roadway, and multi-use paths.

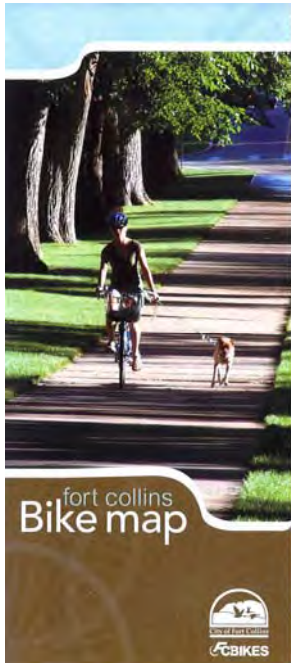
The appropriate treatment for local streets, not designated as a Bike Route and with fewer than 2,500 vehicles per day, is a shared roadway.

Multi-Use Path

A multi-use path is a bikeway that is at least 8-feet in width and usually separated from motorized vehicular traffic by an open space or barrier. It can be located either within the roadway right-of-way or within an independent right-of-way or easement. Multi-use paths are intended to provide adequate and convenient routes for bicycling, walking, and other non-motorized uses. Multi-use paths may be implemented in corridors not well served by the on-street bikeway network. Good examples in Fort Collins include the Mason Trail and the Spring Creek Trail.

The Fort Collins Transportation Planning Department and Parks Department generally work together to plan and develop multi-use paths linking origins and

destinations along continuous greenbelts such as rivers, creeks, irrigation ditches, and recreational trails. Existing and future multi-use paths are identified and advertised for public use on the most recent City of Fort Collins Bike Map and on the City website. Many trails shown on the bikeway network are already planned for implementation. Local examples include the extension of the Poudre River Trail to areas east of Interstate 25 and the extension of the Mason Trail north to Prospect Road.



A combination of all three design treatments is necessary to make up a comprehensive bikeway network for an entire community. The planning and implementation of these design treatments can be relatively simple and inexpensive, particularly if it occurs when the City restripes a roadway with bicycle lanes during a routine resurfacing. Design treatments can also be very complicated and costly, as with bikeways that require complete construction, widening, or grade-separated crossings.

Bicycle Level of Service

All streets except high-speed freeways should be accessible by bicycle. Whenever streets are reconstructed or constructed, appropriate bikeway facilities are considered to accommodate bicyclists' needs. This requirement is reflected in the adopted Fort Collins Multi-Modal Level of Service Manual (Appendix A).

This element of the City's Design Standards ensures that a minimum of Bicycle Level of Service "C" will be met with new development and redevelopment. These standards ensure that the bikeway network and conditions for bicyclists continue to improve with community growth and development.

Street Standards for New Construction and Reconstruction

As previously stated, Street standards for the City of Fort Collins are provided in the LCUASS and are used to specify the appropriate bicycle facility treatments for all new, reconstructed, or rehabilitated streets. Where neither the appropriate design treatment nor an acceptable alternative can be constructed under reasonable conditions, bikeway facilities should be constructed on a nearby (within a quarter mile) parallel roadway or Multi-Use Path. This strategy has been implemented resulting in the Mason Trail as well as Remington Street, both of which provide alternate bicycle access to destinations along South College Avenue.

When a street or intersection is constructed or reconstructed, standard design elements are incorporated into project design and construction whenever possible. This includes evaluation of bicycle use on all roadways and intersections, including roundabouts. When constraints exist and all standard

design treatments cannot be accommodated, decisions are made on a project-by-project basis through an interdepartmental review where all policies and perspectives are considered to ensure bicycle access and safety.

Bikeway Network Development

Ideally, all streets should be accessible by bicycle and as previously described bicycle facilities are phased in as streets are constructed or reconstructed. However, many streets simply are not reconstructed or widened, especially in older areas of the community with existing development constraints. These areas of the community often persist as “gaps” in the bikeway network and remain as obstacles to acceptable bicycle passage, access, and safety. Examples illustrating this issue include but are not limited to: North Shields Street, Taft Hill Road, and Prospect Road between Shields Street and Lemay Avenue.

Existing Bikeway Inventory

As of March 2007, within the City of Fort Collins, the current bikeway network consists of approximately 280 miles of bicycle lanes, 30 miles of hard-surfaced, multi-use paths, and many more miles of local-street bicycle routes. These existing bikeways form a fairly inclusive, interconnected network, as shown in **Figure 1**.

Maintenance

While implementing bikeways is important, keeping them in good condition is equally important. When a bicycle lane becomes cluttered with debris, for example, bicyclists are forced into the motor vehicle lane. Poor bikeway maintenance can contribute to accidents and deter potential bicyclists.

Since the mid-1980's, the City has maintained a pothole response hotline that allows motorists, bicycle commuters, or pedestrians a means of reporting street hazards promoting the clearing of debris from on-street bike lanes. In 2005, the City initiated an internet-based version, *Report a Bike Hazard*, in conjunction with the new *Adopt-a-Bikeway* program. Both are accessible on the FC Bikes Website. In a typical year, the City responds to approximately 250 to 300 requests. Policy states that service requests should be addressed within 48 hours. The City fixes approximately 99 percent of the requests – mostly sweeping, road repair, signing or striping, and storm-water grate repair. Approximately 1 percent of the requests were located outside of the City and forwarded to the appropriate authority.

Traffic Signal Operations

While most traffic signals in Fort Collins operate at preset times, some signals will not turn green until a vehicle is detected. Signals that depend upon vehicle detection are identified as actuated signals. Actuated signals often have push buttons designed for pedestrians. As a bicyclist, the only way to be detected at an actuated signal is to be correctly positioned over a signal detector loop (a

sensitive wire buried in the pavement) usually in the shape of a diamond. The loop detects the presence of metal in a vehicle and then relays the information to a signal control box. However, for the bicyclist it is difficult to determine the proper place to stop in order to trigger the detection loop, often resulting in the bicyclist running the red light after an undetermined wait period at the intersection.

The City of Fort Collins has about 165 intersections with some level of actuated signals. The majority of signals are “semi-actuated”, meaning only the side street or left-turn lane requires vehicle detection. The rest are “fully-actuated”, meaning all approaches and movements require vehicle detection.

Engineering Recommendations

Proposed Bikeway Network

The existing bikeway network, including Priority Bikeways, Local-Service Bikeways, and Multi-Use Paths is designed to provide a high level of service for bicyclists and encourage bicycle use. However, it has been requested by the public, business community, and local officials that improvements be made to further improve the bikeway network, both locally and regionally.

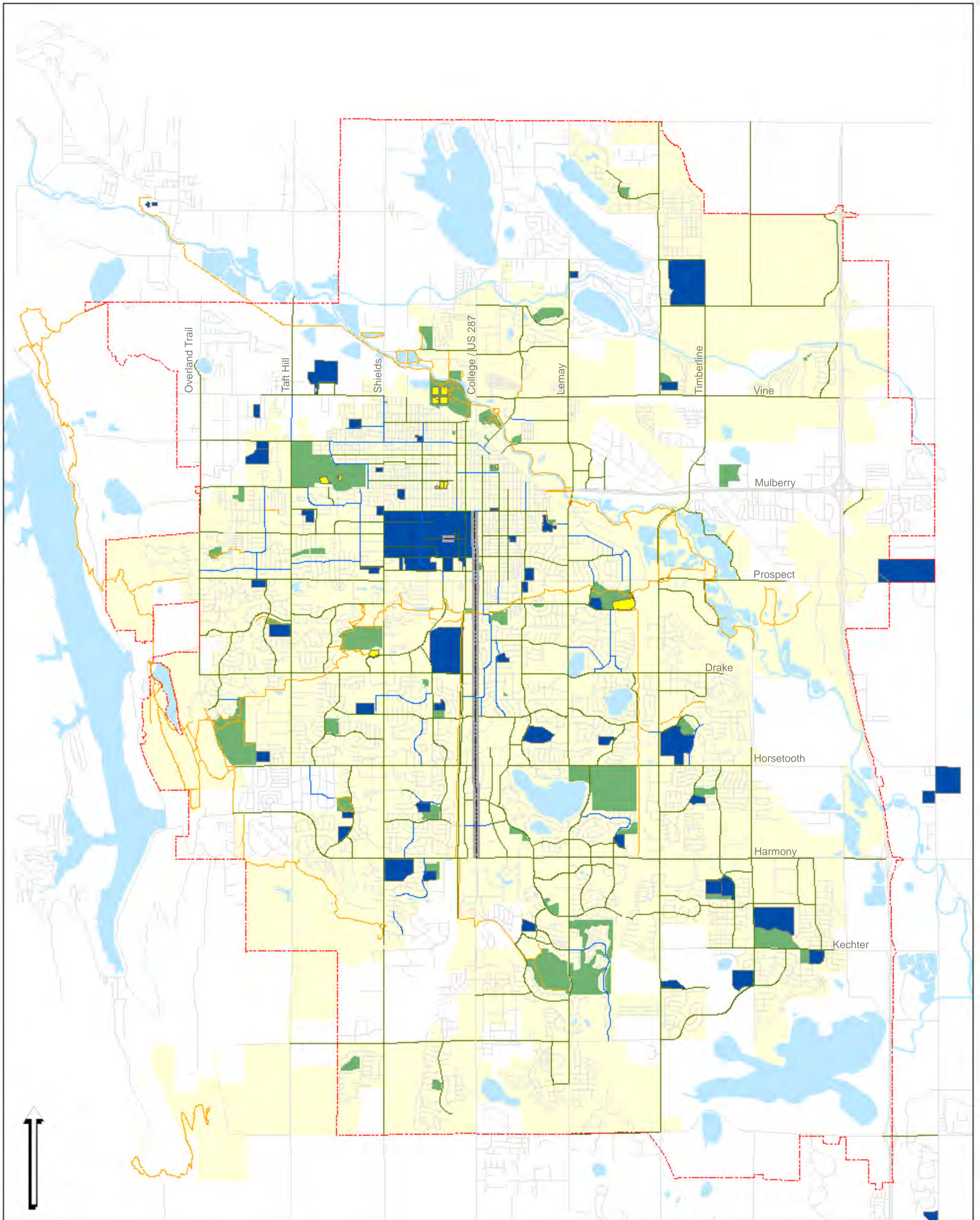
Recommendations resulting from the *2008 Bicycle Plan* are to complete the proposed projects in the *1995 Bike Plan*, identified as Hot List I and previously shown in Table 1, as well as the additional projects proposed in the *2008 Bicycle Plan*, identified as Hot List II and shown below in **Table 2**. The combination of these proposed improvements are visually identified in **Figure 2**.

Overall recommendations proposed in the *2008 Bicycle Plan* are a result of significant public input. A review of current facilities, future facilities identified in the Transportation Master Plan, and network connectivity were a critical part of the evaluation process. In general, proposed bikeways were recommended because they:

- Connect bicyclists to desired destinations such as employment centers, commercial districts, transit stations, institutions, and recreational destinations.
- Provide the most direct and convenient routes possible.
- Provide an alternative route where a Priority Bikeway may not be available.
- Provide an alternative route for less experienced bicyclists.
- Fill-in existing gaps in the bikeway network.
- Target locations with the potential for implementation in the next ten years.
- Lead a bicyclist to safe street crossings.

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Figure 1 Existing Bikeway Network






Legend

Existing Bikeways

-  Bike Lanes
-  Bike Routes
-  Multi-Use Path

Destinations

-  Schools
-  Community Facilities
-  Parks




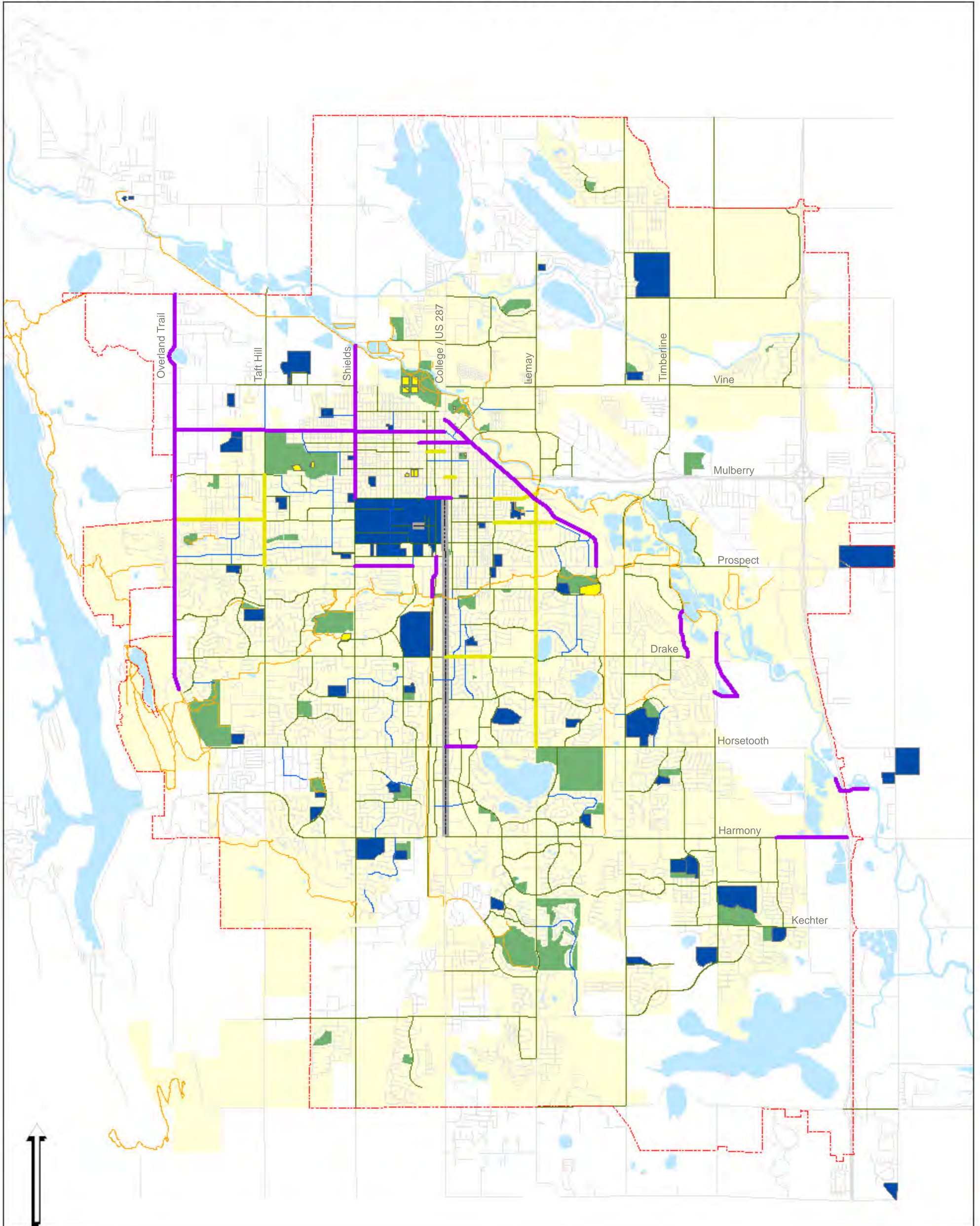
-  Fort Collins Growth Management Area
-  S. College Ave. "no ride zone"
-  Fort Collins City Limits



Figure 2 Proposed Improvements in the Bicycle Plan Update



Legend

- Remaining "Hot List I" Projects
- Hot List II Projects

Existing Bikeways

- Bike Lanes
- Bike Routes
- Multi-Use Path

Destinations

- Schools
- Community Facilities
- Parks

- - - Fort Collins Growth Management Area
- - - S. College Ave. "no ride zone"
- Fort Collins City Limits



Several priority projects that will lend themselves to network development, and also serve to encourage bicycle use were identified through the CAC established for the plan production. The criteria and ranking process used focused on how the proposed projects would increase safety, connectivity, and overall access for the bicyclist. This resulted in “Hot List II” which consists of proposed projects recommended for implementation within the next 2-5 years and is shown in **Table 2**. In addition to the location, there is a brief explanation of basis of the CAC recommendation. Hot List II was produced for planning purposes and is dependent on funding availability which may result in modifications as financial opportunities are presented for individual projects.

Table 2. Hot List II Projects

Hot List II Projects	Rationale
Horsetooth, College to Stover - Bicycle lanes	Existing gap in the arterial bikeway network
Laurel, Howes to Remington - Bicycle lanes or shared	Existing gap in the arterial bikeway network
Citywide Priority - Actuation at Signals	A new project proposed with this plan
Mason Trail - Grade separation at Harmony	Mason Corridor Project
Mason Trail - Grade separation at Horsetooth	Mason Corridor Project
Mason Trail - Grade separation at Troutman/BNSF	Mason Corridor Project
Mason Trail - Spring Creek Trail to Lake St.	Mason Corridor Project
Mountain, Meldrum to Riverside - Bicycle lanes or shared	Downtown Strategic Plan
Poudre Trail - Access to Timnath under I-25	Existing gap in the arterial bikeway network
Laporte, Overland Trail to College - Bicycle lanes	Existing gap in the regional bikeway network
Off-street Trail, Parallel Overland Trail - Lions Park to Spring Canyon Community Park	A new project proposed with this plan
Poudre River Trail - Extension to Environmental Learning Center and connection south to Drake Rd.	A new project proposed with this plan
Citywide Priority - Resurface asphalt trails with concrete	Identified Maintenance Needs
Shields, Laurel to Poudre River Trail - Bicycle lanes	Existing gap in the arterial bikeway network
Prospect, Shields to Centre/Mason Trail - Bicycle lanes or off-street	Existing gap in the arterial bikeway network
Mason Trail - Grade separation at Drake	Mason Corridor Project
Harmony, Cinquefoil to Strauss Cabin - Bicycle lanes	Existing gap in the arterial bikeway network
Conifer, College to Lemay - Resurface lanes	Identified Maintenance Needs
Riverside, Prospect to College - Bicycle lanes or off-street trail	Existing gap in the arterial bikeway network

Some of the projects on Hot List II are large, costly, and may take some time to secure funding. City Staff should continue to look for interim solutions to address access and safety concerns with regard to the projects on Hot List II as well as at other locations throughout the community.

During the public outreach process for the *2008 Bicycle Plan*, appropriate signage was recommended to improve notification and address continuity concerns at several locations, as shown in **Figure 3**. Signage installation at these initial locations was completed in the Summer of 2008 and it is recommended that this type of signage be installed at all appropriate locations.

Further recommendations include the full implementation of the Transportation Master Plan, including the Master Street Plan and all of the associated bicycle facility improvements. Currently, there are approximately 280 miles of arterial and collector streets with bicycle lanes, while it is assumed that most local streets are relatively comfortable for bicyclists. At full build-out of the Master Street Plan, slightly over 90 percent of Fort Collins' streets would have adequate bicycle facilities. This long-term scenario is visually represented in **Figure 4**.

FIGURE 3 PROPOSED BICYCLE SIGNAGE



LOCATION

- 1 HORSETOOTH: STANFORD TO COLLEGE
- 2 LAUREL: REMINGTON TO HOWES
- 3 SHIELDS: NORTH OF LAUREL
- 4 TAFT HILL: ELIZABETH TO LAPORTE
- 5 RIVERSIDE
- 6 ELIZABETH: WEST OF TAFT HILL
- 7 PROSPECT: EAST OF COLLEGE
- 8 LINCOLN: OLD TOWN
- 9 MASON AT HORSETOOTH
- 10 COLLEGE AVE: CHERRY TO "Y"

NEW SIGN TYPE

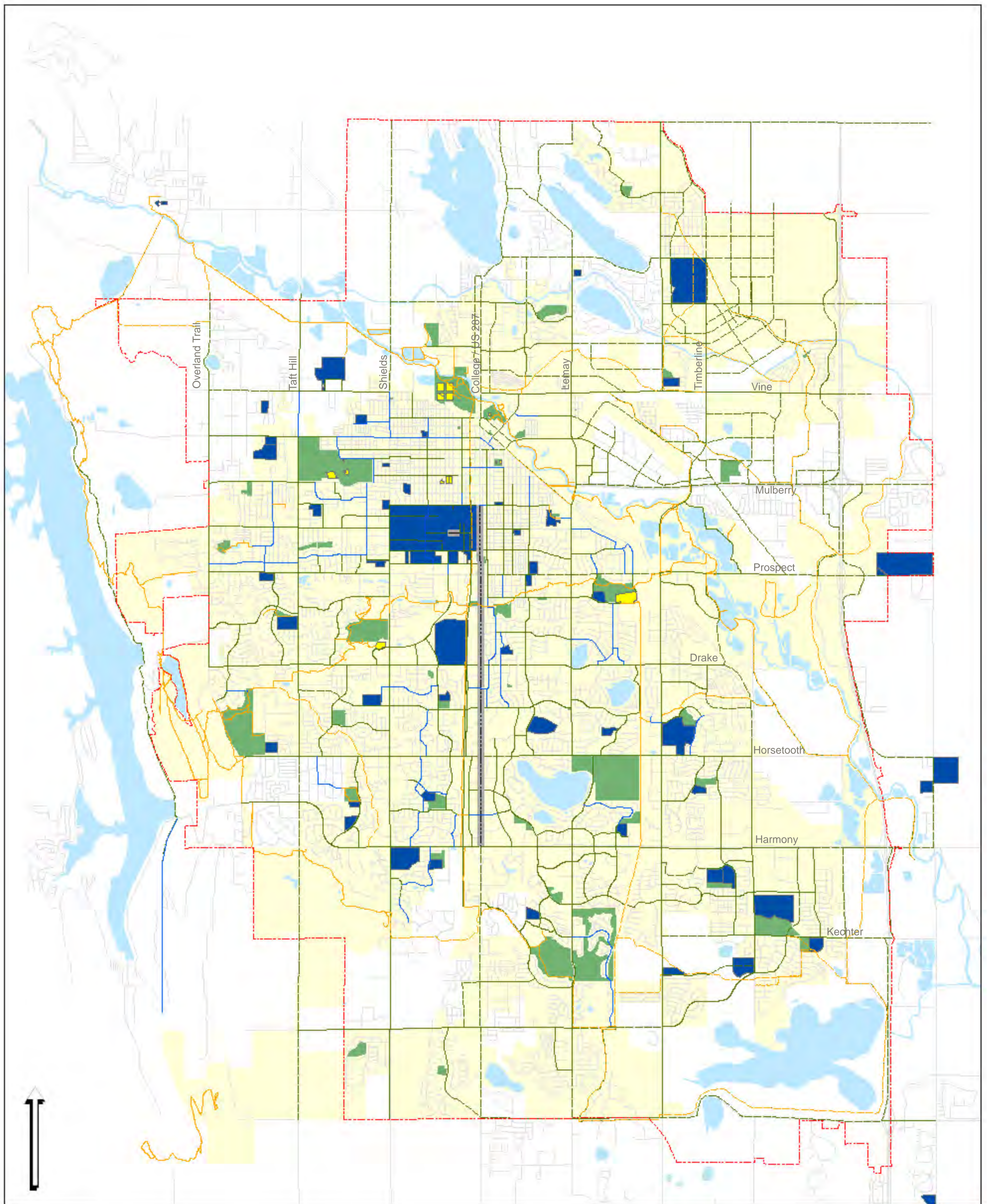
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- A, B
- A
- A
- B
- A

SIGN LEGEND



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Figure 4 Planned Bikeway Network



Legend

Planned Bikeways proposed in the Master Street Plan

- Bike Lanes
- Multi-Use Path

Existing Bikeways

- Bike Lanes
- Bike Routes
- Multi-Use Path

Destinations

- Schools
- Community Facilities
- Parks
- Fort Collins Growth Management Area
- S. College Ave. "no ride zone"
- Fort Collins City Limits



Maintenance

It is recommended that the City increase the amount of attention paid to the Priority Bikeways. Improvements routinely requested by bicyclists through the *Report a Bike Hazard* program are considered high priorities for regular maintenance.

As a result of the work undertaken during the 2004 update of the *Transportation Master Plan*, CAC input, public comment, and staff analysis, several Priority Commuter Routes have been slated for enhanced maintenance. Enhanced maintenance should include but is not limited to frequent sweeping and rapid snow removal. Currently, the majority of requests for annual bikeway maintenance come after the City lays gravel subsequent to winter storms. While the presence of gravel presents little problem for motorists, it collects in bicycle lanes and on shoulders. This, in turn, causes a safety hazard as well as a severe nuisance for bicyclists. In response to this established maintenance need, it is recommended that street sweeping be scheduled as soon as possible following gravel distribution.

The Priority Commuter Routes are comprised mostly of Priority Bikeways that link major activity centers and other important destinations throughout the community, and are shown in **Table 3**.

In an effort to mitigate the City's maintenance cost, local residents should be encouraged to take an active role in reporting areas along the bike lanes and bike trails where excessive debris has accumulated. The City's online pothole/debris reporting mechanism allows for comments to be made electronically and efficiently (<http://fcgov.com/streets/pothole-report.php>). In addition, Fort Collins residents should also be encouraged during the winter not to shovel or plow snow into the streets and/or bike lanes. Snow shoveled into the street or bike lane will melt and then refreeze causing hazardous conditions for bicyclists. Shoveled and plowed snow should remain on private property.

Table 3. Priority Commuter Routes

	Commuter Route	Description
Primary Commuter Routes	Shields St.	Laurel St. to Trilby Rd. (bike trail access)
	Lemay Ave.	Country Club Rd. to Carpenter Rd. (bike trail access)
	Overland Trail	Drake Rd. to Poudre River Trail (bike trail access)
	Laporte Ave.	Overland Trail to Taft Hill Rd.
	Prospect Rd.	Overland Trail to Shields St.
	Harmony Rd.	Taft Hill Rd. to Harmony Transfer Center
	Timberline Rd.	Mountain Vista Dr. to Carpenter Rd.
	Horsetooth Rd.	Taft Hill Rd. to Zeigler Rd. (bike trail access)
	Taft Hill Rd.	Laporte Ave. to Harmony Rd.
	Drake Rd.	Overland Trail to Zeigler Rd.
	Zeigler Rd.	Drake Rd. to Kechter Rd.
	W. Vine Dr. / E. Vine Dr.	Shields St. to Taft Hill Rd. / N. College to Timberline
Secondary Commuter Routes	Centre Ave.	Lake St. to Shields St. (bike trail access)
	W. Laurel St.	Remington St. to Shields St.
	Elizabeth St.	Overland Trail to Shields St. and College to Lemay
	Boardwalk Dr.	Mason St. to Harmony Rd. to Lemay Ave. to Keenland Dr. to McMurray Ave. to Harmony Rd. to Power Trail (Horseshoe Trail access loop)
	*Linden St.	Jefferson St. to E. Vine Dr. to Redwood Trail (bike trail access)
	*Redwood St.	E. Willox Ln. to Conifer St. to Redwood Trail (bike trail access)
	*E. Willox Ln.	Redwood St. to N. Lemay Ave.
	*Mountain Ave.	Grandview Ave. to Mason St. (bike trail access)
	*Loomis Ave.	Laurel St. to Sycamore St. to Sherwood St. to Lee Martinez Park (bike trail access)
	*Remington St.	Mountain Ave. to Spring Park Dr. to Mathews St. to Drake Rd. (bike trail access)
*Swallow Rd.	Dunbar Ave. to Lemay Rd. (bike trail access)	

* Denotes commuter routes that will be cleared following priority routes

Traffic Signal Operations

As previously stated, it is often difficult for bicyclist to trigger detection devices at actuated intersections throughout Fort Collins. It is recommended that alternative options be further researched and considered to minimize or eliminate the inability of bicyclists to trigger traffic signal operations. Such recommendations might include, but are not limited to, the following:

- Installation of bicycle-sized detection loops in bicycle lanes at all intersections with signal detection.
- Installation of traffic signals with video or motion detectors at intersections with high-levels of bicycle traffic. This approach tends to provide a higher level of service for bicyclists
- Encourage bicyclists to stop within the signal detection range necessary in order to actuate the traffic signal by labeling the bicycle stop areas with stencils.

As a result of the public input process for the *2008 Bicycle Plan*, “presence” detectors were installed at six intersections (eleven approaches) to increase detection of bicyclists. Presence detectors make a call for a green light for as long as a vehicle (including a bicycle) is present. Initial reaction to the presence detectors has been positive; however, public outreach to bicyclists would ensure their ability to identify the proper stopping location to trigger the new detectors. Effectiveness at these locations will continue to be evaluated as part of the recommendation, as well as expansion to other intersections. Video detectors have also been evaluated by the City but due to the considerably-higher price tag, they are not scheduled for installation at this time. The City will continue to seek new technologies for bicycle detection at intersections.

Innovative Bicycle Traffic Solutions

Improving the ease and efficiency of bicycling, as well as the safety of the bicyclist are high engineering priorities. The following innovative recommendations are a good start to accomplishing these goals. However, it is imperative that the City continue to be progressive and aware of all potential opportunities to improve the transportation network for bicyclists.

Bicycle Boulevards

A bicycle boulevard is a shared roadway that has been optimized for bicycle traffic. In contrast with other shared roadways, bicycle boulevards discourage cut-through motor vehicle traffic, but typically allow local motor vehicle traffic, and are designed to give priority to bicyclists.

Bicycle boulevards are designed to offer the advantages of cycling on shared arterials roadways that experienced bicyclists typically value, combined with the advantages of bicycle paths that appeal to inexperienced or young riders. Experienced bicyclists can enjoy lower traffic volumes without significant

increases in trip time. For less experienced bicyclists, bicycle boulevards can serve as "stepping stone" facilities that help them move from bicycle paths and trails onto shared roadways.

Bicycle boulevards use a variety of traffic-calming elements to achieve a safer environment. For instance, diverters with bicycle cut-outs at mid-block allow motorists to enter the roadway in order to park or otherwise access a property while allowing bicyclists to continue to the next block, but do not allow motorists to continue through. Typically, these modifications are thought to calm traffic, improve pedestrian safety, and encourage bicycling. The purpose of a bicycle boulevard is to improve bicycle safety and circulation by having or creating one or more of the following conditions:

- Low-traffic volumes (or bike lanes where there are medium-traffic volumes).
- Discouragement of non-local motor vehicle traffic.
- Free-flow travel for bikes by assigning the right-of-way to the bicycle boulevard at intersections wherever possible.
- Traffic control to help bicycles cross major arterial roads.
- A distinctive look and/or ambiance to encourage bicyclists and make motorists aware that the roadway is a priority route for bicyclists.

Bike Box

The bike box is an intersection safety design to prevent bicycle/car collisions, especially those between drivers turning right and bicyclists going straight. The "Right Hook" is the most common accident between bicyclists and motorists as illustrated in **Figure 5**. It is a delineated box on the road with a bicycle symbol inside. It includes bicycle lanes approaching and leading from the box. The main goal is to prevent collisions between motorists turning right and bicyclists going straight. At a red light, bicyclists are more visible to motorists by being in front of them. At a green light, the bike lane through the intersection reminds motorists and bicyclists to watch for each other.

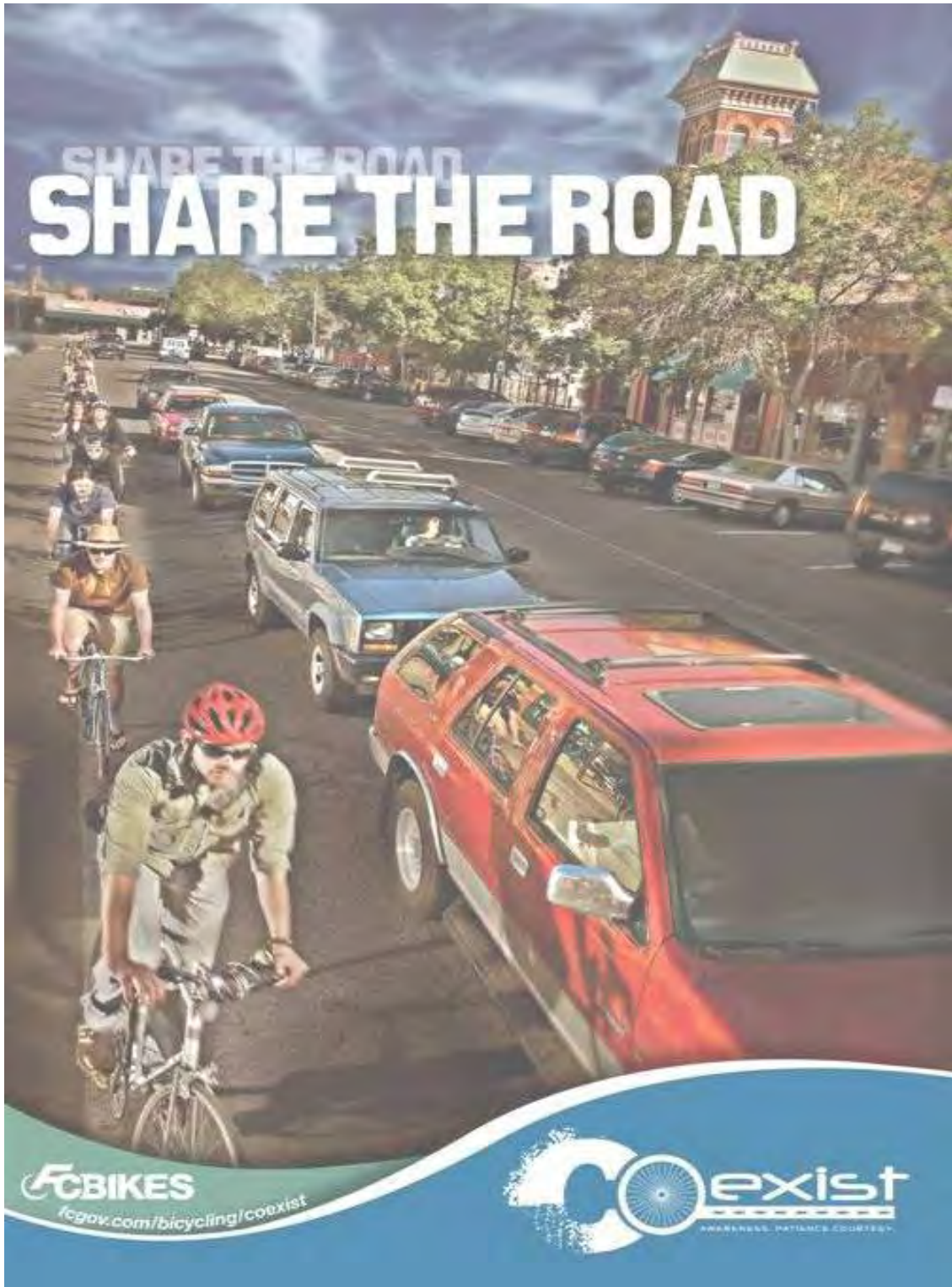
Currently, the City of Fort Collins does not have any Bike Boxes. The most appropriate locations for implementation should be designated in cooperation with Traffic Engineering and based on vehicular and bicycle traffic volumes as well as intersection design.

Figure 5 - Bike Box



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Chapter 7: Education, Encouragement & Enforcement



Education, Encouragement & Enforcement **Chapter 7**

One of the most effective ways to increase bicycling in a community is to improve the bicycle facilities. Although several recommendations for bicycle facility improvements were provided in detail in Chapter 6, bikeway improvements cannot be the only facet of a community-wide bicycle plan. There is also a need for proper education, encouragement, and enforcement in order to address safety, quality, and efficiency of bicycling.

Education goes hand-in hand with encouragement to increase cycling; together they improve skills and raise awareness. For example, a bike to work day encourages more people to ride for transportation purposes: it also teaches urban-riding skills, the importance of wearing a helmet and the necessity of using lights at night. Teaching children cycling skills and the importance of wearing a helmet builds their confidence as bicyclists and encourages them to ride more often.

Existing encouragement measures in the community include:

- Providing a bikeway network, end-of-trip facilities, and bicycle transit service.
- Holding event such as bike to work day, business challenges, and festivals.
- Providing information and/or maps with recommended cycling routes.
- Providing education and safety programs, and other bicycle related activities.

It is often asserted that the greater the presence of bicyclists on the road, the more aware motorists will become. It follows then that over time both may gain comfort around each other and do a better job sharing the roads of the community.

Enforcement is critical in maintaining safety on the roadways for both bicyclists and vehicular traffic, and since the position of the City is that enforcement measures be rooted in education, they are addressed in this same chapter of the *2008 Bicycle Plan*. Education, encouragement, and enforcement programs are recommended with high expectations for the most effective results for the entire community. With better education, cycling can and will become safer. Both motorists and bicyclists need to do their part to make cycling safer and more attractive for residents and visitors in Fort Collins.

FC Bikes and the Bicycle Coordinator



In response to 1995 Bicycle Plan, the City hired a Bicycle Coordinator in 1996. Beginning in 2003, due to budget cuts the position remained un-staffed. In 2006, City Council responded to a tremendous outpouring of public support for the position and once again funded a Bicycle Coordinator for the City. The implementation component of the *1995 Plan* and now the *2008 Bicycle Plan* is known as *FC Bikes* and is managed by the Bicycle Coordinator.

Primarily funded by a Congestion Mitigation and Air Quality (CMAQ) Grant administered by the North Front Range Metropolitan Planning Organization (NFMPO), the overall purpose of the FC Bikes program is to improve air quality and ease roadway congestion by incorporating bicycles into the everyday lives of citizens, Colorado State University students, regional commuters, and visitors to Fort Collins. The FC Bikes strategy is focused on behavioral change, encouragement, and education. By creating and maintaining a bicycle-friendly community atmosphere and support system, the FC Bikes program encourages citizens to use bicycling as their preferred method of personal transport.

FC Bikes, as part of the City of Fort Collins' Transportation Planning Department, is responsible for:

- Maintaining the City's bicycle planning and program web page.
- Researching, developing, and pursuing funding sources, including federal grants for future bicycle programs and events.
- Serving as a contact point and ombudsman for bicyclists to City of Fort Collins' Departments involved with bicycle transportation, recreation, and public safety.
- Replying to citizen complaints and concerns and acting as a point of contact for issues related to bicycle non-profit operations.
- Communicating with the public about bicycle improvements and or temporary hazards.
- Coordinating and cooperating with local bicycle-advocacy groups to assist them in the planning, development, and implementation of special bicycle education events and activities.

As the project manager of FC Bikes, the Bicycle Coordinator position also serves as an ombudsman to the bicycle community and as a liaison between the City departments that handle bicycle-related capital projects/programs. The position provides for public awareness and comprehensive education regarding improvements to bicycle facilities, bicycle events, and other bicycle-related projects. The coordinator assists in organizing activities and

information among the various bicycle interests in the City. To utilize resources effectively, the Bicycle Coordinator relies on public, private, and non-profit partnerships to address bicycling issues and to disseminate information. Current community partners include such organizations as Poudre School District, Colorado State University, Poudre Valley Hospital, and Bike Fort Collins.

Implementation of the recommendations provided on Education, Encouragement, and Enforcement, in the following sections, will be the primary task of the Bicycle Coordinator, with the support from Transportation Planning and other appropriate City Departments.

Education

Education is an important element in increasing bicycling while also improving safety. People often assume that as cycling increases, so will the number of crashes. This need not be the case as has been demonstrated in other cities. The word “education” has many facets when it comes to bicycling. This section will address several educational components.

- Developing safe cycling skills in children.
- Teaching adult bicyclists their rights and responsibilities.
- Teaching motorists how to more effectively share the road with bicyclists.

Target Groups and Existing Education Programs

Youth Bicyclists

School children are most effectively reached when an action-oriented teaching approach and repetitive practice process are coupled with awards and incentives. Awards and incentives can consist of certificates of completion or bicycle/pedestrian licenses, free or reduced cost bicycle helmets and other accessories (such as bicycle lights or bells), or discount coupons from area bicycle shops.



Safe Routes to School

The City’s existing *Safe Routes to School* program has recently undergone a major expansion. Focusing on five E’s – Education, Encouragement, Engineering, Enforcement and Evaluation – the *Safe Routes to School* program works collaboratively with local elementary, junior high, and high schools to provide programming and capital improvements throughout the city. After establishing a Safe Routes to School Task Force in 2007, *Safe Routes to School*

has been working collaboratively with community stakeholders to effectively engage citizens, families and youth in getting more kids walking and biking. Working in conjunction with Bicycle Colorado, Bike Fort Collins, local bike shops, and local fire departments, *Safe Routes* ensures that local youth receive relevant and age-appropriate education information.

Safe Routes provides education to local youths and their families through in-class education, social marketing and events. Encouragement programs include a spring Bike to School Day, fall participation in International Walk (and Bike) to School Day, and Walk and Wheeling Wednesdays. Engineering and capital improvement projects are assessed through site audits and solutions are identified in conjunction with Poudre School District, as well as several departments within the City. In addition to the enforcement efforts of the Fort Collins Police Department, the *Safe Routes to School* program sponsors a mobile speed radar unit and works with Traffic Engineering to deliver the Traffic Tamers program where citizens can track speeding vehicles with the use of a speed radar gun. Evaluation efforts are implemented based upon best practices as determined by the National Center for *Safe Routes to School* housed at the University of North Carolina.



More information about *Safe Routes to School* is available at www.fcgov.com/saferoutes.

The City has been working closely with schools to ensure that school-age children are receiving an age-appropriate bicycle safety message and are learning skills that will help them function safely on the public right-of-way. A *Safe Routes to School Sustainability Guide for Sustainability and Best Practices* has been produced by the City for distribution to all of the schools in the Poudre School District. Traditionally, *Safe Routes* has been targeted at elementary-school aged children. It has been determined through close coordination with administration, staff, students, and parents, that students of all grades (K-12) can benefit from the general messages taught through the *Safe Routes* programs. The following messages have been consistently taught through many mediums:

- Wear a helmet. In the event of a bicycle crash, wearing a helmet reduces the risk of serious head injury by up to 85%.
- Obey all traffic laws. Bicyclists have the same rights and consequently the same responsibilities as others users of the roads.

- Look both ways before crossing streets.
- Always ride with the flow of traffic.
- Be predictable. Always signal your intentions.
- Be visible. Wear light colored, bright, or reflective clothing and always use a front light and rear reflector at night.
- Use the bike map. Look for a route that is suitable to your comfort and skill level.
- Very young children should ride with a parent.
- When riding with a group of children, it's strongly advised that an adult ride in both the front and behind to monitor disparate abilities.



Summer B.I.K.E. Camp

Beginning in the summer of 2008, FC Bikes, together with the City Recreation Department, initiated a summer bike camp for youths. B.I.K.E. (Bikes Improve Kids' Experiences) Camp is a week-long, educational bike camp for children 8-12 years old that teaches children the basics of bicycling in a recreational setting. B.I.K.E. camp addresses the following components of bicycling in Fort Collins:

- Road rules like bike safety, traffic signs/signals, and intersections.
- Emergency skills like quick stops, scan for cars, and rock dodge.
- Bike handling skills and drills on an agility fun course.
- Recreational riding to familiarize children with riding bikes along the Poudre and Spring Creek Trails.
- Maintenance skills to include fix-a-flat, cleaning, lubrication, safety checks, lights and bells.

B.I.K.E. Camp is a great example of private-public partnerships to develop bicycle programs because it is funded by private sponsorships and facilitated by City staff. Expansion of the program to different age groups and various skill levels is already in the planning stage.

Adult Bicyclists

Adult bicyclists fall into several different categories of riders. Some adults are comfortable riding on busy streets and mixing with traffic while others prefer quieter streets or multi-use paths. There are adults who ride a bicycle only a few times a year and those who ride often, both for transportation and/or recreation. Finally, some ride for their profession, such as bicycle police or messengers. A large component of the adult bicyclists targeted with the education, encouragement, and enforcement programs are students at CSU.

Each type of adult bicyclist has his/her own concerns and philosophy about how bicycles fit into the transportation system. Education and encouragement efforts must recognize this fact and tailor messages to each group.

It is also important to reach as wide a range of bicyclists as possible. Since adults do not often group together as a captive audience (as school children often do), the City has provided a wide range of opportunities to improve their knowledge and skills as they relate to bicycling. The following messages have been provided consistently throughout all activities:

- **Be alert.** Watch for other users and sudden behavior changes. Pay careful attention to potential road hazards such as potholes and gravel. Adjust speed to maintain control of the bicycle.
- **Obey all traffic laws.** Although it is tempting to run through traffic signals and stop signs, do not do it. Bicyclists have the same rights and responsibilities as motorists. Disobeying traffic laws gives bicyclists a bad reputation and is potentially dangerous.
- **Always ride with the flow of traffic.** Ride where motorists and others expect bicyclists, and never ride against traffic.
- **Be predictable.** Signal your turns, do not weave in and out of traffic, and stay as far to the right as possible, except when:
 - Traveling the same speed as traffic
 - Avoiding hazardous conditions
 - Preparing to make a left turn, passing another vehicle or using a one-way street (in which case riding along the left curb is permitted)
 - The roadway is too narrow for a bicycle and a motor vehicle to travel safely side-by-side
 - Riding alongside another bicyclist in a manner that does not impede the normal flow of traffic.
- **Be visible.** Wear light-colored, bright, or reflective clothing and always use front and rear lights. Rear reflectors are also advised when cycling at night.
- **Wear a helmet.**
- **Use the bike map.** Look for a route that is suited to your comfort and skill levels.
- **Stay off sidewalks whenever possible.** In Colorado, bicycles are legally classified as vehicles and should behave as such. Unless specifically signed for shared use, as on bridge sidewalks or multi-use paths, sidewalks are primarily intended for pedestrians. In some cases it is appropriate for young or less experienced bicyclists to ride on the sidewalk although bicyclists must always be watchful of pedestrians on the sidewalk. When using sidewalks, bicyclists are required to warn pedestrians audibly when passing (verbally or by bell), yield the right-of-way in conflict situations, and travel at a walking speed at driveways

and intersections when a motor vehicle is approaching. Remember, that motorists are not expecting bicyclists to approach them at driveways or approaches.

- **Do not drink alcohol and ride.**

Other Bikeway Users

Apart from bicyclists, other forms of transportation are legally allowed to move in the bike lane. Wheelchair users are able to utilize a bike lane in the event an adjacent sidewalk does not exist or if a sidewalk does exist, but does not provide adequate access for wheelchairs.

Motorized and electric scooters under 50cc (cubic centimeters) may use bike lanes but are required to yield to wheelchairs and bicyclists in the bike lanes.

The City's non-motorized multi-use trails or bike trails include specific stipulations regarding use. Bicycles, skateboards, and rollerblades must yield to wheelchair users, pedestrians, and equestrians. No motorized vehicles, including electric assist bicycles or scooters, are allowed on bike trails throughout Fort Collins.

Limited information on proper bike trail use can be found through the City's Natural Areas and Parks Department.

Motorists

The main goal in educating motorists is to foster a broad range and general public awareness/respect for bicycling. What would amount to a minor fender bender between two motor vehicles could result in serious injury in a bicyclist-motor vehicle crash. Information and education has been provided to motorists on good driving behavior with the primary safety messages as follows:

- **Be alert.** Watch for other users and sudden behavior changes, especially at intersections.
- **Obey all traffic laws.** Driving the speed limit and coming to a full stop at red lights creates a safer environment for all.
- **Be predictable.** Signal your turns well before an intersection. The law requires use of turn signals in advance of intersections and bicyclists depend on turn signals to judge where to be.
- **Be patient.** Passing bicyclists just before a stop sign or signal creates an atmosphere of unnecessary hostility.
- **Do not honk unless necessary.** Bicyclists can see and hear motor vehicles; honking may cause unnecessary alarm.
- **Give room.** Bicyclists have to react to hazards that a motorist may not see (e.g., glass, storm grates, dogs, car doors). Follow and pass at a safe distance.

The Downtown Bicyclist

The City of Fort Collins and local stakeholders are working to make bicycling safer for bicyclists and pedestrians in the downtown area. Bicycling on the sidewalks in the downtown area is prohibited. This educational program has an enforcement aspect to it as well. Police officers will ticket bicyclists and skateboarders for riding in the dismount zone. As of September 2008, the cost of the ticket is \$50.00.

FC Bikes, Bike Fort Collins, Downtown Development Authority, Downtown Business Association, and Police Services are working together on an education and enforcement initiative to eradicate bicycling on the sidewalk in downtown. Educational posters from the Coexist Campaign, public outreach, press releases, and e-mail list-serve notifications will precede an enforcement component performed by the Police Services District One Station located downtown. It is our goal that these two components, education and enforcement, produce a behavior change in bicyclists downtown.

The following text is stated on the City's Police and Bicycle web-pages regarding bicycling tips in downtown Fort Collins:

“Bicycling on College Avenue is legal but recommended for experienced bicyclists who are comfortable riding with traffic. To access the downtown area on low-traffic streets North and South, please ride Mason St. (North only), Howes St. (south only), as well as Remington St., and Mathews St. Low-traffic East-West connections to downtown include Laporte Ave. to Walnut, Mountain Ave., Oak St., Olive St. and Magnolia. Always be sure to carefully cross railroad tracks at a 90 degree angle as the tracks can otherwise “trap” a wheel causing an accident. Railroad tracks can also be very slippery, especially during wet conditions.

Alleyways also create excellent low-traffic bicycle connectivity throughout downtown, but be alert for pedestrian, motorist, and other bicyclist activity. Ride predictably and respectfully. Communicate through the use of hand signals, a bike bell, and ride with front and rear bike lights at night when bicycling anywhere in the City of Fort Collins. Finally, always wear a helmet.”

For a complete view of bicycle routes through the downtown, as well as the perimeter of the dismount zone, please refer to **Figure 6**.

Figure 6 – Downtown Bicycling



Existing Public Campaigns

The FC Bikes program strives to create and maintain an overall atmosphere of safe and friendly bicycling in Fort Collins. Below are descriptions of current campaigns:

- **Adopt-a-Bikeway and Hazard Reporting Campaign** – This campaign enables commuter bicyclists to take an active role in maintaining safe bike lanes and bike trails. The adopt-a-bikeway program is a partnership between FC Bikes and the Streets Department and is designed to encourage bicyclists in Fort Collins to report hazardous conditions along their favorite bikeway. By signing up for the Adopt-a-Bikeway program, bicyclists pledge to report hazardous conditions along their preferred Bikeway Route. Hazardous conditions include: large amounts of debris, such as drag out or cinders, broken glass, potholes, cars parked in the bike lane, fallen limbs, or slippery paint. This program is implemented through the FC Bikes website.
- **“Be Seen, Be Heard” Campaign** – This campaign promotes riding at night with bike lights. Legally, the State of Colorado requires bike riders to ride at night with a front bike light. Use of front and rear bike lights is strongly advised throughout Fort Collins. By sounding a bike bell, bicyclists inform other road and trail users of their presence thereby avoiding conflicts or collision. FC Bikes implements this campaign by distributing bike lights and bike bells during special events and through local bicyclists giving them to other bicyclists who are without bikes and bells.
- **Coexist Education Campaign** – Adult bicyclist and motorist education is a two-way street. Bicyclists, as well as motorist, and pedestrians, need to be educated on how to coexist in an urban environment so that close calls and accidents can be reduced. Colorado State University students are one of the main target demographics for this education campaign. FC Bikes worked with a local art photographer to create visually-enhanced images depicting seven of the most important messages for bicyclists and motorists:
 1. **"Be Seen"** - encourages bicyclists to ride at night with lights.
 2. **"Don't Blow It"** - encourages bicyclists to stop at red lights and stop signs at intersections where cars are present
 3. **"The Blinder"** - encourages bicyclists to watch for cars backing out of diagonal parking spaces, and motorists to be aware of backing out into the path of a moving bicyclist
 4. **"Ride right"** - encourages bicyclists to ride on the right hand side of the road and to flow with traffic, not against it.
 5. **"Right Hook"** - encourages motorists that bicycles have the right of way and educate them not to make right turns directly into the way of a bicyclist.

6. **"Share the Road"** – encourages all modes to share the road.
7. **"Don't Be That Guy"** – encourages bicyclists to walk their bikes on sidewalks downtown.

Educational messages must be entertaining and visually stimulating to be effective. People are hit with over 5000 marketing messages a day, so we must be effective in our efforts to grab a person's attention. Implementation of this campaign is accomplished through print advertisements, flyers, posters, and electronic dissemination, such as websites and e-newsletters. In the *2008 Bicycle Plan*, these messages are incorporated into the Chapter dividers – please take a look.

Encouragement

Bicycling Support System

FC Bikes provides a support system for the use of the existing and planned bikeway network on a daily basis. The foundation for FC Bikes includes information valuable to the bicyclist, is listed on the FC Bikes Website, and includes the following:

- Accident and close call reporting (track trends).
- Bike trail and bike lane closure and detour information.
- "Momentum", an electronic newsletter providing current information on commuting and bike events.
- Free online bicycle registry for lost or stolen bicycles.
- Online bicycle hazard reporting function.
- Creation and update of the new Fort Collins Bike Map.
- Working-map illustrating a network or grid of streets that will consistently be free of snow, ice, and debris year-round.
- BLT (Bike Lunch Talk), a monthly venue for bicyclists to express concerns and discuss local bicycling issues.

Events

Special events are an important means for FC Bikes to encourage bicycling. FC Bikes has taken a year-long approach to events. This is a key strategy that helps maintain momentum through all seasons. Each event has a specific goal that may include attracting new bicyclists; celebrating our local, rich bicycle culture; focusing on safe bicycling to school at the elementary, junior high, secondary, and college levels; and providing initiatives to keep bicyclists on the road and supported during the winter months.

Spring Events – "Roll into Spring" – This program takes place from March to May, and was created to attract new bicyclists. Past events and potential future ones include:

- **Resources for Bicycling in Fort Collins** – Part of the Environmental Program Series, this event provides the opportunity to learn about bicycling in Fort Collins. Attendees have the opportunity to meet local bike clubs/advocacy groups as well as get tips on commuting safely and efficiently.
- **Bike to School Day** – An official Bike to School Day, this event is promoted in cooperation with the Poudre School District. The event reinforces the ongoing Safe Routes to School program and targets students, staff, faculty, and parents.
- **Earth Day / Bike Fair at Colorado State University** – This event is produced in conjunction with CSU and Earth Day efforts. It provides fun activities associated with commuting in Fort Collins by bicycle.
- **Bike & Lunch** – Through this event, FC Bikes collaborates with the Parks and Recreation Department to reach older demographics. The event is focused on promoting bicycling to this demographic by way of interesting and fun social interaction.
- **Spring Warm Up Bike Rides** - Fort Collins Cycling Club hosts this “hands on” event by leading several rides for all abilities throughout Fort Collins.
- **Community Bike Fair** – Offered at the Downtown Transit Center, this day-long event includes a bike swap, children’s obstacle course and bike rodeo, bicycle information booths, prizes, food, and entertainment.
- **Adaptive Cycling** – Collaborating with Parks and Recreation Department, this event seeks to encourage those with physical disabilities to enjoy bicycling.



Summer Events – “Bike Week”

Coordinating the Colorado Department of Transportation’s (CDOT) annual Bike to Work Day and Bike Month which is in June, Bike Week is a focused program of culturally rich bicycle events that utilizes the energy of local bicycling non-profit organizations and the resources of both public and private partnerships. It also emphasizes the importance of encouraging bicycling as a form of sensible transportation and creating a truly bicycle-friendly community. Past events and potential future ones may include:

- **Commuter Kickoff** – Bike Week kickoff event. This event encourages hundreds of commuter bicyclists to meet for a short, early-morning ride through Fort Collins.

- **Local Bicycle Films** – FC Bike requests bike films produced by the local community. The film showcases contest winners at local venues.
- **Bike Pedal vs. Gas Pedal Challenge** – Bicyclists will challenge motorists on a 5-stop errand race through Fort Collins.
- **Bike to Work Day** – Free breakfasts for bicyclists! The tradition lives on. In 2008, over 4500 bicyclists participated.
- **Downtown Bike Show** – Downtown bike show on College Ave.
- **Cruise to the Movies** – Cruise around town before ending at New Belgium Brewery for an outdoor bike movie.
- **Bike n’ Jazz** – Outdoor jazz musicians and refreshments Spring Creek Gardens.
- **Bike Bazaar** – Bike rodeo, bike swap, bicycle sculpture installation, bike shop, non-profit booths, entertainment, and food.



“Ride Autumn”- The fall program addresses three key points dealing with transportation throughout Fort Collins. **Safe** transportation to school for students of all ages is the foremost objective. **Sensible** transportation suggests an economical, environmental, and healthy means of transportation like walking, bicycling, and riding the bus. **Steady** transportation means developing a routine for implementing methods of sensible transportation on a regular basis. Events focus on attracting new students, staff, faculty, and parents as bicyclists.

In addition, the fall involves specific events as described below:

- **Safe Routes to School Program** – Education and encouragement program targeted at school-aged children, as previously described.
- **Annual Safety Fair** – FC Bikes incorporates a bike rodeo into this event providing a bicycle education and encouragement component for children and their parents. The bike rodeo and helmet-fitting activity teaches children bicycle safety.
- **Walk or Bike a Child to School Day** -- In 2005, more than 3 million children, parents, and community leaders from 37 countries around the world joined together in celebrating the International Walk to School Day. The goals of the walk vary from community to community. The Walk and Bike to School Day rallies for safer and improved streets,

promotes healthier habits, and is environmentally friendly. This event is planned in cooperation of the City of Fort Collins, the Safe Kids Coalition and the Can Do Organization.

- **Take a Kid Mountain Biking Day** – Mountain biking teaches children excellent bicycle handling skills that transfer to comfortable bicycling trips to school and other rides in the urban environment. In addition, this event requires parents to attend as well encouraging more of the family to bicycle together.
- **New Belgium’s Tour de Fat** – A fund-raising event for local charities, which includes a bike parade, music, and entertainment.
- **Pedal to the Point** – Recreational “fundraiser” ride.
- **Horsetooth Double Dip** - Recreational “fundraiser” ride.

Winter Events – “Bike Winter Fort Collins” This program is designed to support and encourage commuting by bicycle during the winter months, and to help “bridge the gap” between fall and spring events. Past, as well as potential future events include:

- **Bike Thru Winter** – This workshop offers participants an opportunity to “winterize” their bicycles by adding fenders, racks, lights, and baskets thus making their bicycles better equipped for year-round transportation. Attendees also learn tips on how to beat the cold and ride smart.
- **Winter Bike to Work Day** – The focus of this event is that, “If it can be done in the summer heat, it can be done in the cold of winter.” This event strives to break the negative stereotypes usually associated with seasonal commuting by bicycle.

Education and Encouragement Recommendations

Given the magnitude of existing educational and encouragement programs currently under way, recommendations for the future are to maintain the existing programs and level of momentum.

Further recommendations include:

Expand the *Safe Routes to School* program to include more local partnerships, additional schools, and extend to junior high and high school levels.

Continue development and implementation of innovative and unique education and encouragement programs, campaigns, and events. Foster relationships between non-profits, advocacy, and community groups that will strengthen public-private partnerships to initiate bicycle programs and infrastructure.

Continue working with CSU on bicycling education, encouragement, and enforcement programs, as well as coordinating on bicycle maps for both on and off campus.

Expand coordination with local businesses, initiate an incentive program to improve bicycling facilities, and encourage programs that influence more employees to bike to work. Examples of improving bicycle facilities include providing secure, weather-free bicycle parking, and shower/locker facilities for bicyclists. An incentive program for employees might include some form of compensation for those who bike to work.

Implement Innovative community events such as a Cyclovia (also Ciclovía), meaning a car-free boulevard. Cyclovia means either a permanent designated bicycle route or a temporary event closing of the street to automobiles to allow dominance by other users. The most prominent examples are in Colombia but the concept is growing in popularity within the United States. For example, some cities block off main streets for a car-free event every Sunday and holiday. Along the streets are walkers, skaters and bicyclists as well as other social and musical events. One of the best reasons to implement a Cyclovia is that it promotes physical activity and health. There are other obvious social and cultural benefits derived from using the public streets as an open meeting area, as well as the environmental benefits of cleaner air and increased safety.

For all education and encouragement efforts, it is recommended that continued efforts be made to encourage additional demographics to take up bicycling including but not limited to: senior citizens, minorities, business executives, parents of elementary school children, and college students.

Enforcement

The intent of the *2008 Bicycle Plan* is to propose complementary recommendations for Engineering, Education, and Encouragement programs that ultimately result in less enforcement of bicycle safety rules. That said, FC Bikes is still engaged in the enforcement component of the bike plan to ensure the most effective approach.

FC Bikes has been working with local government agencies, primarily including Fort Collins Police Services, CSU Police Services, and Larimer County Sheriffs, to provide effective enforcement through programs such as the “Be Seen, Be Heard” campaign. This program has been well received. In addition, FC Bikes coordinates with local agencies to educate bicyclists regarding the dismount zone, as referenced in the previous section on Education.

The Bicycle Coordinator also serves as a point of contact for local agencies that may have suggestions or questions regarding enforcement issues. At the same time, FC Bikes consistently sends an overall message through events and media, that safe and respectful bicycling is just as much the responsibility of bicyclists as it is motorists.

FC Bikes has been working on instilling within the bike culture of Fort Collins the concept of self-regulation and self-enforcement. This concept can be achieved through peer influence and eye-catching marketing campaigns that teach and/or influence bicyclists how to ride respectfully within an urban setting.

Enforcement Recommendations

Enforcement measures should complement the other facets of the bike plan, specifically, the Education component. Education initiatives combined with enforcement measures to ensure the success of many programs. It is recommended that the implementation of enforcement measures not be done in isolation; rather, designed in a comprehensive approach that utilizes other major components of the *2008 Bike Plan* such as education and encouragement.

Further recommendations include:

Disseminate current and appropriate bicycling information to and from local enforcement agencies. This is an important aspect in order to maintain consistent City messaging regarding local ordinances and to bridge the gap of understanding between bicyclists and police officers.

Continue to work closely with local enforcement agencies to create innovative, pro-active education campaigns including enforcement that foster the safety of bicyclists, pedestrians, and motorists.

Encourage and coordinate official trainings for local enforcement agencies to ensure all City personnel are knowledgeable of current local, regional, and national bicycle policies and ordinances.

Review and potentially update enforcement techniques for handling special events such as critical masses and other protests to further bridge the communication gap between bicyclists and local enforcement agencies. Promote a constructive process to determine what types of behavior require enforcement agency involvement.

Explore the creation of a *Share the Road Safety Class*. The class could be offered as an educational activity or for first-time law violators, whether


driving, bicycling, or walking, to educate on specific laws related to bicycle and pedestrian safety.

Regarding the theft of bicycles in the City, coordinate with local enforcement agencies to set up sting operations using GPS tracking systems on bicycles in order to lead authorities to the thief and the evidence itself. These sting operations may provide additional information on bike theft rings.

Coordinate with local enforcement agencies to set up crosswalk stings to ticket drivers that don't yield to pedestrians in addition to stings that ticket bicyclists that ignore traffic laws.

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Chapter 8: Economy, Environment & Community



THE BLINDER

Motorists, check twice before backing up. Bicyclists, be aware of cars backing out.

FCBIKES
fsgov.com/bicycling/coexist

coexist
COMMUNITY PARTNERSHIP

This chapter addresses the connection between the bicycle and the economy, environment, and community, and was a direct result of the public outreach process pursued during preparation of the *2008 Bicycle Plan*. The need to not only consider the connection but also to realize the effect a healthy bicycle network would have in the City's goals of healthy environmental development, continued environmental stewardship, and a quality community.

Economy

The *1995 Bike Plan* briefly touched on the economic benefits of bicycling in the community. Now more than ever, Fort Collins is beginning to understand the economic benefits of promoting bicycling within the community. Infrastructure, sporting events, recreational biking, bicycling facilities, and a desired way of life lead to a greater promotion and understanding of how the bicycle can complement our City's economic considerations. Fort Collins' unique bicycle culture appeals to its residents, future residents, employers, and visitors.

Destination for Bicycle-Oriented Travel

The foundation of cycling in this community confirms that Fort Collins has earned its place in the history of competitive cycling in North America. In 1983, North America's most prestigious stage race, the Coors Classic, passed through Old Town on a leg from Cheyenne, Wyoming to Boulder, Colorado. That was only the beginning; currently, we have the pleasure of hosting events such as the Fort Collins Cycling Festival, well established community celebrations such as the Tour de Fat, competitive events such as the USA Cycling Collegiate Nationals, and the Six Day Races at CSU's Oval.

Fort Collins is home to many cycling champions, including Eddy Gragus, winner of the 1996 United States Professional Road Race. In addition, the CSU Rams Cycling Team is currently 3rd in the nation and has also brought national recognition to Fort Collins. All of these accomplishments put Fort Collins on the map as a bicycle-oriented destination, and help foster a sense of pride in the bicycle community.

Bicycling, as a sporting event, has taken off in Fort Collins. As more residents take up bicycling, so does the interest in bicycle sporting events. Bicycle races make an excellent spectator sport. The energy of the peloton and the racers brings an air of excitement and suspense to event attendees. Bicycle sporting events can attract thousands of people to Fort Collins who in turn spend money on dining, shopping, and accommodations; therefore, the

economic return is a worthy investment when planning and supporting these types of events in Fort Collins.



The initiative of the Fort Collins Velodrome Association to build a velodrome in downtown Fort Collins is a community-based effort to bring local, regional, and international racing to Fort Collins. While a velodrome in Fort Collins presents an economic opportunity in the form of a unique Fort Collins' attraction, other benefits surface as well, such as health and extracurricular activities for a variety of Fort Collins

residents. A velodrome also has far-reaching community impacts such as its potential partnership with CSU Rams Cycling.

Fort Collins is home to several bicycle recreation clubs. Through bike clubs and special-event promotions, visitors come to Fort Collins to enjoy our world-class road and mountain biking, then stay in hotels, shop, and dine out. The truth to the statement that "Fort Collins is a Bicycle-Friendly Community," combined with the way the local culture embraces the bicycle, keeps visitors coming back.

The *Bike Fort Collins* organization has a vision of creating a bicycle museum. Currently, they have created the "Museum Without Walls" exhibit throughout downtown Fort Collins. Vintage, rare bicycles are placed in ten business locations. Residents and visitors of Fort Collins can enjoy a walking or riding tour to these locations to learn about the history of bicycling. Perhaps in the future, a Fort Collins bicycle museum will become a renowned destination for bicycle enthusiasts.

In summary, there are numerous people, and organizations as well as a great deal of energy focused on making Fort Collins a destination for bicycle-oriented travel. The Fort Collins Convention and Visitor's Bureau actively promotes bicycling to regional and national tourists and makes a concerted effort to attract bicycle-related conferences and events to Fort Collins.

Bike to Work, Work to Live, Live to Bike

Fort Collins should also be promoted as a city in which to relocate or start a business. Employers and their employees want to live and work in a place where a bicycling culture is prevalent. They want to live in a city where it is possible to bike to work, the store, the library, and to school. There is a growing population of Americans who want to live in a community where they

have transportation alternatives with which to enjoy local amenities and services. Fort Collins lends itself to this type of bicycle culture and promotes a vibrant lifestyle for both employers and employees.

Local Bike Shops

There are currently 17 bicycle shops in Fort Collins. This demonstrates the popularity of bicycling in Fort Collins. Bicycle and bicycle-related gear sales provide substantial sales-tax revenue for Fort Collins.

Local Bicycle-related Manufactures

Fort Collins is home to several businesses that currently produce bicycle products nationally. Two examples are Cycle-Tote Bicycle Trailers and Black Sheep Bikes both of which produce bikes and bike-related items locally in Fort Collins.

Economic Recommendations

It is recommended that FC Bikes, appropriate city departments, and community organizations, individually and collectively, continue to support and encourage infrastructure development, bicycle sporting events, recreational biking, and bicycle facilities such as the velodrome. This does not necessarily mean financial assistance, but is intended to encompass support through coordination efforts, promotion, and education.

Further recommendations include:

Support and co-promote efforts with local bike shops to get more people on bicycles. Bike-related encouragement and educational campaigns have a positive and substantial effect on local bike shops, bike non-profit organizations, and the City's FC Bikes efforts.

Embrace and support the local bicycle culture and use it as a tool to attract employers, business, and visitors. The bicycle friendly nature of Fort Collins will complement other quality-of-life characteristics such as renewable energy efforts, open space, and recreation.

Pursue bicycle-related businesses and manufacturers, in cooperation with the City of Fort Collins and the Fort Collins bicycling community, as well as support existing bicycle-related businesses in Fort Collins.

Environment

The bicycle is a low-cost and effective means of transportation that is quiet, non-polluting, extremely energy-efficient, versatile, healthy, and fun. Bicycles are relatively inexpensive to acquire and maintain, are a good source of

exercise for the health-conscious traveler, and are dependable in all but the most inclement weather. They are also extremely flexible vehicles that can operate in a wide variety of settings and result in desirable, environmental benefits.

Riding a bicycle has many positive effects on the environment, both physical and social, for all residents and visitors in Fort Collins. Every time a person chooses a bicycle over an automobile, air polluting emissions are minimized. Every time a person chooses a bicycle for recreational purposes, the visual image of them riding promotes the City's trail system. Every time a person can make a choice to live near where they work and play so that they can ride their bicycle daily, City land-use codes are validated. A combination of these benefits results in an enhanced environment for residents and visitors of Fort Collins.

Local statistics on bicycling in Fort Collins and its direct impact on the air quality conditions are prepared annually for the CDOT, in order to comply with current Congestion Mitigation and Air Quality (CMAQ) grant requirements. Statistical information is based on trip-reduction benefits from those people that choose the bicycle over the vehicle for transportation.

The extensive trail system in and around the City of Fort Collins is heavily used. There are 30 miles of hard-surfaced, multi-use paths along with over 30 miles of trails appropriate for all levels of bicyclists. The trails provide direct access to open space and natural resource areas while encouraging an environmentally friendly mode of transportation. This not only reduces pollution but instills a sense of ownership for the quality of our local, natural, environment.

City Plan and associated land-use codes encourage residential development near employment, education, and recreation hubs. Along the proposed Mason Corridor/MAX Bus Rapid Transit Project, the City has implemented a Transit Oriented Development (TOD) overlay zone. Within the TOD zone, mixed-use development, including residential, retail, and office space, will be the primary use. This type of development minimizes distances people must travel in a day and promotes the bicycle as a viable transportation option. In addition, there are no automobile parking requirements in the TOD overlay zone, discouraging vehicular use and encouraging bicycle use.

Environmental Recommendations

Implementation of all recommendations provided in the attempt to meet the purpose of the *2008 Bicycle Plan* and ultimately increase the use of the bicycle on a daily basis will improve the overall environment in Fort Collins. One primary impact will be on air quality as air quality directly benefits from the

reduction of vehicular trips. An improved bicycle network would provide the opportunity for more bicycle trips and fewer vehicular trips. In addition, enhanced connectivity for the bicycle with both transit and pedestrian access, provides further opportunity for vehicular trip reduction. The following chapter, Multi-Modal Connectivity, provides an overview of existing conditions and recommendations for multi-modal linkages.

Specific environmental recommendations include enhanced measurement methods of environmental benefits. This is complicated as many environmental benefits are secondary and/or cumulative; however, it is recommended that further investigations be done to determine adequate and accepted practices of analysis and quantification.

It is also recommended that efforts and coordination continue with other City departments and initiatives underway, such as Climate Wise and the Climate Action Plan, to quantify the cost of transportation and the economic and environmental benefits of alternative modes of travel.

In addition to establishing measurement methods and determining benefits, it is recommended that FC Bikes provide this information regularly to the public and decision makers. It would be helpful to be better able to quantify or at least qualify some environmental benefits of bicycle riding and bicycle facility improvements.

Community

To a great degree, the bicycle is integrated into all facets of life in Fort Collins. FC Bikes program has capitalized on this aspect of our community and is working to build relationships between existing bicycle non-profit organizations, other City departments, the County, local businesses, the Convention and Visitors Bureau, Colorado State University, the Downtown Development Authority, and the Downtown Business Association. Combining the public, private, and non-profit sectors on bicycle projects enhances the probability for success while incorporating the multiple facets of the community. A brief description of these existing relationships and those in development follows.

- **Local Bicycle Non-profits Organizations** – FC Bikes is working on building the strength, organization, and leadership of our local bicycle groups. It is FC Bikes intention to assist these groups that contribute to development of the support system and therefore increase bicycle use. Local bicycle groups include Bike Fort Collins, a bicycle advocacy based group; the Fort Collins Bike Co-op, a grassroots organization dedicated to assisting financially challenged individuals and children adopt bicycling as a form of transportation; and the Fort Collins Cycling Club, which provides recreational activities while engaging in community

involvement projects. FC Bikes is assisting these organizations to become self-sustaining while uniting the groups, their interests, and current and future projects.

- **Other City Departments** – FC Bikes works to strengthen and unify efforts of other City departments. The program is currently developing projects in conjunction with Police Services, TransFort, the Streets Department, Traffic Operations and Engineering, Natural Resources, Parking, Facilities, Park Planning, and other projects internally within the Transportation Planning Department
- **Larimer County** – Regional bike trail construction and bikeways in and out of the City are crucial when promoting regional transportation. More and more people are beginning to bike to Fort Collins from outside the City limits. Therefore, FC Bikes strives to build and maintain relationships with County staff.
- **Local Businesses** – More and more businesses are becoming bicycle-friendly. FC Bikes works with local businesses on employer and employee incentives to foster bicycling as a significant mode of transportation to work. FC Bikes is also developing projects with local hotels to lend bicycles to visitors instead of renting vehicles.
- **The Downtown Development Authority (DDA) and the Beet Street Program** – The DDA and Beet Street program and currently partners with FC Bikes and the FC Bike Library program. This includes cross promotion of special events as well as utilization of each other’s services to benefit the community as a whole.
- **Convention and Visitor’s Bureau (CVB)** – FC Bikes has helped the CVB to identify and adopt bicycling as a legitimate recreational activity and transportation mode for visitors to Fort Collins. Marketing materials that capitalize on the “bicycling lifestyle” the Fort Collins offers, such as a website or brochure made available to visitors, are potential projects. FC Bikes also works to encourage the CVB to attract bicycle special events, such as bike races and conferences.
- **Colorado State University** – With over 15,000 bicyclists, CSU is one of the most significant bicycling destinations in Fort Collins. FC Bikes works with CSU at the start of each semester to educate students on how to ride respectfully and safely in Fort Collins. The Coexist campaign is designed to educate students on this aspect.
- **Poudre School District (PSD)** – FC Bikes coordinates with PSD and the City’s *Safe Routes to School* program to assist PSD students, staff, administration, and families with promoting safe cycling for all ages and abilities.

UniverCity Connections

Bicycling has been an active topic in the planning and discussion of the UniverCity Connections Program. UniverCity Connections is a collaboration between the City of Fort Collins, CSU, DDA, Community Foundation, and other community stakeholders working together to enhance the campus, downtown,

and Poudre River areas. Bicycling lies within the Transit and Mobility subcommittee, which has established objectives to improve bicycle connections between the downtown area, CSU, and the Poudre River. Specific suggestions include bikeway improvements, East-West connections through downtown Fort Collins, alleyway connections, as well as overall wayfinding enhancements.



FC Bike Library

For the past year, FC Bikes, Bike Fort Collins, and the Fort Collins Bike Co-op (local bike advocacy organizations) have been working toward the development and implementation of the FC Bike Library. In early 2007, FC Bikes and Bike Fort Collins co-authored a Congestion Mitigation Air Quality (CMAQ) grant to create a bike lending program in Fort Collins. The two-year grant proposal was approved and the program was launched in April of 2008. After months of planning, bicycle fleet and website construction, the FC Bike Library began lending bicycles and has exceeded expectations in popularity. After the first season in operation, nearly 250 residents and visitors of Fort Collins have become bike library members, and nearly 200 bikes have been checked out.

While the FC Bike Library offers economic benefits from a tourism perspective, the community benefits are far more substantial. The major purpose of the FC Bike Library program is to provide a sensible form of transportation to Fort Collins residents, while improving air quality and decreasing traffic congestion in Fort Collins.

Currently, the FC Bike Library is operated on a day to day basis by Bike Fort Collins. The City of Fort Collins FC Bikes program is the fiscal agent for the program, and collaborates with Bike Fort Collins and the Fort Collins Bike Co-op on the program's vision and development. Currently, the FC Bike Library has a fleet of 50 bicycles. By the end of 2009, the bike library will contain 220 bicycles.

The research of funding opportunities is a high priority to ensure the sustainability of the FC Bike Library. After 2009, the initial CMAQ grant funding will expire. Sponsorships, grants, and City support, will be required to

keep the library rolling on track for years to come.

The Recycled Bike Project

Fort Collins has a surplus of bikes within our community. For many years, nearly 600 bicycles a year were abandoned in Fort Collins. Police Services retrieved, documented, and stored these bicycles until they were ready for auction. The bikes were then trucked to California and auctioned-off online. FC Bikes recognized these bicycles as a community asset, and worked with Police Services, the City Attorney's Office, and the Facilities Department to gain the use of these bicycles and keep them within the City.

The Fort Collins Bike Co-op has been engaged in reconditioning bicycles, then equipping low-income individuals and families with them. FC Bikes, Bike Fort Collins, and the Fort Collins Bike Co-op joined forces and was able to relocate the Fort Collins Bike Co-op into City owned space (222 Laporte Ave.) to operate the Recycled Bike Project with impounded bicycles. Their lease is currently for two years with an option to renew in January of 2010. The Fort Collins Bike Co-op plays a vital role within the City by taking over the responsibility of retrieving, documenting, and storing bicycles found and abandoned throughout Fort Collins. By taking over this responsibility, the Fort Collins Bike Co-op has freed the City's Police Services Department from a time consuming and arduous task, thus facilitating the establishment of the FC Bike Library's fleet of bicycles. The Fort Collins Bike Co-op builds and maintains the fleet of FC Bike Library bicycles. They recycle all unusable bike parts and frames while creating educational programs for all demographics, such as the Earn-a-Bike program. Programs like this emulate our City's vision to be environmental stewards while providing a valuable service to the community.



Community Recommendations

It is recommended that the City explore and pursue the formation of a Bicycle Advisory Committee (BAC) to discuss and plan for the multiple initiatives promoting bicycling in Fort Collins. A potential BAC could initiate and facilitate the exchange of ideas from a variety of community groups, demographics, and City departments, Boards, and City Council. The development of a BAC would require a thorough public involvement process with the residents of Fort Collins.

Pursuit of the Platinum Level designation with the League of American Bicyclists (LAB) is also recommended, with the achievement of this goal supported by many of the other recommendations made throughout the *2008 Bicycle Plan*. This may require a strategic implementation plan to identify and prioritize bicycle improvements while creating an evaluation or performance matrix that tracks the progress of individual and overall bicycle improvement projects within Fort Collins.

Currently, Fort Collins is a Silver Level LAB-designated community and is “on the cusp of gold,” as stated by the League of American Bicyclists’ Bicycle-Friendly Community manager, Bill Nesper. Although the designation by the LAB is an important national designation, there are other avenues we can take as a community to make Fort Collins stand out as an outstanding bicycle-friendly community. It is as important to promote bicycling on a local level as it is to promote the nature of our bicycle-friendly community on a national level. Through the combined efforts of FC Bikes, all Fort Collins bicycle non-profits, event promoters, the Convention Visitors Bureau, local businesses, and the Downtown Development Authority we have already placed Fort Collins on the national bike map.

Further recommendations include continued support of existing and future programs. The FC Bike Library, the Recycled Bike Project, and UniverCity Connections have been created by the community working together to make a difference. Continued support and efforts in terms of funding and encouragement will allow these programs to thrive. It is the cross-pollination of these programs that have led to their immediate successes. These programs and their missions are interrelated and support one another. Apart from current programs, it is also crucial to pursue new, innovative community-based programs as the City of Fort Collins’ bicycle culture evolves.

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Chapter 9: Multi-Modal Connectivity



Enhancing the link between bicycles and transit, bicycles and pedestrians, and bicycles and automobiles, in combination with end-of-trip facilities, will improve overall connectivity within Fort Collins.

Improving the link between bicycles and transit is an important component of making bicycling a convenient, beneficial, and environmentally friendly part of life in Fort Collins. Linking bicycles with transit helps to overcome such barriers as lengthy trips, personal security concerns, and riding at night or in poor weather. This link also enables bicyclists to reach more distant areas and increase transit ridership. Traditionally, transit users are identified within approximately $\frac{1}{4}$ mile of a bus stop. Depending on one's ability, the bicycle can extend this distance to well over a mile, thus it is particularly important to provide linkages between bicycles and transit in those areas with limited transit access. By encouraging the use of bicycles as access to transit, TransFort can increase ridership levels and serve a larger area while minimizing costs.

The additional integration of bicycles with pedestrians and automobiles simply magnifies the potential for multi-modal transportation strategies to be successful. The multiple components of the urban transportation system have a tremendous ability to complement each other in several ways. A bicyclist that uses transit and a pedestrian that incorporates bicycling can easily extend the range of travel without accruing a tremendous increase in travel time. An automobile driver that combines his trips with bicycling can still receive all of the benefits of bicycling particularly if the trip was at a distance that deterred him from bicycling at all. There are many benefits to the bicyclists and the community when multi-modal transportation choices are made.

Bicycling and walking are also a great combination. For example, after bicycling downtown and locking up one's bicycle, a resident can walk through downtown to shop and eat. A bicycle that is equipped with baskets or panniers allows the bicyclist to carry goods home as well. Recreationally speaking, a bicyclist may also ride to several of the City's Natural Areas along the local trail system, lock their bicycle, and then enjoy a nice walk through the Natural Area where bicycling is not allowed.

Currently, there are a limited number of people that commute by bicycle into Fort Collins from Loveland, Windsor, Timnath, Laporte, and Wellington. For many residents, this distance is too great to commute by bicycle and instead they will choose vehicular travel. However, the potential is there to incorporate some programs to encourage multi-modal connectivity that would

get residents of those outlying communities to combine bicycle travel with their automobile travel.

Bike-n-Ride

The Bike-n-Ride program is an effort initiated by Transfort to encourage bicyclists to ride local City buses. As part of the program, TransFort has adopted the use of front-mounted, bicycle racks on all transit vehicles. In 2006, the City received a grant through the Colorado Department of Health and Environment's "Colorado Physical Activity and Nutrition" (CoPAN) program. This grant was used to increase the bicycle carrying capacity of each bus in the TransFort fleet by replacing the older two-bicycle racks with those that can carry three. Even though all Transfort buses are equipped with three bike racks, it is often not enough to serve the needs of the community.

In practice, a bicyclist wishing to board a bus with a bicycle waits for a vehicle to arrive at a stop, loads the bicycle onto the rack, and then boards the vehicle. Front-mounted bicycle racks incur a minimum amount of increase in operating and maintenance costs for transit operators and are located close to the access point of the bus. This design minimizes the increased dwell time due to the loading and unloading of bicycles. Front mounted bike racks are safer because the operator of the vehicle is much more aware of a person loading or unloading a bicycle. Experience reveals that the bicycle can be loaded or unloaded in less than 15 seconds – even by an inexperienced user.

Bicycle parking at many stops throughout the City is lacking, although, newer stops that have been installed under current development guidelines and policies have bicycle parking. Older stops often have no bicycle parking.

When the Mason Corridor /MAX BRT system (a 5-mile corridor west of College Avenue) is fully developed, it is anticipated that bicycles will be allowed on the buses with the passengers. In addition, bicycle parking will be provided at all stops and stations.

Multi-Modal Recommendations

It is recommended that the City continue to support and pursue programs that foster multi-modal connectivity between bicycles and transit, bicycles and pedestrians, and bicycles and automobiles.

Further recommendations include:

Improve bicycle parking at existing transit stops/stations as well as at new stations to be constructed for the Mason Corridor / MAX BRT system.

Enhance both the Bike Map and the Transfort Map by including information indicating locations with easy access for bicycle-transit connectivity.

Consider a “Park-n-Ride” concept for bicycle use to encourage regional bicycle commuters. A "Park n' Ride" program would motivate regional car commuters to park their vehicle on the edges or entrances to Fort Collins and then ride their bicycles into the City. An effort of this nature might decrease traffic within the City and offer health benefits to daily commuters.

Coordinate with businesses to encourage employees to bring bicycles to work or utilize the FC Bike Library for daily trips near their offices such as meetings and lunch.

End-of-Trip Facilities

Every bicycle trip has two basic components: the route selected by the bicyclist, and the “end-of-trip” facilities at the destination. These end-of-trip facilities can include the simple provision of secure and convenient bicycle parking or more elaborate indoor-parking facilities and/or provision of showers and changing space. These facilities promote bicycling.

Community surveys of schools and employers indicated that a lack of adequate end-of-trip facilities serve as barriers for the work/school-commute trip. Of those surveyed, many say they would sometimes commute to work or school by bicycle, or commute more often, if there were showers, lockers, and secure bicycle storage at work. Clearly, the availability of safe, secure, convenient parking is a critical factor for bicycle commuting.

Good, secure bicycle parking offers the following:

- Increases a building’s overall parking capacity.
- Serves those who use bicycles as a mode of transportation.
- Encourages bicycle use.

Bicyclists’ needs for bicycle parking ranges from easy-to-use bike racks to storage in a bicycle locker that affords weather and theft protection, gear storage space, and 24-hour personal access. A bicyclist’s needs are defined by several factors, including the following:

- The length of trip (all-day or just minutes).
- Weather conditions.
- Value of the bicycle.
- Security of Area as determined by the bicyclist’s perception..

Other end-of-trip facilities useful for commuting bicyclists are access to showers, lockers for personal effects, and/or changing rooms at trip destinations. For those bicyclists needing to dress more formally, travel longer distances, or cycle during wet or hot weather, the ability to shower and change clothing can be as critical as bicycle storage.

Bicycle Parking is the primary way to provide convenience and security for bicyclists at destinations. Inadequate facilities and fear of theft are major deterrents to bicycle transportation. Bicycles regularly locked to trees and posts demonstrate that additional bicycle parking is needed at that location. Effective bicycle parking requires a properly designed rack in an appropriate location.

There are many types of bicycle racks and lockers available. There are two general categories of bicycle parking requirements:

- Short-term - parking is needed where bicycles will be left for short stops. It requires a high degree of convenience and should be as close to destinations as possible. At least some short-term bicycle parking should be protected from the weather.
- Long-term - parking is needed where bicycles will be left for hours at a time. It requires a high degree of security, weather protection, and well-designed racks in covered areas, lockers, storage rooms, or fenced areas with restricted access offering added security.

Factors to consider when installing bicycle parking are as follows:

- Visibility - Racks should be highly-visible so bicyclists can spot them immediately when they arrive from the street. A visible location also discourages theft and vandalism.
- Security- Adequate lighting and surveillance is essential for the security of the bicycles and the users. Bicycle racks and lockers must be well anchored to the ground to avoid vandalism and theft.
- Weather Protection - A portion of bicycle parking should be protected from the weather (some short-term bicycle parking can be unprotected since bicycle use tends to increase significantly during fair weather). Protection can include an existing overhang or covered walkway, a special covering, weatherproof outdoor bicycle lockers, or an indoor storage area.
- Clearance - Adequate clearance is required around racks to give bicyclists room to maneuver and to prevent conflicts with pedestrians or parked cars. Racks should not block access to building entrances or fire hydrants.

Current State of End-of-Trip Facilities

Bicycle Parking at Community Destinations within Fort Collins

In general terms, bicyclists will always find a bicycle parking option at all community destinations. Ideally, a choice of long- or short-term alternatives will be at their disposal; however, many times, the existing alternatives may not meet bicyclist's needs. The application of development standards with quantity requirements is limited to current development and redevelopment; therefore, some areas of our community are left with a bicycle parking deficit.

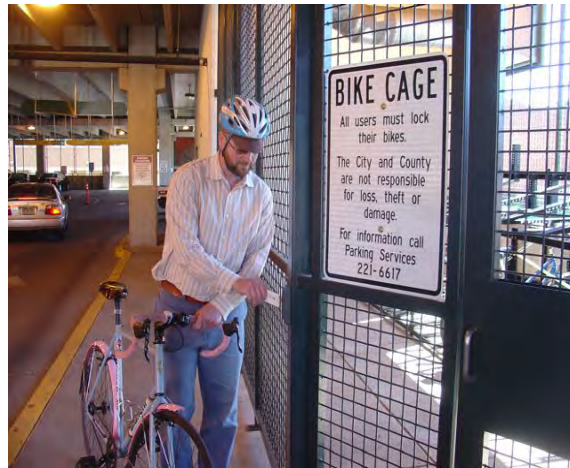
Table 4 summarizes the general availability of bicycle parking at community centers and destinations.

Table 4. Bicycle Parking at Community Facilities

Destination	Does bicycle parking exist?
Libraries	Yes, at all locations.
Transit Stations	Yes, at all locations.
Transit Stops	At most locations.*
Recreation Centers	Yes, at all locations.
Government Buildings	Yes, at all locations.
Office Buildings	At most locations.*
Retail Centers	At most locations.*
Public Spaces and Parks	Yes, at all locations.

* Some existing Transit Stops, Office Buildings, and Retail Centers do not have bicycle parking since they were approved and constructed subject to older standards. With infill and redevelopment projects sites and bicycle parking facilities are routinely brought into compliance with current development standards as adopted with City Plan in 1997.

Much of the bicycle parking found in Downtown and Old Town Fort Collins is the result of a vigorous installation program undertaken by the City in 1992 when 428 U-shaped bike parking racks were installed. Funding for these racks came from a CMAQ grant. Throughout Old Town, there are more than 100 short-term parking spaces (mostly installed on street sidewalks) and 28 long-term spaces in the form of a recently installed bicycle cage. The bicycle cage project was a joint-venture between Larimer County and the City of Fort Collins' Parking Services and is located in the Civic Center Parking Garage.



Downtown and Old Town Area Bicycle Parking

In essence, the condition of the short-term parking supply in Old Town is inconsistent. It ranges from sufficiently maintained, well located, and heavily-used frame style racks to neglected, not secure, and rarely used clip-styles that in many cases discourage use.

Areas of particular concern are:

- Southern and northern entrances to Old Town Square
- College Avenue, between Mountain and Laporte Avenues, and

- Mountain Avenue, between College Avenue and Mason Street.
- Walnut Street, between College Avenue and Linden Street.

Bicycle Parking at Colorado State University

Colorado State University has recently purchased hundreds of new, user-friendly bike racks to accommodate over 15,000 bicyclists daily. The growth of partnerships between the City and CSU (such as UniverCity), discussed in Chapter 7, has the potential to provide innovative solutions to bicycle parking and scofflaw issues downtown and on the CSU campus.

Bicycle Parking at Primary, Middle and Secondary Schools

All public schools within Fort Collins have bicycle parking. In most but not all cases the supply is adequate. The provision of bicycle parking at schools is ultimately the responsibility of the Poudre School District. The City of Fort Collins provides advice on safe and effective parking at schools, primarily through the *Safe Routes to School* Program.



One factor that makes it difficult to assess what level of bicycle parking should be provided at schools is the “school of choice” policy in the Poudre School District. A neighborhood school is open to students from all around the community. The reality of this policy, with regard to bicycling, is that it can result in student attendees who live more than a reasonable bicycling distance from their school so that potential ridership is decreased.

End-of-Trip Facility Recommendations

It is recommended that the City encourage the development of long- and short-term parking strategies throughout the community. Schools and significant community destinations (Old Town, Foothills Mall) should always have an ample supply of secure, high-quality, bicycle parking.

Further recommendations include:

Explore ways through which it can encourage the development of indoor, long-term, bicycle parking facilities with new public and private development.

Areas of focus should include transit stops and stations, community facilities, public and private parking structures, and major employment and commercial centers.

Pursue avenues through which a greater supply of bicycle parking can be implemented at all locations throughout the community.

Downtown Bicycle Parking Recommendations

There is a shortage of short-term parking at certain locations in Old Town. Several businesses, in conjunction with FC Bikes, have begun to explore the option of using vehicular parking stalls as short-term bicycle parking. The use of removable, bicycle parking racks would enable a dramatic increase in parking supply for limited hours when bicycle-parking demand is highest – typically weekend evenings and during special events. Close coordination and cooperation should continue with local businesses to encourage innovative parking solutions in the downtown area.

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Chapter 10: Conclusions



The *2008 Bicycle Plan* assesses and proposes improvements to nearly every facet of bicycling in Fort Collins. The goals, principles and policies that pertain to bicycling established in *City Plan* and the *Transportation Master Plan* have set the foundation for the current policies, projects, and programs as well as the focus for the numerous recommendations provided.

Engineering Recommendations

The importance of expanding and improving the bikeway network are identified throughout the *2008 Bicycle Plan*, with the engineering recommendations summarized below:

- Continued implementation of projects identified on Hot List I.
- Pursue implementation of projects identified on Hot List II.
- Identify and implement interim solutions
- Continued the implementation of the Transportation Master Plan and the Master Street Plan.
- Continue and improve maintenance of Priority Commuter Routes.
- Improve signal detection loops.
- Examine innovative bicycle traffic solutions such as bike boxes and bike boulevards.

Education and Encouragement Recommendations

Education and Encouragement are imperative for the City of Fort Collins to excel at being a nationwide leader in bicycle-friendly communities. In summary, as a step toward that goal, the *2008 Bicycle Plan* recommends the following:

- Maintain existing education and encouragement programs and solicit more participation.
- Continue to develop and implement innovative education and encouragement programs, campaigns, and events.
- Continue to foster relationships between non-profits, advocacy, and community groups and build public-private partnerships.
- Consider the implementation of Cyclovias (car-free events).
- Reinforce yield and safety education programs pertaining to bicyclists and other bike lane and trail users.

Enforcement Recommendations

It is recognized in the *2008 Bicycle Plan* that enforcement is a very important part of the holistic strategy of providing facilities, educating people on how to use them, and providing an environment in which they

want to use them. Therefore, it is recommended that the following actions be initiated:

- Work closely with local enforcement agencies to create innovative, proactive, educational campaigns.
- Bridge the gap of understanding between bicyclists and local enforcement agencies by providing current and consistent information.
- Coordinate training sessions to ensure knowledge on current local, regional, and national bicycle policies and ordinances.
- Establish enforcement techniques for handling special events and protests.
- Explore the creation of a *Share the Road Safety Class*.
- Establish “sting” operations with local enforcement agencies to address bicycle theft and traffic-law evasion by bicyclists.

Economic Recommendations

Economic development opportunities related to the increased bicycle use are highlighted in the *2008 Bicycle Plan*. In an attempt to realize those opportunities, the following actions are recommended:

- Continue to support and encourage infrastructure development, bicycle sporting events, recreational biking, and bicycle facilities.
- Use the local bicycle culture to attract employers, new residents, businesses, and visitors.
- Encourage bicycle-related businesses and manufacturers.

Environmental Recommendations

Environmental benefits are the result of implementing all of the recommendations included in the *2008 Bicycle Plan*; however, specific environmental recommendations include the following:

- Establish measurement methods for environmental benefits.
- Coordinate with other City initiatives to measure environmental benefits.

Community Recommendations

Community support and partnerships have achieved significant growth over the past 13 years; however, below are additional recommendations to ensure sustainability and expansion of those relationships:

- Pursue the formation of a Bicycle Advisory Committee (BAC).
- Pursue the Platinum Level designation with the League of American Bicyclists (LAB).
- Establish performance measures for bicycle programs and facilities.
- Maintain support for existing programs.

- Foster communication among the public, non-profit, and private sector to implement the recommendations in the *2008 Bicycle Plan*.

Multi-Modal Recommendations

Bicycles have a tremendous potential to enhance multi-modal connectivity for the citizen of Fort Collins; therefore, the following is recommended:

- Expand opportunities for bicycle-transit/bicycle-pedestrian/bicycle-car auto linkage.
- Incorporate bicycle parking at transit stops and stations.
- Improve and expand bicycle parking throughout the City.
- Encourage installation of showers and changing facilities.

In conclusion, the recommendations included in the *2008 Bicycle Plan* are intended as a guide for continuing to develop and support a healthy bicycling community with implementation targeted within a 5-year time-frame. However, a good bike plan must be fluid and dynamic and should respond to the growing and changing needs of the local bicycling community. As new ideas are developed and old methods become outdated, the *2008 Bicycle Plan* must respond to, then emulate the expectations of the residents of and visitors to Fort Collins.

Enjoy the Ride!

Appendix A

Relevant Sections of the Larimer County Urban Area Street Standards and
Multimodal Transportation Level of Service Manual

CHAPTER 17 – BICYCLE FACILITIES DESIGN AND TECHNICAL CRITERIA

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CHAPTER 17 – BICYCLE FACILITIES DESIGN AND TECHNICAL CRITERIA

17.1 GENERAL

This chapter sets forth the minimum criteria to be used in the design of all bike lanes, bike paths, or other bicycles facilities within the Local Entity’s rights-of-way or easements.

17.1.1 AASHTO Basis

In this chapter, the **AASHTO “Guide for the Development of Bicycle Facilities”** as published by the American Association of State Highway and Transportation Officials was used as a reference.

17.1.2 Bicycle Master Plan

This subsection was developed based on the **Master Plans** for each Local Entity. All projects shall optimize bicycle travel within the GMA by providing bicycle facilities in all new developments in accordance with the Local Entity’s **Master Plan**.

17.1.3 Permitted Bicycle Travel Areas

On public streets, bicycle travel should use designated bike lanes whenever possible. Bicyclists may share vehicular travel lanes in cases where no designated bike lanes are provided, except in certain cases where bicycle travel may be prohibited.

17.1.4 Requirement for Other Accesses

Off-site improvements may be required to provide citizens with access to schools, and local commercial and other community facilities.

17.1.5 ADA Requirements

All designs for off-street bicycle paths are considered multi-use paths and shall conform to ADA requirements.

17.1.6 Use of Drainage System and Open Space

The bike path and pathway system may use the drainage and open space system in accordance with the Local Entity’s utility standards.

17.1.7 Access Easements

Where bike paths cross private land or coincide with private access facilities, the Developer shall provide a public access easement. This will ensure that bike paths or other access facilities become part of the overall Local Entity bike path plan.

17.1.8 Maintenance Responsibility

Maintenance and operation responsibility for new bike paths will be determined during the site/subdivision plan approval process. Public access/bike path easements shall be conveyed to the Local Entity. The easement width shall be clearly indicated on the site plan or construction plans.

17.1.9 Appurtenances Not Allowed

Manholes, utility poles or other appurtenances or obstructions, should not be located in bike lanes or bike paths.

17.2 ON-STREET BIKE LANES DESIGN REQUIREMENTS

17.2.1 On-Street Bike Routes

Specific streets are designated in the **Master Plans** as on-street bicycle routes. These routes are on streets with lower traffic volumes and speeds, wide outside lanes, and minimal stop signs, stop lights, curb cuts, driveways, and interference with turning traffic. Streets designated as on-street bicycle routes shall be designed with additional width for bike lanes. Some streets within new developments or re-developments must also contain additional roadway width for bike lanes, in accordance with **Figures 7-1F** through **7-13F** and **7-1L** through **7-11L**.

17.2.2 Width and Cross Sections

The bike lane shall be designed with widths shown in standard street classification sections. Bicycle lanes on one-way streets shall be on the right side of the street, unless otherwise specified by the Local Entity. Refer to **Chapter 7, Street Design and Technical Criteria**, for the standard cross section requirements. Bike lane width shall not be less than 5 feet.

17.2.3 Signage and Striping

All designated bike lanes shall be signed and striped, as required by MUTCD and as required in **Chapter 14, Traffic Control Devices**.

17.2.4 Actuation Loop

Separate actuation loops are required in bike lanes at signalized intersections. Quadra pole-type loops are required. Loop installation shall be similar to that in **Sections 22.5.8 C5 and 22.5.9, E6, HBP-Superpave and HBP – Marshall Method**.

17.2.5 Rural Roads

In rural road sections, the paved roads shall include not less than a 5-foot paved shoulder, and not less than a 6-foot paved shoulder in Fort Collins (city limits only), for bicycle travel.

17.2.6 Bike Lanes at Intersections

At the intersections where a separate right turn lane exists and is striped, the bicycle lane shall transition and be placed between the through lane and the right turn lane. The bike lane width shall remain the same as the approaching bike lane.

17.3 OFF-STREET BICYCLE PATHS DESIGN REQUIREMENTS

The Applicant should refer to the Local Entity’s parks and recreation department for the recreation trail design requirements.

17.3.1 Bike Path Location

A. Location Criteria

Bike path locations shall be based on safety, circulation, and access considerations.

B. Easements

Where needed, a 10 to 20-foot minimum easement width shall be procured for a 10-foot wide bike path, in accordance with **Figure 7-14**.

17.3.2 Trees, Vegetation, and Other Obstacles

A. Preserving Trees

Where possible, bike paths shall be routed to minimize the loss of trees and disruption of natural environmental conditions.

B. Distance from Obstacles

A minimum of 2 feet is required between the bike path edge and any vertical obstructions such as trees, utility poles, signs, fences, or other obstacles. Greater separation may be required by the Local Entity where grades exceed 4 percent.

C. Clearing of Vegetation

Regardless of bike path surface, all vegetative material within 4 feet of the bike path shall be removed prior to bike path construction. This requirement shall be specified by the Designer and included on the approved plans. See **Figure 17-1**.

D. Overhead Clearance

All bike paths shall have a minimum of 10 feet clear vertical distance above the path. See **Figure 17-1**.

17.3.3 Cross Section

Typical cross-sections shall be provided for all critical points (i.e. change in grade, direction) along the length of the bike path. See **Figure 17-1**

17.3.4 Grade

A. Profile

A profile of the proposed bike path construction shall be included in the construction plans or site plan. If the bike path profile is not consistent with the roadway profile, provide a separate profile for the bike path.

B. Minimum and Maximum Grade

Minimum grade shall be 0.60 percent except in sag curves where proper drainage is provided by cross slope. The minimum grade shall be waived if cross slope is 2 percent and good drainage is provided off the side and is unobstructed. Maximum grade shall be 5 percent or as allowed by ADA.

17.3.5 Design Speed

A. Paved Surfaces

For paved surfaces a minimum design speed of 20 mph shall be used. Where grades exceed 4 percent, a design speed of 30 mph shall be used.

B. Unpaved Surfaces

For unpaved surfaces, a minimum design speed of 10 mph shall be used. Where grades exceed 4 percent, a design speed of 20 mph shall be used.

17.3.6 Horizontal Alignment

A. Minimum Radius of Curvature

The minimum radius of curvature negotiable by a bicycle is a function of the superelevation rate of the bicycle path surface, the coefficient of friction between the bicycle tires and the bicycle path surface, and the speed of the bicycle.

B. Formula for Radius Calculation

The minimum design radius of curvature shall be based upon the following formula:

$$R = \frac{V^2}{15(e+f)}$$

where:

R = Minimum radius of curvature (ft)

V = Design speed (mph)

e = Rate of superelevation

f = Coefficient of friction

C. Rate of Superelevation

Bicycle path superelevation rate shall be a minimum of 2 percent (the minimum necessary to encourage adequate drainage) and a maximum of 3 percent.

D. Coefficient of Friction

The coefficient of friction depends upon speed, surface type, roughness, and condition; tire type and condition; and whether the surface is wet or dry. Friction factors used for design should be selected based upon the point at which centrifugal force causes the bicyclist to recognize a feeling of discomfort and instinctively act to avoid higher speed.

E. Coefficient of Friction Values

Extrapolating values used in highway design, design friction factors for paved bicycle paths can be assumed to vary from 0.27 at 20 mph to 0.22 at 30 mph. Unpaved surface friction factors are to be reduced by 50 percent to allow a sufficient margin of safety.

F. Minimum Radius

Based upon a superelevation rate (e) of 2 percent, the minimum radius of curvature to be used is 95 feet for 20 mph.

G. Substandard Radius Curves

When substandard radius curves must be used on bicycle paths because of Right-of-Way, topographical, or other considerations, standard curve warning signs and supplemental pavement markings shall be installed in accordance with the MUTCD. The negative effects of substandard curves can also be partially offset by widening the pavement through curves.

17.3.7 Sight Distance

Refer to **Figures 17-2** through **17-4** and Chapter 7, Street Design and Technical Criteria, for sight distance requirements.

17.3.8 Cross Slope

The cross slope shall be 2 percent.

17.3.9 Drainage

A. Requirements and Standards

All bike path designs shall satisfy the storm drainage requirements of the Local Entity's utilities department. Bike paths located within state Right-of-Way shall meet CDOT standards.

B. Ditch Placement

Where a bike path is cut into a hillside, a ditch shall be placed along the high side of the bike path to prevent sheet flow across it.

17.3.10 Safety Considerations

A. Consideration of Pedestrians

The safety of pedestrians, and others who may use or travel on a bike path, shall be a prime consideration in the bike path design.

B. Clearance Between a Bike Path and a Street

A utility easement, as required in **Chapter 12, Utility Locations**, is required between the edge of the bike path and the back edge of curb and gutter. No bike path shall be constructed directly adjacent to street curb or street pavement. Minimum separation shall be 6 feet.

The Local Entity Engineer may require a larger distance of separation when it is feasible and would improve safety.

C. Barriers and Other Safety Devices

For bike paths adjacent to streets with speed limits over 25 mph, and with slopes greater than 6 percent, the Local Entity Engineer may require special safety measures. Examples include barriers or other safety devices between the roadway and bike path, or an increase in the distance between the bike path and highway.

D. Signs for Hazards and Regulatory Messages

Standard signing and pavement markings in the MUTCD shall be specified in the design of the bike path to alert bike path users to hazards and to convey regulatory messages.

E. Intersection Grade

Maximum grade of the bike path at intersections is 3 percent extending for 30 feet in each direction from the centerline of the intersection.

F. Access Ramps

Standard access ramps will be provided at all bike path curb crossings to allow continuity of bike path use by bicyclists and pedestrians. Curb depressions equaling the bike path width shall be used, with the bike path surface sloping to the pavement at 1:12 maximum slope.

17.3.11 Bicycle Path Bridges

A. Crossings of Water Courses

All bike paths require either a bridge or a fair weather crossing. See **Chapter 11, Structures**, for design requirements for bridges.

B. Pedestrian Crossings on Major Collectors and Arterials

On all Local Entity major Collectors and Arterials, wherever desirable, underpass or overpass (grade separated) pedestrian crossings shall be provided for regional/neighborhood bike paths. These pedestrian crossings must be coordinated with the Local Entity Engineer or the Local Entity's appropriate department.

C. Railings, Fences, or Barriers

Railings, fences, or barriers on both sides of a bicycle path structure shall be a minimum of 4.5 feet high. Smooth rub rails should be attached to the barriers at handlebar height of 3.5 feet. Barriers should not impede storm water runoff from the path.

D. Bridge Requirements

See Chapter 11, Structures.

E. Bridge Underpass Lighting

All bike path bridge underpasses shall have lighting in accordance with **Chapter 15, Street Lighting**.

17.3.12 Bicycle Path Underpasses

The minimum clearances for underpasses are as follows:

- Horizontal: 10 feet from abutment to curb or edge of water, 12 feet if equestrian accommodation is required.
- Vertical: 10 feet from trail surface to underside of bridge, 12 feet if equestrian accommodation is required.

The trail surface elevation shall be at or above the high water mark for the 10 year storm.

17.3.13 Signage and Pavement Marking

A. Basic Requirements

All signs, except locally adopted bike route signs, shall conform to MUTCD.

B. Painted Centerline on Curves

All curves with restricted sight distances are required to be painted with a centerline to separate traffic. The centerline shall be 4 inches in width and painted yellow.

17.3.14 Lighting

See Chapter 15, Street Lighting.

17.3.15 Intersections

The following requirements apply to all bike path intersections with either streets or other bike paths:

A. Curb Ramps

Curb ramps the same width as the bike path shall be provided at each intersection.

B. Sight Distance

Sight distance requirements shall be in conformance with AASHTO requirements. The Designer shall ensure sufficient stopping and intersection sight distance at all bike path intersections and curves, particularly where steep grades are proposed at bike path/ roadway intersections. Obstructions to the visibility of motorists or bike path users shall be removed or the bike path aligned around the obstruction to maximize visibility.

C. Turning Radius at Intersections

The minimum turning radius at bike path intersections shall be 20 feet.

17.4 BICYCLE PARKING AREAS

17.4.1 Bicycle Parking Area Requirement

A. U Type Bike Rack

The inverted U type bike rack is required for all bicycle parking racks. See **Construction Drawings 1701** through **1707**.

B. Bike Parking Spaces

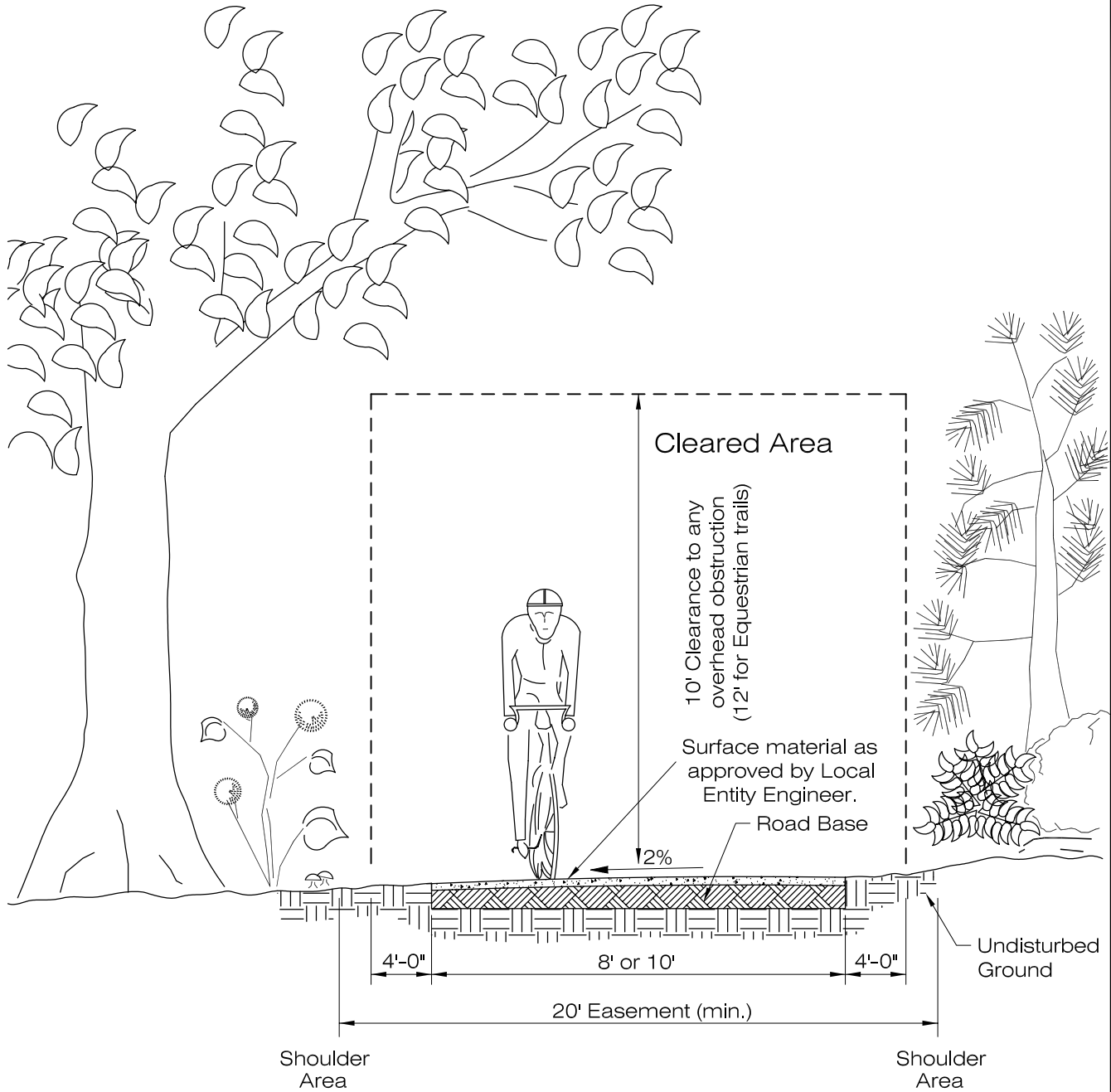
For proposed nonresidential land uses, bicycle parking shall be equivalent to 5 percent of the off-street vehicle parking requirement with a minimum of 2 spaces. Each inverted U rack provided will count as two bicycle parking spaces.

17.4.2 Placement of Bike Racks

Racks shall be within 30 feet of building entrances. All bicycle parking provided shall be on concrete, and located a minimum distance as follows from any wall:

<u>Bike Orientation</u>	<u>Min. Distance of Rack from Wall</u>
Parallel to wall	24 inches
Perpendicular to wall	30 inches

Covered parking is encouraged where possible.



BIKE PATH CLEARING

NOTES:

1. Clear trail and shoulder areas of all vegetative matter and debris.
2. For bike paths 10 feet or greater in width, 4 feet in width more than the bike path shall be cleared.
3. 8' width (min.) for one way traffic, 10' width (min.) for two way traffic.

BIKE PATH

**LARIMER COUNTY
URBAN AREA
STREET STANDARDS**

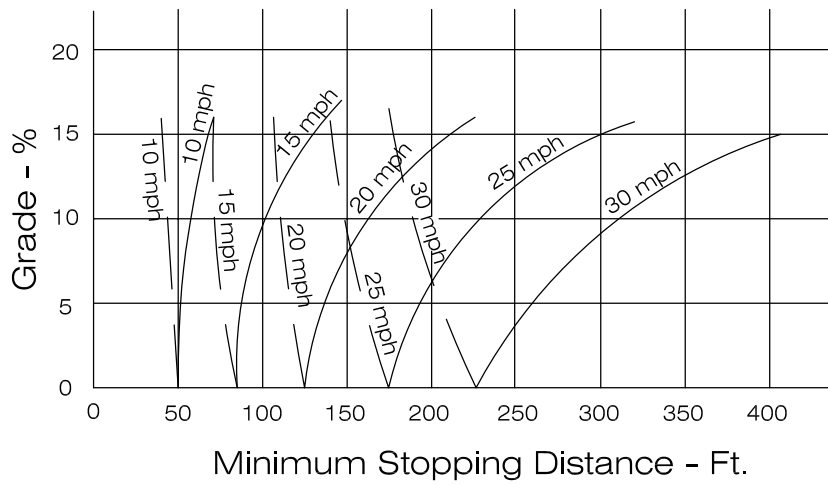
**DESIGN
FIGURE**

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DATE: 08/07/00

FIGURE

17-1



$$S = \frac{v^2}{30(f \pm G)} + 3.67v$$

Where: S = Minimum Sight Distance, Ft.

V = Velocity, mph

f = Coefficient of Friction (use 0.25)

G = Grade Ft./Ft. (rise/run)

Descend (-G) —————

Ascend (+G) — — — —

(Metric Conversion: 1 FT. = 0.3 m. 1 mph = 1.6 km/h)

From AASHTO

MINIMUM STOPPING SIGHT DISTANCES

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

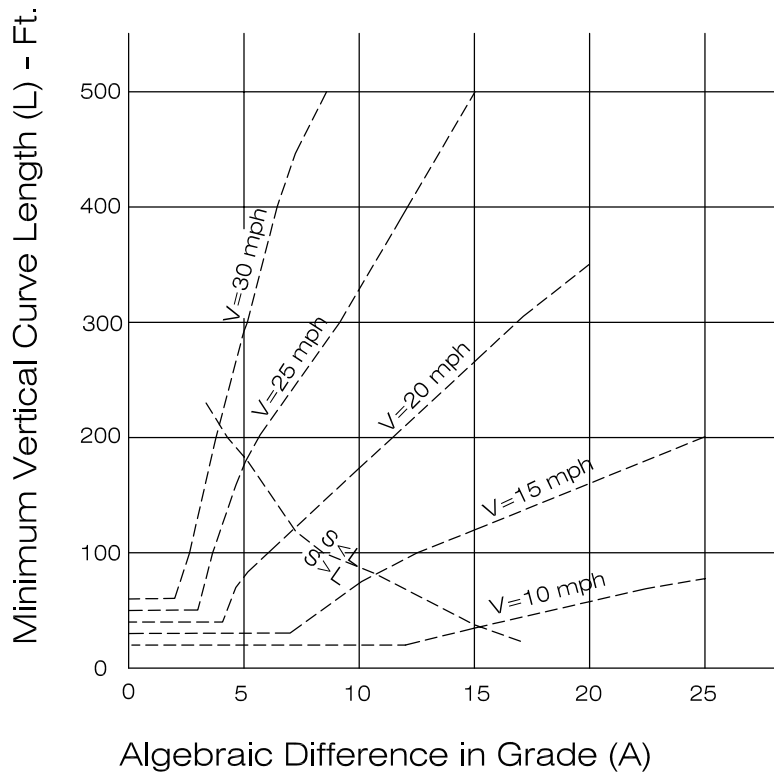
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FIGURE

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DATE: 08/07/00

FIGURE

17-2



$$L = 25 - \frac{200(\sqrt{h_1} + \sqrt{h_2})^2}{A} \quad \text{When } S > L$$

$$L = \frac{AS^2}{100(\sqrt{2h_1} + \sqrt{2h_2})^2} \quad \text{When } S < L$$

$$L (\text{min.}) = 2V$$

Where: S = Stopping Sight Distance (ft.)
 A = Algebraic Difference in Grade
 h_1 = Eye Height of Bicyclist (4.5 Feet)
 h_2 = Height of Object (0 Feet)
 L = Minimum Vertical Curve Length (ft.)

From AASHTO

MINIMUM LENGTH OF VERTICAL CURVES

LARIMER COUNTY
 URBAN AREA
 STREET STANDARDS

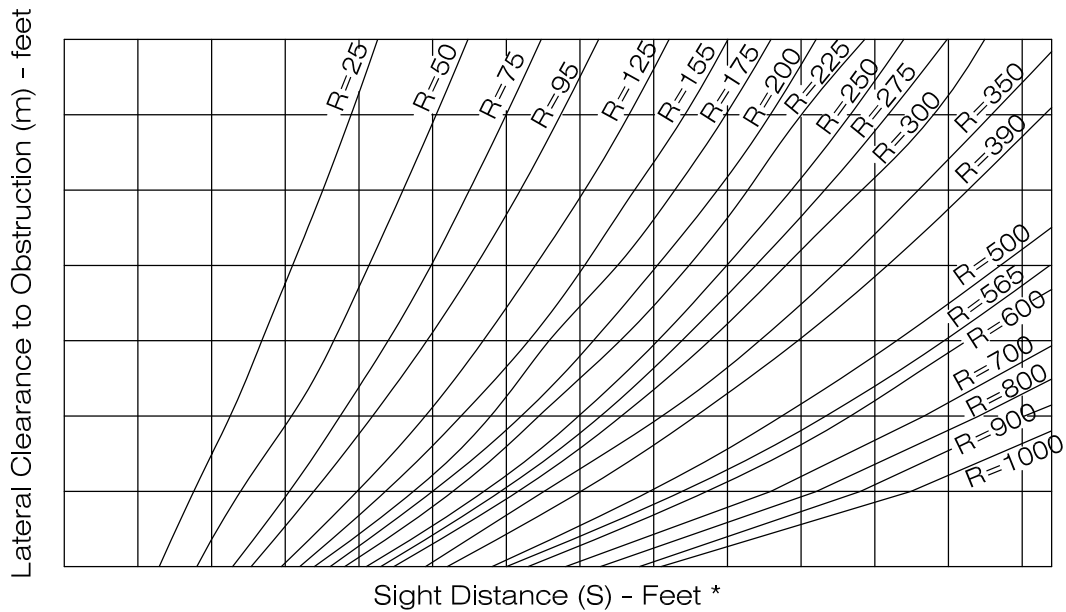
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 FIGURE

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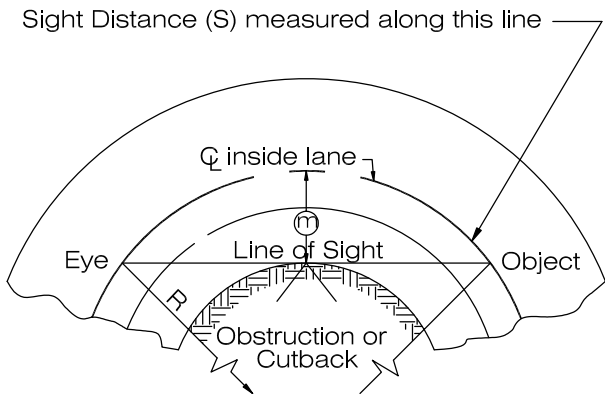
FIGURE

17-3



(Metric Conversion: 1 FT. = 0.3 m.)

* Lateral clearances on horizontal curves should be calculated based on the sum of the stopping sight distances for bicyclists traveling in opposite directions around the curve. See text for additional discussion.



S = Sight distance in feet.
 R = Radius of Q inside lane in feet.
 m = Distance from Q inside lane in feet.
 v = Design speed for 5 in mph.

Angle is expressed in degrees

$$m = R \left[v \text{ or } s \left(\frac{28.655}{R} \right) \right]$$

$$S = \frac{R}{28.65} \left[\cos^{-1} \left(\frac{R-m}{R} \right) \right]$$

Line of sight is 2.0' above Q inside lane at point of obstruction.

Formula applies only when S is equal to or less than length of curve.

From AASHTO

MINIMUM LATERAL CLEARANCES ON HORIZONTAL CURVES

LARIMER COUNTY
 URBAN AREA
 STREET STANDARDS

DESIGN
 FIGURE

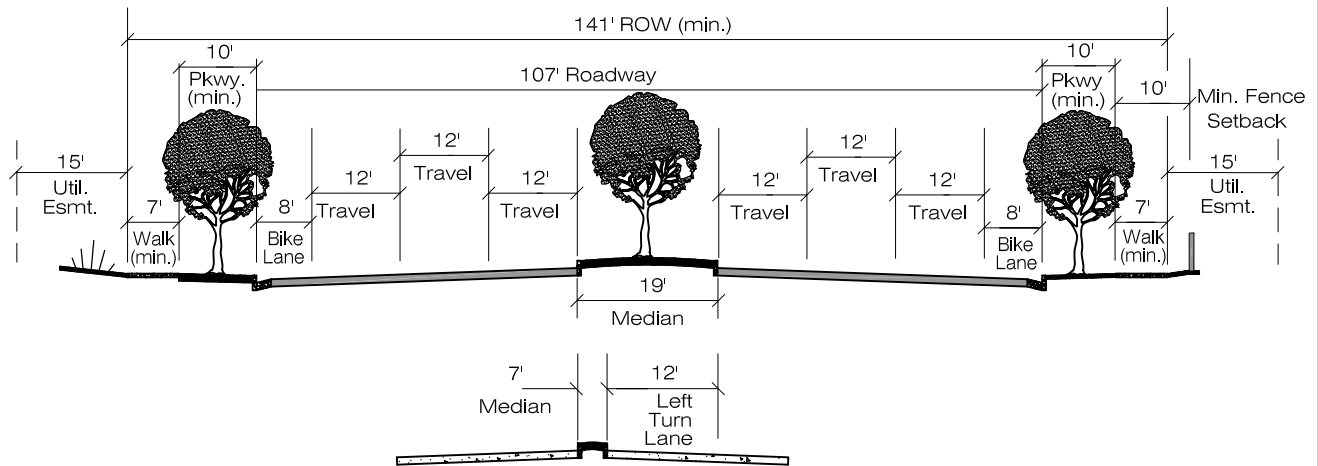
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FIGURE

17-4

FORT COLLINS ONLY



LEFT TURN MEDIAN

ROADWAY WIDTH: 107'

RIGHT OF WAY WIDTH: 141' (min.)

TRAVEL LANES: Six lanes, 12' wide

LEFT TURN LANE: 12' wide

BIKE LANES: Two lanes, 8' wide

PARKING: None.

PARKWAY: 10' (min.) wide. Additional width optional.

SIDEWALK: 7' (min.) wide. Additional width may be required for higher pedestrian traffic within and leading to activity centers.

MEDIAN: Center Median: 19' wide landscaped; Left Turn Median: 7' wide landscaped. Barrier curb or out-fall curb and gutter.

WHERE USED: These specifications shall apply as required by the Local Entity when a 6-lane arterial street is shown on the Master Street Plan, or when the traffic volume on the street is anticipated to be greater than 35,000 vpd.

DESIGN SPEED: 50 MPH

SPEED LIMIT: 40-45 MPH

ACCESS: Access will be limited. Points of access must be approved by the Local Entity.

CONTINUITY: Unlimited

FENCES: Fences shall be setback a minimum of 10' from the parkway edge of the sidewalk.

LANDSCAPING: See Appendix "C"

CURB AND GUTTER: Vertical curb and gutter.

6-LANE ARTERIAL STREET

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

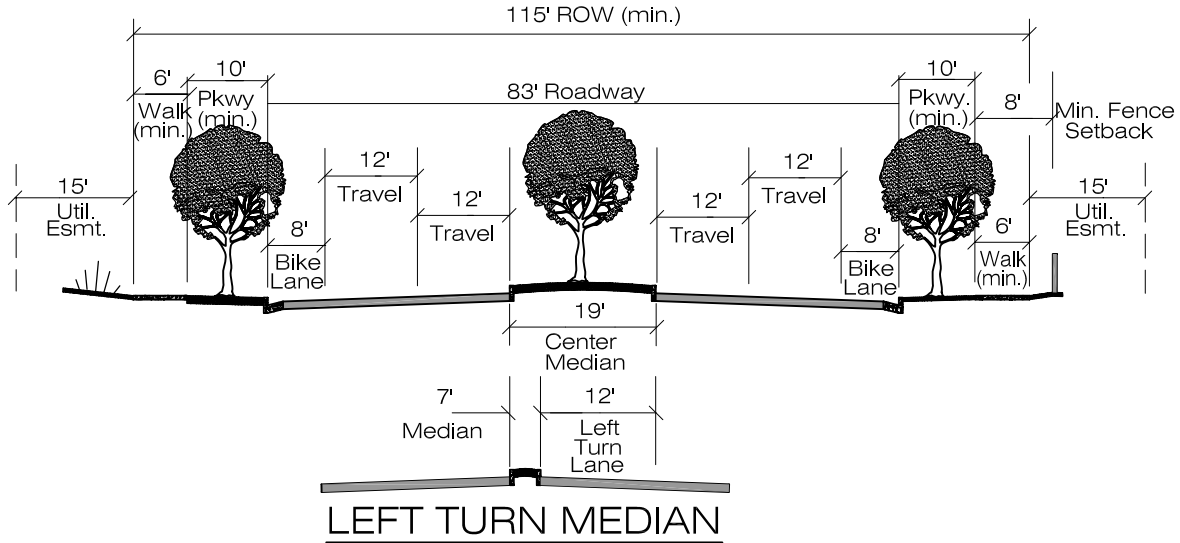
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FIGURE

7-1F

FORT COLLINS ONLY



ROADWAY WIDTH: 83'

RIGHT OF WAY WIDTH: 115' (min.) plus 30' (min.) utility easement.

TRAVEL LANES: 4 lanes, 12' wide

LEFT TURN LANE: 12' wide

BIKE LANES: 2 lanes, 8' wide

PARKING: None.

PARKWAY: 10' (min.) width. Additional width optional.

SIDEWALK: 6' (min.) width. Additional width may be required for higher pedestrian traffic in and leading to activity areas.

MEDIAN: Center Median: 19' wide landscaped; Left Turn Median: 7' wide landscaped. Barrier curb or out-fall curb and gutter.

WHERE USED: These specifications shall apply as required by the Local Entity when a 4-lane arterial street is shown on the Master Street Plan, or when the traffic volume on the street is anticipated to be 15,000 to 35,000 vpd.

DESIGN SPEED: 50 MPH

SPEED LIMIT: 35-45 MPH

ACCESS: Access will be limited. Points of access must be approved by the Local Entity.

CONTINUITY: Unlimited

FENCES: Fences shall be setback a minimum of 8' from the parkway edge of the sidewalk.

LANDSCAPING: See Appendix "C"

CURB AND GUTTER: Vertical curb and gutter.

4-LANE ARTERIAL STREET

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

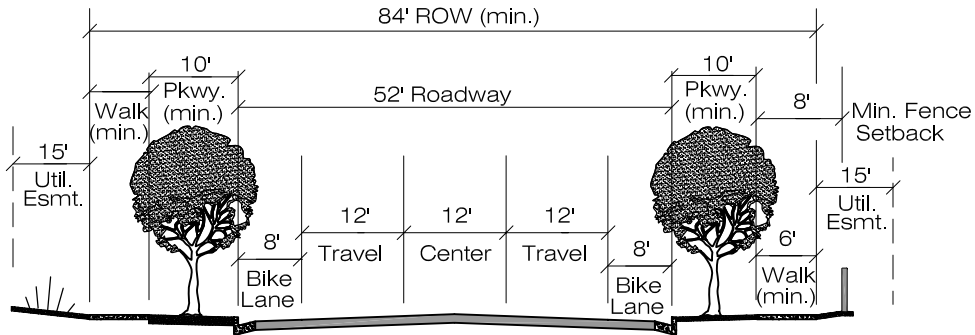
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FIGURE

7-2F

FORT COLLINS ONLY



ROADWAY WIDTH: 52'

RIGHT OF WAY WIDTH: 84' (min.) plus 30' (min.) utility easement.

TRAVEL LANES: Two lanes, 12' wide.

LEFT TURN LANES: 12' wide at intersections where needed.

BIKE LANES: Two lanes, 8' wide.

PARKING: None

PARKWAY: 10' (min.) width. Additional width optional.

SIDEWALK: 6' (min.) wide. Additional width may be required for higher pedestrian traffic in and leading to activity areas.

MEDIAN: Not required, except where necessary to control access and/or to provide pedestrian refuge or where Developer requested medians are approved by the local entity. Additional roadway and right of way width may be required.

WHERE USED: These specifications shall apply as required by the Local Entity when a Collector street is shown on the Master Street Plan or when the traffic volume on the street is anticipated to be 3,500 to 15,000 vpd.

DESIGN SPEED: 50 MPH

SPEED LIMIT: 30 - 45 MPH

ACCESS: Access will be limited. Points of access must be approved by the Local Entity.

CONTINUITY: Unlimited

FENCES: Fences shall be setback a minimum of 8' from the parkway edge of the sidewalk.

CURB AND GUTTER: Vertical.

2-LANE ARTERIAL STREET

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

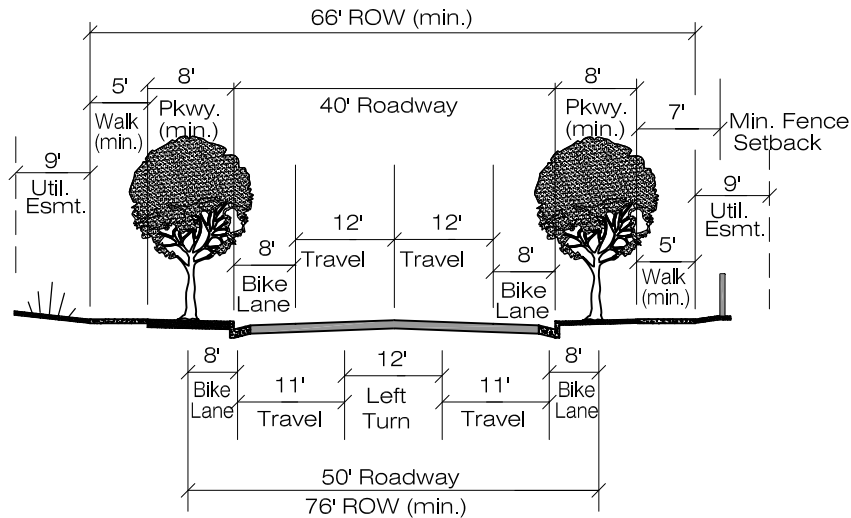
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FIGURE

7-3F

FORT COLLINS ONLY



INTERSECTIONS (WHERE NEEDED)

ROADWAY WIDTH: 40' (Widen to 50' where a left turn lane is required).

RIGHT OF WAY WIDTH: 66' (min.) (Widen to 76' where a left turn lane is required).

TRAVEL LANES: Two lanes, 12' wide or 11' wide where a left turn lane is required.

LEFT TURN LANES: 12' wide at intersection where needed.

BIKE LANES: Two lanes, 8' wide.

PARKING: None. Parking must be provided off street for any development adjoining the street.

PARKWAY: 8' (min.) width. Additional width optional.

SIDEWALK: 5' (min.) width. Additional width may be required for higher pedestrian traffic within and leading to activity areas.

MEDIAN: Not required, except where necessary to control access and/or to provide pedestrian refuge or when requested by the Developer and approved by the Local Entity. Additional roadway and right of way width may be required.

WHERE USED: These specifications shall apply as required by the Local Entity, when a Collector street is shown on the Master Street Plan or when the traffic volume on the street is anticipated to be in the range of 3,500 to 5,000 vehicles per day.

DESIGN SPEED: 40 MPH

SPEED LIMIT: 30-35 MPH

ACCESS: Access will be limited. Points of access must be approved by the Local Entity.

CONTINUITY: The street shall be continuous for no more than 1320 feet.

FENCES: Fences shall be setback a minimum of 7' from the parkway edge of the sidewalk.

CURB AND GUTTER: Vertical curb and gutter.

MAJOR COLLECTOR STREET

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

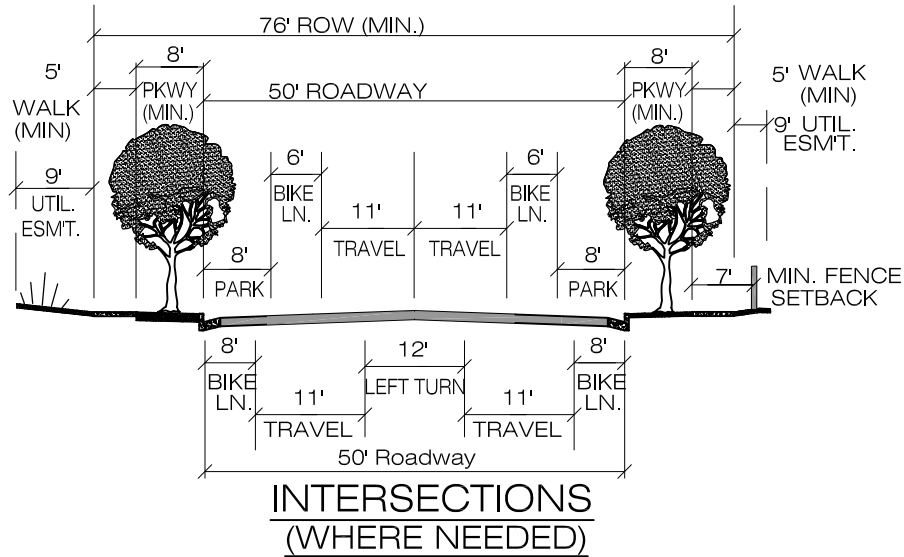
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DATE: 09/11/00

FIGURE

7-4F

FORT COLLINS ONLY



ROADWAY WIDTH: 50'

RIGHT OF WAY WIDTH: 76' (min.)

TRAVEL LANES: Two lanes, 11' wide.

LEFT TURN LANES: 12' wide at intersections where needed.

BIKE LANES: Two lanes, 6' wide. (8' wide where adjacent to curb)

PARKING: Two lanes, 8' wide; parking may be removed at certain locations to provide a left turn lane at intersections where needed.

PARKWAY: 8' (min.) width. Additional width optional.

SIDEWALK: 5' (min.) width. Additional width may be required for higher pedestrian traffic within and leading to activity areas.

MEDIAN: Not required, except where necessary to control access and/or to provide pedestrian refuge. additional roadway and ROW width may be required.

WHERE USED: These specifications shall apply as required by the Local Entity, when a Collector street is shown on the Master Street Plan or when the traffic volume on the street is anticipated to be in the range of 2,500 to 3,500 vehicles per day.

DESIGN SPEED: 40 MPH

SPEED LIMIT: 25-30 MPH

ACCESS: Access will be limited. Points of access must be approved by the Local Entity.

CONTINUITY: The street shall be continuous for no more than 1320 feet.

FENCES: Fences shall be setback a minimum of 7' from the parkway edge of the sidewalk.

CURB AND GUTTER: Vertical curb and gutter.

MINOR COLLECTOR STREET

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

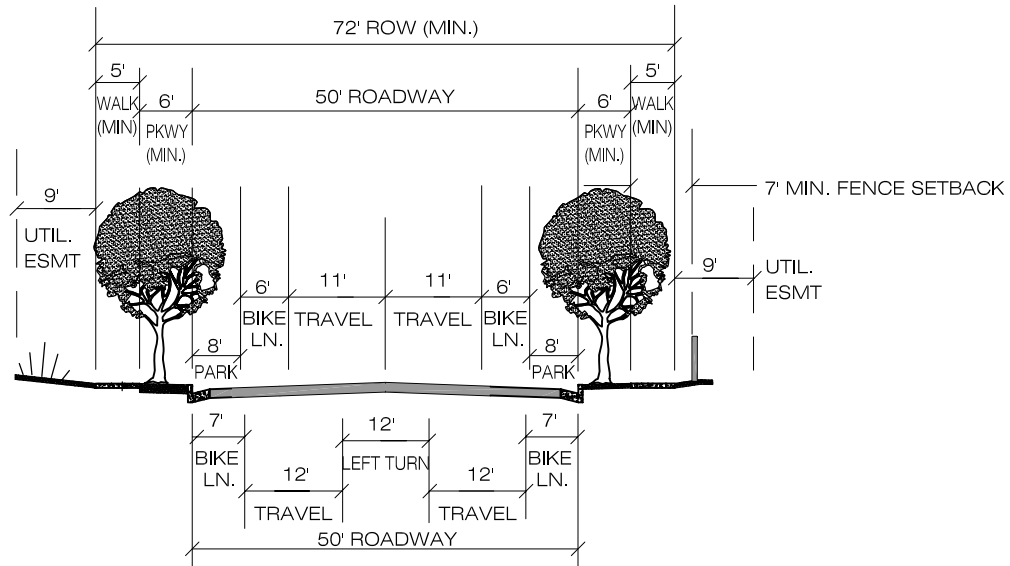
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DATE: 09/11/00

FIGURE

7-5F

FORT COLLINS ONLY



INTERSECTIONS (WHERE NEEDED)

ROADWAY WIDTH: 50' wide

RIGHT OF WAY WIDTH: 72' (min.)

TRAVEL LANES: Two lanes, 11' wide.

LEFT TURN LANES: 12' wide, provided at certain intersections where needed.

BIKE LANES: Two lanes, 6' wide, 7' wide where a left turn lane is provided.

PARKING: Two lanes, 8' wide. None provided at intersections or where a left turn lane is required.

PARKWAY: 6' (min.) width. Additional width optional.

SIDEWALK: 5' (min.) width. Additional width may be required within and leading to activity areas.

MEDIAN: Not required, except where necessary to control access and/or to provide pedestrian refuge. Additional roadway and right of way width may be required.

WHERE USED: These specifications shall apply to streets used in commercial areas for local access and circulation, when the traffic volume on the street is anticipated to be 2,500 vpd or less.

DESIGN SPEED: 30 MPH

SPEED LIMIT: 25 MPH

ACCESS: Access will be limited. Points of access must be approved by the Local Entity.

CONTINUITY: Streets are limited in length to 1320 feet.

FENCES: Setback a minimum of 7' from the parkway edge of the sidewalk.

CURB AND GUTTER: Vertical curb and gutter.

COMMERCIAL LOCAL STREET

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

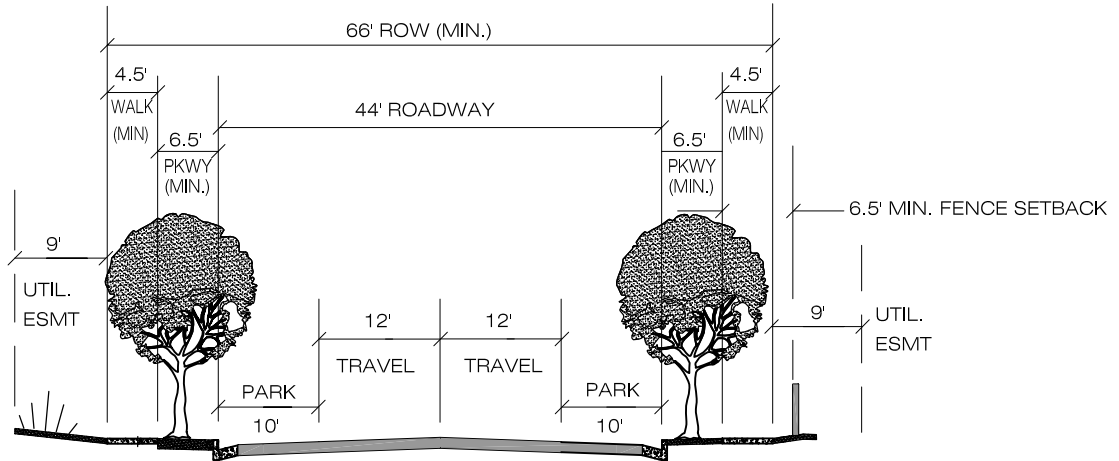
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FIGURE

7-6F

FORT COLLINS ONLY



ROADWAY WIDTH: 44' wide

RIGHT OF WAY WIDTH: 66' (min.) plus 18' (min.) utility easement.

TRAVEL LANES: Two lanes, 12' wide.

LEFT TURN LANES: None. If needed, parking would be prohibited.

BIKE LANES: Bicyclists shall share the travel lanes with motor vehicles. Additional width may be required in the parking lanes to provide 14' wide bike/parking shared lanes within and leading to activity areas.

PARKING: Two lanes 10' wide.

PARKWAY: 6.5' (min.) width. Additional width optional.

SIDEWALK: 4.5' (min.) width. Additional width may be required within and leading to activity areas.

MEDIAN: Not required, except where necessary to control access and/or to provide pedestrian refuge. Additional roadway and right of way width may be required.

WHERE USED: These specifications shall apply to streets used in industrial areas for local access and circulation, when the traffic volume on the street is anticipated to be 2,500 vpd or less.

DESIGN SPEED: 30 MPH

SPEED LIMIT: 25 MPH

ACCESS: Access will be limited. Points of access must be approved by the Local Entity.

CONTINUITY: Streets are limited in length to 1320 feet.

FENCES: Setback a minimum of 6.5' from the parkway edge of the sidewalk.

CURB AND GUTTER: Vertical curb and gutter.

INDUSTRIAL LOCAL STREET

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

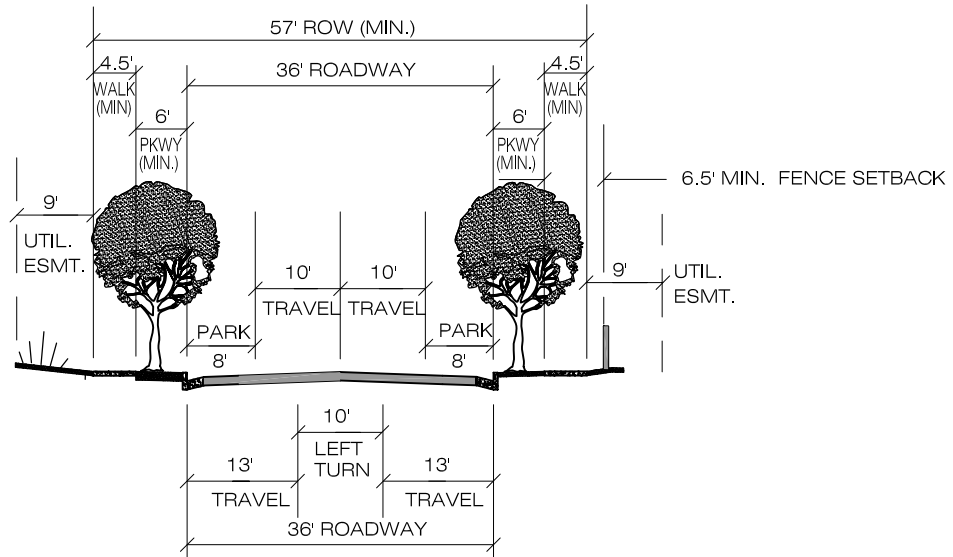
REVISION NO:

DATE: 09/11/00

FIGURE

7-7F

FORT COLLINS ONLY



INTERSECTIONS (WHERE NEEDED)

ROADWAY WIDTH: 36' wide without bike lane; 42' wide with bike lane; 36'; wide with left turn lane.

RIGHT OF WAY WIDTH: 57' (min) plus 18' (min.) utility easement.

TRAVEL LANES: Two lanes, 10' wide, 13' wide at intersections shared with bicyclists, or 10' wide where bike lanes are required.

LEFT TURN LANES: 10' wide, at intersections where needed.

BIKE LANES: Bicyclists shall share the roadway with motor vehicles in the travel lanes. Additional street width may be required to add bike lanes 6' wide on each side to accommodate bike traffic within and leading to activity areas.

PARKING: Two lanes 8' wide. Parking will be removed at intersections where a left turn lane is required.

PARKWAY: 6' (min.) width. Additional width optional.

SIDEWALK: 4.5' (min.) width. Additional width may be required for higher pedestrian traffic serving activity areas.

MEDIAN: Not required, except where necessary to control access and/or to provide pedestrian refuge. Additional roadway and right of way width may be required.

WHERE USED: These specifications shall apply to streets where traffic volume on the street is anticipated to be in the range of 1,000 to 2,500 vpd.

DESIGN SPEED: 30 MPH

SPEED LIMIT: 25 MPH

ACCESS: Access will be limited. Points of access must be approved by the Local Entity.

CONTINUITY: The street shall be continuous for no more than 1320 feet.

FENCES: Fences shall be setback a minimum of 6.5' from the parkway edge of the sidewalk.

CURB AND GUTTER: Vertical curb and gutter.

CONNECTOR LOCAL STREET

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

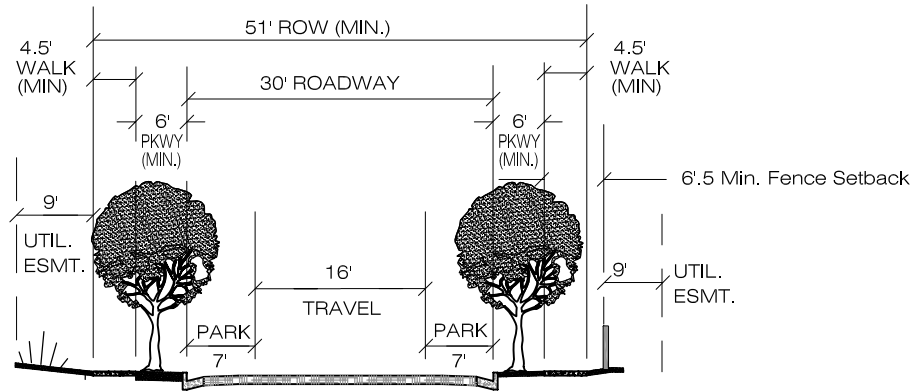
REVISION NO:

DATE: 09/11/00

FIGURE

7-8F

FORT COLLINS ONLY



INTERSECTIONS (WHERE NEEDED)

ROADWAY WIDTH: 30' wide.

RIGHT OF WAY WIDTH: 51' (min)

TRAVEL LANES: 16' wide.

LEFT TURN LANES: None.

BIKE LANES: Bicyclists to share travel lane with motor vehicles. Additional street width, up to 4' wider, may be required in the travel lane to accommodate bike traffic to serve activity areas, such as schools and parks.

PARKING: Two lanes 7' wide.

SIDEWALK: 4.5' (min.) width. Additional width may be required for higher pedestrian traffic serving activity areas.

MEDIANS: None.

WHERE USED: All residential local streets where traffic volume is anticipated to be 1000 vpd or less. (unless the Narrow Residential Local Street or Rural Residential Local Street standards are used)

DESIGN SPEED: 25 MPH

SPEED LIMIT: 25 MPH

ACCESS: Access will be unlimited in accordance with these standards.

CONTINUITY: The street shall be continuous for no more than 1320 feet.

FENCES: Fences shall be setback a minimum of 6.5' from the parkway edge of the sidewalk.

CURB AND GUTTER: Vertical curb and gutter, or driveover. However, if driveover is used, the parkways must be widened by 1' and thereby, the required right of way width will increase by 2' to provide 53'.

RESIDENTIAL LOCAL STREET

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

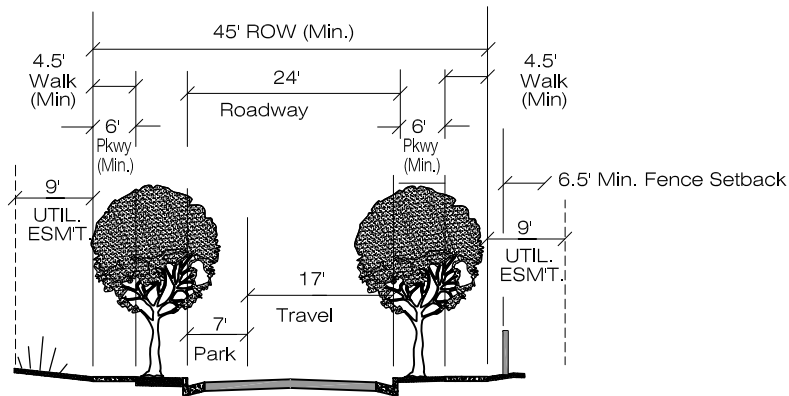
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DATE: 09/11/00

FIGURE

7-9F

FORT COLLINS ONLY



ROADWAY WIDTH: 24'

RIGHT OF WAY WIDTH: 45' (min.)

TRAVEL LANES: 17' wide.

LEFT TURN LANES: none.

BIKE LANES: Bicyclists to share travel lane with motor vehicle. Additional street width, up to 4' wider, may be required in the travel lane to accommodate bike traffic to serve activity areas, such as schools and parks.

PARKING: One lane 7' wide. Parking shall be removed at intersections where space is needed for two travel lanes.

SIDEWALK: 4.5' (min.) width. Additional width may be required for pedestrian routes to schools, parks, or other activity areas.

WHERE USED: This street may be used for single family dwelling areas where: (1) the dwelling units all have off-street parking access from an alley; (2) blocks do not exceed 660 feet in length and; (3) traffic volume, on the street is anticipated to be 700 vpd or less.

DESIGN SPEED: 25 MPH

SPEED LIMIT: 25 MPH

ACCESS: None. Access will be taken from the alley.

CONTINUITY: The street shall be continuous for no more than 660 feet.

FENCES: Fences shall be setback a minimum of 6.5' from the parkway edge of the sidewalk.

CURB AND GUTTER: Vertical curb and gutter.

SIGNS: "No Parking" signs are required on one side of the street.

NARROW RESIDENTIAL LOCAL STREET (Used w/Alleys Only)

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

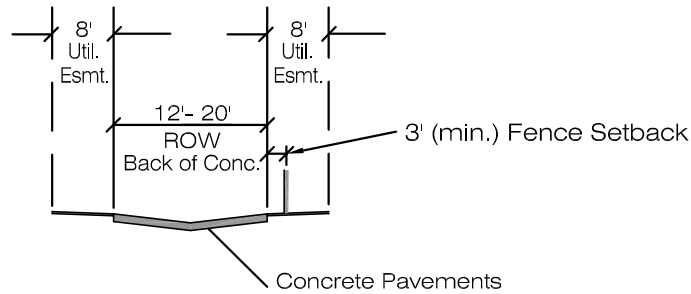
REVISION NO:

DATE: 09/11/00

FIGURE

7-10F

FORT COLLINS ONLY



ROADWAY WIDTH: 12' to 20'. (20' width required for commercial and industrial areas)

RIGHT OF WAY WIDTH: 12' to 20'. (20' width required for commercial and industrial areas)

PARKING: None. Parking must be provided on private property.

WHERE USED: An alley may be used to provide secondary vehicular access only to the rear of properties served by a street, if allowed by city code.

DESIGN SPEED: 15 MPH

SPEED LIMIT: 15 MPH.

DRIVEWAY CONNECTIONS TO ALLEYS: Driveway connections to alleys must be flared in accordance with Detail 1.

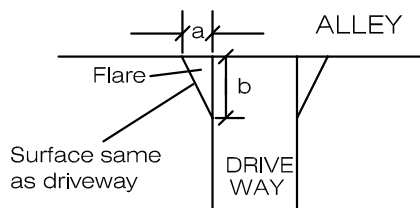
ALLEY CONNECTIONS TO STREETS: Where an alley intersects the right of way for a street 10' x 10' corner cuts shall be dedicated as R.O.W. for visibility as shown in Detail 2 below. These areas may be landscaped no higher than 12". No fences may encroach into this area.

CONTINUITY: Alleys are limited in length to 660 feet.

GARAGE DOOR SET BACK: ★ Option 1: 8' for fences placed with a setback equal to 8' or more. Option 2: 20' feet minimum for fences placed less than 8' from the edge of the alley.

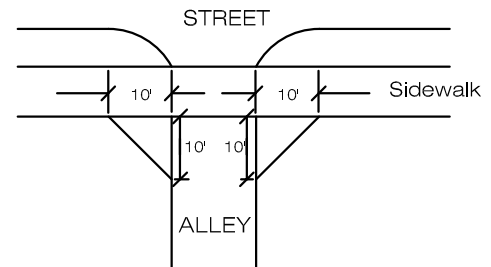
FENCES: Fences may be placed as close as 3' from the right-of-way line on private property when the garage door is set back at least 20' from the right-of-way. Minimum setback is 8' for garage door setback less than 20' from the right-of-way.

★ Building setbacks shall be in accordance with the Land Use Code.



DETAIL 1

Alley Width FT.	Driveway Flare	
	a FT.	b FT.
20	0	0
18	2'	6'
16	4'	8'
14	5'	8'
12	6'	8'



DETAIL 2

ALLEY OPTION (A) (Drainage to Center)

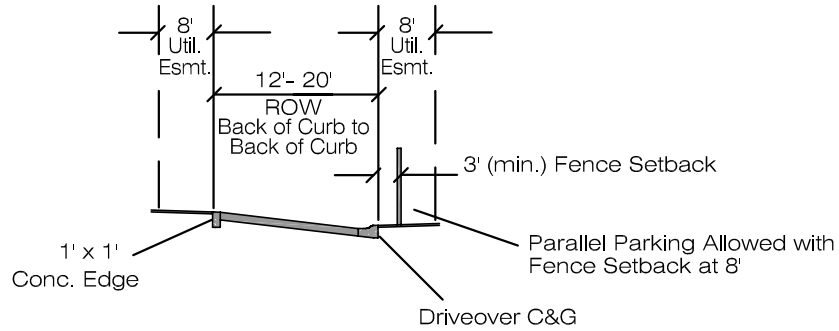
LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

REVISION NO: 1
DATE: 04/01/07

FIGURE
7-11F

FORT COLLINS ONLY



ROADWAY WIDTH: 12' to 20'. (20' width required for commercial and industrial areas)

RIGHT OF WAY WIDTH: 12' to 20'. (20' width required for commercial and industrial areas)

PARKING: None. Parking must be provided on private property.

WHERE USED: An alley may be used to provide secondary vehicular access only to the rear of properties served by a street, if allowed by city code.

DESIGN SPEED: 15 MPH

SPEED LIMIT: 15 MPH.

DRIVEWAY CONNECTIONS TO ALLEYS: Driveway connections to alleys must be flared in accordance with Detail 1.

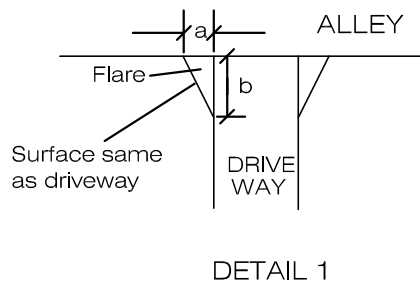
ALLEY CONNECTIONS TO STREETS: Where an alley intersects the right of way for a street 10' x 10' corner cuts shall be dedicated as R.O.W. for visibility as shown in Detail 2 below. These areas may be landscaped no higher than 12". No fences may encroach into this area.

CONTINUITY: Alleys are limited in length to 660 feet.

GARAGE DOOR SET BACK: ★ Option 1: 8' for fences placed with a setback equal to 8' or more.
Option 2: 20' feet minimum for fences placed less than 8' from the edge of the alley.

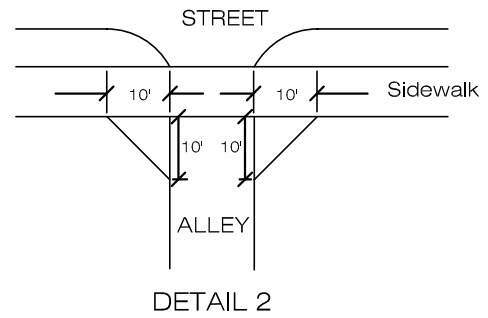
FENCES: Fences may be placed as close as 3' from the right-of-way line on private property when the garage door is set back at least 20' from the right-of-way. Minimum setback is 8' for garage door setback less than 20' from the right-of-way.

★ Building setbacks shall be in accordance with the Land Use Code.



DETAIL 1

Alley Width FT.	Driveway Flare	
	a FT.	b FT.
20	0	0
18	2'	6'
16	4'	8'
14	5'	8'
12	6'	8'



DETAIL 2

ALLEY OPTION (B) (Drainage to One Side)

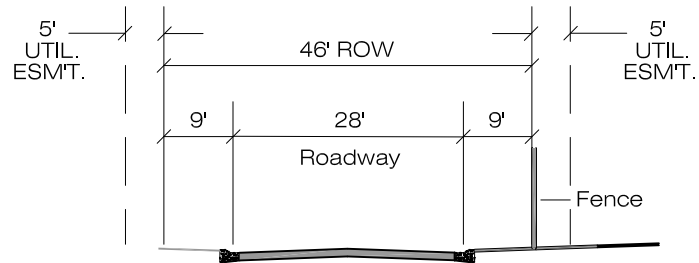
LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

REVISION NO: 1
DATE: 04/01/07

FIGURE
7-12F

FORT COLLINS ONLY



ROADWAY WIDTH: 28'

RIGHT OF WAY WIDTH: 46' (min.)

BIKE LANES: Bicyclists share the travel lanes with motor vehicles.

PARKWAY: Both sides of the street.

PARKING: Both sides of street.

CURB AND GUTTER: Drive over or vertical curb and gutter.

WHERE USED: These specifications may be used for internal local streets of developments, with minimum lot sizes of one (1) acre or larger, and when the traffic volume, on the street is anticipated to be less than 300 vpd.

ACCESS: Access will be unlimited in accordance with these standards.

CONTINUITY: Streets are limited in length to 1,320 feet.

DESIGN SPEED: 25 MPH

SPEED LIMIT: 25 MPH

FENCES: Fences may be set on the right-of-way line as long as required sight distance is not obstructed.

GARAGE DOOR SETBACKS: 50'.

SIDEWALK: None.

RURAL RESIDENTIAL LOCAL STREET

LARIMER COUNTY
URBAN AREA
STREET STANDARDS

DESIGN
FIGURE

REVISION NO:

DATE: 09/11/00

FIGURE

7-13F

Appendix H

NOTE: Appendix Information is for Reference Only. Contact Local Entity Engineer for Current Information.

Fort Collins
Multimodal Transportation
Level of Service Manual

**City of Fort Collins
Multimodal Transportation
Level of Service Manual**

March 28, 1997

City of Fort Collins Transportation Master Plan



Multimodal Transportation Level of Service Manual

Goals, Objectives and Standards

Part I. Adequate Public Facilities Plan

Goals, Objectives and Standards

Level of Service (LOS) standards do not exist as stand-alone measures, but are part of a system of goals, objectives and standards. They are interpreted by the public and by elected decision makers in the context of current and future issues, trends, conditions, expectations, and perceptions and they require a system of measurement.

LOS standards are an important form of municipal "policy" and are based on the City of Fort Collins "Community Vision and Goals 2015," the "City Structure Plan" and the "City Plan Principles and Policies" documents developed as part of the City Plan process. LOS standards provide a means of testing the City's plan for future land uses (as represented in the Structure Plan) against the City's goals for transportation and for overall quality of life.

The LOS standards also provide a means of applying the City's goals in the development review process.

The general principle and specific policies that give rise to the Adequate Public Facilities (APF) requirement are found in the City's Principles and Policies.

The provisions dealing with adequate public facilities and the Principles from the Transportation section are reprinted below:

PRINCIPLE GM-5: The provision of adequate public facilities and the phasing of infrastructure improvements will be important considerations in the timing and location of development.

Policy GM-5.1 Phasing of Development. The provision of public facilities and services will be utilized to direct development in desired directions, according to the following considerations:

- Development will only be permitted where it can be adequately served by critical public facilities and services such as water, sewer, police, transportation, schools, fire, storm water management, and parks.
- New roads and other City services shall not be extended to serve development outside the designated Urban Growth Area (Stage 1). Moreover, the City shall not enter into any agreements with other jurisdictions to jointly fund or construct infrastructure improvements or provide services that might foster growth outside of the Urban Growth Area (Stage 1). These policies will not preclude the City from working with other jurisdictions to provide services and facilities which benefit the entire community such as regional trails, open space and parks.
- Development which occurs within the Urban Growth Area (Stage 1) shall have at least one-sixth of its boundary area contiguous with existing urban development.
- Preferential consideration will be given to the extension and augmentation of public services and facilities to accommodate infill and redevelopment before new growth areas are prepared for development.



Multimodal Transportation Level of Service Manual

Goals, Objectives and Standards

p. 3

- The City will review applications for the creation of new special service agencies and the expansion of existing special service agencies for conformance with these *City Plan Principles and Policies*.
- The City will work with Larimer County to develop plans and policies for public services and facilities required for new and existing development located in unincorporated areas of the City's Urban Growth Area, with special consideration to those subareas and neighborhoods where more detailed planning will follow the adoption of these *City Plan Principles and Policies*.
- The City should charge additional fees to non-city residents who utilize City services.

PRINCIPLE T-1: The physical organization of the city will be supported by a framework of transportation alternatives that maximizes access and mobility throughout the city, while reducing dependence upon the private automobile.

PRINCIPLE T-2: Mass transit will be an integral part of the city's overall transportation system.

PRINCIPLE T-3: Transportation Demand Management will be a critical component in the City's overall transportation system.

PRINCIPLE T-4: Bicycling will serve as a viable alternative to automobile use for all trip purposes.

PRINCIPLE T-5: The City will acknowledge pedestrian travel as a viable transportation mode and elevate it in importance to be in balance with all other modes. Direct pedestrian connections will be provided and encouraged from place of residence to transit, schools, activity centers, work and public facilities.

PRINCIPLE T-6: Street crossings will be developed to be safe, comfortable, and attractive.

PRINCIPLE T-7: The City will encourage the development of comfortable and attractive pedestrian facilities and settings to create an interesting pedestrian network.

PRINCIPLE T-8: The City shall develop secure pedestrian settings by developing a well-lit inhabited pedestrian network and by mitigating the impacts of vehicles.

PRINCIPLE T-9: Private automobiles will continue to be an important means of transportation.

PRINCIPLE T-10: The City will participate in a coordinated, regional approach to transportation planning.

Multimodal Transportation Level of Service Manual

Goals, Objectives and Standards

The "Adequate Public Facilities" principle is intended to ensure that adequate transportation infrastructure and services required to meet the needs and demands created by new development will be provided by the time the development is occupied (that is, concurrently).

The purpose of these Level of Service standards is to provide a definition of "adequate" -- for each mode of travel.

General Methodology

Historically, LOS standards were applied only to roadways and only in engineering. Their primary purpose was to facilitate the design of specific roadway improvement projects based on forecast demand. Now, however, LOS standards also serve as performance planning and measurement systems. The City of Fort Collins has chosen to develop performance-based LOS standards and to do so for all modes.

Evaluating LOS standards for purposes of determining their adequacy under City policy requires more than an evaluation of specific transportation facilities. Roadways that are of adequate width and design must also be adequately connected into the larger street grid. Bicycle and pedestrian facilities, too, must be connected into the City's grid of bicycle and pedestrian facilities.

Applying LOS standards to specific sidewalks, for example, would ignore the issue of whether the sidewalk in question is connected to the rest of the pedestrian network. Similarly, proximity to service and connectivity to the larger city-wide grid are important issues for all modes and are included in the LOS standards.

In the case of public transit, the "bricks and mortar" physical infrastructure approach used to evaluate the other modes is not adequate to the task. Transit performance is determined, not only by what is built, but also by the amount and type of operations that are

provided (hours of service, frequency of service, and so forth). Also, as with the bicycle and pedestrian modes, the proximity of transit service becomes an issue to be addressed by LOS standards.

For each non-auto travel mode -- bicycle, pedestrian and public transit -- the LOS standards do not require forecasts of user volumes or demand. Instead, they are designed to ensure ubiquitous availability of adequate bicycle and pedestrian facilities, and transit service.

In the case of roadways, however, estimating future LOS conditions requires predicting future traffic levels. In other words, forecasting future roadway LOS involves forecasting both supply and demand.

Coordination With Other Plans

On the following two pages are tables listing the City's goals, objectives and standards from which the proposed LOS standards have been derived. The tables are divided into four modes of travel: public transit, pedestrian, bicycle and motor vehicle.

City of Fort Collins documents relied upon in preparing LOS Standards for the modes included:

- Fort Collins Congestion Management Plan;
- Community Vision and Goals 2015 ;
- City Structure Plan;
- City Plan Principles and Policies;
- Fort Collins Bicycle Program Plan;
- Residential Street Standards;
- Transit Development Plan 1996-2002; and,
- Fort Collins Pedestrian Plan.



Multimodal Transportation Level of Service Manual

Goals, Objectives and Standards

Goal	Objective	LOS Standard	Design & Operations Standards *
<p>Pedestrian</p> <ul style="list-style-type: none"> A safe, comfortable, attractive and secure pedestrian environment. A pedestrian network which is well-connected and directly linked to schools, neighborhoods, parks, activity centers and other destination areas. Pedestrian facilities which provide universal access to all users, including children, the mobility impaired, and elders. Regular maintenance of pedestrian facilities. An urban form which promotes pedestrian activity. 	<ul style="list-style-type: none"> Revise local statutes and codes to increase pedestrian safety and security by 1998. Achieve a level of funding for the pedestrian program which is in proportion to mode share. Place a high funding priority on pedestrian facilities needed to achieve minimum pedestrian LOS requirements for school walking areas, parks and recreation facilities, transit corridors, and activity areas. Achieve active and continuing involvement by the pedestrian community in the development and implementation of pedestrian policies and facilities. Ensure that all pedestrian facilities are designed and constructed according to new standards. 	<ul style="list-style-type: none"> Pedestrian LOS will be evaluated according to prevailing or forecast conditions within a 1/4 mile sphere of influence. This is to be measured as 1,320' along a straight line radius "as the crow flies" in all directions from the site. LOS requirements are based on ease of street crossings, sidewalk continuity, directness of travel, amenities, and security and will be evaluated according to type of adjacent land use. 	<ul style="list-style-type: none"> Residential streets: 4.5' wide sidewalks with a 6' landscaped parkway, <i>except</i> for rural residential streets, which do not require sidewalks, and 36' residential infill streets, which do not require landscaped parkways. Connector streets: 4.5' sidewalks and a 6' landscaped parkway. Collector streets: 5' sidewalks and an 8' landscaped parkway. Industrial/Commercial Local streets: 5' sidewalks, and a 6' landscaped parkway. Arterials <35,000 ADT: 6' sidewalks and a 10' landscaped parkway; arterials > 35,000 ADT: 7' sidewalks and a 10' landscaped parkway.
<p>Automobile</p> <ul style="list-style-type: none"> A transportation system which provides both access and mobility and which minimizes automobile dependence. 	<ul style="list-style-type: none"> Ensure that the rate of growth in vehicle miles traveled (VMT) does not exceed the rate of growth in population. 	<ul style="list-style-type: none"> Automobile LOS will be evaluated using the latest version of the Highway Capacity Manual and will reflect street classification and adjacent land use. When LOS falls below identified levels in Mixed Use Districts, mitigation will be required in order to ensure a high degree of accessibility through alternative modes. 	<ul style="list-style-type: none"> 12' travel lanes will be required for all arterial streets and for collectors without parking. 11' travel lanes will be required for all other streets, except for connectors and residential streets. Residential local streets will have a width of 30' for streets with parking on both sides of the street or 24' for streets with parking on one side of the street. Residential alleys will be 12-20' wide. A continuous median will be required on all arterial and major arterial streets.

* Note: exceptions to standards may occur in constrained corridors.

Multimodal Transportation Level of Service Manual

Goals, Objectives and Standards

Goal	Objective	LOS Standards	Design & Operations Standards *
<ul style="list-style-type: none"> A safe, convenient, continuous and well-connected bicycle system which provides access to major destination areas and activity centers. A bicycle system which provides links to the regional system. 	<ul style="list-style-type: none"> Achieve a continuous system by the year 2015. Double the percentage of daily resident person trips made by bicycle from 7% in 1995 to 14% in 2015. Reduce the bicycle accident rate by 10% by 2015. 	<ul style="list-style-type: none"> Bicycle level of service (LOS) will be evaluated according to facility and area-based requirements. Area LOS requirements are based on connectivity to North-South and East-West corridors. 	<ul style="list-style-type: none"> 8' bicycle lanes are required on all arterial streets and on collectors without parking. A 6' bicycle lane is required on collector streets with parking. An 11' shared bicycle and parking lane or a 6' bicycle lane is required on commercial local streets. Industrial/Commercial Local streets require an 11' shared bicycle and parking lane or a 6' bicycle lane. An 8' foot bicycle and pedestrian path connection will be required to make neighborhood connections where streets are not required or feasible.
<ul style="list-style-type: none"> A well-connected intermodal transportation system. Frequent, reliable and accessible transit service. Transit service oriented around activity centers. Comfortable transit service. 	<ul style="list-style-type: none"> Ensure that 70% of the city has access to transit service (1/4 mile walk). Double the size of existing service by the year 2002. Increase the area served, frequency of service and hours of operation by 2002. Increase ridership to 2,000,000 annual trips by 2002. Reduce transfer wait times. 	<ul style="list-style-type: none"> Transit LOS will be evaluated based on hours of weekday service, weekday frequency of service, travel time factor and peak load factor. 	<ul style="list-style-type: none"> Ensure transit travel times are no greater than 2.5 times competing automobile travel times. Weekday headways will be reduced to at least 30 minutes in all corridors by 2002 and to no more than 20 minutes in all corridors and to 15 minutes in mixed-use and commercial corridors by 2015. Peak load factor will be less than 1.2. Transit stops will be located 1,000 to 1,400 feet apart in high-use areas and 2,000 feet apart in low-use areas.

* Note: exceptions to standards may occur in constrained corridors.

Multimodal Transportation Level of Service Manual

Public Transit LOS

Public Transit LOS

Transit LOS standards take into account route service characteristics and land use characteristics of the areas served. Figure 1 relies in part on standards developed in the City's Transit Development Plan. The service level standards are intended for use in evaluating service planned by the year 2015.

The transit LOS rating for an area is based on how many of the four service standards are met. The minimum condition is higher in mixed use centers and commercial corridors. The level of route service is graded higher if the transit routes run within a quarter-mile of the area being evaluated. Routes more than a half-mile away cannot be considered in arriving at transit LOS.

The minimum requirements for transit level of service are (by 2015):

- At least 70% of the land area of Fort Collins outside of Mixed Use Centers and Commercial Corridors shall be served by transit at no less than LOS D.
- For Mixed Use Centers and Commercial Corridors, the minimum level of service for adequacy is LOS B.

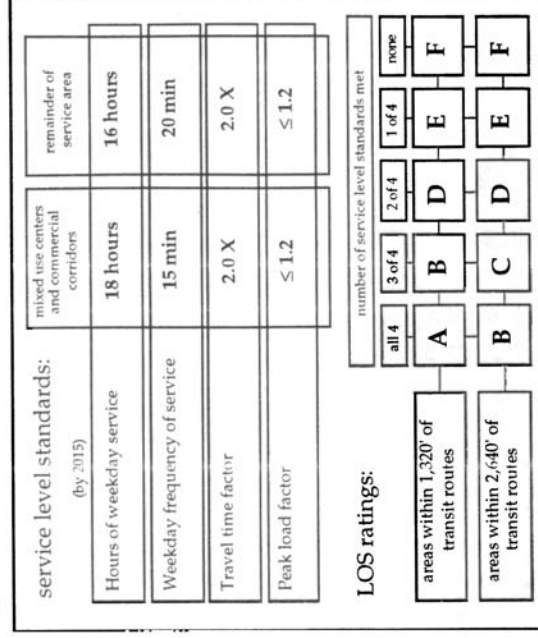
Definitions of terms used in Figure 1 are as follows:

Hours of Weekday Service -- The weekday hours of service on the applicable route, measured from the first scheduled stop to the last.

Weekday Frequency of Service -- Peak period headway.

Travel Time Factor -- Portal-to-portal bus travel time divided by auto travel time. Auto is measured using average speed in peak hour via the most direct route on arterials and collectors and includes time

Figure 1. Public Transit LOS -- Standards and Ratings



to park and walk. Transit is measured along the bus route using peak hour speed, including walk, transfer, and expected wait times.

Peak Load Factor -- Calculated by dividing the number of passengers on board at the peak time of day by the available seats.

Mixed use centers and commercial corridors are designated on the City's Structure Plan.

Multimodal Transportation Level of Service Manual

Pedestrian LOS

Pedestrian LOS

Five level of service standards specific to pedestrian facilities are utilized to address pedestrian needs and land use considerations. These standards are briefly described below and are defined in more detail in Appendix A.

Directness -- Directness is defined as the walking distance to destinations including transit stops, schools, parks, commercial employment, or activity areas. A grid street pattern with sidewalks on-site or within/adjacent to existing public right of way typifies the ideal system, however "off-road" multi-use paths may also be considered if practical to provide more direct pedestrian routes.

Measurement of directness is the ratio of the Actual (existing or proposed) distance to such destinations by way of pedestrian sidewalk or pathway divided by Minimum north/south and east/west right angle distance characterized by the grid street pattern (the A/M ratio).

Continuity -- Continuity is defined as the completeness of the sidewalk/walkway system with avoidance of gaps. Levels of service range from an A/B, where the pedestrian corridor is integrated within the activities along the corridor, to a C, where continuous stretches of sidewalks with variable widths and design elements, to D/E, where there are breaches in the pedestrian network, to F, which indicates large gaps in the network.

Street Crossings -- Each of the four types of street crossings is assigned an LOS rating.

Signalized Intersections: LOS elements include grade separation, number of lanes to cross, signal indication, well marked crosswalks, lighting, raised median width, visibility, curb ramps, pedestrian buttons, convenience, comfort and security.

Unsignalized Intersection Crossing the Major Street: LOS elements include grade separation, number of lanes to cross, well-marked crosswalks, lighting, raised median width, visibility, and curb ramps.

Unsignalized Intersection Crossing the Minor Street: LOS elements include well-marked crosswalks, lighting, and curb ramps.

Mid-block Crossing: LOS elements include grade separation, number of lanes to cross, strength of crosswalk presence, well marked crosswalks, lighting, raised median width, curb ramps, pedestrian signals, convenience, comfort and security.

Visual Interest and Amenity -- To promote pedestrian activity and use of transit, the pedestrian system should be esthetically compatible with local architecture and should include amenities to serve pedestrians. The attractiveness of the pedestrian network can range from visually appealing and compatible with local architecture, including environmental enhancements (such as pedestrian street lighting, fountains, and benches) to an experience of discomfort and intimidation, associated with absence of amenities and incompatible architectural design.

Security -- Pedestrians require a sense of security, through visual line of sight with others, separation from motor vehicles and bicycles, and adequate lighting levels. The highest level of service is in an environment with high pedestrian and police presence, clear lines of sight, and good lighting levels. The lowest is where the streetscape is totally intimidating with major breaches in pedestrian visibility from the street, adjacent land uses, and activities. For details regarding sight distance and lighting requirements, refer to the City of Fort Collins' street design standards and codes.

Multimodal Transportation Level of Service Manual

Pedestrian LOS

While there are design standards for all types of pedestrian facilities, acceptable level of service thresholds for purposes of concurrency will vary by the type of activity area.

The five types of areas are as follows:

Pedestrian District -- This area includes the existing Fort Collins downtown, the CSU area, and a future activity center in the northwest portion of the city which has been designated on the Fort Collins City Structure Plan.

There are numerous locations within the City that do not currently meet the minimum level of service standards. Because of limited funding, improvements will be prioritized toward routes to schools, parks, transit, and activity areas with the objective of bringing the entire city into compliance with the LOS standards by 2015.

To prevent an increase in the backlog, new developments, both public and private, as well as major street improvements and redevelopment, must meet these minimum pedestrian level of service standards.

A map (from the City's Pedestrian Plan) is provided in Appendix A showing the location of existing and future pedestrian districts.

The five pedestrian environment factors were developed as part of the Pedestrian Plan and the LOS letter grades are described in detail in Appendix A.

Activity Corridor/Center -- These include the commercial corridors of North and South College Avenue as well as areas within a quarter-mile (1,320') radius around neighborhood and community retail centers. They are designated on the map in Appendix A.

Transit Corridor -- These include all areas within a quarter-mile (1,320') of existing transit routes and transit routes to be initiated by 2015.

School Walking Area -- These include all areas within a mile (5,280') radius around existing public schools (K - 12) and around sites officially designated by the School District for future public schools.

Other -- This category includes all locations not falling within one of the four previous areas.

Figure 2 displays minimum conditions required to achieve the LOS standards.

Figure 2
Pedestrian Level of Service by Location Area Type

area type	directness	continuity	street crossings	visual interest & amenities	security
pedestrian district	A	A	B	A	A
activity center/corridor	B	B	B	B	B
transit corridor	B	B	B	C	B
school walk area	B	B	B	C	B
other	C	C	C	C	C

Multimodal Transportation Level of Service Manual

Bicycle LOS

Bicycle LOS

Bicycle LOS standards are based on connectivity to various bike facilities in connecting corridors. For purposes of this analysis, bicycle corridors may contain one of three types of facilities:

“Directly connected” means the site is penetrated by the bicycle facility; or the bicycle facility runs immediately adjacent to the property and is not separated from it by any significant barriers, or the bicycle facility runs perpendicular to the property edge and is readily accessible from the property with no significant barriers.

On-Street Lanes -- These are striped exclusive-use bicycle lanes within the flow-lines of public streets.

Bicycle facilities which are not consistent with the City’s minimum design standards will be not considered in evaluating bicycle LOS.

Off-Street Paths -- These are multi-use paths or exclusive-use bicycle paths that are separate from public streets. They may be on public or private land, but must be open for public use to be considered in LOS evaluation.

On-Street Route -- These are low-volume local streets which the City has designated as Bicycle Routes and which are signed as such. Bicycles share the travel lanes with motor vehicles.

It is the City’s policy that on-street lanes provide safer and more direct connectivity than off-street multi-use paths. For that reason, higher ratings are assigned to areas connected to on-street lanes.

The overall approach to bicycle LOS is based on the fact that the City’s bike grid will steadily approach completion. In the future, it will be possible, once access to the grid is achieved, to travel safely by bicycle directly to any other area that has access to the grid. Thus the issue of connectivity has become paramount.

Figure 3 shows the minimum LOS standards for the bicycle system.

Figure 3. Bicycle LOS Standards

connectivity required for levels of service:	
A	directly connected to both North-South and East-West on-street lanes
B	directly connected to both North-South and East-West corridors at least one of which is a set of on-street lanes
C	directly connected to either a North-South or an East-West corridor which is a set of on-street lanes
D	directly connected to either a North-South or an East-West corridor which is an off-street path
E	indirectly connected via an on-street unstriped route along a low volume local street to one or more of the above within 1/4 mile
F	no direct or indirect connections to either North-South or East-West corridors

minimum LOS	
base city-wide minimum level:	C
public school sites:	A
recreation sites:	B
community/neighborhood commercial centers:	B



Multimodal Transportation Level of Service Manual

Motor Vehicle LOS

Motor Vehicle LOS

Over the past two decades, sophisticated formulas and routines for measuring arterial roadway LOS have been developed. These take into account such details as intersection design, signal timing and frequency of connecting driveways. Unfortunately, such variables cannot be reliably forecast twenty-five years into the future.

Instead, forecasts of future roadway LOS must rely on a simpler approach which compares predicted volume to predicted capacity. These "volume to capacity" (V/C) ratios are then used to determine the LOS letter grade rating (A through F). The means for predicting future roadway V/C or LOS levels is the MINUTP traffic model maintained by the City's transportation staff and the regional North Front Range Transportation & Air Quality Planning Council.

(Note: for purposes of completing a "Transportation Impact Study" for specific proposed development projects, a method of measuring roadway LOS is required which involves applying Highway Capacity Manual procedures and LOS definitions.)

Prior to adoption in early 1995 of the Congestion Management Plan, the City had an objective of maintaining at least LOS D on all arterial roadways.

The City's Congestion Management Plan (CMP) changed that approach, addressing motor vehicle LOS as follows:

"This objective (LOS D) is unachievable for the core area of the city; all of the scenarios examined by the Committee predicted some of the arterial systems would fall below this level. LOS D is also not an adequate basis for roadway system planning because it has a tendency to direct capacity investments to where they are not appropriate . . ."



"LOS objectives for the roadway system should be defined in a manner that differentiates between the type of urban development being served. Standards for vehicular circulation within densely developed areas such as the core city and other activity centers should be set to favor access over mobility. Standards for radial routes to suburban areas and for through routes should be set to reflect the importance of community-wide mobility." (Chapter 8, p. 70)

The City's motor vehicle LOS standards have been designed to reflect the type of area being served (based on the City Structure Plan) and the City's system of functional classification of roads. This will allow the City to manage investments in motor vehicle capacity and efficiency in a manner that supports its land use plan.

The City of Fort Collins functional classification system recognizes four broad categories of roadway. (Only arterials and collectors are shown on the City's adopted Master Streets Plan map.)

The four classifications are defined below:

ARTERIAL

(includes: Major Arterials, Arterials, and Minor Arterials)

One or more of the following conditions may apply:

- provides direct service to major center(s) of activity;
- provides continuity and length for crosstown trips;
- connects to at least one other arterial; and,
- may carry high levels of traffic (>3,500 vpd).

Multimodal Transportation Level of Service Manual

Motor Vehicle LOS

COLLECTOR

(includes: Collectors With and Without Parking)

One or more of the following conditions may apply:

- connects local streets with arterial streets;
- continuity and length may be less than one mile;
- some commercial activity may be present in the corridor; and,
- may carry moderate levels of traffic (2,500 - 3,500 vpd).

CONNECTOR

(includes: Connectors only)

One or more of the following conditions may apply:

- connects local streets to collector(s) or arterial(s);
- gathers traffic from throughout a residential district;
- continuity and length may be less than one mile;
- connects adjacent residential districts; and,
- may carry traffic of 1,000 - 2,000 vpd.

LOCAL

(includes: Commercial Local, Industrial Local, Residential Local, Narrow Residential Local, and Rural Residential Local)

One or more of the following conditions may apply:

- provides access to property;
- continuity with the street network may occur only at one end;
- facility length may be less than one mile;
- may connect to connector(s) or collector(s); and,
- carries low levels of traffic (< 1,000 vpd, except up to 2,500 vpd for commercial and industrial local streets).

(Note: the City's street design standards provide more detail on physical characteristics of streets by functional classification.)

The street system provides both mobility (the ability to get across town) and access (the ability to get to a specific location). It is important to balance these competing demands, and it is important that LOS standards adopted for motor vehicles reflect this balance. Where arterials and collectors pass through built-up commercial areas (e.g., downtown) they may become congested in the future and there will be no way to build roadway improvement projects to eliminate such congestion.

Successful destination areas usually reach levels of motor vehicle traffic that cannot be handled at high levels of service. This occurs because the "people-holding" capacity of successful commercial areas eventually exceeds the traffic capacity of the roadways that serve them. At such locations, alternative means of getting around (especially walking, but also including transit and bicycling) become important.

To the extent that arterial and collector roadways transect successful destination areas, they will become less effective for purposes of achieving long distance mobility. At this point, the "access" function becomes more important to the public than "mobility." In Fort Collins, these conditions are anticipated for "commercial corridors" and within "mixed use districts." The motor vehicle LOS standards shown in Figure 4 on the next page reflect this fact.

The LOS standards in Figure 4 recognize five levels of roadways and four categories of land use (from the City Structure Plan):

- commercial corridors (e.g., College Avenue);
- mixed use districts (e.g., downtown, campus);
- low density mixed residential areas; and,
- all other land uses.



Multimodal Transportation Level of Service Manual

Motor Vehicle LOS

Local streets present special issues. Their primary function is local access, and in many cases the principal issue is not capacity, but rather the impacts of traffic on adjacent properties.

Local streets are not included in Figure 4 and are not included in the evaluation of the "adequate public facilities" performance of the City Structure Plan and the Master Street Plan. The City has developed a special "Neighborhood Transportation Impact Analysis" process to address issues related to local street performance.

In addition to the recognition of the special situations anticipated along commercial corridors and within mixed use districts, the City has identified two circumstances for special treatment: "Constrained Corridors" and "Backlogged Facilities."

These are defined as follows:

Constrained Corridors -- These are segments of the street network which are physically constrained from further widening or major reconstruction. The constraint may be caused by the proximity of buildings (e.g., along College in Downtown Fort Collins) or by environmental conditions (e.g., the presence of a wetland or riparian corridor).

Backlogged Facilities -- These are roadway segments which currently operate below the LOS standards in Figure 4. These roadways are normally adjacent to developed properties and are not expected to be improved by future development.

Both Constrained Corridors and Backlogged Facilities will be identified on a city map. These special circumstances will warrant special treatment in the development review process described in Part II of this Manual.

Figure 4. Motor Vehicle LOS Standards

roadway functional classification	land use (from structure plan)			
	Commercial Corridors	Mixed Use Districts	Low Density Mixed Residential	All Other Areas
Major Arterial	E	E*	D	D
Arterial	E	E*	D	D
Minor Arterial	E	E*	C	D
Collector	D	D*	C	D
Connector	D	C*	B	C

* Corridors within mixed use districts may fall below the LOS level indicated. In such cases, the City will provide for mitigation of congestion through alternatives to motor vehicle travel.



**Part II.
LOS Standards for Development
Review**

The LOS standards set forth in Part I of this Manual form the basis for planning the future location and intensity of land uses in Fort Collins as embodied in the City Structure Plan.

The LOS standards define "acceptable" relationships between future land development patterns and transportation demand in terms of overall service levels by the year 2015. A number of specific strategies will be required to achieve city-wide transportation adequacy. Among these is evaluating the level of service of each of the transportation modes as part of the development review process.

The document which outlines the process for evaluation of proposed new development in terms of transportation LOS standards is the "Transportation Impact Study Guidelines" which is available from the City's development review staff.

Part II of this Manual provides detailed guidance on comparing the existing LOS condition for each of the modes with the minimum standards, and for forecasting future LOS conditions once development occurs.



Multimodal Transportation Level of Service Manual

LOS Standards for Development Review - Public Transit

Public Transit LOS Standards for Development Review

Evaluation of public transit LOS shall be based on Figure 1 of this Manual.

All development sites within the City shall be evaluated with respect to the level of transit service serving the site as outlined in the **Transportation Impact Study Guidelines** and this Manual, and shall be based on the City's long range transit service plan. (Appendix B provides a map of the routes and service levels planned for 2015.)

Although each proposed new development within the City will require a transit analysis as part of a Transportation Impact Study at the time of development review, *development that is in conformance with the Structure Plan and Zoning Map will not be precluded from proceeding by virtue of failing to meet the transit level of service test for adequate public facilities.*

For sites outside of Mixed Use Centers and Commercial Corridors, the minimum level of public transit service is **Level of Service D** or better based on the City's long range transit service plan. (See Appendix B.)

For sites within Mixed Use Centers and Commercial Corridors, the minimum level of public transit service is **Level of Service B** or better based on the City's long range transit service plan. (See Appendix B.)

A site may be graded as "served" by public transit only if the transit route utilizes a street that lies within one-half mile (2,640') of the proposed development site.

Site evaluation pursuant to Figure 1 of service frequency, hours of weekday service and route location are to be based on planned service characteristics in 2015 (shown in Appendix B).

For purposes of development review, the "travel time factor" shall be calculated to four specific destinations:

- the CSU Campus Transit Center
- Foothills Fashion Mall (north entrance)
- Fort Collins High School (main entrance)
- Downtown Fort Collins (corner of Mountain and College) .

Travel speed will be based on an average bus speed of twelve miles per hour. Travel time components within the existing TransFort system, wait times, and resulting differentials shall be based on **current data** (not forecast data) provided by the TransFort Manager.

The "peak load factor" calculation shall be based on **current data** (not forecast data) provided by the TransFort Manager. For all future routes not currently in existence, the peak load factor shall be presumed to be 1.0.

Project applicants should request transit service data from TransFort prior to submitting their Transportation Impact Study. An appropriate time to request this data is at the Initial Scoping Meeting called for in the **Transportation Impact Study Guidelines**.

Multimodal Transportation Level of Service Manual

LOS Standards for Development Review - Pedestrian

Pedestrian LOS Standards for Development Review

Development approval will not be granted for projects which would fail to meet minimum LOS standards for pedestrian facilities at the time of issuance of any building permit.

Figure 6 (on page 18) provides a worksheet which shall be used to compare actual pedestrian conditions with the minimum standard and, if applicable, with a future condition once improvements have been made.

Applicants should follow this step-by-step process for evaluating pedestrian LOS:

Step 1. Determine whether the project is located within one or more of the five types of location areas: pedestrian district, activity corridor/center, transit corridor, school walking area, or other area. These are defined below. The identification of location area type forms the basis for determining minimum LOS standards.

• “pedestrian district” -- This area includes the existing Fort Collins downtown, the CSU area, and a future activity center in the northwest portion of the city which has been designated on the Fort Collins City Structure Plan. A map (from the City’s Pedestrian Plan) is provided in Appendix A showing the location of existing and future pedestrian districts.

• “activity corridor/center” -- These include the commercial corridors of North and South College Avenue and areas within a quarter-mile (1,320’) radius around neighborhood and community retail centers. They are designated on the map in Appendix A.

- “transit corridor” -- These include all areas within a quarter-mile (1,320’) of existing transit routes and transit routes to be initiated within seven years.
- “school walking area” -- These include all areas within a mile (5,280’) radius around existing public schools (K-12) and around sites designated by the School District for future public schools.
- “other” -- This category includes all locations not falling within one of the four previous areas.

Step 2. Using Figure 5 (on page 17), determine the applicable LOS minimum standards for the project based on its location relative to the area types. If the project site is located in more than one area type, the type with the higher LOS standards shall be used.

Step 3. Identify all “destination areas” located within a quarter-mile (1,320’) of outside edges of the project site. Six types of destinations should be identified:

- “recreation sites” -- These include public parks, sports facilities, public tennis courts and other sites where the public would be expected to go to participate in physical recreation and sports activities.
- “residential areas” -- These include any concentration of at least ten dwelling units that may reasonably be regarded as a contiguous neighborhood or which are part of a single subdivision.
- “institutional sites” -- These include all churches, public schools, and public buildings which regularly receive the public for public business.

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LOS Standards for Development Review - Pedestrian

- "office buildings" -- These include all commercial office buildings, office parks, and office-type employment campuses with building area of at least 25,000 square feet.
- "commercial sites" -- These include any retail space of at least 15,000 square feet including shopping centers, strip shopping areas, and shopping malls.
- "industrial sites" -- These include all other non-residential sites of at least 50,000 square feet of building space utilized for manufacturing, assembly, shipping or warehousing activities.

List all applicable destination areas in the boxes provided at the left side of the worksheet along with their addresses. Show the destination area classification of each in the second column. Space for up to four destination areas is provided in the worksheet. If more than four sites are identified, use additional copies of the worksheet.

Step 4. Based on Figure 5 above, fill in the applicable minimum LOS standards in the boxes for each destination area identified (the minimum standard is based on the location of the project site, identified in Step 1 above, so the entries in the "minimum" boxes will be the same for all destination areas).

Step 5. Based on actual documented field measurement, show the actual LOS condition for the areas between the nearest publicly-accessible edge of the project site and each of the destination areas in the worksheet. In the "proposed" row of boxes, show the LOS conditions that would result from any pedestrian improvements proposed as part of project development.

The worksheet in Figure 6 will form the basis for City review of development proposals. Agreement should be reached at the Initial Scoping Meeting concerning which of the location area types will apply to the project site for which the Transportation Impact Study is being prepared, and concerning which destination areas should be included in the worksheet.

If applicable, developers may meet pedestrian LOS standards by voluntarily providing off-site improvements to achieve minimum conditions. Such off-site improvements, however, are not exactions imposed by the City but rather are voluntary actions taken by the developer, at its sole option, to accelerate the achievement of adequate public facilities on the project site. The costs of such off-site improvements shall not be credited by the City against any financial obligations for which the developer may otherwise be responsible (such as Street Oversizing or Transportation Impact Fee). Appendix A provides descriptions of the standards (column headings in Figure 5) and conditions to be utilized in assignment of letter grades.

Figure 5
Minimum Pedestrian Level of Service

	directness	continuity	street crossings	visual interest & amenities	security
pedestrian district	A	A	B	A	A
activity center/corridor	B	B	B	B	B
transit corridor	B	B	B	C	B
school/walk area	B	B	B	C	B
other	C	C	C	C	C

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LOS Standards for Development Review - Pedestrian

Figure 6. Pedestrian LOS Worksheet

project location classification:		(enter as many as apply)																				
1	description of applicable destination area within 1,320' including address	destination area classification (see text)	level of service (minimum based on project location classification)									security										
			directness	continuity	street crossings	visual interest & amenities	minimum	actual	proposed	minimum	actual		proposed									
2																						
3																						
4																						

Multimodal Transportation Level of Service Manual

LOS Standards for Development Review - Bicycle

Bicycle LOS Standards for Development Review

Development approval will not be granted for projects which will not meet two LOS standards by the time the project is to be occupied:

The project must be directly connected to the greater Fort Collins bicycle grid at no less than LOS C as defined in Figure 3.

The project must be directly connected to all priority destinations located within a quarter mile (1,320') of any edge of the project boundaries.

Priority destinations include all "priority destination areas" located within a quarter-mile (1,320') of outside edges of the project site. Three types of destinations should be identified:

"public school sites" -- These include any existing public schools (K-12) as well as any sites designated by the School District for future public schools.

- "recreation sites" -- These include public parks, sports facilities, public tennis courts and other sites where the public would be expected to go to participate in physical recreation and sports activities.

"community and neighborhood commercial centers" -- These are designated on the City Structure Plan map and are shown on the pedestrian map in Appendix A.

Figure 7 provides a worksheet which is to be used to compare actual bicycle connectivity conditions with the minimum standard and, if applicable, with a future condition once improvements have been made.

The worksheet in Figure 7 will form the basis for City review of development proposals. Agreement should be reached at the Initial Scoping Meeting concerning which destination areas should be included in the worksheet. The applicant should evaluate the base LOS condition at the top part of the worksheet and evaluate connections to all applicable destination areas in the rows provided. If there are more than four destination areas, additional copies of the worksheet may be utilized.

If applicable, developers may meet bicycle LOS standards by voluntarily providing off-site improvements to achieve minimum conditions. Such off-site improvements, however, are not exactions imposed by the City but rather are voluntary actions taken by the developer, at its sole option, to accelerate the attainment of minimum LOS conditions for the project site. The costs of such off-site improvements shall not be credited by the City against any financial obligations for which the developer may otherwise be responsible (such as Street Oversizing or Transportation Impact Fee).

"Directly connected" shall mean the project site is penetrated by the bicycle facility; or the bicycle facility runs immediately adjacent to the property and is not separated from it by any significant barriers; or the bicycle facility runs perpendicular to the property edge and is readily accessible from the property with no significant barriers.

Bicycle facilities which are not consistent with the City's minimum design standards shall not be considered in arriving at bicycle LOS using the worksheet in Figure 7.

Explanation of the letter grades for bicycle LOS are found in Figure 3 on page 10 of this Manual.



Figure 7. Bicycle LOS Worksheet

		level of service - connectivity	
		minimum	actual
base connectivity:		C	
specific connections to priority sites:			
1	description of applicable destination area within 1,320' including address		
2			
3	destination area classification (see text)		
4			



Motor Vehicle LOS Standards for Development Review

The facility-based motor vehicle LOS standards shown in Figure 4 represent city-wide level of service standards. They are based on "volume/capacity" calculations prepared in connection with traffic modeling of future land uses and roadway networks.

In development review, projects will be evaluated based on a detailed analysis of intersections and links in a manner consistent with the 1985 Highway Capacity Manual. The procedure and requirements for this analysis are described in detail in the Transportation Impact Study Guidelines. They are summarized here.

Transportation Impact Study Guidelines

The Transportation Impact Analysis will determine if a proposed development project will create any significant impacts at the study intersections and on roadways surrounding the project site. In order to determine this, peak hour levels of service at each of the study intersections will be evaluated for each of the following scenarios:

- existing conditions;
- existing conditions plus site generated traffic;
- short range conditions (3 - 5 years); and,
- long range conditions (10 - 15 years).

The level of service evaluation for each of these traffic scenarios should include estimates of the percentage distribution of person trips among the modes of travel.

Motor vehicle LOS analysis should be conducted for intersections located within one-half mile of the project site. The City Traffic Engineer may require analysis of additional intersections. The City has established LOS D as the general

standard for signalized arterial intersections. The standard for arterial intersections on commercial corridors and within activity centers is LOS E. (Arterial intersections are the intersection of an arterial roadway with another arterial or a collector.)

Figure 8 below provides intersection LOS standards for use in development review. Development projects which will generate traffic causing intersections to fall below these standards will be regarded as "significantly impacting a study intersection." In these cases, mitigation measures must be evaluated in cooperation with the City as outlined in the Transportation Impact Study Guidelines.

The City has also identified certain corridors and roadways as either "constrained" or "backlogged" (see page 12 for definitions of these terms). Projects which significantly impact such corridors and facilities will also be required to provide appropriate mitigation.

Figure 8. Motor Vehicle LOS -- Study Intersections

intersection type	land use (from structure plan)			
	Commercial Corridors	Mixed Use Districts	Low Density Mixed Residential	All Other Areas
Signalized Intersections	D	E*	D	D
Stop Sign Control (arterial / local)	N/A	E*	E*	E
Stop Sign Control (collector / local)	N/A	C	C	C

* Intersections falling below LOS E will require identification of specific strategies for mitigation of congestion through alternatives to motor vehicle travel.

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LOS Standards for Development Review - Motor Vehicle

Relationship to Street Oversizing Fee

(For a detailed explanation of the Street Oversizing Fee, see Section 24-111 to 24-121 of the Fort Collins City Code, or contact the City's Director of Engineering).

Street oversizing fees are collected prior to the issuance of building permits. These fees are coordinated with the City's overall Transportation Level of Service standards and with its capital improvements planning.

Proposed developments which would not meet Motor Vehicle LOS standards without additional investment in roadway infrastructure must be evaluated in light of the City's Street Oversizing Fee provisions. For such projects, the relationships between LOS standards and the Street Oversizing Fee Program, including the anticipated sharing of costs for roadway investments and the timing of such improvements, should be established as part of early review and should be explicitly addressed at the Initial Scoping Meeting.

In some instances, the City will participate through the street oversizing program in funding the street improvements to be constructed in connection with the development. This will be determined on a case-by-case basis according to the criteria in City Code Section 24-111 to 24-121.

In all cases, however, the developer will be expected to pay the City's street oversizing fee and all other applicable fees as required by City ordinances.



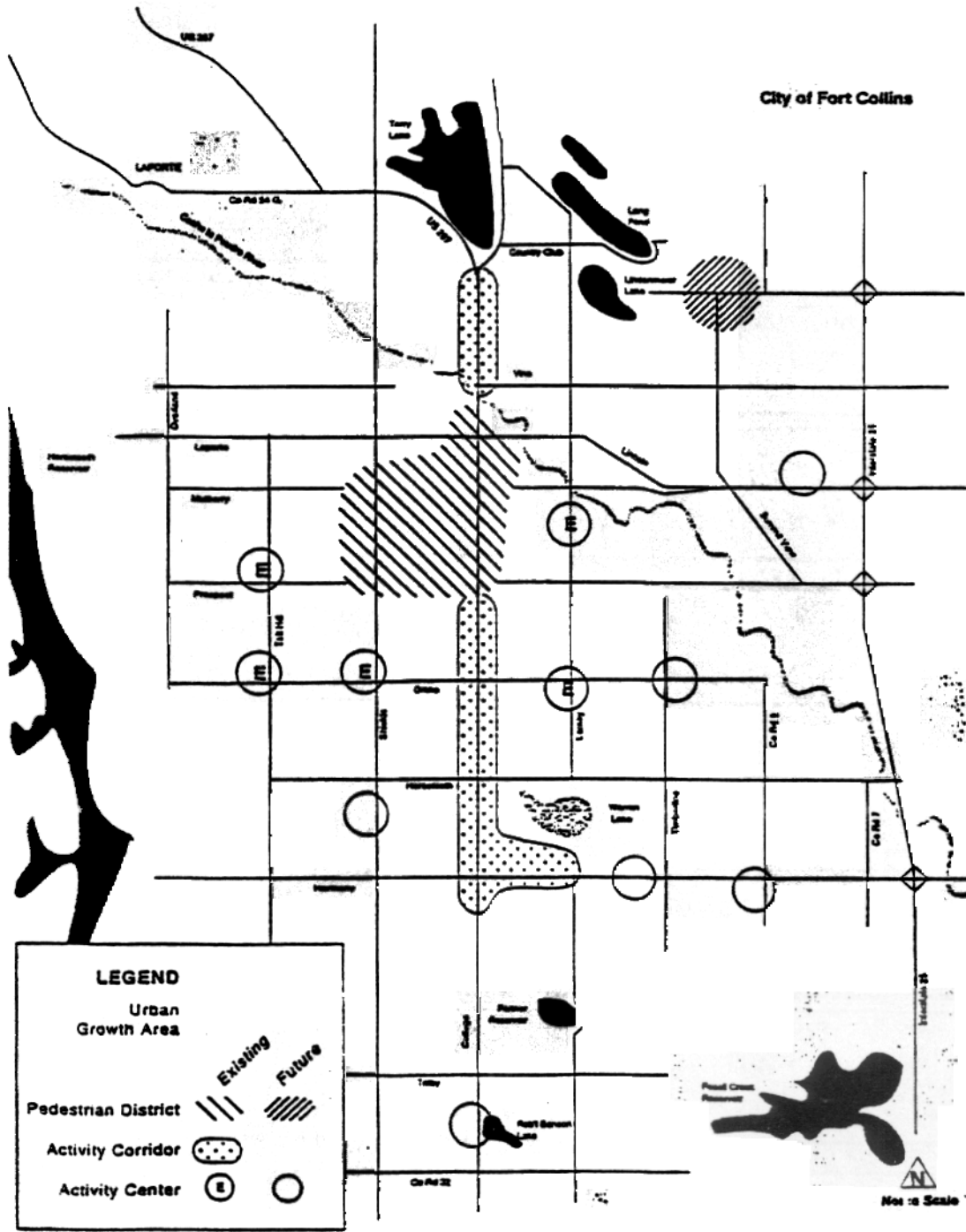
**Appendix A
Pedestrian Plan**

Fort Collins Pedestrian Levels of Service

	A	B	C	D	E	F
Directness	Excellent and direct connectivity through full utilization of urban space, streets, transit, activity centers with clear linear visual statements. (A/M Ratio < 1.2)*	Excellent and direct connectivity with clear linear and visual connection to transit facilities, streets and activities. (A/M Ratio 1.2 to 1.4)*	Minimum acceptable directness and connectivity standard. Perceptions and urban space are not as connected with the beginnings of discomfort with visual clarity and lack of linearity. (A/M Ratio 1.4 to 1.6)*	Increasing lack of directness, connectivity and linearity with confusing direction and visual connection to pedestrian destinations. (A/M Ratio 1.6 to 1.8)*	Poor directness and connectivity. Pedestrians perception to desired destination fails and serves only the person with no other choice. (A/M Ratio 1.8 to 2.0)*	No directness or connectivity. Total pedestrian disorientation, no linearity and confusing (A/M Ratio > 2.0)*
Continuity	Pedestrian sidewalk appears as a single entity with a major activity area or public open space. (A/M Ratio < 1.2)*	Continuous stretches of sidewalks which are physically separated by a landscaped parkway. (A/M Ratio 1.2 to 1.4)*	Continuous stretches of sidewalks which may have variable widths, with and without landscaped parkways. (A/M Ratio 1.4 to 1.6)*	Pedestrian corridors are not well connected with several breaches in the pedestrian network. (A/M Ratio 1.6 to 1.8)*	Significant breaks in continuity. (A/M Ratio 1.8 to 2.0)*	Complete breakdown in pedestrian traffic flow as different routes as no pedestrian network exists. (A/M Ratio > 2.0)*
Signals**	3 or fewer lanes to cross; signal has clear vehicular and pedestrian indications; well marked crosswalks; good lighting levels; standard curb ramps; automatic pedestrian signal phase; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	4 or 5 lanes to cross; signal has clear vehicular and pedestrian indications; well marked crosswalks; good lighting levels; pedestrian refuge area: raised medians at least 6' wide with low plantings or features; standard curb ramps; automatic pedestrian signal phase; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. Missing 2 elements of A	6 or more lanes to cross; signal has clear vehicular and pedestrian indications; well-marked crosswalks; good lighting levels; pedestrian refuge area: raised median at least 6' wide with low plantings or features; standard curb ramps; automatic pedestrian signal phase; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a pedestrian crossing; drivers and pedestrians have unobstructed views of each other. Missing 4 elements of A Missing 2 elements of B	Missing 3 elements of A Missing 4 elements of B Missing 2 elements of C	Missing 6 elements of A Missing 5 elements of B Missing 4 elements of C	Missing 7 elements of A Missing 6 elements of B Missing 5 elements of C
Unsignalized, crossing the major street**	3 or fewer lanes to cross; Well-marked crosswalks; good lighting levels; standard curb ramps; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a	4 or 5 lanes to cross; Well-marked crosswalks; good lighting levels; pedestrian refuge area: raised median at least 6' wide with low plantings or features; standard curb ramps; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a	6 or more lanes to cross; Well-marked crosswalks; good lighting levels; pedestrian refuge area: raised median at least 6' wide with low plantings or features; standard curb ramps; amenities, signing, sidewalk, and roadway character strongly suggest the presence of a	Missing 3 elements of A Missing 2 elements of B Missing 1 element of C	Missing 4 elements of A Missing 3 elements of B Missing 2 elements of C	Missing 5 elements of A Missing 4 elements of B Missing 3 elements of C

	amenities, signing, sidewalk, and roadway character strongly suggest the presence of pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	amenities, signing, sidewalk, and roadway character strongly suggest the presence of pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	amenities, signing, sidewalk, and roadway character strongly suggest the presence of pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	Missing 2 elements of A Missing 1 element of B	Missing 3 elements of A	Missing 4 elements of A	Missing 5 elements of A
Unsignalized crossing the minor street**	Well-marked crosswalks; good lighting levels; standard curb ramps; amenities, signing, sidewalk, and roadway character strongly suggest the presence of pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	Missing 1 element of A	Missing 2 elements of A	Missing 2 elements of A	Missing 3 elements of A	Missing 4 elements of A	Missing 5 elements of A
Mid-block major street crossing***	3 or fewer lanes to cross; amenities, signing and sidewalk and roadway character strongly suggest the presence of pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	4 or 5 lanes to cross; Raised median at least 10' wide with low plantings or features; amenities, signing and sidewalk and roadway character strongly suggest the presence of pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	6 or more lanes to cross; Raised median at least 10' wide with low plantings or features; amenities, signing and sidewalk and roadway character strongly suggest the presence of pedestrian crossing; drivers and pedestrians have unobstructed views of each other.	Missing 3 elements of A Missing 2 elements of B Missing 1 element of C	Missing 3 elements of A Missing 2 elements of B Missing 1 element of C	Missing 4 elements of A Missing 3 elements of B Missing 2 elements of C	Missing 5 elements of A Missing 4 elements of B Missing 3 elements of C
Visual Interest and Amenity	Well marked crosswalks; good lighting levels; standard curb ramps.	well marked crosswalks; good lighting levels; standard curb ramps.	well marked crosswalks; good lighting levels; standard curb ramps.	Missing 2 elements of A Missing 1 element of B	Design ignores pedestrian with negative mental image.	Comfort and convenience non-existent, design has overlooked needs of users.	Trial discomfort and intimidation.
Security	Visually appealing and compatible with local architecture. Generous sidewalk, active building frontages, pedestrian lighting, street trees and quality street furniture.	Generous sidewalks, visual clarity, some street furniture and landscaping, no blank street walls.	Functionally operational with less importance to visual interest or amenity.	Unobstructed lines of sight.	Sidewalk configuration and parked cars may inhibit vigilance from the street.	Major breaches in pedestrian visibility from street, adjacent land uses and activities.	Streetscape is pedestrian intolerant.

A/M Ratio: Actual distance between pedestrian origin/destination divided by minimum distance defined by a fifth angle grid street system.
 A signalized intersection LOS will go up one level of service with a dedicated pedestrian signal phase and/or a colored or textured crosswalk.
 Unsignalized crossing at intersection of major street (minor arterial to major arterial) and minor street (local, connector and collector).



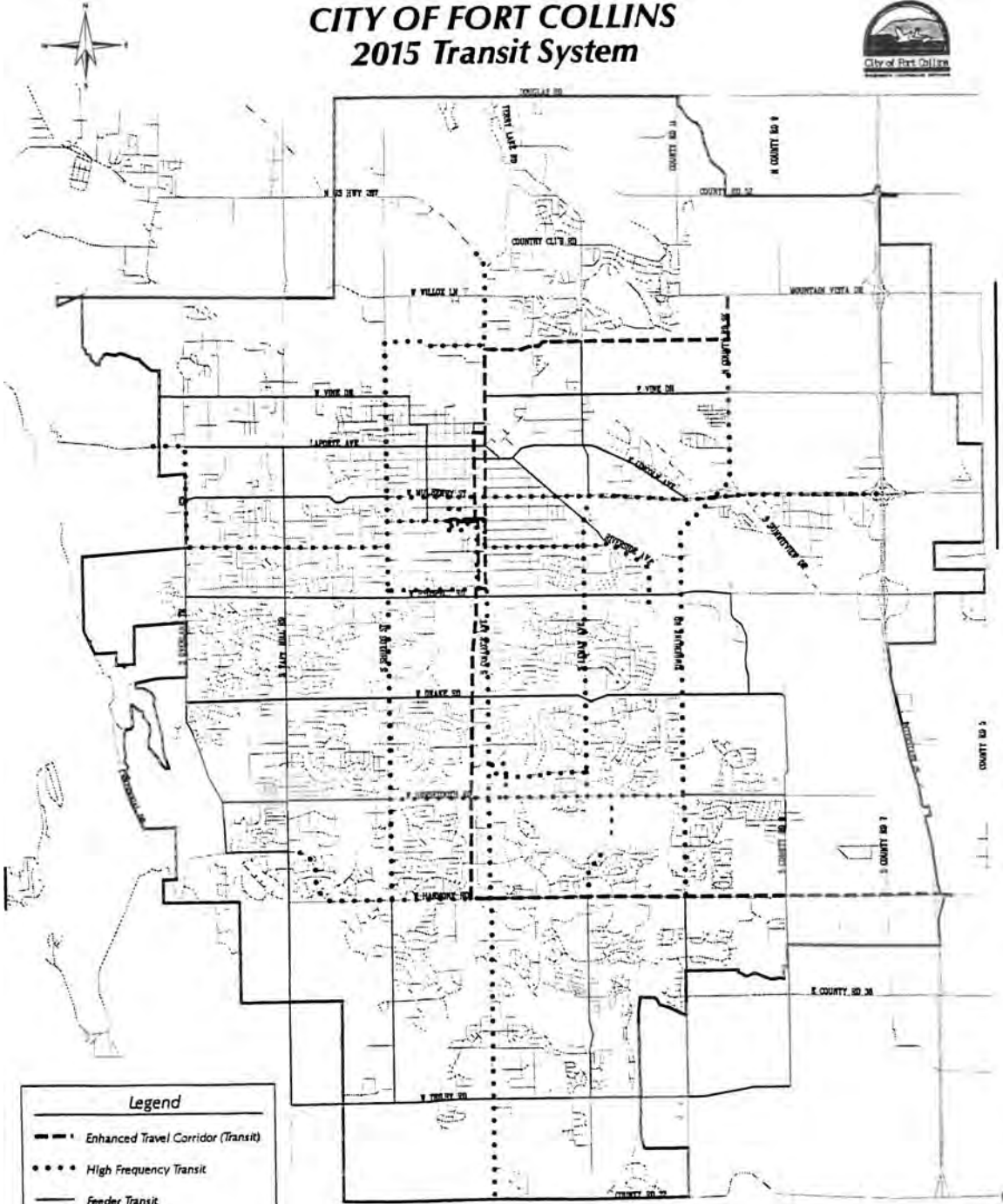
**Appendix B
Public Transit Plan**

Multimodal Transportation Level of Service Manual






City of Fort Collins Transportation Master Plan



CITY OF FORT COLLINS 2015 Transit System



Legend

-  Enhanced Travel Corridor (Transit)
-  High Frequency Transit
-  Feeder Transit
-  Urban Growth Area
-  Street Center Lines

Not To Scale
February 03, 1997

Appendix B

Bicycle Parking Recommendations

Design and Location Recommendations

Rack Selection - All bicycle racks are not created equal. There are many styles to choose from, some of which are appropriate for a particular situation, and some which are unsuitable or even harmful. For detailed recommendations see the Association of Pedestrian and Bicycle Professional's *Bicycle Parking Guidelines* (APBP, 2002, available at www.bicyclinginfo.org/pdf/bikepark.pdf).

What works: Bicycle parking may be provided in floor-, wall- or ceiling-mounted racks but they should meet these requirements:

- Holds the bicycle frame, not just a wheel.
- Can be used with a U-shaped shackle lock.
- Accommodates a wide range of bicycle/wheel sizes and types.
- Will not chip the paint of a bicycle that leans against it.
- Does not have hazards, such as sharp edges.



A good rack holds the bicycle frame, and can be used with a U-lock.

This is a popular one.

This is another popular rack that holds the bicycle frame and can be used with a U-lock. CSU currently uses this style of rack.



What doesn't work: Old fashioned “wheelbender” racks that hold only the bicycle’s wheel, and are unsuitable for use with a U-shaped shackle lock. Many cyclists will not use a rack that only hold the wheel or is unsuitable for a U-lock.

Finding a Good Location

To ensure that bicycle parking will be used, locations should be easy to find, convenient to use, and secure enough to reasonably safeguard against bicycle theft. Facilities can be located where cycles already parked, or where recommended by bicycle advisory groups. Bicycle parking on a sidewalk in front of your building requires a permit.

Short-Term Parking Recommendations

Short-term bicycle parking provides shoppers, customers, messengers and other visitors who generally park for two hours or less a convenient and readily accessible place to park bicycles. It should be located within 50 feet of the building entrance that cyclists use. Where there is more than one building on a site, or where a building has more than one main entrance, the parking must be distributed to serve all buildings or main entrances. If more than 10 short-term spaces are required, at least 50 percent of the spaces should be covered.

Only locate bicycle racks on a sidewalk or path where there is adequate clearance for pedestrian traffic. A rail or eyelets secured onto a building wall can sometimes provide a place to lock a bicycle where it is out of the way of traffic.

What works: Locate parking in visible and prominent locations - if cyclists are unaware of the parking it won't be used.

What doesn't work: Isolation - a bicycle rack that is visually or physically isolated will not be used and is a target for thieves. A bike rack that is in the way of pedestrian traffic or provides inadequate space to maneuver a bicycle and its gear is also undesirable.

Recommendations for Long-Term Parking

Long-term bicycle parking provides employees, students, residents, commuters and others who stay at a site for several hours or more, a secure and weather-protected place to store their bicycles. It should be located on site or within 500 feet of the site. Daily bicycle commuters are generally willing to walk a short distance, about one block, if they are confident the parking is secure. The following are suitable options:

- A locked room or area enclosed by a fence with a locked gate.
- Within view or within 100 feet of an attendant or security guard.
- An area that is monitored by a security camera.
- A location that is visible from employee work areas.

What works: Cyclists are more likely to park where their bicycles are safe and protected from weather. At least 50 percent of long-term bicycle parking should be covered. Indoor storage is best. It is often possible to find a secure room, or an area in a basement or under stairs. Bicycle parking can use odd-shaped interior spaces that have few other purposes. Wall-mounted racks are well suited to indoor storage. Locate in well-lit areas because lighting increases security of property and personal safety. In areas where security is in question or where there is limited opportunity to provide weather protection, enclosed bike lockers are a good solutions. Cyclists may pay a monthly fee to lease such lockers.



Bicycle lockers are a good choice for secure bicycle storage.

Recommendations for Spacing and Site Standards

Each bicycle parking space should be easily accessible. Cyclists should be able to securely lock their bicycles without undue inconvenience and their bicycles should be reasonably safeguarded from intentional or accidental damage. Consider the space that a rack full of bicycles will take up, not just the rack itself. Also consider that cyclists require a sufficient pathway in and out of the parking area.

Each parking space must be accessible without moving another bicycle - generally, allow for 2-feet by 6-feet for each bicycle parking space. Provide an aisle at least 5-feet wide behind all bicycle parking to allow room for maneuvering - just as automobile drivers need additional space to maneuver in and out of parking spaces.

What works: Staggered racks - some bicycle racks can be staggered on 17-inch centers, allowing room for more bicycles to be parked.

What doesn't work: Installing bicycle racks too close to a wall or too close to each other. Improper rack installation can cut capacity as much as 90 percent. Installing bicycle racks too close to car parking. Motorists will seldom leave sufficient room for bicycles to park and maneuver if bicycle parking is not sufficiently separated from car parking.

Covered Bicycle Parking

Prolonged exposure to rain can rust a bike's metal frame and components and the sun's ultraviolet rays can deteriorate a bike's soft seat and tires. Cyclists will appreciate weather-protected parking. The

cover must be permanent, should be designed to protect the bicycle from rainfall, and be at least 7-feet above the floor or ground.



What works: Take advantage of existing overhangs or awnings as a creative, low-cost way of providing some weather protection. If there is no existing opportunity to provide cover, enclosed bicycle lockers may be the best solution.

What doesn't work: Partial cover or cover that is too high does not protect bicycles from rain and sun nor does it protect cyclists from rain when they are locking or unlocking their bicycle.

Recommendations for Shower and Changing Facilities

Commuters who bicycle or walk often arrive wet, muddy or sweaty. Providing employees with a place to shower, change and store clothes can encourage bicycle commuting. Such facilities also benefit employees who exercise during breaks or may occasionally need to wash and change clothes for other reasons. There are several ways that employers can provide such facilities.

- A shower and clothes lockers can be designed into new or retrofitted buildings.
- A shower and clothes lockers can sometimes be added to existing restrooms. A single shower stall and space to change clothes typically requires a six by four foot space.
- Several businesses located close together can establish shower and changing facilities that are shared by employees at several buildings.
- Employers can arrange to use showers and changing rooms at a nearby recreation center or gym. This may require special

arrangements to access the facilities when they would otherwise be closed.

Recommended Parking Signs

Signs serve several purposes. They let cyclists know you have bicycle parking and that cyclists are valued customers. Signs also help cyclists find the parking if it is not immediately visible. Signage can direct long-term users, keeping short-term parking readily available. A sign should be posted at the main building entrance, or other visible location, easily identifiable by a cyclist. .

What works: Standard bicycle parking signs made of high-quality materials.

What doesn't work: Complicated signing schemes. If a complicated signing scheme is needed to find your bicycle parking, you may need to find a better location. Signs that discourage bicycling and signs prohibiting bicycle parking when no alternative is available, only create ill-will

For more information on the design, selection and installation of bicycle parking and changing facilities see Browning (1999), APBP (2002) and DfT (2003). Below are some general recommendations.

- Provide suitable bicycle parking where cyclists stop.
- Choose properly designed bicycle racks that support a bicycle's frame and are secure.
- Locate bicycle parking where it is convenient to use, secure, visible, protected from weather, and has adequate clearance.
- Provide well-protected, long-term bicycle parking for commuters, residents or anywhere else cyclists will leave a bicycle for several hours. If possible, also provide showers and clothes lockers for bicycle commuters.
- Do not locate bicycle racks where they are in the way of pedestrian traffic.