Columbus Bicentennial Bikeways Plan

The City of Columbus, Ohio

BURGESS & NIPLE

alta PLANNING + DESIGN

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Executive Summary

In 2012, the City of Columbus will celebrate its bicentennial. This event provides a historic opportunity for developing innovative solutions that build upon the city's past and create a better future. The bicycle is a symbol of these efforts – a vehicle with significant potential to help meet the City's environmental, mobility, health, economic and social goals. The Bicentennial Bikeways Plan provides a new vision of transportation, recreation and quality of life for Columbus. This vision is connected to the City's Green Initiative, the Commit to Be Fit program, and broader efforts that support a sustainable future. The projects, policies and programs included in this document will provide the City with a lasting legacy for 2012 and beyond.

The Bicentennial Bikeways Plan will create a more livable Columbus by developing a network of on-street bicycle facilities and completing the shared-use path system. The Plan includes a balanced approach to the "Four E's" of Engineering, Education, Encouragement and Enforcement. This approach is based on the League of American Bicyclists' Bicycle Friendly Communities (BFC) program, and will enable the city to earn national recognition for its innovative efforts. A key to implementing the plan is a new Complete Streets policy, which will enable the City to integrate bicycle facilities into ongoing infrastructure projects.

The bicycle is an important solution as Columbus works to take local action on global issues including climate change, peak oil, the physical inactivity epidemic, the loss of young professionals to other regions, affordable housing, aging in place, and the need to attract businesses to places with a high quality of life. The Bicentennial Bikeways Plan cannot completely solve all of these problems, but it does provide real solutions that work with current technology and can be implemented quickly. According to the 2001 USDOT National Household Travel Survey, nearly half of all trips by car are for distances less than 3 miles – an ideal distance for travel by bicycle. Ohio has adult obesity rates of 24.9 percent, ranking it the 15th heaviest in the nation, according to a 2006 report by Trust for America's Health (TFAH). The Ohio Public Health Association calls childhood overweight and obesity "An Epidemic of Modern Times".

"By implementing the Bicentennial Bikeways Plan, Columbus can shift 10 percent of the city's transportation to bicycling, walking, transit and other transportation options. Ten percent equates to biking to work just 2 days per month.... "2 by 2012" will be a goal that citizens, government and the private sector can achieve together."

Private Sector Commute Options: Employers are choosing to locate their businesses in places that provide a high quality of life. Employees want to be able to enjoy active lifestyles. For example, Humana Healthcare in Louisville provides free bikes to employees to use during the workday.

In the late 1960s Columbus constructed its first shared use paths along the Olentangy and Scioto Rivers to meet the Columbus Recreation and Parks Department's goal to connect its parks with shared use paths. In the late 1980's, when Schrock Road was widened, bike lanes were included. In recent years, bicycle lanes have been installed on Hard Road and Morse Road and bicycle route signs have been posted for several identified bicycle routes. In the past decade, bicycle racks have been added to the local bus fleet. Columbus now has 50 miles of shared use paths along the Olentangy and Scioto Rivers, Alum Creek, and I-670, and 6 miles of bicycle lanes. Other U.S. cities, including Portland, Chicago, and Louisville are implementing ambitious bikeway systems, and Columbus has the potential to be the best bicycling city in the nation.

Green Initiative / Carbon Footprint: Bicycling is an important part of the solution to climate change.

Columbus has unique advantages for being a bicycle friendly city: flat topography, a large college-age population, rivers that run through the city, the state capitol and a large private-sector presence. The new Bicentennial Bikeways Plan is proposed in a series of phases that allow for Columbus to create the new infrastructure and programs as resources and opportunities become available. The Plan calls for the following initiatives:

If people bicycled to work just twice a month, 10 percent of commuter trips will be made by bike.

Complete Streets: Adopt a new City policy consistent with the model adopted by the Mid Ohio Regional Planning Commission to integrate bicycle facilities into infrastructure projects.

100 Miles of Bikeways by 2012: Phase one of the plan involves expanding the existing system to 100 miles with 50 miles of new projects created by integrating bike lanes into street paving and construction projects, implementing 'road diets' on streets with extra capacity, and continuing the development of shared use paths using current funding.

200 New Miles by 2018: The second phase of the plan involves the next 200 miles of bikeways, with a continued emphasis towards on-street facilities that link throughout the City. In the long term, if the resources and support are available, the completed system will reach a total of more than 500 miles.

City-wide Share the Road Campaign: The education, encouragement and enforcement elements of the plan are as important as the engineering elements. The Plan calls for a major campaign that provides bicyclists, motorists and other roadway users with the information they need to improve traffic safety on the City's streets. This campaign will complement other programs including Safe Routes to Schools, Commit to be Fit, and employer-based commuter choice initiatives.

100 Bike Friendly Intersections: Safety at intersections is a critical issue for improving mobility as Columbus becomes a Bicycle Friendly Community. Each year, ten intersections will be improved with enhanced signage, pavement markings, bicyclist actuated signals and other features.

1000 New Bike Racks: Just like driving a car, having a secure place to park is essential for travel by bicycle. A new Bicycle Parking Ordinance has been proposed by the City of Columbus Bikeway Advisory Committee. New bike parking can be installed as a typical element of streetscape design, and worksites, public buildings and schools throughout the City.

The Columbus Bicentennial Bikeways Plan guides the future development of bicycle facilities, education, enforcement, and encouragement programs for the City of Columbus over the next ten years. This Plan was developed with public input from the community, but continued outreach and civic participation is encouraged through neighborhoods, area commissions, districts and organizations. The Plan inventories and evaluates the City's current bicycle network, addresses the opportunities and constraints for improving bicycling in Columbus and recommends policy changes to enhance bicycling. The Plan also presents design guidelines for constructing high quality facilities, including shared use paths, bike lanes, signed shared roadways, bicycle parking and innovative treatments such as bicycle boulevards and shared lane markings. The plan prioritizes bicycle facilities and establishes a funding and implementation plan for the next 10 years.

Funding for implementation of the Bicentennial Bikeways Plan will come from a range of sources, including federal and state transportation funds, parks and recreation funds private sector partnerships, and a proposed Bicentennial Bond package that is similar to the bonds that were issued for the City's sidewalk program. The phasing of the plan allows for implementation as resources become available. The key funding elements are described as follows:

Bicentennial Bikeways Bonds ("B3" Bonds): The City will include the Bicentennial Bikeways in the proposed 2008 bond package that will provide funding for key initiatives related to the City's celebration in 2012.

Federal transportation 'Green Tea' demonstration project funding: The reauthorization of the federal SAFETEA transportation legislation will provide a significant opportunity for implementing the Bicentennial Bikeways plan. The City will work with Ohio's Congressional delegation and other partners to secure this funding.

Private sector 'adopt a bikeway' endowment campaign: Key private sector and philanthropic partners will be engaged in a fundraising effort to adopt each mile of the bikeways system. This program will enable community partnerships to sustain the trail system into the future.

Funding from other state and other local sources: There are a range of public, private and non-profit sources that can supplement the primary funding, including land conservation, public transit, utilities, environmental mitigation, health and physical activity, education and other sources.

Quality of Life: Bikeways are an important legacy for the future of Columbus.

Bicyclists and pedestrians in downtown Columbus.

Parks & Recreation Funding: The Recreation and Parks Department and Metro Parks are planning to spend approximately $2,500,000 in 2008 for land acquisition, design and construction associated with shared-use trails in Central Ohio. Additional resources will also be spent for operations, programming and management from recreation funding sources.

In order to successfully implement the plan, partnerships between citizens, public agencies, the private sector and non-profit organizations are essential. The plan recommends that the City agencies establish an Interagency Working Group to coordinate the broad range of engineering, education, encouragement, enforcement and evaluation elements of the plan. A full time Bikeways coordinator will support this effort. The existing City Bikeway Advisory Committee will continue to be a voice for citizens to advise the City Council. It is also recommended that a new entity be created to engage community leadership in long-term support and fundraising for the Bicentennial Bikeways Plan.

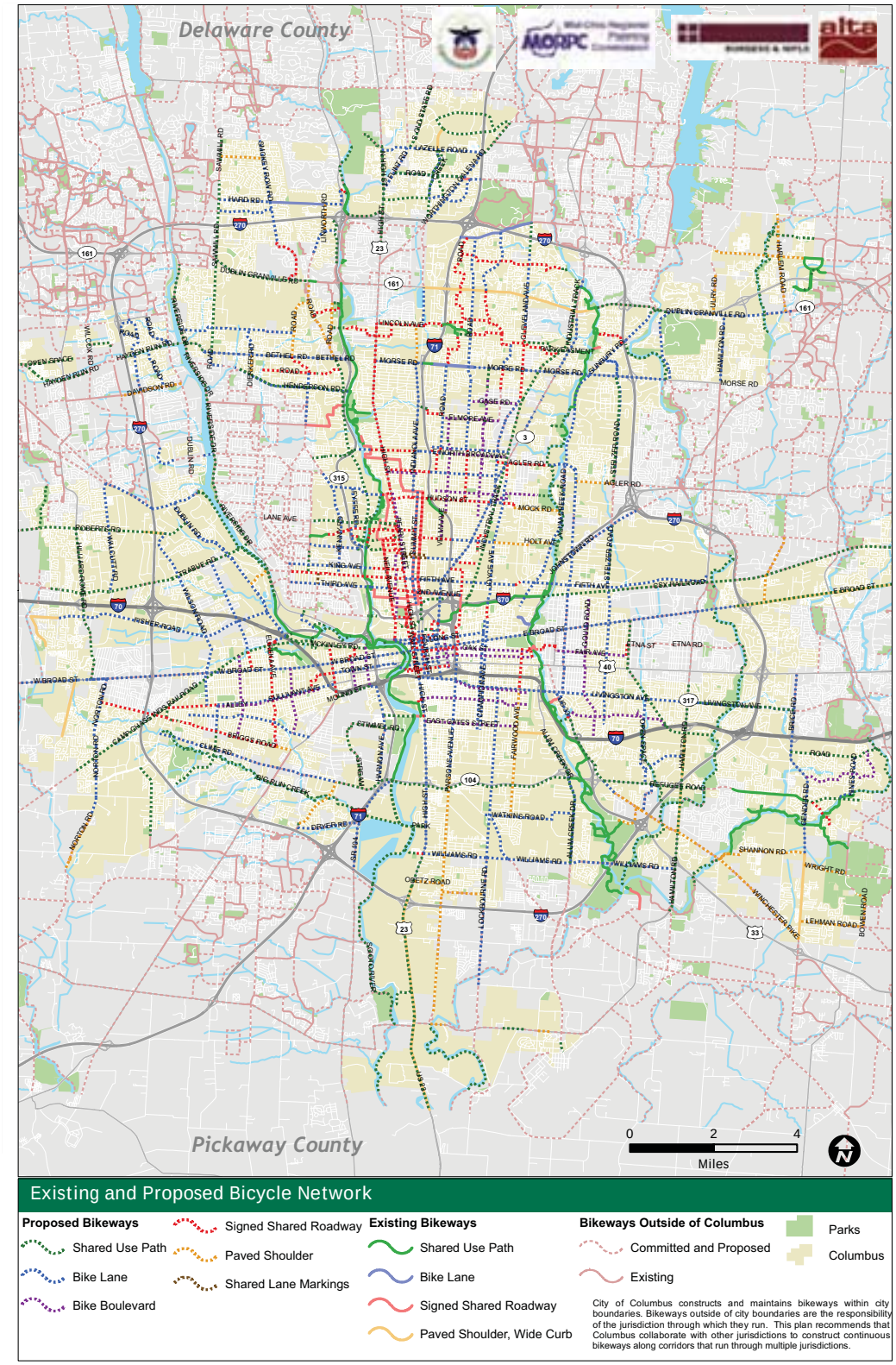
This Bicentennial Bikeways Plan will guide the development of a world-class on-street and off-street bicycle transportation system for the enjoyment and use of Columbus's residents and visitors. With the current popularity of the City's existing bikeways, an increased interest in leading healthy lifestyles, growing concern for the environment, and the need for sustainable economic development, these actions will move Columbus forward into its third century. With support from Columbus community members, the City of Columbus has the potential to implement the new bicycle master plan. The City can shift one out of every ten trips made by car to bicycling, walking, and alternative transportation.

Bicyclists contributing to the local economy.

Cycling along the downtown Columbus waterfront in North Bank Park.

Bicycling as part of a multi-modal trip in Columbus.

Public involvement is an important part of implementing the Bikeways Plan.



Data: City of Columbus, Franklin County, Mid-Ohio Regional Planning Commission, U.S. Census. Map created by Alta Planning + Design. January 2007.

The Bicentennial Bikeways Plan proposes more than 500 new miles of bikeways for Columbus.

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1. Introduction

In 2012 the City of Columbus will celebrate its bicentennial. The Bicentennial Bikeways Plan will provide a new legacy as the city moves forward towards a sustainable future: a future in which Columbus is a world-class bicycling city, where people of all ages and skill levels can easily bicycle to work, to shop, for fun, for exercise, and where people will choose to bicycle rather than drive. This plan recommends strategies and actions for the four "E's" of bicycle planning: *engineering* to provide essential facilities such as bike lanes, shared use paths, bike parking, and wayfinding, *education* to teach bicyclists safety, riding, and how-to skills, *encouragement* to provide a helping hand and information for people who want to try bicycling, and *enforcement* to remind bicyclists and motorists of their rights and responsibilities.

Implementing this plan will require the continued and collective efforts of City staff, concerned bicyclists, advocacy groups, and non-profits, as well as the continued support of Columbus' political leaders and voters. The plan recommends a phased implementation plan, to take place over the next twenty years.

The Bicentennial Bikeways Plan was developed using many resources, including input from residents of Columbus and members of the Technical Advisory Group, the citizen Stakeholder Group, City staff, field research, and information outlined in city plans and documents.

1.1. The History of Bicycle Planning in Columbus

The City of Columbus has a history of providing for the needs of cyclists that dates back to the 1960's, and several projects serve to make many parts of the City a pleasant place to bicycle:

- Trail system that includes the Olentangy Trail, the Alum Creek Trail, the Scioto Trail and the Walnut Creek trail
- The I-670 Bikeway
- The Ohio State University Bikeways Plan
- Incorporating bicycle lanes into redesign of Morse Road
- Bicycle facilities on Hard Road
- Installing bicycle racks on COTA buses
- Political support for encouraging more active and healthy lifestyles, as evidenced by the Mayor's Green Team initiatives
- Enthusiastic grassroots support for improving bicycling in Columbus, as evidenced by local organizations supporting bicycling and the number of community members who provided input into this plan.

In the late 1960's Columbus constructed its first shared-use paths along the Olentangy and Scioto Rivers to meet the Columbus Recreation and Parks Department's goal to connect its parks with

shared-use paths. In the late nineties, funding for paths significantly increased, accelerating the progress. Columbus now has 46 miles of shared-use paths along the Olentangy and Scioto Rivers, Alum Creek, and I-670.

On-street bicycle facilities have been overseen by Columbus' Public Service Department. In the 1970's, an on-street, shared-use path was installed on High Street (across from The Ohio State University), by the Traffic Engineering and Parking Division. Unfortunately, because of crossing conflicts and maintenance difficulties, the path was later removed. In the late 1980's, when Schrock Road was widened, bike lanes were included. In recent years, bicycle lanes have been installed on Hard Road and Morse Road and bicycle route signs have been posted for several identified bicycle routes.

The program expanded in 1992 when the Bikeways Advisory Committee was created. In 1993 the Public Service Department hired a Bikeway Coordinator, primarily to develop on-street bikeways.[1] In 1998 the Recreation and Parks Department hired a full-time Greenways Coordinator to plan and develop an integrated system of linear parks, incorporating shared use paths along the City's stream corridors.

The Columbus Health Department also became involved around this time. It was after the Surgeon General of the United States published Physical Activity and Health. Since then, the Health Department has promoted more active lifestyles and has supported a long-standing injury prevention program.

Now, with the popularity of the shared use paths, an increased interest in leading healthy lifestyles, high gas prices, concerns for the environment, and tremendous support from Columbus community members, the City of Columbus has developed this updated bicycle master plan.

1.2. Purpose of the Bicentennial Bikeways Plan

The Columbus Bicentennial Bikeways Plan was developed to:

Present a vision of Columbus' bicycle transportation system. The Bicentennial Bikeways Plan provides the long-term vision for the development of a citywide bicycle network consisting of off-street trails, on-street bike lanes, signed shared roadways, and bicycle parking. The network will be complemented by educational, encouragement, and enforcement programs that serve to develop a cultural awareness of the importance of bicycling in everyday life in Columbus. The network has been developed to serve all types of bicyclists for all types of trips.

[1] In late 2005, the City's Bikeway Advisory Committee stopped meeting regularly, and as of 2007, the Bikeway Coordinator Position was unfilled. This plan recommends re-forming a citizen advisory committee, and filling the Bikeway Coordinator Position.

Address the following nine bicycle elements identified in the Columbus Comprehensive Plan:

1) Pay special attention to establishing east-west bikeway connections

This Plan has developed plans for several east-west connections, including proposed facilities along the corridors of Sullivant Avenue, State Route 161, Williams Road, Trabue Road, and a neighborhood connector north of Morse Road. Additional facilities are recommended along Refugee Road, Tussing Road, 3rd, 5th, King and Greenlawn Roads.

Broad Meadows Bridge will provide a key east-west connection

2) Take full advantage of opportunities to provide bicycle facilities within greenways

This Plan includes proposals to extend trails along the Scioto River, Alum Creek, Blacklick Creek and Big Walnut Creek, as well as a proposal to create a bicycle boulevard along Milton Avenue, improving a key connection along the Olentangy Trail.

Olentangy Trail runs along the Olentangy River

3) Connect major activity centers by bikeways

The proposed bicycle network has been developed with activity centers in mind. Whenever possible, bicycle facilities were selected to connect destinations and to serve activity centers. The implementation plan prioritizes bicycle facilities along corridors that serve important destinations, such as downtown, The Ohio State University, existing trails, commercial districts, schools, shopping centers, and houses of worship.

Bicyclists traveling through the Short North

4) Address use by bicyclists when improvements are made to arterial roadways

This Plan proposes that Columbus adopt a "Complete Streets" policy to ensure that bicycle and pedestrian facilities are provided during construction of new roadways and during major improvements to existing roadways.

Bond money at work

5) Develop signage which helps the bicyclist know the destination points of each particular route

This Plan proposes a wayfinding system that clearly guides bicyclists using distinctive signs that provide information about destinations and distance.

Berkeley, California's Bike Boulevards provide destination signage

6) Promote bicycle safety issues

This Plan recommends several education and enforcement programs, including incorporating bicycle safety education into public schools' curriculum, and driver point reduction classes, a campaign to increase the use of bicycle helmets and bike lights, and targeted enforcement to encourage bicyclists and motorists to follow traffic laws.

Bike education should start early

7) Address bicycle parking standards and incentives while encouraging provision of bike parking

This Plan recommends that Columbus adopt a bicycle parking ordinance and provides guidelines for the design and placement of bicycle parking. The Plan also recommends that Columbus pursue innovative bicycle parking solutions, including continuing Pedal Instead—the bicycle valet service—and considering electronic bicycle lockers and a bike station.

Bike Parking at OSU

8) Address bikeway maintenance issues

This plan outlines suggested maintenance procedures for on-street and off-street bicycle facilities and provides cost opinions for maintaining Columbus' existing and proposed bikeway facilities.

Street sweeping is an important part of bikeway maintenance

9) Champion the education of motorists and bicyclists concerning the shared use of roadways.

This Plan recommends a citywide Share the Road education and enforcement campaign, with the High Street corridor as a demonstration area.

Share the Road signs are one element of a comprehensive share the road campaign

Provide needed facilities and services. Through the use of surveys, public workshops, field work, local data on biking and walking, and best engineering practices, this plan identifies and evaluates existing bicycle facilities in the City, and recommends facilities and services that are needed to improve bicycle travel in Columbus.

Enhance and preserve the quality of life in Columbus. The development and maintenance of bicycle facilities provides for people-friendly streets, paths, trails, and activity centers available to

everyone, and supports sustainable community development. Through its recommended Complete Streets Policy, this plan supports bicycle and pedestrian travel on all city streets.

Enhance the health of the community. By promoting biking for recreation and transportation, this plan aims to improve the health of Columbus. This goal supports the vision of the Ohio Department of Public Health's Ohio State Physical Activity Plan.

Improve safety. This Plan seeks to increase safety for bicyclists in Columbus through recommended design practices, policies, proposed projects, and public education and enforcement programs.

Prioritize capital improvements. This Plan provides the City of Columbus with a prioritized list of bicycle-related capital improvements. This list reflects the input of Columbus residents over the course of the Plan's development, gathered at public meetings, through online public outreach efforts, and during the public comment period. Improvements also reflect discussions with City Staff and empirical data such as reported bicycle and pedestrian collisions and bicycle and pedestrian counts.

Maximize funding sources for implementation. The Bicentennial Bikeways Plan summarizes potential funding sources for bicycle facilities and programs, and recommends a phased implementation plan.

1.3. Contents of the Bicentennial Bikeways Plan

This document can be divided into three parts: Chapters 1-4, Chapters 5-8 and the Appendices. The first four chapters outline the existing bicycling conditions in Columbus. The last four chapters present recommendations to guide the future development of bicycling in the City and contain the implementation plan and design guidelines. The Appendices provide supporting information such as bicycle parking ordinance language, bicycle counts, survey responses, and state laws related to bicyclists.

The Columbus Bicentennial Bikeways Plan contains the following chapters:

Chapter 1, Introduction, provides an overview of the plan, its purpose, and implementation strategies.

Chapter 2, Policies, Goals and Objectives reviews relevant city, state and federal planning documents and establishes new Policies, Goals and Objectives to guide bicycle planning in Columbus.

Chapter 3, Existing Conditions, provides a description of the existing bicycle conditions. The chapter includes a map of existing bikeways, descriptions of existing bicycle programs, and a map and description of opportunities and constraints to bicycling.

Chapter 4, Needs Analysis, documents the need for bicycle transportation in Columbus, including an overview of existing user groups, demand analysis, collision analysis, benefits analysis, and a summary of public input from the online survey, public meetings, and technical advisory group.

Chapter 5, Recommended Bicycle Network and Infrastructure Programs, outlines the recommended bikeway network, recommended citywide programs to improve bicycle facilities, and details ten high-priority bicycle facility projects. The chapter includes a map of the recommended bikeway network, and descriptions of infrastructure improvement programs. Descriptions and maps of twelve high-priority demonstration projects are included in this chapter.

Chapter 6, Recommended Education, Encouragement, and Enforcement Programs, recommends programs the City should implement to promote bicycling, to increase bicyclist safety, and to increase the awareness of bicycling as a viable means of transportation.

Chapter 7, Funding and Implementation, provides a prioritized list of recommended bikeways with basic Cost Opinions, a list of potential funding sources, and recommended measures of effectiveness. This chapter provides an implementation plan for the bikeway network over the next 20 years.

Chapter 8, Design Guidelines, provides design guidelines to be referenced when implementing bikeway projects in Columbus.

The Bicentennial Bikeways Plan is supplemented by several appendices:

- Appendix A: Model Policy Goals
- Appendix B: MORPC Collision Analysis Maps
- Appendix C: Bicycle Crash Breakdown 2000 - 2004
- Appendix D: Response to Public Comments, Bicycle Counts and Survey Summary
- Appendix E: Draft Bicycle Parking Policy
- Appendix F: Programmatic Cost Estimates
- Appendix G: Bikeway Funding Sources
- Appendix H: Recommended Bikeway Projects
- Appendix I: Testing Innovative Signage

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2. Policies, Goals, and Objectives

This chapter provides a summary of local, regional, and state planning and policy documents that are relevant to bicycling in Columbus. These plans and policies were used to develop the Policies, Goals, and Objectives for the Columbus Bicentennial Bikeways Plan. This chapter also includes recommended modifications to Columbus City Codes to support bicycling. This chapter consists of the following sections:

2.1. Review of Existing Plans and Policies summarizes relevant plans and policies (Page 2-1)

2.2. New Policies, Goals, and Objectives identifies new policies, goals and objectives established by this bicycle master plan. (Page 2-9)

2.3. Review of Relevant Legislation provides an overview of federal, state and local legislation that is relevant to the Columbus Bicycle Master Plan. (Page 2-16)

2.1. Review of Existing Plans and Policies

2.1.1. Columbus Planning History

The history of planning in Columbus provides important background for framing the current Bicentennial Bikeways Plan. The 1993 Columbus Comprehensive Plan provides the following summary of the planning efforts that took place 100 years ago:

"In 1907, a Plan Commission composed of an architect, landscape architect, a sculptor from New York City, a civic advisor from Rochester, New York, and an architect from Philadelphia, was formed. Within a year, the group had prepared the first known plan for the city. The 1908 Plan was a response to two mounting concerns. The first was what the Plan described as "the unromantic practical necessities of a rapidly growing and prosperous manufacturing city" — water supply and wastewater collection and disposal. The second was the city's "humiliating position" relative to other cities in its consideration of parks, parkways, and playgrounds.

In both cases, the underlying goal was to secure Columbus' position as one of the nation's great cities and to establish a civic environment that recognized its function as Ohio's governmental and education center.

The Plan Commission recommended that the State Capitol be surrounded by a civic center of great public buildings and open spaces. A parkway was to encircle the city three miles from its center. Diagonal streets would radiate from the parkway, breaking what the plan called the "Maltese Cross" development pattern along the railroads. The streets of Columbus would be adorned by monuments, sculpture, and street furniture, and would be rid of overhead utility poles and wires. Small parks and playgrounds were called for in the neighborhoods, while linear parks were to be developed along the Olentangy and Scioto Rivers."

This historical view shows that Columbus has a long heritage of visionary planning, and that with the involvement of civic leaders, the potential exists to continue this vision into the future. Columbus started developing its current bikeways system in the 1960's, and even had bike lanes on High Street in the 1970's. While the current system has not lived up to the potential identified in previous decades, that potential still exists, and the current plan should be seen as an opportunity to capitalize on the city's bikeway heritage.

2.1.2. Columbus Comprehensive Plan 1993

The 1993 Comprehensive Plan established a framework for neighborhood and area plans that have been developed throughout the City. The overview of the Plan states: *"The Columbus Comprehensive Plan prescribes development policies for the city of Columbus and an area that may become part of the city of Columbus over the next 20 years. The Plan Establishes policies for Columbus' growth, development and redevelopment to 2010 in the area of land use, infrastructure and community facilities."*[2]

In describing the infrastructure of the City, the 1993 Plan provides the following statement:

"The infrastructure systems of the city of Columbus — streets and highways, public transit, pedestrian facilities, bikeways, sanitary and storm sewers, water system, and street lights — represent a tremendous public investment and provide the many conveniences expected by both city residents and visitors alike. Provision for and maintenance of these systems is one of the primary functions of local government."[3]

This was a progressive statement for planners to make in the 1990's – especially since it included bikeways in the framework of public infrastructure. The last sentence captures a key point for future efforts and strengthens the long-term support of improvements to the bikeways system. Two other key references from the plan include:

> *Natural Resources and Environmental Quality*
>
> *"1. Maintain and improve the environmental quality of Columbus.*
> *2. Protect, expand and enhance the natural features of Columbus.*
> *3. Promote the greening of Columbus."*
>
> *Recreation*
>
> *"The quality of life of any city is largely dependent upon its parks and recreation system. Columbus has an extensive system of parks and recreation facilities. Acquisition of these facilities must keep pace with development."*[4]

These statements are central concerns for bikeways, which provide transportation, recreation and environmental benefits. The Comprehensive Plan goes on to provide detailed sections on Land Use, Development Regulations, General Transportation Recommendations, Streets and Highways, and Functional Classification. The various classifications form a hierarchy of roadways as shown on

[2] City of Columbus, Neighborhood Plans and Overlays, available at: http://td.ci.columbus.oh.us/Bizdevelopment/PlanList/index.asp
[3] Source: Columbus Comprehensive Plan 1993, page 23.
[4] Source: Columbus Comprehensive Plan 1993, page 16.

the 1993 Columbus Thoroughfare Plan. Significantly, the Plan includes a specific section on Bikeways, which is provided below:

Bicycle Facilities

Bicycling offers a healthful, ecological alternative to transportation by automobile and is a recreational activity enjoyed by many. While bicycle transportation is certainly not for everyone, a greater proportion of the population would take part if necessary facilities were available to enhance bicycle safety and convenience. Certainly bicycling has its place in a balanced, coordinated transportation system.

The availability of facilities encourages the use of bicycles. These include bicycle parking, bicycle lockers, and of course, bikeways. A bikeway is defined as any road, path, or way which is in some manner specifically designated as being open to bicycle travel, regardless of whether it is designated for the exclusive use of bicycles or is to be shared with other transportation modes. Bikeways can be paths, lanes, or routes. A bike path is physically separated from motorized vehicular traffic by an open space or barrier. A bike lane is a portion of a roadway which has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicycles. Bike routes are designated by signage along existing roads to indicate their appropriateness for bicycle travel, usually with no other bicycle-related improvements.

It is not the intent of the Columbus Comprehensive Plan to determine specific locations for bikeways. However, several recommendations are offered to encourage the use of bicycles in Columbus and promote further planning for bicycles as an effective means of transportation.

It is the recommendation of the Columbus Comprehensive Plan that:

- *the Public Service Department develop a bikeways plan for the city of Columbus and represent bicycle interests to both government and the private sector.*
- *the Columbus bikeways plan 1) pay special attention to establishing east-west bikeway connections, 2) take full advantage of opportunities to provide bicycle facilities within greenways, 3) connect major activity centers by bikeways, 4) address use by bicyclists when improvements are made to arterial roadways, 5) develop signage which helps the bicyclist know the destination points of each particular route, 6) promote bicycle safety issues, 7) address bicycle parking standards and incentives while encouraging provision of bike parking, 8) address bikeway maintenance issues, and 9) champion the education of motorists and bicyclists concerning the shared use of roadways.*
- *the bikeways plan for the city of Columbus be developed concurrently with 1) an update of the 1977 Mid-Ohio Regional Planning Commission Regional Bikeway Plan Update, and 2) revisions, where necessary, of suburban bikeway plans throughout central Ohio.*
- *the responsibility and function of the Columbus Traffic and Transportation Commission be expanded to include bicycle issues and that, if necessary, additional members be appointed so that it can serve as an effective advisory body on bicycle issues to the Public Service Department and City Council.*
- *the city of Columbus, following accepted standards, provide bicycle parking at all its government buildings.*

Source: Columbus Comprehensive Plan 1993, p.31-32

These are still valid points for the current Bikeways planning effort. It is important to note that, as a follow up action to the 1993 Comprehensive Plan, City Council Resolution 23X-93 established a

Bikeways Advisory Committee[5] to advise the Mayor and City Council "*on the planning, design, construction and installation of bike routes, bikeways, and bike paths in the city of Columbus.*" The mission of the Committee is "*To integrate bicycles into the transportation systems of Columbus and central Ohio, by providing a safe convenient system of bikeways and other bicycle facilities.*"[6]

2.1.3. Columbus Thoroughfare Plan 1993

The Columbus Thoroughfare Plan designates the functional classifications of roads and includes right-of-way requirements for the various classifications. It serves as a tool for local officials to help develop an orderly, efficient, balanced, and coordinated roadway system. Specifically, the Thoroughfare Plan *"designates the functional classification of roads and includes right-of-way requirements for these various classifications."* Roadway designations are *"closely related to recommendations for land use, community facilities, and other transportation systems."* The Thoroughfare Plan can be used *"to keep development away from needed future roadway expansions, connections, and extensions",* to *"help maintain a balance between land use development and the establishment of an adequate roadway system to service that development"* and *"can be used to protect needed rights-of-way for roadways and serve as a basis for requiring that roadway improvements identified be funded before full development of an area takes place."*[7]

It is important to note that this section of the Thoroughfare Plan also includes specific descriptions of each roadway type by functional class, and includes two primary measures of transportation system performance: Volume-to-Capacity Ratio at signalized intersections and Level-of-Service (Delay) for roadway segments. In general, the roadway classes, typical section descriptions and performance measures do not include bikeways as an integrated element of the on-street transportation system. From a systems perspective, the 1993 Comprehensive Plan / Thoroughfare Plan treats bikeways as an important, but separate infrastructure that is primarily implemented through the development of shared-use paths created along greenway corridors.

2.1.4. Progress since the Comprehensive Plan: 2004 Internal Staff Report

While Columbus did not create the Bikeways Plan recommended in 1993, an internal staff report was developed in 2004 that contains information and resources for the development of the Bikeways Master Plan. That document, entitled *Columbus Bicycle Plan: Bicycle Program Policies,* Public Service Department Transportation Division, Draft for Internal Review February 24, 2004 includes the following sections:

> *"The Columbus Comprehensive Plan was adopted by City Council in 1993. Our progress with response to each directive is described below.*
>
> - *Pay special attention to establishing east-west bikeway connections: Potential alignments for numerous east-west bikeways have been explored. Current efforts focus on 3 bikeways (44, 54 and the Downtown Bikeway Connector). The first is partially done and the others are in development.*

[5] Recommendations for improving the effectiveness of the Bikeway Advisory Committee are discussed in Chapter 6
[6] Source: Columbus Bikeway Advisory Committee, http://pubserv.ci.columbus.oh.us/transportation/GettingAround/columbus_bikeway.htm
[7] Source: Columbus Thoroughfare Plan, page 26.

- *Take full advantage of opportunities to provide bicycle facilities within greenways: Paths are planned, built or under construction in all the stream corridors. The City aggressively seeks right of way for paths.*
- *Connect major activity centers by bikeways: A system of bikeways connects the downtown to The Ohio State University and Clintonville. These are the largest trip generators. The system is expanding to other areas.*
- *Address use by bicyclists when improvements are made to arterial roadways: Almost a dozen proposed arterial widening projects incorporate bikeways. Projects completed, under construction or planned as of 2007 include: bicycle lanes on Hard Road and on Morse Road between I-71 and Karl Road.*
- *Develop signage which helps the bicyclist know the destination points of each particular route: This has been done.*

Note: Although a numbered route system was developed and route signs were installed along many routes by 2004, the system does not include destinations, and is difficult to use for people unfamiliar with the numbering system. The Bicentennial Bikeways Plan recommends a wayfinding system to help bicyclists navigate through Columbus.

- *Promote bicycle safety issues: Every spring for over 7 years, the City has distributed thousands of bicycle safety flyers. Brochures on proper cycling techniques have also been distributed.*
- *Address bicycle parking standards and incentives while encouraging provision of bike parking: Draft legislation has been completed.*
- *Address bikeway maintenance issues: The City hired a full-time maintenance crew, specifically for paths.*
- *Champion the education of motorists and bicyclists concerning the shared use of roadways: This effort stalled because of 2 problems. These are lack of resources and inconsistent bicyclist behavior. At this time staff could only inform motorists that bicyclists are also entitled to use streets (if resources for publicity were available). Any effort to tell motorists what to expect from bicyclists, will have to be preceded by a massive bicyclist education program."*[8]

Note: This Plan recommends a Share the Road Campaign that is targeted toward motorists and bicyclists and recommends bicycle education in schools in Chapter 6.

2.1.5. "Our Vision for the Future"

A 2004 internal staff report provided a vision for Columbus' bicycling future. This Internal Staff Report was not adopted or proposed as formal policy, but is described here as a historic step toward the development of the Bicentennial Bikeways Plan.

The internal staff report envisioned a multi-modal transportation system where people have multiple transportation options (walking, bicycling, riding transit, driving). Future development patterns would create neighborhoods where residents could find most of what they need within the neighborhood, thus permitting them to walk, bike, or take transit for most trips, thus reducing

[8] Source: *Columbus Bicycle Plan: Bicycle Program Policies* Draft for Internal Review February 24, 2004, p.10-11

traffic congestion. Bicycling and walking facilities would be provided in every neighborhood, allowing people to integrate physical activity into their daily lives, and improving health.

The Bicentennial Bikeways Plan incorporates this vision into its goals and policies and recommendations.

2.1.6. I-70/I-71 South Innerbelt Corridor Study

The four-year I-70/I-71 South Innerbelt Corridor Study sought to identify solutions to congestion, traffic delays and safety hazards in downtown Columbus around this crucial freeway interchange.

In the study's final recommendations, one proposal suggests creating two-way collector-distributor roads on Fulton, north of I-70/71, and on Lester, west of I-71. The study concluded that two-way roads offered flexibility and integration with the city's downtown street conversion plans, while also potentially balancing transportation goals of safety and efficiency with community goals, like minimizing environmental impacts and improving connectivity to downtown. Development on both roads could provide an opportunity for the installation of bike lanes, resulting in improved access for bicyclists within the Columbus downtown area.

2.1.7. Columbus Recreation and Parks Master Plan, December 2002

Greenways and trails are an important component of the Columbus Recreation and Parks Department (CRPD) system. CRPD is responsible for developing and maintaining the City's multi-use trails, as well as its parks, playgrounds, lakes, swimming pools, recreation centers, athletic facilities, public gardens, signage and wildlife management areas.

The CRPD's 2002 Master Plan states that "*multi use trails also offer a safe, alternative form of transportation; substantial health benefits; habitat enhancements for plants and wildlife; and unique opportunities for outdoor education and cultural interpretation.*"[9] In 2002, Columbus had 35 miles of asphalt shared use paths. The CRPD's goal is to have 155 miles of trails eventually.

CRPD recognizes that these trails require significant maintenance efforts:

> "*Trails have long term maintenance impacts just like any recreational facility. Maintaining trails can cost anywhere between $10,000 and $14,000 per mile for 10 foot to 12 foot wide asphalt trails; these figures include staff, equipment and resources such as mowing, trash pickup, brush hogging, repairs to benches, lighting, trail markers and trail repaving / sealing. The long range impact of this trail system could reach more than $1.5 million in maintenance costs annually when completed. Not only will manpower have to be increased but a strong volunteer base would have to assist wherever possible.*" p. 5-34

The following bicycle-related recommendations were included in Chapter 5 of the CRPD's 2002 Master Plan:

> *Recommendation 2: Locate Neighborhood Parks within One-Half Mile of all Neighborhoods*

[9] Columbus Recreation and Parks Department 2002 Master Plan, p. 1-12

"*Neighborhoods Parks are the backbone of the CRPD system and should be easily accessible to a maximum number of City residents. These parks should be within a reasonable walking distance, which is about one half mile. Currently, CRPD uses as service radius of one-half to one-mile. A new standard based on one-half mile distance would encourage patrons to walk or bike to these parks. The construction of parking lots at neighborhood parks should be discouraged.*" p. 5-22

Recommendation 9: Continue Developing Multi-Use Trails throughout the City

"In the Columbus area, the major focus for 2010 will be developing a regional network of greenways and on-street bikeways totaling approximately 165 miles that will link parklands, stream corridors, Metro Parks and surrounding community trail systems into an integrated, easily accessible system. The plan also includes providing greenway corridors along Blacklick Creek, Walnut Creek, Scioto River and Big Run." p. 5-24

2.1.8. The Downtown Columbus Circulation Study

This recent study included recommendations for conversions of some downtown streets from one-way to two way operations, along with potential on-street Bikeways in the Downtown area. The study is anticipated to be completed by the end of 2007. The project website describes the study as follows:

The Ohio Department of Transportation (ODOT) is conducting a Major Investment Study (MIS) on the I-70/I-71 portion of the innerbelt freeway circling downtown (Innerbelt MIS). Part of the Innerbelt MIS will consider changes to the freeway ramps which access downtown as well as larger capacity issues. The Central Ohio Transit Authority (COTA) is studying the accommodation in downtown of an expanded transit system that includes Light Rail Transit (LRT).

At the same time, the City of Columbus is examining, through the coordination of downtown area plans, changes to the downtown street system as part of its efforts to increase the livability of the downtown environment. As a result, there is a need to coordinate the MIS and COTA's LRT with the downtown plans and activities of the City of Columbus.

The study, sponsored by the City of Columbus and the Ohio Department of Transportation, has been undertaken by the Mid-Ohio Regional Planning Commission to assist Columbus on various issues to make the downtown more livable and friendly to pedestrians and downtown residents while providing appropriate mobility and safety.

Source: MORPC, Downtown Columbus Circulation Study, http://transportation.morpc.org/library/dtcircstudy/dccs_home.htm, updated 02.14.06

2.1.9. MORPC Regional Bikeway Plan Goals

The Mid Ohio Regional Planning Council has developed a bikeway plan that provides a framework for the Columbus plan. The goals and objectives of the MORPC 2006 Regional Bicycle Transportation Plan have been developed to support the overall transportation vision goals of the regional agency.

MORPC's vision for the region's transportation system is

"*A transportation system that enhances environmental, social and economic well being of the region."* This vision includes three goals:

Goal I: Provide a safe, secure and efficient transportation system

Goal II: Provide an accessible transportation system with a range of choices

Goal III: Protect the social, environmental and economic well being of the citizens of the region

To achieve the above transportation goals and objectives pertaining to the bicycle as a mode of transportation, MORPC plans to:

> *1. Give priority to projects that will close gaps in the bikeway system, eliminate barriers; provide linkage, and/or continuity to any existing facilities when planning and programming improvements.*
>
> *2. Identify federal and state funds for eligible projects.*
>
> *3. Encourage planners and engineers to include the needs of bicyclists when designing transportation facilities in urban, suburban and rural areas.*
>
> *4. Encourage the appointment of bicycle coordinators by local member governments.*
>
> *5. Encourage local jurisdictions to incorporate the regional bikeway plan network as part of its comprehensive plan."*
>
> Source: MORPC 2006 Regional Bicycle Transportation Facilities Plan

It is important to note that MORPC has been a national leader in developing a "Complete Streets" policy for integrating bikeways into transportation projects. MORPC's Routine Accommodation Policy is provided in Appendix A: Model Policy Goals.

2.1.10. Mayor's Green Principles

In addition to these important policy documents, it is significant to reference the Mayor's Green Team, which is advancing the City's environmental goals. The Columbus "Green Principles," dated March 17, 2006, includes the following statement:

> ***Encourage transportation and mobility alternatives*** *that decrease use and dependence on petroleum-based fuels while improving outdoor air quality. Promote energy independence by seeking non-petroleum, renewable fuel sources. Support a variety of choices to the community that promote pedestrian access, transit, bikeways and healthy lifestyles.*
>
> Source: Columbus "Green Principles," March 17, 2006

There are a number of other Columbus program initiatives which support bicycling. A partial listing of these programs includes the following:

Commit to be Fit

This health promotion program was developed in response to Columbus being named among the nation's five most obese cities in 2001. The program was developed in partnership with 10TV, The

Ohio State University Medical Center, Metro Parks, Donatos, and other partners. After the first 6 years of the program, Men's Fitness Magazine listed Columbus as one of the top 20 fittest cities in the nation. The program provides a website that individuals can sign on to and monitor their diet and fitness programs. The program provides an opportunity to connect bicycling with a highly visible and successful health promotion effort in Columbus.

Pedal Instead

Pedal Instead provides City-sponsored secure bicycle parking corrals at summer festivals where riders can park their bikes, helping to reduce vehicle emissions, cut demand for parking, and encourage fitness. Pedal Instead is co-sponsored by Get Green Columbus, the Columbus Recreation and Parks Department, Scotts, Batelle, MORPC, the Central Ohio Bicycle Advocacy Coalition, and Safety Town.

Columbus Outdoor Pursuits

Columbus Outdoor Pursuits is a non-profit organization providing outdoor recreational opportunities and training for youth and adults in central Ohio. This organization includes bicycling as one of its program offerings.

Other Organizations

Consider Biking, the Central Ohio Bicycle Advocacy Coalition, and Simply Living are non-profit organizations working to promote bicycling. These and other organizations provide potential partnership opportunities in the Columbus community.

2.2. New Policies, Goals, and Objectives

This section identifies recommended bicycle-related policies, codes and ordinances for the City of Columbus. These recommendations are based on the foundation established in the City's past planning efforts and informed by models from other communities. Formal adoption of policy changes would need to take place within a General Plan/Zoning Code update process and in consultation with the newly formed Transportation, Pedestrian and Bicycle Commission.[10]

2.2.1. Complete Streets

There is a growing movement in the U.S. to integrate non-motorized transportation into the planning, design, and operation of roads, bridges and transit projects. This movement has taken the name of "Complete Streets." At the national level, the US Department of Transportation developed a model bicycle and policy framework in 2001. This policy is based on the principle that bicyclists and pedestrians have the right to move along or across all roadways unless specifically prohibited from doing so. The national policy has served as guidance for State DOT's and public works agencies throughout the U.S. It has recently evolved into the concept of "Complete Streets" – the idea that streets are only complete when they address the needs of all modes of transportation,

[10] This plan recommends that the Bikeway Advisory Committee be combined with the Transportation and Pedestrian Advisory Commission, and shared leadership should be established between the Public Service Department and the Department of Recreation and Parks

including walking and bicycling. This approach includes providing for transit, ADA compliance, and facilities for people of all ages and abilities. MORPC has adopted a complete street policy, and the Bikeway Master Plan recommends that the City of Columbus adopt a similar policy.

The USDOT 2001 Policy Statement says that "*Bicycle and pedestrian ways shall be established in new construction and reconstruction projects in all urbanized areas,"* unless specific exceptions can be established. At the state level, the American Association of Highway and Transportation Officials (AASHTO) provides guidelines for State Departments of Transportation which are widely accepted for use throughout the U.S. The AASHTO 1999 *Guide for the Development of Bicycle Facilities* includes the following policy guidance:

> *"All highways except those where cyclists are legally prohibited, should be designed and constructed under the assumption that they will be used by cyclists. Therefore, bicycles should be considered in all phases of transportation planning, new roadway design, roadway reconstruction, and capacity improvements and highway projects."*

The idea of "Complete Streets" is based on the premise that quality transportation facilities **"***are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists, and bus riders of all ages and abilities are able to safely move along and across a complete street."* A national coalition of organizations supporting this policy concept has formed to encourage adoption of Complete Streets policies. The City of Columbus has the ability to adopt a Complete Streets policy through the City Council. The following is a proposed "Complete Streets" policy that could be adopted by the City:

Proposed Draft

City of Columbus Complete Streets Policy

Purpose:

A City of Columbus "Complete Streets" policy will ensure consistency of planning, design and operational characteristics of bicycle transportation and recreation facilities as an integral element of roadway, bridge, transit and transportation, recreation and public works projects.

Proposed Policy:

City of Columbus hereby adopts the policy of "Complete Streets" as a guiding principle for our infrastructure. "Complete Streets" are defined as facilities that *"are designed and operated to enable safe access for all users. Pedestrians, bicyclists, motorists and bus riders of all ages and abilities are able to safely move along and across a complete street."*

The City will support the development of a complete system of bikeways, pedestrian facilities and shared use paths, bicycle parking and safe crossings connecting residences, businesses, transit stops and public places. The City will promote bicycling and walking for health, environmental sustainability, exercise, transportation, and recreation.

Bicycle and pedestrian facilities shall be provided in new construction, reconstruction and maintenance projects in the City, including traffic impact mitigations by private developers, unless one of the following conditions is met:

- Bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, bicyclists and pedestrians will be accommodated elsewhere within the right of way or within the same transportation corridor. The same transportation corridor is defined as a parallel route within 1/8 mile.
- The cost of establishing bikeways or walkways would be excessively disproportionate to the need or probable use. Disproportionate is defined as exceeding twenty percent of the cost of the larger project. In cases where cost or right-of-way constraints will tend to prevent improved bicycle and pedestrian accommodation, other measures such as developing strategic crossings, improving bridges and use of parallel street networks should be considered.
- In cases where the existing right-of-way or other constraints do not allow for sidewalks, bike lanes, paths or other improvements, potential alternatives will include the appropriate use of paved shoulders, signage, traffic calming and/or enhanced education and enforcement measures.
- Bicycle and pedestrian facilities will be provided and maintained in accordance with guidelines adopted by the USDOT, ODOT and AASHTO. In cases where established standards cannot be met, professional judgment should be used to determine whether variations from the standard, such as path width, improvements to a parallel facility or other alternatives might be appropriate given adequate safety evaluation.

In addition, private sector development projects will address traffic impacts for all modes of travel, including walking and bicycling. Site plan and subdivision reviews of private sector developments conducted by the City will incorporate facilities for bicyclists and pedestrians. On City maintained roadways, bicycle and pedestrian facilities will be provided in accordance with this policy. City offices and public buildings will provide bicycle parking, lockers and showers in accordance with local zoning and planning regulations.

2.2.2. Proposed Vision, Goals and Objectives

Mayor Coleman provided a vision for the future of Columbus' bicycling environment when he announced the following at the July, 2007 Bikeways Master Plan media event:

> *"Today, we are launching an all out planning initiative to define how we support biking for the next 20 years. By the beginning of 2008, the City of Columbus will have a comprehensive Bikeway Master Plan to include miles of new off-road trails, on-street bike lanes, and other amenities. I'm calling it the Bicentennial Bikeways Plan, and it will be put together with extensive public outreach, starting with the people here today.*
>
> *Today, we have some 87 miles of bike trails, bike lanes and posted bike routes in Columbus, but that's just a start. Our current plan would add some 60 miles of trails in the next 4 years, but I want to do more. I want to see more trails and bike lanes in downtown, as well as along major routes from the distant neighborhoods.*
>
> *Our Bicentennial Bikeways Plan will include:*
>
> *Adding bike trails, lanes and routes;*
> *Improved street-crossing protection, with signals and signs;*

Adding Bike racks, lockers and showers along routes and downtown;
A public awareness campaign for bicyclists and motorists

From this planning we will go to the ballot in 2008 as part of the Bicentennial Bond Package and ask voters to support this important Capital investment. This will provide even more funding to built routes and paths citywide."

With a broad "Complete Streets" approach to infrastructure, there are a range of goals and objectives that can be developed to implement the Bikeways Plan. Each goal presented below includes specific timeframes and targets for measuring success.

The following goals and objectives will help the City guide the implementation process for the Bikeways system and provide measurable benchmarks that are part of the City's management processes.

Goal 1: Implement the Columbus Bikeway Plan.	
Objective 1-1:	Complete the Phase I projects and programs identified in the Bikeways Plan by 2012.
Objective 1-2:	Complete Phase II projects and programs within 10 years, based on available funding and project costs.
Benchmarks:	Miles of bikeways completed; number of locations improved; number of bike parking spaces installed; percentage of projects completed

Goal 2: Increase the number of people bicycling for transportation and recreation.	
Objective 2-1:	Increase the mode share of trips made by bicycling, transit and walking in Columbus to 10% of all trips in 10 years.
Objective 2-2	Increase the number of trail users by 10% per year as measured through annual count data.
Benchmarks:	Conduct annual counts of pedestrian and bicycle travel at key locations on the trail system using the National Bicycle and Pedestrian Documentation Project methodology. Integrate bicycle counts in vehicle count programs; Number of bicycle-on-bus trips: Utilize U.S. Census data for mode share data.

Goal 3: Improve bicyclist safety.	
Objective 3-1:	Reduce the number of injuries and fatalities by 10% by 2013, and maintain a crash rate (number of crashes in relation to bicyclist mode share) that is the same as or lower than the expected crash rate for a City with Columbus' population.[11] Identify areas with high numbers of bicycle crashes on roadways and the bikeway system and develop the means to mitigate the problem.
Benchmarks:	Annual crash data reports; Mitigation of priority crash locations.

These broad goals can be supplemented by specific actions that integrate bicycling with other initiatives and programs, including the following:

Green Goal	
Objective	**Make bicycling a major focus of the City's efforts to create energy independence.** As climate change becomes a major issue in the national media, local communities are realizing the role that non-motorized transportation can play in reducing energy use and dependence on fossil fuels. "Carbon Neutral" planning has become one of the tools for documenting the pollution reductions that communities can make as a response to creating sustainable solutions.
Benchmarks:	The performance benchmark for environmental quality is an annual calculation of the pollution reduction benefits achieved by bicycle travel in Columbus.

Health Goal	
Objective	**Improve the health and physical fitness of Columbus residents.** Each trip by bicycle, for either transportation or recreation, results in increased physical activity and related improvements in cardiovascular fitness.
Benchmarks:	A calculation of the numbers of calories used by cyclists can be tracked annually and benchmarked against local health data for obesity, cardiovascular disease and diabetes.

[11] According to the National Highway and Traffic Safety Administration, in 2004, crash rates for bicyclists are 140 per million population injured and 2.47 per million killed. NHTSA *Traffic Safety Facts, 2004 Data, Pedalcyclists* Columbus' crash rate for 2000 through 2004 is 368 per million injured and 1.75 per million killed.

Education, Enforcement and Encouragement Goal	
Objective	**Bicyclists, pedestrians, and motorists will share the road safely.** Emphasize education, encouragement and enforcement programs that parallel the development of physical infrastructure. Promote a "Share the Road" program to educate motorists and bicyclists of their rights and responsibilities.
Benchmarks:	Specific benchmarks include the percentage of motorists obeying cyclists' rights-of-way, surveys of legal bicyclist behavior (riding with traffic, wearing helmets, using night lighting), participation in cycling events (including National Bike Month, races and club rides) and programs (number of League Cycling Instructors, Bicycle Friendly Communities designation, number of cyclists trained in Effective Cycling, police on bikes, recycle-a-bicycle, bicycle registration, etc.).

Economic Goal	
Objective	**Capitalize on the benefits of bicycling in the local economy.** Promote bicycling in economic development, tourism and job creation programs. Identify business benefits including employee health and quality of life.
Benchmarks:	Benchmarks include bicycle related tourism (bike rentals, events, lodging, meals, etc), job creation, new development projects along bikeways and retail activity.

Safe Routes to Schools Goal	
Objective	**Involve all of the City's schools in Safe Routes to Schools Programs.** The growing national Safe Routes to Schools provides multiple benefits for health, safety, mobility and the environment.
Benchmarks:	Specific benchmarks include the percentage of schools with active Safe Routes to School programs and the mode share of children bicycling to school.

Bicycle Parking Goal	
Objective	**Provide bicycle parking City-wide as an integrated element of streetscape design.** The Bikeways Advisory Committee's bicycle parking ordinance will be approved by the City Council and implemented. Short term bicycle parking racks will be provided as a typical streetscape feature and at long term locations bike lockers or secure sheltered parking will be provided. The ordinance will include an incentive for private developers to include bike parking by reducing their motor vehicle parking requirements. Worksites of more than 50 employees will provide lockers or secure indoor bike parking and showers for employees.
Benchmarks:	The benchmark for this goal will include the number of bicycle parking spaces installed annually.

Quality of Service Goal	
Objective	**Ensure that the City's bikeways are well maintained and operated** Once the bikeway system is developed, it requires an ongoing operations and management program. Maintenance of bikeways is a shared responsibility. The Transportation Division is responsible for bike lanes, storm water grates, street sweeping, crossings, and other on-street infrastructure. The Recreation and Parks Department is responsible for maintaining the City's shared-use path system. Operations include safety patrols, security, activity programming, promotional efforts, education and outreach, routine litter patrol, annual safety reporting, and facilities condition management. A thorough management process will include an annual reporting program, assignment of staff responsibilities, interagency coordination, and the development of public-private partnerships. A public request form can be developed as a Bike Spot Improvement program to respond to citizen requests for minor bikeway improvements.
Benchmarks:	The benchmark can be an annual report of the newly established Transportation, Pedestrian and Bicycle Commission, with input from partner agencies including the Departments of Health, Education, Public Safety, and other organizations.

Multimodal Goal	
Objective	**Create an integrated transportation system that balances the needs of all modes of travel, including pedestrians and bicyclists.** Ensure that bikeways become an integrated element of highway, transit and infrastructure projects. Include bikeways in typical roadway sections and the City's Thoroughfare Plan and functional classifications.
Benchmarks:	Performance measures: multi-modal level of service for roadway segments and intersections, accommodation of bicycles on all buses and future transit systems (e.g. light rail), and secure bicycle parking at all major transit stations and airports.

2.3. Review of Relevant Legislation

The following sections provide and overview of federal, state and local legislation that relates to the Columbus Bikeway Plan. Section 2.3.3 lists recommended bicycle-friendly modifications to Columbus' city codes.

2.3.1. SAFETEA

In the U.S., federal transportation legislation has played a key role in the development of bikeways. In August 2005, the Safe Accountable, Flexible, Efficient Transportation Equity Act, a Legacy for Users (SAFETEA-LU) was signed. Under SAFETEA-LU, federal funding for bicycle and pedestrian facilities and programs has exceeded $400 million per year. Significant new funding streams established by the legislation include the Safe Routes to Schools program, the Model Communities program, and renewed support for the Transportation Enhancements program.

The SAFETEA-LU legislation has a number of provisions that relate to improving conditions for bicycling and walking and increasing the safety of the two modes. These include policies to increase non-motorized transportation to at least 15% of all trips, and to reduce the number of non-motorized users killed or injured in traffic crashes by at least 10%. The legislation emphasizes that state and local agencies work together to provide a choice of transportation modes. It is the intent of SAFETEA-LU that all transportation projects that receive federal money should give due consideration to bicyclists and pedestrians during planning, design, and construction.

The US Department of Transportation states that "there must be exceptional circumstances for denying bicycle and pedestrian access either by prohibition or by designing highways that are incompatible with safe, convenient walking and bicycling." Further, "even where circumstances are exceptional and bicycle use and walking are either prohibited or made incompatible, States, MPOs, and local governments must still ensure that bicycle and pedestrian access along the corridor served by the new or improved facility is not made more difficult or impossible."

A summary of SAFETEA-LU's provisions for bicyclists and pedestrians is provided below. Full text of the summary, which was written by the US Department of Transportation, is available at http://www.fhwa.dot.gov/environment/bikeped/bp-guid.htm

- *The long range metropolitan and Statewide transportation plans, and the Metropolitan and Statewide Transportation Improvement Programs shall "provide for the development and integrated management and operation of transportation facilities (including accessible pedestrian walkways and bicycle transportation facilities) that will function as an intermodal transportation system... (23 U.S.C 134(c)(2) and 135(a)(2))*
- *The process in developing the long-range Statewide and metropolitan transportation plans and transportation improvement plans is to consider "...all modes of transportation..." (23 U.S.C.134(c)(3) and 135(a)(3)*
- *The long-range metropolitan and Statewide transportation plans are to "provide for the development and implementation of the intermodal transportation system" (23 U.S.C. 134(i)(2) and 135(f)(1)*
- *SAFETEA-LU added "representatives of users of pedestrian walkways and bicycle transportation facilities" to the list of 'interested parties" with whom metropolitan areas and States must include in the development of the long range metropolitan and Statewide transportation plan (23 U.S.C 134(i)(5) and 135 (f)(3)(A)*
- *Bicyclists and pedestrians shall be given due consideration in the comprehensive transportation plans developed by each metropolitan planning organization and State..." (23 U.S.C. 217(g)(1)*
- *"Bicycle transportation facilities and pedestrian walkways shall be considered, where appropriate, in conjunction with all new construction and reconstruction and transportation facilities, except where bicycle and pedestrian use are not permitted." (23 U.S.C. 217(g)(1)*
- *"Transportation plans and projects shall provide due consideration for safety and contiguous routes for bicyclists and pedestrians." (23 U.S.C. 217(g)(2)*
- *"In any case where a highway bridge deck is being replaced or rehabilitated with Federal financial participation, and bicyclists are permitted on facilities at or near each end of such bridge, and the safe accommodation of bicyclists can be provided at reasonable cost as part of such replacement or rehabilitation, then such bridge shall be so replaced or rehabilitated as to provide such safe accommodations." (23 U.S.C. Section 217(e))*
- *"The Secretary shall not approve any project or take any regulatory action under this title that will result in the severance of an existing major route or have significant adverse impact on the safety for non-motorized transportation traffic and light motorcycles, unless such project or regulatory action provides for a reasonable alternate route or such a route exists." (23 U.S.C. Section 109(m))*

2.3.2. Ohio Legislation

Through the successful advocacy efforts of the Ohio Bicycle Federation, a "Bill for Better Bicycling in Ohio - House Bill 389" was recently adopted. HB 389 was signed into law during the 2006 GOBA opening ceremonies at the Greene County Fairgrounds in Xenia. The Ohio Bicycle Federation provides the following summary of the new law:

"The Better Bicycling in Ohio bill, known as House Bill 389, makes Ohio laws regarding cycling conform more closely aligned with the Uniform Vehicle Code (UVC). The OBF worked for years as a member of the National Committee on Uniform Traffic Laws and Ordinances to make the UVC more cyclist friendly. Now, Ohio law will follow the UVC. The new laws will:

Substitute "far enough to the right to allow passing by faster vehicles if such passing is safe and reasonable" for "as close as practicable to the right-hand curb" in the "slow-moving vehicle" section of the Ohio Revised Code.

No longer require front and rear wheel reflectors if a red light is used in the rear.

Permit generator-powered lights.

Permit either flashing or steady rear light.

No longer require a bell or horn."[12]

In addition to the new legislation, the Ohio Bicycle Federation also provides a summary of Ohio legislation related to bicycling. The summary includes the following sections:

4501.01. Definitions.
As used in this chapter and Chapters 4503, 4505, 4507, 4509, 4511, 4513, 4515, and 4517 of the Revised Code, and in the penal laws, except as otherwise provided:

(A) "Vehicle" means every device, including a motorized bicycle, in, upon, or by which any person or property may be transported or drawn upon a highway, except that "vehicle" does not include any motorized wheelchair, any electric personal assistive mobility device, any device that is moved by power collected from overhead electric trolley wires or that is used exclusively upon stationary rails or tracks, or any device, other than a bicycle, that is moved by human power.

***Comment:** A bicycle is defined as a vehicle and thus is governed by a uniform set of rules common to all vehicles and a small set of specific rules for bicycles. (There are other specific rules for other vehicle types, such as trucks or busses.) The annotated list here summarizes the most important parts of the traffic rules and equipment rules that govern bicycle driving. People who try to make up their own rules have an accident rate five times higher than knowledgeable cyclists who follow the rules of the road.*

§ 4511.07. Local traffic regulations.

(A) Sections 4511.01 to 4511.78, 4511.99, and 4513.01 to 4513.37 of the Revised Code do not prevent local authorities from carrying out the following activities with respect to streets and highways under their jurisdiction and within the reasonable exercise of the police power:

(8) Regulating the operation of bicycles: provided that no such regulation shall be fundamentally inconsistent with the uniform rules of the road prescribed by this chapter and that no such regulation shall prohibit the use of bicycles on any public street or highway except as provided in section 4511.051 of the Revised Code;

[12] Source: Ohio Bicycle Federation, A Bill for Better Bicycling in Ohio, http://www.ohiobike.org/hb389info.html

(9) Requiring the registration and licensing of bicycles, including the requirement of a registration fee for residents of the local authority;

(B) No ordinance or regulation enacted under division (A)(4), (5), (6), (7), (8), or (10) of this section shall be effective until signs giving notice of the local traffic regulations are posted upon or at the entrance to the highway or part of the highway affected, as may be most appropriate.

Comment: *The most important of the reforms passed in 2006 will require that any local regulations be consistent with the uniform rules of the road. In addition, signs are required of such local regulations. Unfortunately, there are still many ordinances inconsistent with uniform laws. Some of these bad ordinances mandate unsafe practices.*

Source: Ohio Bicycle Federation, Digest of Ohio Bicycle Traffic Laws, http://www.ohiobike.org/bicycle-law-digest.html

2.3.3. Columbus City Codes

The following modifications to city codes are recommended to support bicycling in Columbus.

Table 2-1: Recommended Policy Modifications

2.1. Code Section	2.2. Suggested Modification
Title 9 STREETS, PARKS AND PUBLIC PROPERTIES CODE **Article I. Street and Sidewalk Areas** Chapter 902 HEALTH AND SAFETY Chapter 905 SIDEWALK AND DRIVEWAY CONSTRUCTION AND REPAIR Chapter 910 COMPREHENSIVE RIGHTS-OF-WAY	Add section on Complete Streets to integrate bikeways within roadway and right-of-way definitions.
Title 21 TRAFFIC CODE **Article IX. Pedestrians, Bicycles and Motorcycles** Chapter 2171 PEDESTRIANS Chapter 2173 BICYCLES AND MOTORCYCLES	Modify right of way section to include safe passing distance; add requirement to prohibit wrong-way riding in bike lanes and shoulders; require that bike lanes provide safe distance from the 'door zone' in areas with on-street parking; clarify code to clearly state it is unlawful for a motorist to strike a bicyclist who has fallen into the roadway; ensure consistency with Ohio HB389; cyclists' right to ride on city streets should be clarified to expressly allow experienced cyclists the right to utilize travel lanes and turning movements in addition to designated bicycle lanes and routes.

2.1. Code Section	2.2. Suggested Modification
Title 31 PLANNING AND PLATTING CODE **Article I. Planning** Chapter 3107 PLANNING AND DEVELOPMENT **Article III. Planning and Land Development** Chapter 3121 LAND DEVELOPMENT; SCHOOLS, PARKS AND RECREATION AREAS Chapter 3123 REGULATIONS FOR LAND SUBDIVISION Chapter 3124 ADEQUATE PUBLIC FACILITIES Chapter 3125 TRAFFIC STANDARDS CODE	Include provision of bikeways in site plan review process; ensure consistency with Traffic Standards Code.
Title 33 ZONING CODE **Article II. Traditional Neighborhood Development** Chapter 3320 TRADITIONAL NEIGHBORHOOD DEVELOPMENT	Include bikeways in TND code and provide typical sections to ensure consistency with thoroughfare types; include greenway and trail corridors in transect zoning types; add bike lanes to arterial and collector roads.
Article V. Residential Use Districts Chapter 3342 OFF-STREET PARKING AND LOADING	Include Bikeways Advisory Committee's draft bicycle parking ordinance; ensure that the ordinance applies to residential, commercial and institutional district.

Source: Columbus City Code, available at: http://www.ordlink.com/codes/columbus/index.htm

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3. Existing Conditions

This chapter provides a description of existing bicycle conditions within the City of Columbus. The information provided is based on field visits, the City's existing maps and planning documents, and meetings with the City staff.

3.1. Existing Conditions Summary

Below is a summary of key findings from this chapter:

1. **Columbus has an excellent shared use path system that has been developed primarily along north-south river corridors. However, this system is not well-connected to streets.** Wayfinding signage, on-street bicycle facilities that link to the existing trails, new trail access points, and bridges to provide access over barriers could significantly improve access to the trails.

2. **Over 900 survey responses were received. These were very positive and show support for new ideas**.

3. **Columbus, unlike most of the country, has seen a slight increase in bicycle commuting to work**, with 0.4% bicycling to work in 1990, 0.3% bicycling to work in 2000, and 0.6% bicycling to work in 2005.[13]

4. **There is a potential for "road diets" on arterial streets to alleviate the lack of on-street bikeways**. On many of Columbus' arterials, roadway widths and traffic volumes may allow four-lane roadways to be converted into three-lane roadways with a middle turn lane and bicycle lanes.

5. **The need for east-west bicycle connections goes back to 1993.** Successful east-west bikeways require appropriate connections over several barriers, including the Olentangy and Scioto Rivers, Alum Creek, I-71, State Route 315, and railroad tracks.

6. **Current signage and wayfinding systems are incomplete.** Though a bike route system has been developed for Columbus, the signage and numbering system could be improved by adding destination and distance information.

7. **There is no existing bike map that shows the bicycle system.**

8. **Alleys in many neighborhoods are a potential opportunity for developing bicycle boulevards.**

[13] U.S. Census Bureau's 2005 American Community Survey estimates that 0.6% of commuters bicycle to work, with a margin of error of plus or minus 0.2%. The US Census and American Community Survey only count work-related trips by bicycle. The true number of daily bicycle trips which include utilitarian and recreational trips is likely to be significantly higher.

9. **The City should balance engineering efforts with the other E's: education, encouragement, enforcement and evaluation.** Columbus' efforts so far have been primarily engineering-related: constructing bicycle paths and lanes.

10. **Early wins are possible for bike parking, complete streets policy, and a share the road program.**

11. **Bike-transit use is significant as a result of the bike-on-bus program**, and clearly shows the latent demand for bicycle amenities. Between May 1, 2006 and April 31, 2007 COTA saw over 35,000 total weekday bicycle boardings—an average of 221 bicycle boardings each weekday.

12. **The 2012 bicentennial is a significant opportunity for bicycling in Columbus.**

13. **Bicycling can provide significant benefits for the city in terms of health, environment and quality of life**. These benefits include:

    - Air quality benefits, including reduction in motor-vehicle based air pollutants, such as particulate matter, reactive organic gases, and nitrous oxides
    - Congestion benefits, including the estimated reduction of 173,600 motor vehicle trips each weekday and reduction of 179,800 vehicle miles traveled per weekday.
    - Economic benefits, including estimated annual recreational income of $21 to $312 million, estimated annual savings in healthcare of $1 to $11 million, and estimated annual savings due to increased mobility of $7.6 million.

3.2. Organization of Chapter

This chapter is divided into the following sections:

3.3. Setting, describes Columbus' location, land uses and key activity centers. (Page 3-3)

3.4. Types of Bicycle Facilities, describes the standard bikeway types—shared use paths, bicycle lanes, signed shared routes, paved shoulders—and introduces innovative bicycle facilities such as shared lane markings and bicycle boulevards. (Page 3-4)

3.5. Inventory of Columbus' Existing Bikeways lists Columbus' existing on- and off-street bicycle facilities, describes major off-street paths, and provides a map of these facilities. This section also describes existing support facilities, such as bicycle parking. (Page 3-6)

3.6. Assessment of Conditions, provides a general overview of bicycling conditions within the City. (Page 3-14)

3.7. Encouragement and Education Programs, describes biking and walking encouragement and education programs currently available in Columbus. (Page 3-16)

3.8. Multi-Modal Connections, describes how bicycles are supported on Columbus' transit services. (Page 3-17)

3.9. Opportunities and Constraints, describes and maps the existing opportunities for bicycle facilities and constraints to bicycling in Columbus. (Page 3-18)

3.3. Setting

The City of Columbus was founded in 1812 adjacent to the Scioto and Olentangy Rivers and has served as Ohio's state capital since 1816. With over 700,000 people, Columbus is the largest city in the state. The City area has grown dramatically in population and area between 1950 and the present day, with 186 square miles annexed to the city between 1950 and 2007. Columbus' current size is 225.9 square miles. Due to its growth by annexation, the City boundaries are not uniform, and within Columbus are islands of smaller communities. As a result, a stretch of road within Columbus boundaries may pass through several jurisdictions, making it logistically challenging to construct bicycle facilities along that roadway.

Downtown Columbus is the center of governmental, office and commercial space in the region. Additional office, shopping, and commercial centers are found around the city in local neighborhoods and along State Route 161 (Dublin-Granville Road) and I-270. Columbus' downtown is well-served by bicycle paths along the Olentangy and Scioto Rivers, and several opportunities exist to improve bicycle access to downtown along roadways, rivers, and abandoned rail lines. Within the downtown area, the proposed conversion of one-way streets to two-way will allow for construction of bicycle lanes.

Columbus' Downtown is well-served by bicycle paths along the Olentangy and Scioto Rivers

The primary geographic features of Columbus are its rivers, railroads and major freeways. Columbus' rivers generally flow north-south, and make it difficult for bicyclists to travel east-west. The primary waterway in the area is the Scioto River. Its tributaries include Big Darby Creek, the Olentangy River, Alum Creek, Big Walnut Creek, Blacklick Creek, and Little Walnut Creek. The bicycle paths that have been constructed along portions of the Scioto River, Olentangy River, and Alum Creek provide excellent north-south bicycle access.

The City is ringed by Interstate 270, and divided by I-70 (east-west), I-670 (east-west), I-71 (north-south) and State Route 315 (north-south). These roadways generally present barriers to bicyclists, but in one case, the I-670 Bikeway, bicycle facilities have been constructed within the highway right-of-way.

Columbus' railroads date back from the late 1800's and radiate from Columbus' downtown, providing access between downtown and the rest of the City. Abandoned rail lines in the southwest, southeast, and northeast quadrants of the city present potential opportunities for trails.

3.4. Types of Bicycle Facilities

3.4.1. AASHTO Bikeway Classifications

This plan separates bicycle facilities into three types, as identified by the American Association of State Highway and Transportation Officials (AASHTO). **Figure 3-1: AASHTO Bicycle Facility Types** illustrates the three types of bikeways.

The majority of bicycle trips are on local streets not designated as bicycle facilities

Shared Use Path: a paved right-of-way completely separated from any street or highway. Often these are built within greenway corridors, along railroad rights-of-way or parallel to (but separate from) highways. Shared use paths are shared by a variety of users, including bicyclists, pedestrians, rollerbladers and people pushing strollers. As such, they need to be designed appropriately to accommodate all users.

Bike Lane: a striped and stenciled lane for one-way travel on a street or highway. These are designated with signs, striping, and pavement stencils. With this type of bikeway, motorists and bicyclists share the street, each having their own preferred lane.

Signed Shared Roadway (Bike Route): a roadway shared by bicyclists and motor vehicle traffic and is identified by signing. On these routes, motor vehicles and bicycles share the same lane on a street. Signs are posted to indicate that the street is a bikeway.

Paved Shoulder: Many of Columbus' roadways have unpaved shoulders and have narrow (10 to 12 foot) motor vehicle lanes, making the roadways uncomfortable for bicycling. In many cases, providing a paved shoulder adjacent to a road can significantly improve bicycling conditions. The AASHTO Guide for the Development of Bicycle Facilities states that shoulders should be at least 4 feet wide, be maintained and be free of road debris.

3.4.2. Innovative Bikeway Treatments

In addition to the three AASHTO-designated bikeway types, there are other innovative treatments, two of which are outlined below.

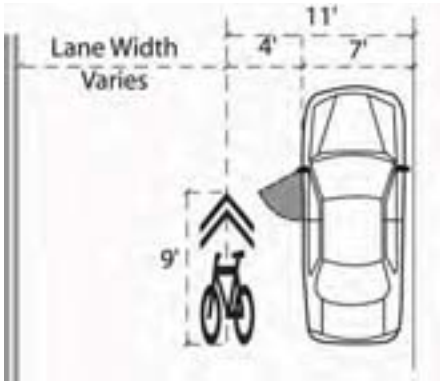
Bicycle Boulevards have been implemented in a variety of locations including cities in California (Berkeley, Palo Alto and Davis) and in Oregon (Portland). A Bicycle Boulevard is a roadway that allows all types of vehicles, but which has been modified to enhance bicycle safety and security. Roadways are designed to be places where cars and bicycles can equally share right-of-way. Bicycle Boulevards tend to be residential streets with lower traffic volumes, typically between 3000 to 5000 average daily vehicles, but can include secondary commercial streets.

Bicycle Boulevards typically include design features such as:

- Traffic calming devices such as traffic circles and bulbouts
- Bicycle destination signage
- Pavement stencils indicating status as a Bicycle Boulevard
- Crossing improvements at major arterials, such as traffic signals with bicycle-detection, four-way stops, and high-visibility crosswalks
- Stop signs on streets crossing the Bicycle Boulevard
- Some jurisdictions have implemented Bicycle Boulevards by removing on-street parking in select locations.

Bicycle Boulevards can be designed to accommodate the particular needs of the residents and businesses along the routes, and may be as simple as pavement markings with wayfinding signs or as complex as a street with traffic diverters and bicycle signals. Bicycle Boulevards are described and illustrated further in Chapter 8: Design Guidelines.

Shared-Lane Markings, though currently only officially accepted as an official marking within California, Shared-Lane Markings offer an option for providing bicycle facilities on narrow urban streets.[14] The primary purpose of the Shared-Lane Marking is to provide positional guidance to bicyclists on roadways that are too narrow to be striped with bicycle lanes and to alert motorists of the location a cyclist may occupy on the roadway. Shared-Lane Markings are intended to reduce the chance of a cyclist colliding with an open car door of a vehicle parked on-street, parallel to the roadway. Shared-Lane Markings are appropriate for roadways in urban areas with on-street parallel parking.



Shared-Lane Marking Placement


Shared Lane-Markings in San Francisco

It should be noted that providing bicycle lanes on certain streets or designating certain streets as shared signed routes does not imply that bicycles should not be accommodated on all streets. The majority of bicycling takes place on undesignated city streets within neighborhoods. Bicyclists are legally allowed on all City streets and roads regardless of whether the roads are designated as a

[14] Policy Directive 05-10 "Shared Roadway Bicycle Marking", passed on September 12, 2005, outlines implementation guidelines for placing Shared Lane Markings. <http://www.dot.ca.gov/hq/traffops/signtech/signdel/policy.htm>

bikeway or not. Local agencies may not prohibit bicyclists from riding on any public street or highway. (Ohio Revised Code 4511.07 Local Traffic Regulations)

3.5. Inventory of Columbus' Existing Bikeways

The City of Columbus' existing bicycle facilities consist of approximately 46 miles of off-street shared use paths, 3 miles of bicycle lanes, and 19 miles of signed bicycle routes. Additionally, several streets with wide curb lanes or paved shoulders have been identified by the City as "bicycle-friendly" streets. The existing bicycle facilities are shown in **Figure 3-2, City of Columbus Existing Bikeways** and **Figure 3-3, Columbus Downtown Existing Bikeways**.

3.5.1. Shared Use Paths

The City of Columbus began construction of its shared use paths in 1969 with a 1.7 mile section of the Lower Scioto Greenway in Berliner Park. Since then the City, in partnership with Metro Parks, has constructed 48 miles of shared-use paths and shorter connector paths, including those along Alum Creek, Scioto River and Olentangy River.

The following shared use path descriptions were based on information provided on the Columbus Department of Recreation and Parks trails website and on 2007 mapping data provided by MORPC.

Alum Creek Trail

The Alum Creek Trail runs from Main Street in Westerville to connect with Blacklick Creek Trail in Franklin County at Three Creeks Park. The trail currently consists of two segments, listed from the south to the north:

- Three Creeks Park to Airport Drive/Ohio Dominican University
- Easton to Westerville

The City has plans to develop the trail system from Innis Park to Hayden Park. Approximately 15 miles of the system have been constructed in Columbus.

Trailheads are provided along all segments at the trail at parks and at Easton Way. Trailheads include:

North Segment: Cooper Park, Casto Park, Strawberry Farms Park, Tanager Woods Park, and Parkridge Park, Easton Way

South Segment: Wolfe Park, Academy Park, Nelson Park, Madison Mills Park, and Three Creeks Park

Blacklick Creek Trail

Approximately 10 miles of trail have been constructed along the Blacklick Creek Greenway within Columbus, Groveport and Franklin County. Four miles of existing trail are within Columbus' jurisdiction (See Table 3-1). The trail consists of two segments:

- From Alum Creek Trail in Three Creeks Park to just south of US-33 on the west edge of Groveport. This trail is within Grovepark.
- Shannon Road at Blacklick Parkland east, where it splits to serve Portman Park to the north and Pickerington Ponds Metro Park to the south. This 5.7 mile trail is within Columbus.

There are plans to connect the two segments. The proposed connection includes areas within the county and the City of Columbus.

The I-670 Multi-Use Trail

The 4-mile bike trail connects the Alum Creek Trail to Fort Hayes. It runs along I-670 and crosses the highway twice. This is part of the planned Downtown Bikeway Connector, and is an important link in the statewide Ohio to Erie Trail.

The Olentangy River Trail links Downtown Columbus to Neighborhoods in the North

Table 3-1: Existing Shared Use Paths within the City of Columbus

Name	From	To	Miles within Columbus
Alum Creek Trail - South	Three Creeks Park	Hayden Park at Airport Rd	10.2
Alum Creek Trail - North	Easton Soccer Fields (Easton Way and Sunbury Rd)	I-270 (Westerville Border)	5.1
Blacklick Creek Greenway Portman/Pickerington Ponds Metro Park	Shannon Road	Portman Park/Pickerington Ponds Metro Park	4.2
I-670 Multi-Use Trail	Alum Creek Trail	Fort Hayes	4.0
Olentangy Trail	Scioto/Olentangy Confluence	Worthington Hills Park	14.3*
Scioto Trail (Lower)	Berliner Park	Dublin Road Water Plant	7.5
Scioto Trail (west)	Dodge Park	Souder Avenue	1.9
Scioto Trail (Upper)	Grandview Avenue	River's Edge Office Park on Dublin Road/Riverside Drive	1.8
Sullivant Trace Path	Rhodes Park	Holton Park	1.0
		TOTAL MILES	**50**

Source: MORPC Bikeways GIS, September 2007.

** 1.75 miles of Olentangy Trail is located in Worthington*

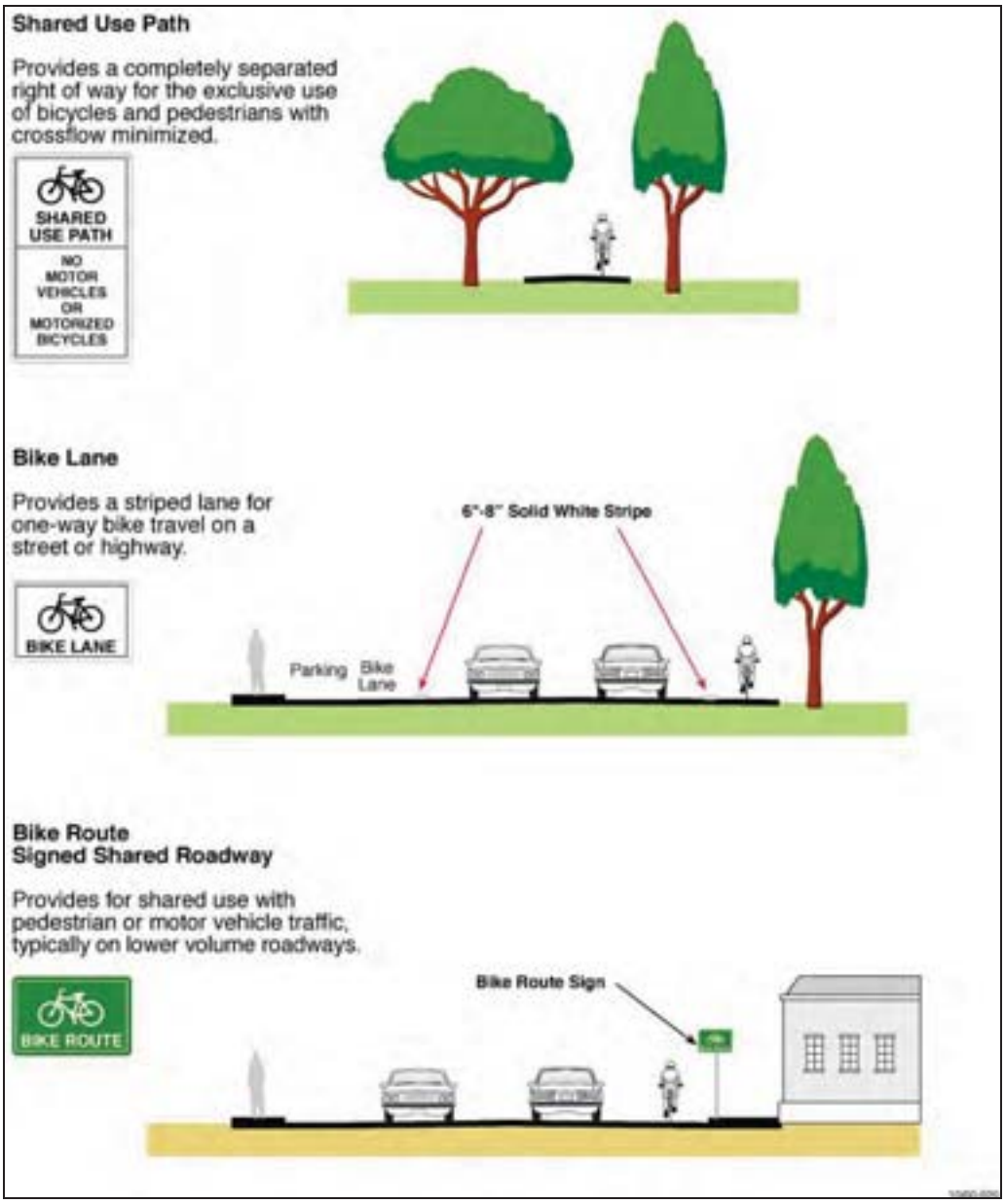


Figure 3-1: AASHTO Bicycle Facility Types

Figure 3-2: Existing Bicycle Network

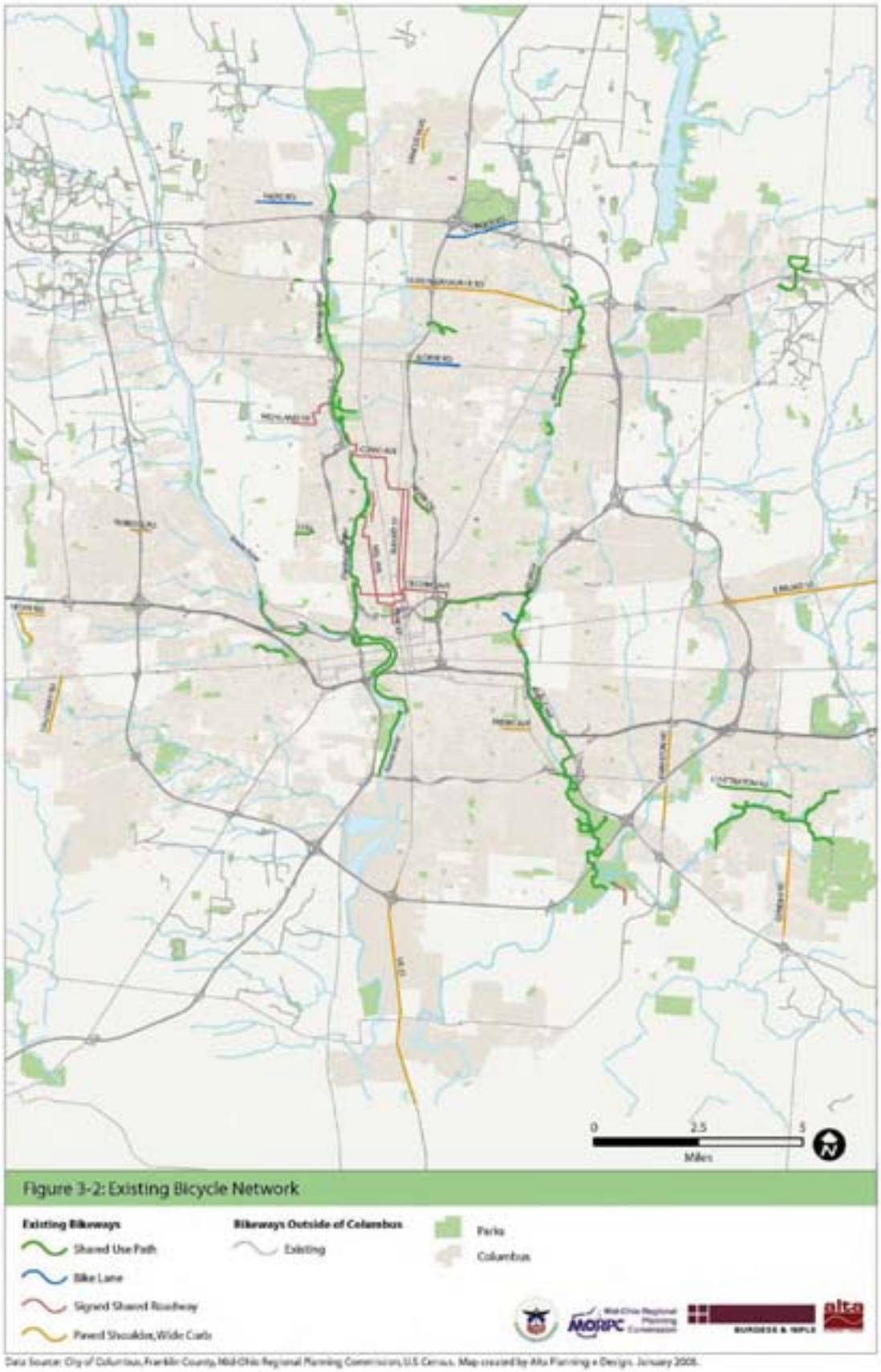


Figure 3-3: Existing Bicycle Network: Downtown Columbus

Olentangy Trail

The 14-mile Olentangy Trail connects Worthington, Clintonville, The Ohio State University, Harrison West and Downtown and is well-used by many residents. This pathway includes two bridges that cross the Olentangy River. The pathway was built over many years, and as such varies in width from 8' to 10' of paved surface. This popular trail serves many neighborhoods and provides a prime commuter route between residential neighborhoods to the north and downtown Columbus. Some sections are not wide enough to comfortably accommodate all users.

At North Broadway trail users must exit the shared path portion of the trail, and continue on the roadway before reentering the trail.

Most of the trail's 14.3 miles are located within Columbus' jurisdiction. Approximately 2 miles are located within Worthington.

Trailheads are located at Worthington Hills Park, Clinton-Como Park, Antrim Park, Whetstone Park, Northmoor Park, Tuttle Park, The Ohio State University, and Confluence Park.

While the trail is nearly continuous for its entire length, trail users must currently use on-street facilities at North Broadway, and through a section within The Ohio State University.

Scioto Trail

Approximately 11 miles of bicycle path has been built along the Scioto River in Downtown Columbus. This trail consists of four sections:

Lower Segment 7.5 mile segment from Frank Road to the Dublin Road Water Treatment Plant. This trail is one of the first stretches of trails Columbus built along a greenway. It serves commuters and recreational needs into the downtown area.

West Segment 1.9 mile segment on the west side of the river from Dodge Park to Souder Avenue. A trailhead is provided at the south end at Dodge Park. There is no trail head on the north end. The trail can be accessed at Main St., Rich St., Broad St., and Souder Avenue.

Upper Segment 1.8 mile segment along the east side of the Scioto River from Grandview Ave., under two I-670 bridges to a dead end near the River's Edge Office Park on Dublin Road/Riverside Drive. It will eventually be a part of the Upper Scioto Greenway Trail system running from downtown north to Griggs Park. Access is only at Grandview Ave at the I-670 exit.

Connector Trails

Approximately 10 miles of shorter connector trails have been built to provide access to parks and the longer trails. These trails are not summarized here, but are included on the map of existing bikeways.

The Ohio to Erie Trail

The Ohio to Erie Trail is a cross-state multi-use trail that when completed would reach from Cincinnati to Columbus to Cleveland. Within Columbus, the route currently runs along West Broad

Street to the Scioto Trail to the Olentangy Trail, then zigzags through residential streets to Schrock Road bicycle lanes, where it connects to the Alum Creek Trail in Westerville. The future alignment will follow the proposed Camp Chase Trail to the Scioto Trail, through downtown on the proposed Downtown Bikeway Connector, along the I-670 Trail and north along the Alum Creek Trail.

3.5.2. On-Street Bike Lanes and Signed Shared Roadways

In recent years, the City of Columbus has started to provide more on-street bicycle facilities. The city currently has 6.3 miles of bicycle lanes. Bicycle lanes exist on Hard Road between Linworth Road and Smoky Row Road (1.3 miles), on Schrock Road between Cleveland Avenue to just West of Huntley Road (3.0 miles), and on Morse Road from Karl Road to 4th (2 miles).

3.5.3. Bikeway Signage

Bikeway signage includes signs identifying a signed shared roadway, lane or shared-use path to cyclists and drivers (e.g. "Bike Lane" signs posted along a roadway with a bike lane), signs providing regulations or warnings to cyclists or drivers (e.g. bicycle-sized "STOP" signs on shared use paths), and signs providing wayfinding to cyclists (e.g. trailhead signage or bike route numbering).

On all shared use paths, Columbus uses trail wayfinding signage based on MORPC's regional Central Ohio Greenways signage plan. This signage program has been adopted by several communities and provides a uniform identification and wayfinding system for all of Central Ohio.

Columbus uses Central Ohio Greenways wayfinding signage on its shared use paths.

On-street facilities use standard Ohio bikeway signage. Directional signage is provided by Columbus' numbered bikeways corridor system, described in detail below. Bikeway-roadway crossings sometimes include signage indicating that motorists should yield to trail users.

In the mid-nineties, in response to resident requests to provide on-street bicycle facilities, and in conjunction with MORPC's Regional Bicycle Master Plan update, Columbus developed a system of numbered bike routes to assist bicyclists in traversing the city. These bike routes are identified in **Table 3-2: On-Street Bike Routes Identified in 1994**. A single route may include both on-street and off-street facilities.

A list of these signed routes is provided below. Some of the routes have been installed. Route signs are standard bike route green with the route number on them.

The reasons for designating these alignments as bike routes were complex. Below are examples, with some reasons why these were selected.

- High Street, Neil Avenue: Has relatively high levels of bicycle use.
- Proposed Bikeways 53 and 54: Forms a coherent, relatively low-volume route through town.
- Williams Road: Forms a continuous route.
- Parsons Avenue: No freeway interchanges.
- Harrisburg Pike, Norton Road: Has paved shoulders.
- Morse Road, Route 161: Provides access to major commercial areas.
- Neil Avenue: Creates a direct route to major trip generator.
- Dublin Road, McKinley Avenue, Hilliard-Rome Road: Easy to add a bikeway.
- Walcutt and Roberts Roads: Provides continuity to a corridor.
- Northtowne and Sharon Woods Boulevards: Has relatively low traffic volumes.
- Summit & Fourth Street: Streets with excess capacity.

Table 3-2: On-Street Bike Routes Identified in 1994

Number	Direction	Name
360	EW	New Rome to Canal Winchester
380	EW	West Jefferson to Reynoldsburg
390	NS	Darbydale to Dublin
410	NS	Grove City to Dublin
440	EW	Hilliard to Grandview Heights to Bexley
460	EW	Upper Arlington to Gahanna
480	EW	Upper Arlington to Gahanna
490	NS	Lockbourne to Clintonville
500	EW	Henderson-Morse Bikeway
510	NS	Obetz to Polaris
530	NS	State Fairgrounds to Sharon Woods Park
540	EW	Dublin to New Albany
550	NS	Obetz to Bexley
560	EW	Westerville to Worthington
580	EW	Dublin to Westerville
670	NS	Canal Winchester to New Albany

3.5.4. Bicycle-Accessible Bridges

Columbus has constructed several bicycle and pedestrian bridges in recent years. Bridges span the Olentangy River, the Scioto River, and Alum Creek to provide access to the City's shared-use paths. Additional bridges have been constructed to connect neighborhoods over freeways, such as the bicycle and pedestrian bridges that span Interstate 71. The Broadmeadows Bicycle and Pedestrian Bridge, which connects Broadmeadows Park to the Olentangy Trail, will be completed in 2008. On-street crossings of the freeways and rivers are generally provided by arterial roadways, which do not always provide comfortable bicycling conditions.

3.5.5. Bicycle Actuated Signal Detection

Bicycle actuated signal detection includes in-pavement loop detectors, video detection and infrared systems. Loop detectors are in-pavement wire sensors that activate traffic signals when a vehicle is positioned over the loop. They work by sensing the metal in the vehicle. Several types of loop detectors can be adjusted to be sensitive enough to sense when a bicycle has stopped over the loop, and thus allow a bicyclist to activate a traffic signal.

Since heavy vehicle traffic and road construction can damage pavement and loop detectors, some cities install video detection at intersections with high volumes of traffic. A vehicle is detected when it enters a preset detection boundary within the camera's view. Video detection systems can be modified to identify bicyclists as well as motor vehicles.

Infrared detection can detect heat from the bicyclist and trigger a traffic light.

3.5.6. Bicycle Parking

Columbus provides bicycle racks along many of its shared-use paths and bicycle lockers at selected COTA park-and-ride lots (see Multi-modal connections section.). The Ohio State University provides ample bicycle parking. Bicycle parking is not generally available in retail and commercial areas. Major destinations, such as the Arena area in downtown, do not generally provide bicycle parking.

The Easton development re-zoning includes language for bike parking requirements. However, it is not written into the City's policies to require developers and businesses to provide bicycle parking. Adding such a requirement to the City's municipal code is recommended. The Bikeways Advisory Committee has developed a draft of bicycle parking ordinance.

Paving the shoulder on this road would allow the bicyclist and motor vehicle to share the roadway

3.6. Assessment of Conditions

3.6.1. Bicycle Conditions on Streets

Columbus' roadway network supports local bicycling within residential neighborhoods, but does not provide adequate longer cross-town facilities for bicyclists who are not comfortable riding on roads with heavy traffic volumes, high motor vehicle speeds, or multiple lanes. Below are descriptions of common on-street conditions.

Many of Columbus' arterials are not comfortable for bicycling, yet are often the only way to reach a destination

Bikeable, but Discontinuous Residential Streets

Residential roadways, which comprise the majority of Columbus' roadway network, are hospitable to bicyclists. These streets tend to have 25 mph speed limits, low motor vehicle volumes, and one lane in either direction. However, the bikeway network cannot be developed only on residential streets. The residential street system is discontinuous. Crossings of major streets, freeways, rivers and railroads can be difficult, and residential streets do not generally provide access to retail, commercial, employment, and entertainment destinations. Bicycling on residential streets can be improved by developing wayfinding signage and improving access across major roads, rivers and railroad tracks.

Constrained Roadway Widths

Constrained roadway widths pose another challenge for bicycling. Especially in Columbus' older neighborhoods, arterials and collectors are relatively narrow, and there is little room to widen these streets to accommodate bicycle facilities. Outside lane widths are often narrow and uncomfortable for bicycling. It may be possible to accommodate bicycle facilities on these roadways through road diets or shared lane markings.

Lack of Shoulder

In more rural areas, roads may lack shoulders, making it difficult to bicycle. These roads could be easily made bicycle friendly by paving the shoulder.

High Volume Arterials are Uncomfortable for Bicycling

Many of Columbus' arterials are not comfortable for bicycling, due to high speeds, numerous driveways, and heavy traffic. Improving these roadways for bicyclists generally means providing a separate lane or right of way for bicyclists. Modifications can range from reducing lane widths to provide bicycle lanes, adding bicycle lanes as part of a road diet, to developing an access control plan and parallel shared use path. The recent retrofit of Morse Road to include a median and bicycle lanes is a great example of how arterials can be improved to accommodate bicycling.

Integrated Curb and Gutter

Many of Columbus' streets have an integrated curb and gutter, with a gutter pan ranging from one foot to two feet in areas. The gutter pan effectively reduces the lane width for bicyclists. With repaving, a lip can develop between the gutter pan and the pavement, creating a hazard for bicycling. Roads with integrated curb and gutter should have wider bicycle facilities.

3.6.2. Bicycling Conditions on Shared-Use Paths

Columbus' shared-use paths are generally well-maintained. Many amenities have been constructed along the facilities, such as natural history interpretation areas, bicycle parking, shade shelters, benches, and landscaping. Shared-use paths near downtown are especially well-maintained.

Observations made during a field review include:

- Shared-use paths are well used by bicyclists, pedestrians, joggers, and people walking dogs.

- Shared-use paths are integrated into the neighborhood fabric, skirting parks and recreational facilities.
- The street connections to the shared-use paths aren't apparent, especially between paths and retail and commercial areas.
- There may be a need for additional trail staging areas. The OSU Medical Center parking lot often serves as a makeshift staging area for Olentangy Trail.
- Major repairs on shared-use paths can be slow.
- Lighting is not provided on most segments of the shared-use paths.
- Shared-use path width varies. A narrow width of 8' may not be wide enough to accommodate all users.
- Wayfinding is not apparent at shared-use path gaps where the shared-use path ends and users are required to use the road.
- Major signalized crossings are well-signed with regulatory signage and include pedestrian push buttons, but could be improved with infrastructure improvements.

3.7. Encouragement and Education Programs

Columbus sponsors encouragement and education programs related to bicycling. These include:

- Commit to be Fit, a health promotion program to encourage people to eat right and exercise.
- Pedal Instead, a program to provide City-sponsored secure bicycle parking corrals at summer festivals.
- The City also distributes three bicycle safety publications:
- Bicycle Safety: What Every Parent Should Know, a brochure written for parents teaching children how to bicycle. It covers most of the basic skills needed for bicycling on local streets.
- Bicyclist Survival, a general guide to bicycling for adults. The booklet discusses equipment, repairs, weather, clothing, and traffic skills.
- Street Smarts describes safe techniques for bicycling on arterial streets.

Nonprofits involved in encouraging bicycling in Columbus include:

- Columbus Outdoor Pursuits, a non-profit organization that provides outdoor recreational opportunities and training for youth and adults in central Ohio.
- Consider Biking and Simply Living are non-profit organizations working to promote bicycling.
- Central Ohio Bicycle Advocacy Coalition is a non-profit advocacy group with the mission of *"working, through education and through the building of a safe, comprehensive network of complete streets and trails to create a friendlier environment for bicycling enabling all our citizens to make bicycling part of their everyday routines."* COBAC advocates for bicycle-friendly laws and policies, recruits volunteers for Pedal Instead and other bicycle-events, and publicizes bike rides.

The following agencies provide bicycle helmets and/or brochures to train on proper fitting and education.

- Nationwide Children's Hospital implements a summer Bike Safety Program and includes bike safety and helmet use in babysitting training classes, S.A.F.E. (Safety Awareness for Everyone) and parenting classes.
- SafeKids Coalition has a grant process to purchase bicycle helmets. The grants are up to $300 one time per year.
- Center for Injury Research and Policy, Children's Hospital, provides helmets to schools and other groups. The helmets come with lessons on proper fitting, safety and education.

There is one League of American Cyclists Bicycle Instructor listed for Columbus.

COTA publishes a brochure instructing bicyclists on the use of bike racks on buses.

3.8. Multi-Modal Connections

The Central Ohio Transit Authority (COTA) supplies local bus service. COTA recently installed bike racks on all its buses. Demand for the service is clear; bicyclists have been using the racks on nearly all bus lines. Between May 2006 and April 2007, COTA saw over 35,000 weekday bicycle boardings—an average of 221 bicycle boardings each weekday. Bicycle boardings comprise 0.25% of overall ridership. Ridership data from the top ten bicycle boarding stops is shown in **Table 3-3: Top Ten COTA Bicycle Boarding Locations.**

Table 3-3: Top Ten COTA Bicycle Boarding Locations: May 2006 to April 2007

Line	Stop	Service	Average Daily Passengers	Average Daily Bicycle Boardings	Bicycle Boardings as a Percentage of Daily Boardings	Total Annual Bicycle Boardings
2	N.High St./E. Main Street	Local	10315	24	0.24%	6416
10	Broad St.	Local	6134	20	0.33%	5185
1	Cleveland/Livingston	Local	7132	16	0.23%	4340
8	Frebis Ave./Hamilton Ave.	Local	3229	8	0.27%	2278
6	Mt Vernon Ave./Sullivant Ave.	Local	2849	7	0.27%	1998
4	Indianola Ave./Parsons Ave.	Local	2413	6	0.27%	1700
3	Northwest Blvd/W.Mound St.	Local	1403	3	0.26%	943
18	Kenny Rd.	Local	904	3	0.38%	881
16	Long St/Easton	Local	2457	3	0.13%	854
7	Whittier St./Neil Ave	Local	2454	3	0.13%	852

Source: COTA Ridership Survey May 1 2006 to April 31, 2007.

Table 3-4: COTA Bike Locker Locations

Locations	Served By
Reynoldsburg Birchview near Brice Rd. & Eastgreen Blvd	#1, #45, #47
Crosswoods Off N. High St., just south of Campus View/Worthington Woods Bridge	#2, #31
Grove City Stringtown Rd. & Parkmead Dr.	#15, #64
Westwoods W. Broad St. & Westwoods Blvd./Hilliard-Rome Rd.	#10, #53
Delawanda	#2, #31, #95

Source: COTA website http://www.cota.com/bike_n_bus.asp accessed September 7, 2007.

COTA bike lockers are fully enclosed.

COTA also has a Bike & Ride program. In addition to the bikes on buses, COTA supplies bike lockers at eight park & ride facilities. Bike locker locations include eight completely enclosed bike lockers. Lockers are available for free rental on a month-to-month basis with a $10 security deposit.

3.9. Opportunities and Constraints

Columbus' physical structure presents numerous opportunities and constraints to developing a continuous, comfortable bicycle network. These are described below and summarized in **Table 3-5:** Opportunities **and Constraints**

Columbus City Jurisdiction

Due to its annexations, there are many pockets within Columbus City boundaries that are not within the City's jurisdiction. The uneven boundaries complicate funding, constructing, and maintaining continuous bikeway facilities.

Despite these challenges, the large area of the City allows Columbus to truly develop a regional bicycle network.

Physical Barriers to Continuous Bicycle Facilities

Freeways, railroads, and rivers provide barriers to bicyclists, especially those traveling east to west. Often, the crossings over these barriers are arterial roadways that have high motor vehicle volumes and high speeds. For example, Interstate 71 travels nineteen miles through Columbus. Of thirty crossings, only seven are not arterial streets (two are pedestrian bridges). Two arterials cross the Scioto River in Franklin County: Greenlawn Avenue and State Route 665. Two other crossings, at Interstate 270 and State Route 104, are closed to bicyclists.

Shared Use Path system

Columbus has an excellent shared use path system that has been developed primarily along north-south river corridors. This system provides an excellent backbone for developing the citywide bicycle network. However, the current system is not well-connected to streets. Wayfinding signage,

on-street bicycle facilities that link to the existing trails, new trail access points, and bridges to provide access over barriers could significantly improve access to the trails.

Table 3-5: Opportunities and Constraints

Opportunities	Constraints
Large jurisdiction allows Columbus to provide regional bicycle facilities.	Islands of smaller communities within Columbus mean that proposed bikeways lie within multiple jurisdictions.
Road diets may be possible on many arterials.	Freeways, rivers, and railroads are barriers throughout Columbus.
Alleys in many neighborhoods could be designed as bicycle boulevards.	City is built out, so roadway widening to provide bikeways is not generally possible
Shared use paths can be developed along railroads, highways and rivers.	Crossings over rivers and highways are limited, generally provided by arterial roadways, and usually not bicycle friendly.
Existing shared-use path provides excellent backbone for city-wide bikeway network.	East-west connections are limited by barrier crossings.
Existing bicycle route numbering system can serve as a backbone to a new, improved wayfinding system.	

Alleyways as Bicycle Boulevards

Several neighborhoods within Columbus have alley systems that could potentially be used for low-traffic, low-speed, bicycle boulevards in some neighborhoods. Neighborhoods with alleys include those built during the mid-1800's to early 1900's. These include German Village and portions of the near south; Victorian Village, Italian Village and portions of the Short North; and the Olde Towne East and Franklin Park areas on the near east as well as Clintonville, South Linden, and Hilltop areas. Alleyways in downtown Columbus provide excellent connectivity and a network can be developed by adding high-visibility crossings and speed tables where alleys cross the street system. One high-priority demonstration project in Chapter 5, the Sullivant Avenue East-West Connector, recommends developing an alleyway parallel to Sullivant Avenue as a bicycle boulevard.

Rails to Trails Opportunities

There are many opportunities for Columbus to develop shared-use paths along both abandoned and active railroad corridors. Railroad lines radiate from downtown Columbus, providing access to nearly all parts of the City. Rail-with-trail opportunities have already been identified in Westerville and Hilliard.

Figure 3-4: Opportunities and Constraints

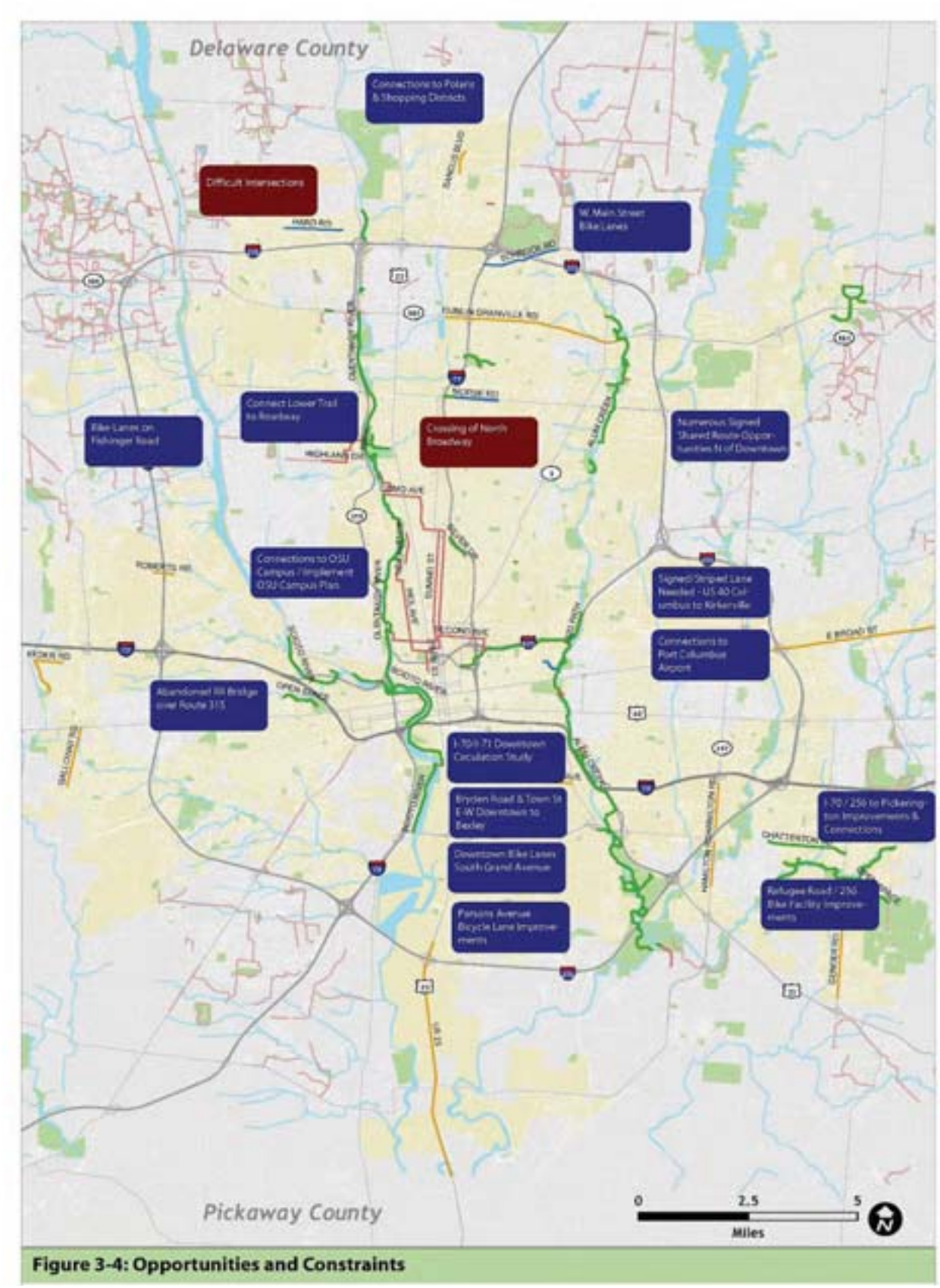


Figure 3-4: Opportunities and Constraints

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4. Needs Analysis

This chapter presents an overview of the needs of bicyclists in the City of Columbus.

4.1. Needs and Types of Bicyclists, provides general information about bicyclists. (Page 4-1)

4.2. Demand Analysis, provides an overview of the places in Columbus where bicyclists are likely to be riding, and estimates the existing demand on the system. (Page 4-4)

4.3. Benefits Analysis, describes the air quality and other benefits that may be realized with the implementation of this Bicycle Master Plan. (Page 4-8)

4.4. Collision Analysis, presents a summary and analysis of bicycle related collisions. (Page 4-13)

4.5. Public Outreach and Surveys, summarizes outreach campaigns via online surveys, the project website and public meetings. (Page 4-15)

4.1. Needs and Types of Bicyclists

The needs and preferences of bicyclists vary depending on the skill level of the cyclist and the type of trip the cyclist is taking. For example, bicyclists who bicycle for recreational purposes may prefer scenic, winding, off-street trails, while bicyclists who bicycle to work or for errands may prefer more direct on-street bicycle facilities. Child bicyclists, seniors, and adults new to bicycling may prefer shared-use paths, while adult bicyclists with many years of experience may prefer bicycle lanes. Cyclists also include utilitarian cyclists who choose to live with one less car, and people who ride because they have no other transportation option due to economic conditions. An effective bicycle network provided facilities for all user types. The following sections describe the different types of bicyclists, the different reasons for bicycling, and the respective needs of these categories of bicyclists.

4.1.1. Needs of Casual and Experienced Bicyclists

Bicyclists can be separated into two skill levels: casual and experienced. Casual bicyclists have limited bicycle-handling skills. This category includes youth and many infrequent adult riders. The majority of bicyclists are casual. Some casual bicyclists may be unfamiliar with operating a vehicle on roads and related laws. Experienced bicyclists are skilled in riding on streets with motor vehicles and vehicular operation of a bicycle. This group includes commuters, long-distance road bicyclists, racers, and many who use their bicycle as a primary means of transportation. A summary of the needs of the different types of bicyclists is provided below in **Table 4-1: Characteristics of Casual and Experienced Bicyclists**.

Table 4-1: Characteristics of Casual and Experienced Bicyclists

Casual Riders	Experienced Riders
Prefer off-street, shared-use paths or bike lanes along low-volume, low-speed streets.	Prefer on-street or bicycle-only facilities to multi-use paths.
May have difficulty gauging traffic and may be unfamiliar with rules of the road. May walk bike across intersections.	Comfortable riding with vehicles on streets. Negotiates streets like a motor vehicle, including "taking the lane" and using left-turn pockets.
May use less direct route to avoid arterials with heavy traffic volumes.	May prefer a more direct route.
May ride on sidewalks and ride the wrong way on streets and sidewalks.	Avoids riding on sidewalks or on multi-use paths. Rides with the flow of traffic on streets.
May ride at speeds comparable to walking, or slightly faster than walking.	Rides at speeds up to 20 mph on flat ground, up to 40 mph on steep descents.
Cycles shorter distances: up to 2 miles.	May cycle longer distances, sometimes more than 100 miles.

The casual bicyclist will benefit from route markers, multi-use paths, bike lanes on lower-volume streets, traffic calming, and share the road and educational programs. To encourage youth to ride, routes must be safe enough for their parents to allow them to ride.

The experienced bicyclist will benefit from a connected network of bike lanes on higher-volume arterials, wider curb lanes, and bicycle actuation at signals. The experienced bicyclist who is primarily interested in exercise will benefit from loop routes that lead back to the point of origin.

Both types of bicyclists will benefit from intersection improvements that make road crossings, easy, comfortable and quick.

Columbus' shared-use paths offer many good opportunities for casual bicyclists. However, connections between paths and residential neighborhoods need to be created. Many experienced bicyclists, including those who bicycle long distances for exercise, also use the shared-use paths within the City. This combination of fast-moving bicyclists on training rides with slower-moving casual bicyclists and pedestrians results in user conflicts.

Children bicycling in Columbus

An experienced bicyclist in traffic on Front Street

4.1.2. Characteristics of Recreational and Utilitarian Trips

Bicycle trips can be separated into two trip types: recreational and utilitarian. The majority of bicycle trips are recreational. Recreational trips can range from 50-mile weekend group rides along rural roads, to a family outing along the Alum Creek Trail, and all levels in between. Utilitarian trips include commuter bicyclists, which are a primary focus of state and federal bicycle funding, as well as bicyclists going to school, shopping, or running other errands. Utilitarian cyclists include those

who choose to live with one less car, as well as those who cannot afford a car. Please see **Table 4-2: Characteristics of Recreational and Utilitarian Trips**.

Table 4-2: Characteristics of Recreational and Utilitarian Trips

Recreational Trips	Utilitarian Trips
Directness of route not as important as visual interest, shade, protection from wind.	Directness of route and connected, continuous facilities more important than visual interest, etc…
Loop trips may be preferred to backtracking.	Trips generally travel from residential to shopping or work areas and back.
Trips may range from under a mile to over 50 miles.	Trips generally are 1-5 miles in length.
Varied topography may be desired, depending on the skill level of the cyclist.	Flat topography is desired.
May be riding in a group.	Often ride alone.
May drive with their bicycles to the starting point of a ride.	Use bicycle as primary transportation mode for the trip; may transfer to public transportation; may or may not have access to a car for the trip.
Trips typically occur on the weekend or on weekdays before morning commute hours or after evening commute hours.	Trips typically occur during morning and evening commute hours (commute to school and work) and on weekends.
Type of facility varies, depending on the skill level of cyclist.	Generally use on-street facilities, may use pathways if they provide easier access to destinations than on-street facilities.

Recreational bicyclists' needs vary depending on their skill level. Road bicyclists out for a 100-mile weekend ride may prefer well-maintained roads with wide shoulders and few intersections, and few stop signs or stop lights. Casual bicyclists out for a family trip may prefer a quiet shared use path with adjacent parks, benches, and water fountains.

Utilitarian bicyclists have needs that are more straightforward:

- Bike routes should be direct, continuous, and connected.
- Wayfinding signage that includes destinations and distance are useful.
- Intersections should accommodate bicyclists through improvements such as bicycle actuated signals, turn pockets, advance bicycle boxes, and advance bike signals.
- Bicycle commuters must have secure places to store their bicycles at their destinations.
- Bicycle facilities should be provided on arterials.

Columbus' trail system provides excellent access to the downtown core and to The Ohio State University from neighborhoods along the Olentangy River Trail. However, not all neighborhoods have easy bicycle access to employment centers, schools and shopping. For the casual recreational rider, this may not be a serious deterrent, since they would be willing and able to drive their bicycle to a trailhead. However, this may not be an option for the experienced recreational rider or the commuter, as they generally would like to use their bicycle for the whole trip.

To increase the number of people who ride their bike for everyday activities, a continuous network of low-speed, bicycle-friendly streets should be developed.

4.2. Demand Analysis

This section uses a variety of demand models to estimate the usage of Columbus' existing bicycle facilities, and to estimate the potential usage of new facilities. The models used for this study incorporate information from bicycle research as well as data from the U.S. Census. Data assumptions and sources are footnoted in the tables. These models give an estimate of existing bicycle activity levels and geographic distribution of bicycling.

The model results are used to plan bicycle facilities that serve high-demand and high-activity-level areas and to prioritize the implementation of bicycle facilities.

4.2.1. Existing Bicycle Demand

The City of Columbus bicycle demand model uses bicycle mode share, student population and transit ridership to estimate the total number of daily bicycle trips in Columbus. The study area includes all residents within the City of Columbus and is calculated using 2005 data. Data regarding the existing labor force (including number of workers and percentage of bicycle commuters) was obtained from the 2005 Census and American Community Survey. **Figure 4-1: 2005 Journey to Work Data, City of Columbus, Ohio** shows estimated commuter patterns in Columbus for 2005.

Subject	Total	Margin of Error	Male	Margin of Error	Female	Margin of Error
Workers 16 years and over	336,964	+/-6,918	174,097	+/-4,783	162,867	+/-4,513
MEANS OF TRANSPORTATION TO WORK						
Car, truck, or van	91.6%	+/-0.7	91.3%	+/-1.0	92.0%	+/-1.0
Drove alone	82.7%	+/-1.1	81.8%	+/-1.4	83.8%	+/-1.4
Carpooled	8.9%	+/-0.9	9.5%	+/-1.2	8.2%	+/-1.1
In 2-person carpool	6.7%	+/-0.7	6.6%	+/-0.8	6.9%	+/-1.0
In 3-person carpool	1.1%	+/-0.4	1.3%	+/-0.6	0.8%	+/-0.4
In 4-or-more person carpool	1.1%	+/-0.4	1.6%	+/-0.7	0.5%	+/-0.3
Workers per car, truck, or van	1.15	+/-0.01	1.16	+/-0.02	1.14	+/-0.01
Public transportation (excluding taxicab)	2.9%	+/-0.4	3.1%	+/-0.6	2.6%	+/-0.6
Walked	1.6%	+/-0.4	1.8%	+/-0.5	1.5%	+/-0.4
Bicycle	0.6%	+/-0.2	0.9%	+/-0.4	0.2%	+/-0.2
Taxicab, motorcycle, or other means	0.4%	+/-0.1	0.5%	+/-0.2	0.3%	+/-0.2
Worked at home	2.8%	+/-0.4	2.4%	+/-0.6	3.1%	+/-0.6

Figure 4-1: 2005 Journey to Work Data, City of Columbus, Ohio

Source: US Census, American Community Survey, 2005

Journey to work trends from the U.S. Census (**Table 4-3: Journey to Work Trends, Columbus, OH**) show that the percentage of people primarily commuting to work by bicycle has slightly increased since 1990. This is notable, since nationwide trends show that bicycle commute mode share has decreased in most areas. The slight increase in bicycle mode share in Columbus may be a result of the number of shared use paths the City built in the 1990's, and may also be attributed to COTA placing bike racks on its buses.

Table 4-3: Journey to Work Trends, Columbus, OH

City of Columbus, Ohio					
Means of Transportation to Work	**2005 Estimate**			**2000**	**1990**
Bicycle	0.6%	+/-	0.2%	0.3%	0.4%
Walked	1.6%	+/-	0.4%	3.2%	4.2%
Worked at home	2.8%	+/-	0.4%	2.3%	1.8%
Transit	2.9%	+/-	0.4%	3.9%	4.6%
Percentage of Commute Trips not in Private Vehicles	8.0%	+/-	1.4%	9.8%	11.0%

Source: U.S. Census Bureau, American Fact Finder, 2000 Summary File 3and 1990 Summary Tape File, and American Community Survey, 2005 Summary Tables, Generated by Alta Planning + Design.

Table 4-4: Aggregate Estimate of Existing Daily Bicycling Activity in Columbus, OH summarizes the estimated number of bicycle trips made each day in Columbus. The table indicates that over 126,000 trips are made on a daily basis. The model also shows that non-commuting trips comprise the vast majority of existing bicycle demand.

Table 4-4: Aggregate Estimate of Existing Daily Bicycling Activity in Columbus, OH

Variable	Figure	Calculations
Employed Adults, 16 Years and Older		
a. Study Area Population [1]	730,657	
b. Employed Persons [2]	336,964	
c. Bicycle Commute Mode Share [2]	0.60%	
d. Bicycle Commuters	2,022	(b*c)
e. Work-at-Home Percentage [2]	2.80%	
f. Work-at-Home Bicycle Commuters [3]	4,717	[(b*e)/2]
School Children		
g. Population, ages 6-14 [4]	92,063	
h. Estimated School Bicycle Commute Mode Share [5]	2%	
i. School Bicycle Commuters	1,841	(g*h)
College Students		
j. Full-Time College Students [6]	82,102	
k. Bicycle Commute Mode Share [7]	10%	
l. College Bicycle Commuters	8,210	(j*k)
Work and School Commute Trips Sub-Total		
m. Daily Bicycle Commuters Sub-Total	16,790	(d+f+i+l)
n. Bike on Bus Boardings (Average Daily) [8]	213	(m+i)
o. Daily Bicycle Commute Trips Sub-Total	34,006	((m+n)*2)
Other Utilitarian and Discretionary Trips		
p. Ratio of "Other" Trips in Relation to Commute Trips [9]	2.73	ratio
q. Estimated Non-Commute Trips	92,837	(o*p)
Total Estimated Daily Bicycle Trips	**126,844**	(o+q)

Notes:

Census data collected from 2005 U.S. Census, American Community Survey for City of Columbus, OH.

(1) 2005 U.S. Census, American Community Survey STF3, P1.
(2) 2005 U.S. Census, American Community Survey S0801. Full time workers over age 16.
(3) Assumes 50% of population working at home makes at least 1 daily bicycle trip.
(4) 2005 U.S. Census, American Community Survey S0101
(5) Estimated share of school children who commute by bicycle, as of 2000 (source: National Safe Routes to School Surveys, 2003).
(6) Fall 2006 full-time enrollment (The Ohio State University, Franklin University, Columbus State)
(7) Review of bicycle commute mode share in 7 university communities (source: National Bicycling & Walking Study, FHWA, Case Study #1, 1995).
(8) Average Number of Daily Bike Boardings on COTA Transit for the Period of May 1, 2004 through April 30, 2007 – 0.25% of all boardings Source: Central Ohio Transit Authority
(9) 27% of all trips are commute trips (source: National Household Transportation Survey, 2001).

In addition to people commuting to the workplace via bicycle, the model incorporates a portion of the labor force working from home. It was assumed that half of those working from home would make at least one bicycling or walking trip during the workday. Data from the 2005 American Community Survey was used to estimate the number of children in Columbus. This figure was combined with data from National Safe Routes to School surveys to estimate the proportion of children riding bicycles to and from school. Enrollments from The Ohio State University, Franklin State University and Columbus State were used to estimate college populations. Data from the Federal Highway Administration regarding bicycle mode share in university communities was used to estimate the number of students bicycling to and from these campuses. Bicycle trips associated with transit were estimated from COTA's bicycle boarding surveys. Finally, data regarding non-commute trips was obtained from the 2001 National Household Transportation Survey to estimate bicycle trips not associated with traveling to and from school or work.

4.2.2. Geographic Distribution of Bicycle Demand

To guide route selection and prioritization process, we looked at the geographic distribution of bicycle demand. Two maps were generated: **Figure 4-2: Areas with Potential for High Bicycling in Columbus**, which uses 2000 Census data to indicate locations that have populations that are likely to bike, and **Figure 4-3: Destination Density**, which indicates the areas that are likely to attract bicyclists. These maps are representative of current conditions, and may change based on changes in demographics, land use, and destinations.

The variables used to generate Figure 4-2 are listed in **Table 4-5: Factors used to Estimate Areas with High Potential for Bicycling.** Census data was used to calculate population density (population per block group), household density (number of dwelling units per acre), and socio-economic factors that may affect bicycle ridership (density of college students and density of zero-car households, percentage of commute trips under nine minutes, percentage of people who bike to work).

To develop Figure 4-3, regional land use data was used and weighted by trip percentages established from a 2000 MORPC travel survey. Factors that were included in the map are: density of shopping centers, parks, recreational areas, employment areas, schools, and places of worship. The characteristics are indicated below in **Table 4-6: Factors Used to Calculate Destination Density**.

Table 4-5: Factors used to Estimate Areas with High Potential for Bicycling

Factor	Source	Calculation	Rational for Calculation
Estimated number of bicycles from Households with No Vehicles (Block Group)	US Census 2000	Number of no Vehicle Households * 10% * Average people per HH	"About 10% of households that don't own a motorized vehicle make bike trips in a given day, compared to 4% of vehicle-owning households." From University of MN fact page[1]
Housing Units Per Acre (block group)	US Census 2000	0 to 5 hh/acre = -5 5.1 to 9.9 HH/acre = 0 10 to 13.9 hh/acre= 5 points 14 to 28 hh/acre=10 points	Walking rates only start to increase at residential densities over 14 households per acre.
Estimated number of people with commute under nine minutes that convert to biking (block group)	US Census 2000	number of people * 0.1	9 minute car ride at 32 mph (national average per NHTS) is equal to 4.6 mile bike ride. Assuming 10% can be captured to bike
Estimated number of adults who bicycle every day (block group)	US Census 2000	Population over 18 *(0.3% + 1.5*bicycle commute mode share)	Based on formula derived from University of Minnesota Study (Barnes & Krizek)

/1 http://www.hhh.umn.edu/centers/slp/bike_basicfacts.html accessed July 8, 2007

Table 4-6: Factors Used to Calculate Destination Density

Type of Attractor	Land Uses	Source	Weight (percent of trips)
Family & Personal Business	Public Services Shopping Centers	Franklin Co. Auditor	0.54
Social & Recreational	Cultural Sites Fairgrounds Museums Music & Sports Venues Parks and Rec (weighted .5)	MORPC MORPC MORPC MORPC MORPC	0.12
Work and Work Related	Government Bldgs Office Parks Office Towers	MORPC MORPC MORPC	0.22
School & Church	Schools Places of Worship	Franklin Co. Auditor Franklin Co. Auditor	0.12

Weights of each location are calculated based on the MORPC trip percentages from the 2000 Travel Survey. The MORPC survey found that all trips in the region could be broken down into the following percentages:

36% Family & Personal Business
33% Home
12% To work
8% School and Church
8% Social and Recreational
3% Work related

To calculate the weighting factors in the destination density model, the home trips were removed (this model focuses on non-home activity centers), work and work-related were combined, and the relative weights of the locations were adjusted to account for the fact that home trips were removed.

The results of these models were used as one of several criteria used to prioritize proposed bicycle facilities. A full discussion of the prioritization is included in Chapter 7.

4.3. Benefits Analysis

4.3.1. Air Quality Benefits

Non-motorized travel directly and indirectly translates into fewer vehicle trips, and an associated reduction in vehicle miles traveled and auto emissions. Working from the estimate of existing daily bicycle trips described in table 4-4, we can calculate the estimated benefits of bicycle riding in Columbus.

Assumptions were used to estimate the number of reduced vehicle trips and vehicle miles traveled, as well as vehicle emissions reductions. In terms of reducing vehicle trips, it was assumed that 73 percent of bicycle trips taken by adults and college students would replace vehicle trips, and 53 percent of bicycle trips taken by schoolchildren would replace vehicle trips. To estimate the reduction of existing and future vehicle miles traveled, a bicycle roundtrip distance of eight miles was used for adults and college students; and one mile for schoolchildren. For pedestrian trips, a roundtrip distance of 1.2 miles was used for adults and college students, and a 0.5 mile distance was used for children.

Estimating future benefits requires assumptions regarding the City of Columbus' population and anticipated commuting patterns. According to the U.S. Census, approximately 336,967 people are currently employed in the City. A future workforce population of 400,000 was used to reflect current overall population growth trends. In terms of commuting patterns, the walking and bicycling mode shares were increased to address higher use potentially generated by the addition of new bikeway facilities and enhancements to the existing system. The estimated proportion of residents working from home was also grown slightly.

Figure 4-2: Areas with Potential for High Bicycling Use in Columbus, OH

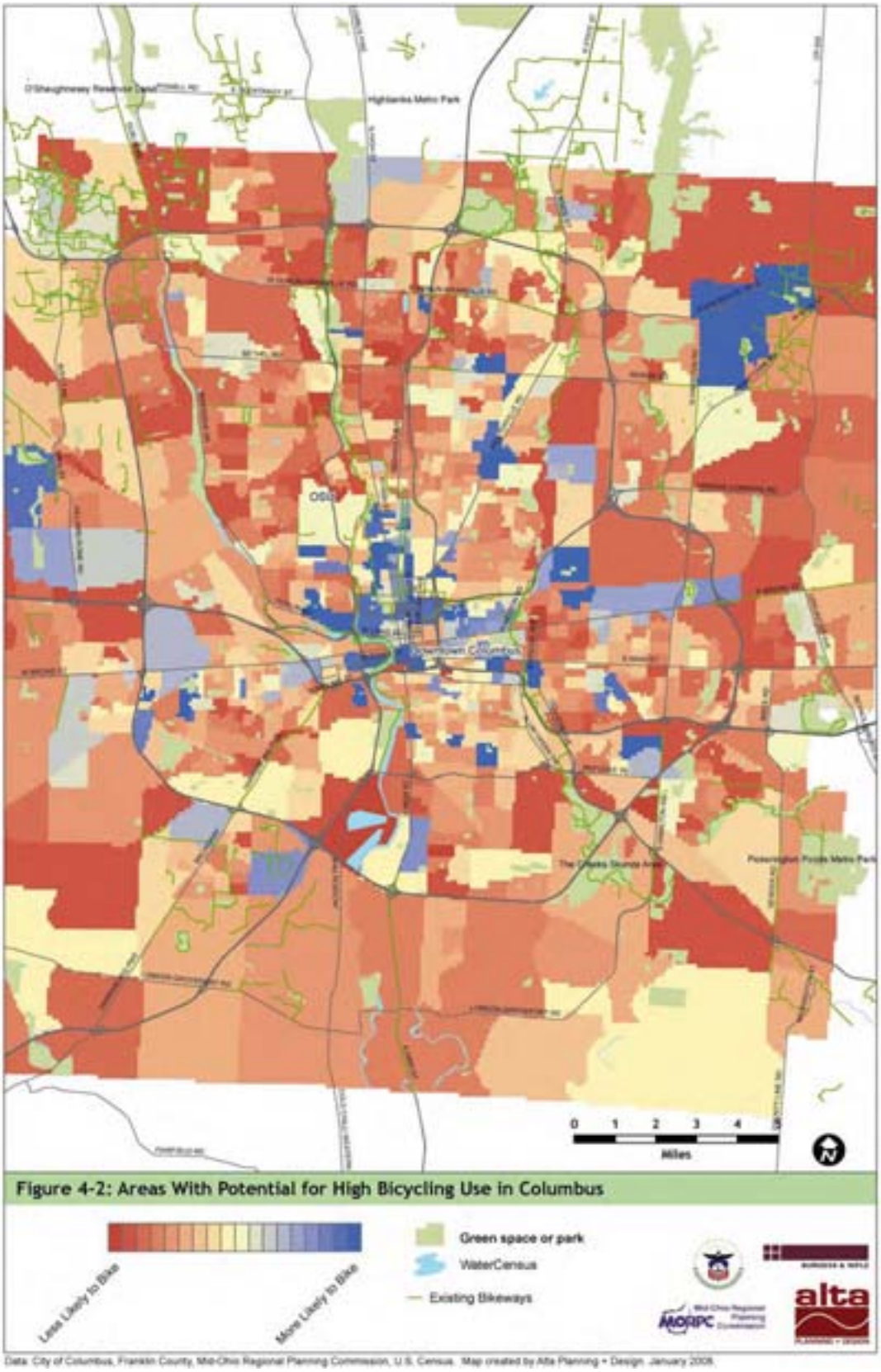

Figure 4-3: Destination Density

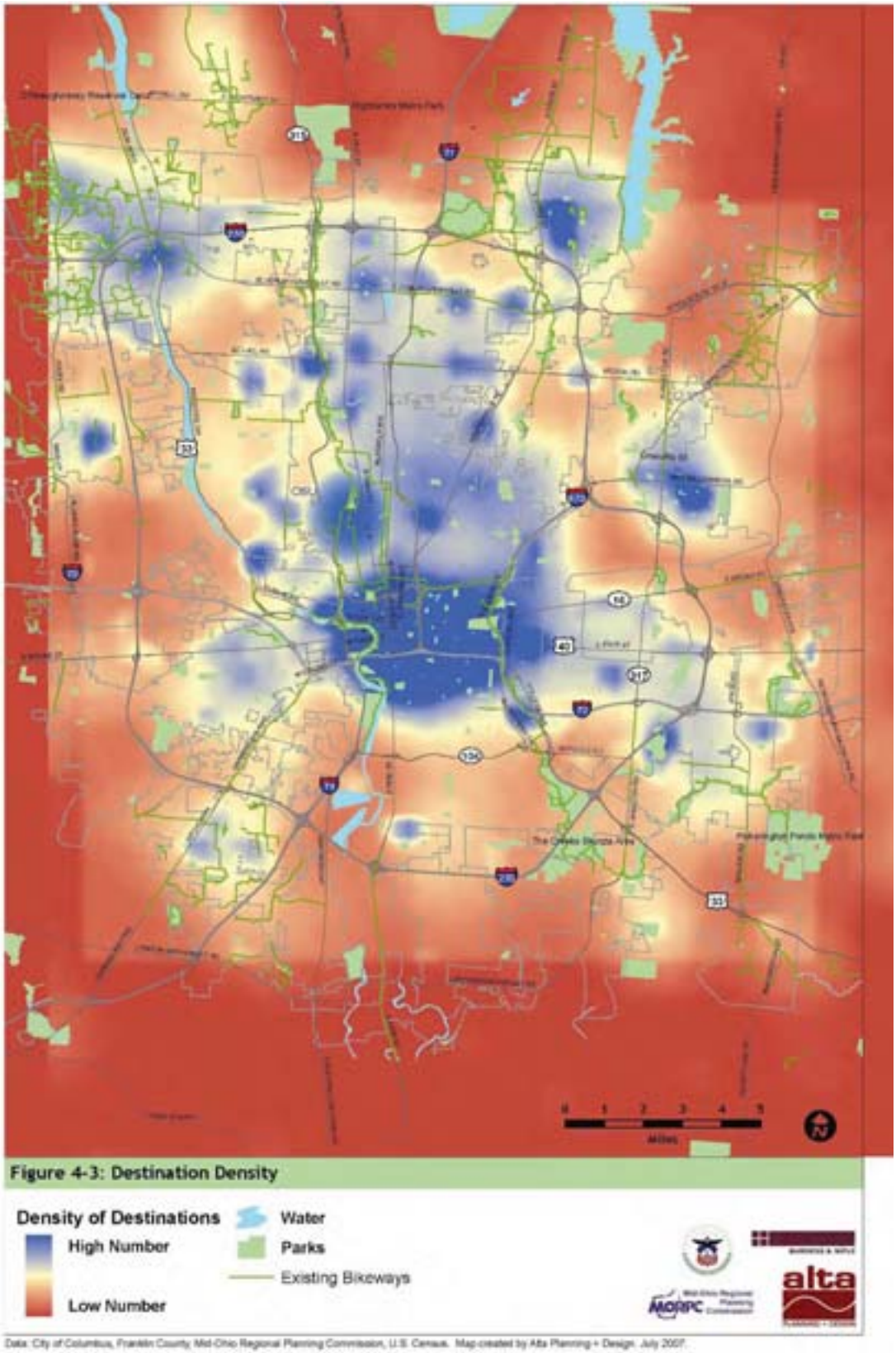

Table 4-7: Existing and Potential Future Air Quality Benefits summarizes existing and potential future air quality improvements associated with bicycling and walking in Columbus. Combined, bicycling and walking currently replace about 100,900 weekday vehicle trips, eliminating over 160,500 vehicle miles traveled. Bicycling and walking also save nearly 95,000 tons of vehicle emissions from entering the atmosphere each weekday.

It should be noted that this model only addresses commute-related trips. Unlike the demand models, this model does not account for air quality improvements associated with recreational non-motorized travel. If we consider recreational biking and walking, it is likely that the benefits are higher than those indicated in Table 4-7.

Table 4-7: Existing and Potential Future Air Quality Benefits

	Bicycle		Pedestrian	
Vehicle Travel Reductions	**Existing**	**Future**	**Existing**	**Future**
Reduced Vehicle Trips per Weekday (1)	19,357	173,611	81,586	111,241
Reduced Vehicle Trips per Year (2)	5,052,048	8,543,082	21,294,051	29,033,815
Reduced VMT per Weekday (3)	97,210	179,775	63,298	97,002
Reduced VMT per Year (2)	25,371,783	46,921,356	16,520,746	25,317,507

	Bicycle		Pedestrian	
Vehicle Emissions Reductions	**Existing**	**Future**	**Existing**	**Future**
Reduced PM_{10} (tons per weekday) (4)	1,789	3,308	1,165	1,785
Reduced NO_X (tons per weekday) (5)	48,488	89,672	31,573	48,385
Reduced ROG (tons per weekday) (6)	7,057	13,052	4,595	7,042
Reduced PM_{10} (tons per year) (7)	466,841	863,353	303,982	465,842
Reduced NO_X (tons per year) (7)	12,655,445	23,404,372	8,240,548	12,628,372
Reduced ROG (tons per year) (7)	1,841,991	3,406,490	1,199,406	1,838,051

Note: VMT means Vehicle Miles Traveled

(1) Assumes 73% of bicycle trips replace vehicle trips for adults/college students; 53% reduction for school children.
(2) Weekday trip reduction multiplied by 261 weekdays per year.
(3) Bicycle trips: assumes average roundtrip of 8 miles for adults/college students; 1 mile for school children. Pedestrian trips: assumes average roundtrip of 1.2 miles for adults/college students; 0.5 mile for school children.

(4) PM_{10} reduction of 0.0184 tons per mile.
(5) NO_X reduction of 0.4988 tons per mile.
(6) ROG reduction of 0.0726 tons per mile.
(7) Weekday emission reduction multiplied by 261 weekdays per year.

4.3.2. Other Benefits

Bicycling and walking generate benefits beyond air quality improvements. Non-motorized transportation can also serve recreational purposes, improve mobility and improve health. The National Pedestrian and Bicycle Information Center's "*BikeCost*" model quantifies these benefits. Though focused primarily on bicycling, the model provides a starting point for identifying the potential cost savings of improving and expanding Columbus' bikeway facilities.

Several modeling assumptions should be discussed. First, the *BikeCost* model is project-specific, requiring specific information regarding project type, facility length and year of construction. Because this study focuses on a larger study area, several variables were used. The model is based on an addition of 100 miles of bikeway improvements with an expected 2016 "mid year" of construction. The model requires data from the 2005 U.S. Census, including bicycle commute mode share, average population density, and average household size.

Based on the variables described above, the *BikeCost* model estimates annual recreational, mobility and health benefits listed in Table 4-8.

Table 4-8: Estimated Aggregate Annual Benefits of an Enhanced Bikeway Network

Recreational Benefits (1)	**Low Estimate**	**Mid Estimate**	**High Estimate**
	$21,232,138	$203,918,870	$312,157,597

Mobility Benefits (2)	**Per-Trip**	**Daily**	**Annually**
	$3.17	$32,290	$7,588,157

Health Benefits (3)	**Low Estimate**	**Mid Estimate**	**High Estimate**
	$1,093,105	$7,499,654	$11,295,423

Decreased Auto Use	**Urban**	**Suburban**	**Rural**
	$16,633,132	$10,235,774	n/a

Source: Benefit-Cost Analysis of Bicycle Facilities ("*BikeCost*") Model, Pedestrian and Bicycle Information Center.

(1) Recreational benefit estimated at $10 per hour (based on previous studies). Assumes one hour of recreation per adult. $10 value multiplied by the number of new cyclists minus the number of new commuters. This value multiplied by 365 days to estimate annual benefit.
(2) Assumes an hourly time value of $12. This value multiplied by 20.38 minutes (the amount of extra time bicycle commuters are willing to travel on an off-street path). Per-trip benefit was then multiplied by the daily number of existing and induced commuters. This value then doubled to account for roundtrips, to reach daily mobility benefit. Daily benefit then multiplied by 50 weeks per year and 5 days per week.
(3) Annual per-capita cost savings from physical activity of $128 based on previous studies. This value then multiplied by total number of new cyclists.

Table 4-8: Estimated Aggregate Annual Benefits of an Enhanced Bikeway Network summarizes the estimated benefits of an enhanced bikeways system in the City of Columbus. Except for mobility benefits, the model outputs are represented on an aggregate basis. Potential annual recreational benefits range from a low estimate of about $21 million to a high estimate of over $312 million. Annual health benefits range from about $1 million to over $11 million. Mobility benefits were estimated on a per-trip, daily and annual basis. The roughly $3 per-trip benefit of off-street trails could translate to an annual benefit of over $7 million. Decreased auto usage could also generate monetary benefits. The enhanced network could generate nearly $27 million in annual savings from reduced vehicle trips.

4.4. Collision Analysis

Safety is a major concern for bicyclists and is commonly cited as one of the most compelling reasons not to bicycle.

Nationwide, the total number of reported cyclist fatalities has dropped dramatically since 1994, with 802 fatalities reported in 1994 and 725 fatalities reported in 2004[15]. In comparison, total traffic fatalities have increased by 5% over this ten-year period.[16]

The same study shows that in 2004, of all Ohio traffic fatalities, 1.5% were cyclist fatalities. This is lower than the nationwide average of 2%. Bicyclist fatalities in Ohio represent a fatality rate of 1.66 per million people.

According to a 1990 study of 3,000 bicycle crashes, the most common type of bicycle-vehicle crash was one where the motorist failed to yield right-of-way at a junction (22% of all crashes)[17]. More than a third of these involved a motorist violating the sign or signal and driving into the crosswalk or intersection and striking the bicyclist. The next most common types of vehicle-bicycle crash were where the bicyclist failed to yield right-of-way at an intersection (17%), a motorist turning or merging into the path of a cyclist (12%), and a bicyclist failing to yield right-of-way at a midblock location.

These data suggest that a bicycle safety plan should address intersection improvements and education about the rights and responsibilities of cyclists and motorists, especially regarding right-of-

[15] Cyclist crash data is produced from Police reports. It is likely that the true number of crashes that result in injury or fatality is significantly higher.
[16] Traffic Safety Facts, 2004 Data. "Pedalcyclists" NHTSA, DOT # HS 809 912
[17] Pedestrian and Bicycle Crash Types of the Early 1990's, Publication No. FHWA-RD-95-163, W.H. Hunter, J.C. Stutts, W.E. Pein, and C.L. Cox, Federal Highway Administration, Washington, DC, June, 1996.

way laws. Intersection improvements are especially important where driveways and roadways cross parallel bicycle paths

4.4.1. Regional Bicycle Master Plan Collision Analysis

An extensive collision analysis for the years 2000-2004 was conducted by MORPC for the *2006 Regional Bicycle Transportation Facilities Plan.* The majority of bicycle crashes within Franklin and Delaware Counties occurred in Columbus, with concentrations near the downtown areas. Specific corridors of high collision rates were identified for the region. The top ten bicycle crash streets are identified in **Table 4-9: The Top 10 Bicycle Crash Streets (2000-2004).** Maps of the top ten crash locations are provided in **Appendix B**.

Table 4-9: The Top 10 Bicycle Crash Streets (2000-2004)

Road	Bike Crashes	Mileage	Crash Per Linear Mile	Annual Crash Per Linear Mile	Functional Classification
High St – Downtown to Morse Rd	105	7.15	14.7	2.9	Urban Principal Arterial
Parsons Ave – Groveport Rd to Livingston Ave	29	2.33	12.4	2.5	Urban Minor Arterial
Broad St – I-270 (West) to Ohio Ave	67	7.98	8.4	1.7	Urban Principal Arterial
Sullivant Ave – Georgesville Rd to Davis Ave	35	4.95	7.1	1.4	Urban Minor Arterial
Cleveland Ave - Downtown to Morse Rd	39	7.02	5.6	1.1	Urban Principal Arterial
Main St – Ohio Ave to Reynoldsburg	49	9.34	5.2	1.0	Urban Principal Arterial
Livingston Ave – Downtown to Hamilton Rd	30	6.18	4.9	1.0	Urban Principal Arterial
Mound St – Hague Ave to Souder Ave	12	2.95	4.1	0.8	Urban Minor Arterial
Champion Ave – Marion Rd to Leonard Ave	15	3.86	3.9	0.8	Urban Principal Arterial
5th Ave – US 33 to I-71	14	4.41	3.2	0.6	Urban Minor Arterial

Source: MORPC 2006 *Regional Bicycle Transportation Facilities Plan,* April 2007, page 31.

4.4.2. Common Causes of Bicycle Crashes in Columbus

Bicycle crashes in Columbus, Ohio were reviewed using data provided by the Ohio Department of Public Safety. The data consisted of 1,053 bicycle reports in Columbus from 2000 through 2004. Every crash analyzed involved an instance where a bicyclist interacted with some type of motor vehicle. It is important to note that crash data is usually based on accident reports from a reporting municipality police agency. Crash data does not include collisions that were not reported to the police department, and are therefore likely to undercount crashes and to over-represent severe crashes.

Overall, the number of bicycle crashes in Columbus has been decreasing. In 2000, 216, or 20% of all collisions, involved bicyclists, while in 2004, 185 collisions, or 18% of all collisions involved bicyclists. According to a 2004 National Highway and Traffic Safety Administration study, national crash rates for bicyclists are 140 per million population injured and 2.47 per million population killed.[18] Columbus' crash rate for 2000 through 2004 is 368 per million injured and 1.75 per million killed.

Overall, the location of the bicyclist when struck was not indicated or was listed as "unknown" in 610 of the 1,053 bicycle crashes in Columbus during the study period. Of the known locations, 249, or 24 percent of the crashes, were classified simply as "In roadway" accidents. Crashes classified as "Marked crosswalk at intersection" numbered 72 crashes, or 6.8 percent. Crashes classified as "At intersection, but no crosswalk" numbered 69 crashes, or 6.5 percent.

"Failure to yield" by motorist was the most common contributing factor for motorist-fault determined crashes (12 percent or 125 crashes). For crashes determined to be the fault of the bicyclist, "Improper crossing" was listed in 111 crashes, followed by bicyclist failure to yield in 99 crashes. In over 30 percent of the crashes, the bicyclist contributing factor was listed as "unknown". Drug and alcohol use was listed as a separate factor in the crash reports, and was a factor in about 2 percent of the overall crashes for bicyclists.

Injury, and in some cases death, resulted from motor vehicle-bicyclist crashes. Eighty percent of the bicycle-related crashes resulted in some type of injury and the percentage of "incapacitating" crashes was 8%. Throughout the four-year period, 5 cyclists were killed in crashes.

Most of the crashes occurred under ideal conditions; roads were straight and level, dry, and well lit if the crash occurred at night. Specific routes, such as High and Broad Streets were common crash locations. **Appendix C: Bicycle Crash Breakdown 2000 through 2004** contains collision tables.

In addition to these crashes, anecdotal evidence has indicated that there have been several incidents of assault on bicyclists. These assaults are generally not reported in collision reports, but should be tracked.

4.5. Public Outreach and Surveys

The primary outreach methods employed to gather information regarding existing bicycle use within in City of Columbus were public meetings, manual bicycle counts, and an on-line survey. These are

[18] NHTSA *Traffic Safety Facts, 2004 Data, Pedalcyclists*

described below. Appendix D summarizes the public outreach process, lists the most common comments received, and provides a summary of the count and survey results.

4.5.1. Public Outreach

Public outreach for this plan included press releases, news articles, a ride with Mayor Coleman, two well-attended public meetings and an open stakeholders meeting. People were also invited to comment on the draft versions of this plan. Public input received from the meetings and the survey were used to develop a list of roadways requested for bicycle facilities. This list was used in developing the recommended bikeway network and as a criteria in the facility prioritization.

Several public meetings were held during the development of this plan:

June 7, 2007 – First public meeting is held, stakeholder meeting is held.

June 26, 2007— Mayor Coleman announces the launch of the Columbus Bicentennial Bikeway Master Plan.

September 26, 2007 – Second public meeting held.

December 14, 2007 – Open stakeholder meeting is held.

The public was able to comment on the Draft Plan through January 11, 2008.

4.5.2. Bicycle Counts

The City of Columbus conducted bicycle counts at several locations in July 2007. Bicycle count methodology was based on the Bicycle and Pedestrian National Documentation research initiated by Institute of Transportation Engineers Pedestrian and Bicycle Council. Weekday counts were collected between 7 am and 9 am and between 11 am and 1 pm. Counts were primarily conducted on on-street facilities, but included one location on the Olentangy River Trail. A total of 124 bicyclists and 1,123 pedestrians were counted during the morning peak period, and 121 bicyclists and 3,376 pedestrians counted during the mid-day period. A summary of counts at each location is included as **Appendix D.**

4.5.3. On-Line Survey

An on-line survey was developed in combination with the City of Columbus & MORPC and was launched in conjunction with the first day of the bicycle counts. The purpose of the survey was to gather more detailed information on bicycling within the City of Columbus.

The City of Columbus Bikeways survey was open from May 11th, 2007 through August 17th, 2007. In that time period, 917 people either completed the on-line survey or filled out and returned a paper copy of the survey. The survey asked questions about where bicyclists are from, how much they ride, reasons that they ride, where they like to ride, where they don't like to ride, and suggestions for improving bicycling within the City.

General Trends of Survey

Of the 917 survey respondents, the dominant age group is 26-69 (72%). When asked why they bike, most cited for recreation (88%) or for exercise (87%). There is a discrepancy between why respondents currently bike and where they would like to bike. For example, although about half of the respondents indicated that they bike to get to work, 73% responded that they would like to bike to work. Similarly, 9.9% ride to connect to transit, while 25.1% indicated they would like to bike to connect to a transit stop.

When asked how often they bike, half of the respondents indicated that they ride their bikes several times a week, while 21% indicated that they ride everyday. The range for the average distance of bike rides varies considerably: 28% ride 3-5 miles, 23% ride 11-24 miles, and 21% ride 6-10 miles. The most frequently cited reasons that prevents bikers from biking more often are lack of bike facilities near their residences (67%) and too many cars/motorists drive too fast (67%).

The top three most cited projects that respondents would like to see included in the City of Columbus Bicycle Master plan are: 1. on-road bike lanes or paved shoulders (85%), 2. new paved shared-use paths (76%), and 3. bicycle parking (59%). Similarly, when asked to rank their preference for bicycle facilities, respondents cited paved, shared-use paths and on-street bike lanes as their most preferred.

Finally, when asked if their school has a Safe Routes to School Program, only 5% responded "yes," while 30% responded "no" and 65% responded "n/a."

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5. Recommended Bicycle Network and Infrastructure Programs

Chapters 5 and 6 provide a blueprint for how the City of Columbus can accommodate, plan for, and promote bicycling. Chapter 5 focuses on infrastructure improvements, including the recommended on-street and off-street bicycle network, recommended maintenance, bike parking, and other programs. Chapter 6 focuses on education, encouragement, and enforcement programs.

Chapter 5 is divided into the following sections:

5.1. Recommended Bicycle Network outlines how the bicycle network was developed, and includes a map and description of the proposed bicycle network for the City of Columbus. (Page 5-1)

5.2. Bicycle Parking and Support Facilities presents recommended programs for improving bicycle parking and other support facilities. (Page 5-11)

5.3. Maintenance and Operations describes a preferred maintenance program to ensure that bicycle facilities are well maintained. (Page 5-13)

5.4. Bicycle-Actuated Traffic Signals describes preferred treatments for accommodating bicycles at signalized intersections. (Page 5-17)

5.5. Spot Improvement Programs outlines three programs to reduce barriers to bicycling: intersection improvements, railroad crossing improvements, and bridge and tunnel access. (Page 5-19)

5.7 High-Priority Demonstration Projects presents detailed diagrams, descriptions, and Cost Opinions for demonstration bicycle projects. (Page 5-22)

5.1. Recommended Bicycle Network

This plan envisions an interconnected network of well-designed, well-signed, and well-maintained bicycle facilities that serve all sections of Columbus, allow people to bicycle for recreation, and to reach major destinations within the City by bicycle. The final recommended network sets up a grid system of bikeways that are approximately 1 mile apart in outlying areas and approximately half a mile apart in the central areas of the city.

5.1.1. Project Development

The project development process began with the review and documentation of the existing bicycle network, facilities, and programs. Bicycle maps and planning documents from the City of Columbus and the Mid-Ohio Regional Planning Commission were used to develop the preliminary network. The final recommended network sets up a grid system of bikeways that are approximately 1 mile apart in outlying areas and approximately half a mile apart in the central areas of the city.

After the recommended network was finalized, each segment was reviewed to designate a recommended type of bicycle facility. Recommended bikeway types were selected using high-resolution aerial photos, posted speeds (MORPC GIS data 2006), average daily vehicle traffic (MORPC, 1995-2004), and planned roadway projects included in MORPC's 2030 Transportation Plan. Field visits were conducted at selected sites.

After identifying the proposed network, demonstration projects were identified and additional review of these projects was conducted to provide more detailed recommendations. These demonstration projects are listed at the end of this chapter.

5.1.2. Recommended Bicycle Network

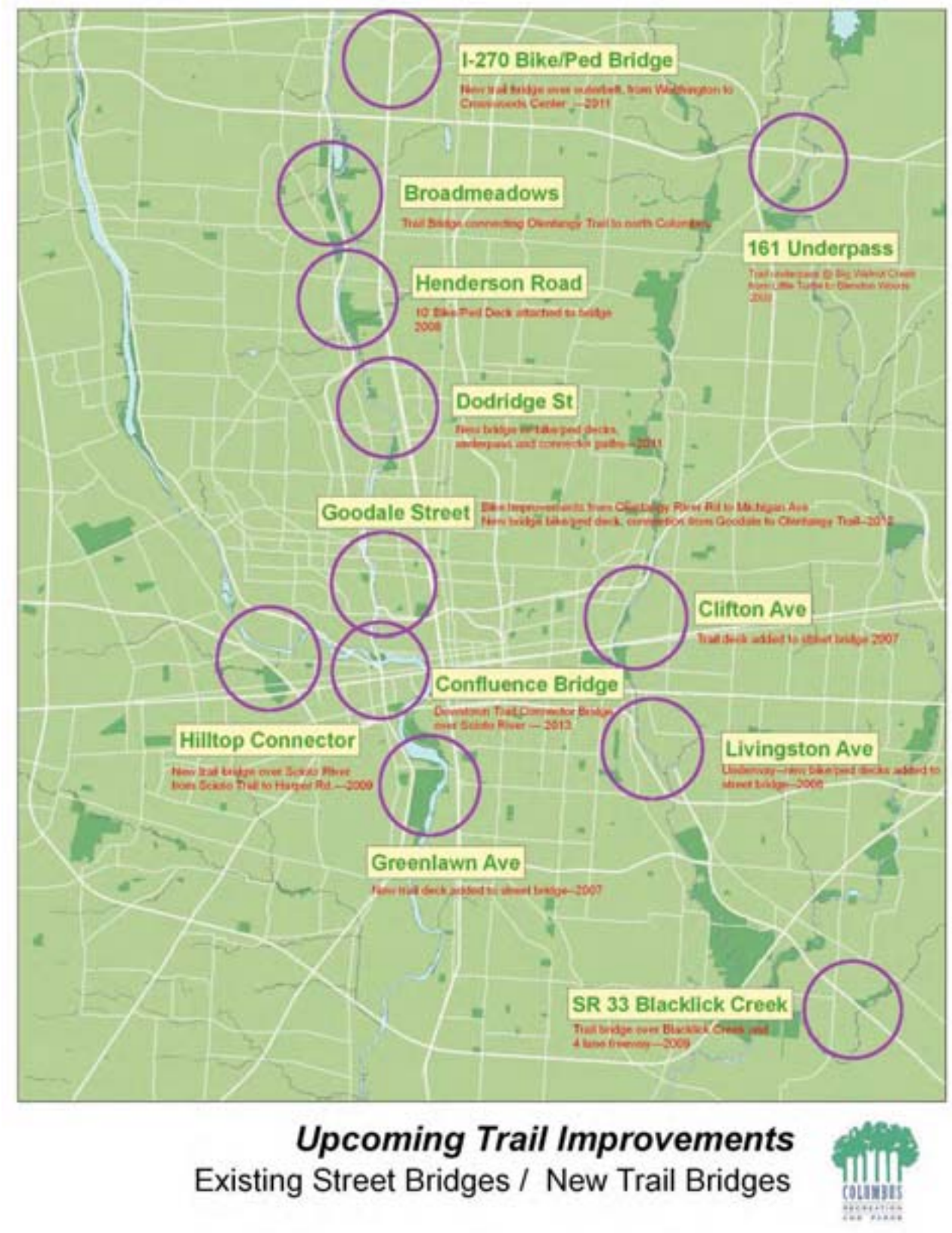
The recommended bicycle network has been developed to connect gaps in the current network, to continue the expansion of the existing trail network, to formalize existing routes used by bicyclists, and to improve access between residential, employment, civic, and commercial destinations and the current bikeway network. The network includes facilities to serve bicyclists of different skill levels, and includes recreational facilities as well as facilities for commuting and utilitarian trips. Many of the routes identified in this Plan are included in the Mid-Ohio Regional Planning Commission's *2006 Regional Bicycle Transportation Facilities Plan*. **Figure 5-2: Existing and Proposed Bikeways** shows the proposed bicycle network.

Figure 5-1: Planned Bicycle Accessible Bridges, identifies locations that are scheduled for planned bicycle improvements.

It should be noted that bicycles should be accommodated on all city streets, regardless of whether a street is identified as a bikeway or not. With the adoption of complete streets policies by MORCP and the City of Columbus, bicyclists and pedestrians should be accommodated on all motor vehicle roadways. Unless specifically restricted, bicyclists are legally allowed to ride on all city streets and roads regardless of whether the roads are a part of the designated bikeway network or not.

Cost opinions for developing the bicycle network and a phased implementation plan can be found in Chapter 7.

Figure 5-1: Planned Bicycle-Accessible Bridges



Demonstration Projects

In addition to identifying a proposed citywide network of bicycle facilities, the Bicentennial Bikeways Plan identifies thirteen demonstration projects. Project sheets with specific recommendations and maps for these demonstration projects are included at the end of this chapter. These projects were selected based on three characteristics: 1) their ranking in the overall prioritization scheme discussed in Chapter 7: Implementation and Funding, 2) to represent all quadrants of the City, and 3) to represent a variety of bicycle improvements, including bicycle lanes, bicycle boulevards, and education and encouragement programs.

Demonstration projects and reasons for selection are listed in **Table 5-1: High-Priority Demonstration Projects**.

Table 5-1: High-Priority Demonstration Projects

Project	Reasons for Selection
Hilltop Connector – Bike Route and Shared Use Path	Gap connector, underserved area, east-west connection
High Street Share the Road with Bicycles Campaign	High crash location, serves activity centers, public support
Scioto River Confluence Bridge	East-west connection, Technical Advisory Group support, high visibility signature project, serves activity centers
Improve Six At-Grade Railroad Crossings	Safety, demonstration of spot improvement program
Olentangy to Alum Creek Neighborhood Connector	East-west connection, high gain for low cost, demonstration of neighborhood bikeways
Trabue Road/Renner Road Connection from Scioto River to Spindler Road	East-west connection, underserved area, serves activity centers
Town-Oak Street Bicycle Boulevard	Demonstration of bicycle boulevard, public support, east-west connector
SR-161 Shared Use Path	East-west connector, gap closure, serves activity centers, public support
Williams Road Bicycle Lanes	East-west connector, underserved area, high crash location, public support
Sullivant Avenue Corridor Improvements	East-west connector, underserved area, high crash location, serves activity centers, bicycle boulevard demonstration project
Hudson Street/Joyce Avenue/Seventeenth Ave\ Improvements	Underserved area, high crash location, rail to trail project, example of complete streets
Stelzer Road and James Road	Underserved area, access to airport, complete streets
Milton Avenue Bicycle Boulevard (Note: Project sheet not included.)	Public support, safety, key connector on Olentangy Trail

Other Recommended Projects

Ohio to Erie Trail and Westerville Arena District Bike Route

While this plan focuses demonstration projects on a specific roadway or corridor, it also recognizes the importance of developing longer routes. At least two of these routes are identified here: The Ohio to Erie Trail and the Westerville to Arena District Bike Route. These routes both consist of several different segments of on-street and off-street facilities. Segments necessary to complete these routes are included in the recommended bicycle network. As more opportunities for regional routes are identified, it is recommended that they are incorporated into the recommended network.

Broad Street and High Street

Throughout the planning process, a solid consensus was reached that Columbus can, and should, address biking improvements along its two famous thoroughfares, Broad and High Streets. These streets travel the heart and soul of the city. They cross key destination points. They are often risky cycling environments. Creating a culture of cycling along significant stretches of these streets is an opportunity Columbus will not want to miss.

North High Street, from the Short North to Worthington, crosses distinct communities, street cross sections, and cycling demand. In the Clintonville area and OSU campus area there is a considerable density of on-street cyclists. High Street is a critical corridor for motor vehicles, transit, and bicyclists, but currently only provides for motor vehicles and transit. Providing bicycle facilities along this corridor is important, but will require tradeoffs for transit and motor-vehicle access and is likely to be controversial. This plan recommends improving bicycle access along High Street in a multi-pronged approach: a share the road campaign to improve bicyclist-driver interactions along this corridor in the near term, improvements along the parallel road Hunter Avenue, and long-term consideration of this roadway for bike lanes. Minor improvements, such as marking bulb-outs with reflective paint, will contribute to safer conditions for all users, especially at night.

West Broad Street, from the city boundary to downtown, forms a key corridor for bike improvements. Not only is the west side of Columbus underserved by bike/ped facilities, there exists a six-lane cross section through this area which could be reconfigured to include bike lanes in conjunction with fewer travel lanes, center turn lanes, or medians and landscaping.

South High and East Broad share similar cross sections and challenges, but it makes sense to first attempt improvements on a larger scale on underserved or high cycling density urban areas.

Tackling this amount of arterial street retrofit is daunting, and can appear remote. However, if developed in conjunction with larger street-improvement projects, and funded by Bicentennial Bond monies, improvements may be possible along North High and West Broad. Improvements will take time to implement, but the city will very likely see popular demand to continue improvements in other parts of Columbus.

Complete the Regional Greenway Network

Few cities in the nation enjoy the benefit of five rivers flowing through their boundary, offering a perfect palette for a first class greenway network. The north/south layout of the waterways is now being developed into a 165-mile inter-connected trail system. Once completed, most residents will

live within a few minutes ride from regional trail. Getting to the paths remains a significant work item, for both the city's Recreation and Parks and Transportation Divisions. It is clear from public feedback that residents see momentum and results in the regional trail movement, and rate it as one of the top priorities for the future. Plans to complete the network are farther along at this point than on street facilities, but ultimately the goal is to seamlessly tie the trail's "spine" into the street grid.

It is interesting to note that Columbus may someday lead the nation in the concept of "trails serving as commuting corridors," which is not an option available to most big cities with limited waterways. While the broad perception that trails are for recreational enjoyment will continue, the city should recognize and work towards a trail system inclusive of all users and significantly expand access and mileage.

Expand the Off-Street Path System

Clearly, many more people would begin daily cycling once their fear factor of on-street riding decreases. This explains a key result of the survey conducted in developing the Bicentennial Bikeways Plan: many riders would feel more comfortable if there was a shared-use path separated, but close to, an existing street. This sense of security means that a critical intermediate step for Columbus to take is to increase the mileage of separated paths within the right-of-way, where feasible.

A case in point is the newly constructed Troon Trail path extension project. While there is only 6 feet of separation from the busy traffic of Olentangy River Road, riders still have a perception of greater safety than being on the shoulder or travel lane. Putting riders and motorists in close proximity to each other, yet still separated, offers a good graduated learning experience "stepping stone" for both. After time, the cyclist will grow more accustomed to being in the zone of traffic, and vice versa. These types of paths are often cost effective, as little or no right-of-way expense is involved.

Columbus has constructed shared-use paths along its rivers, but has not yet taken advantage of opportunities within railroad rights-of-way and along utility corridors. The City should explore pathways along these corridors, including a shared-use path along Camp Chase railroad right-of-way and a shared use path along Columbia Gas transmission lines right-of –way in northeast Columbus.

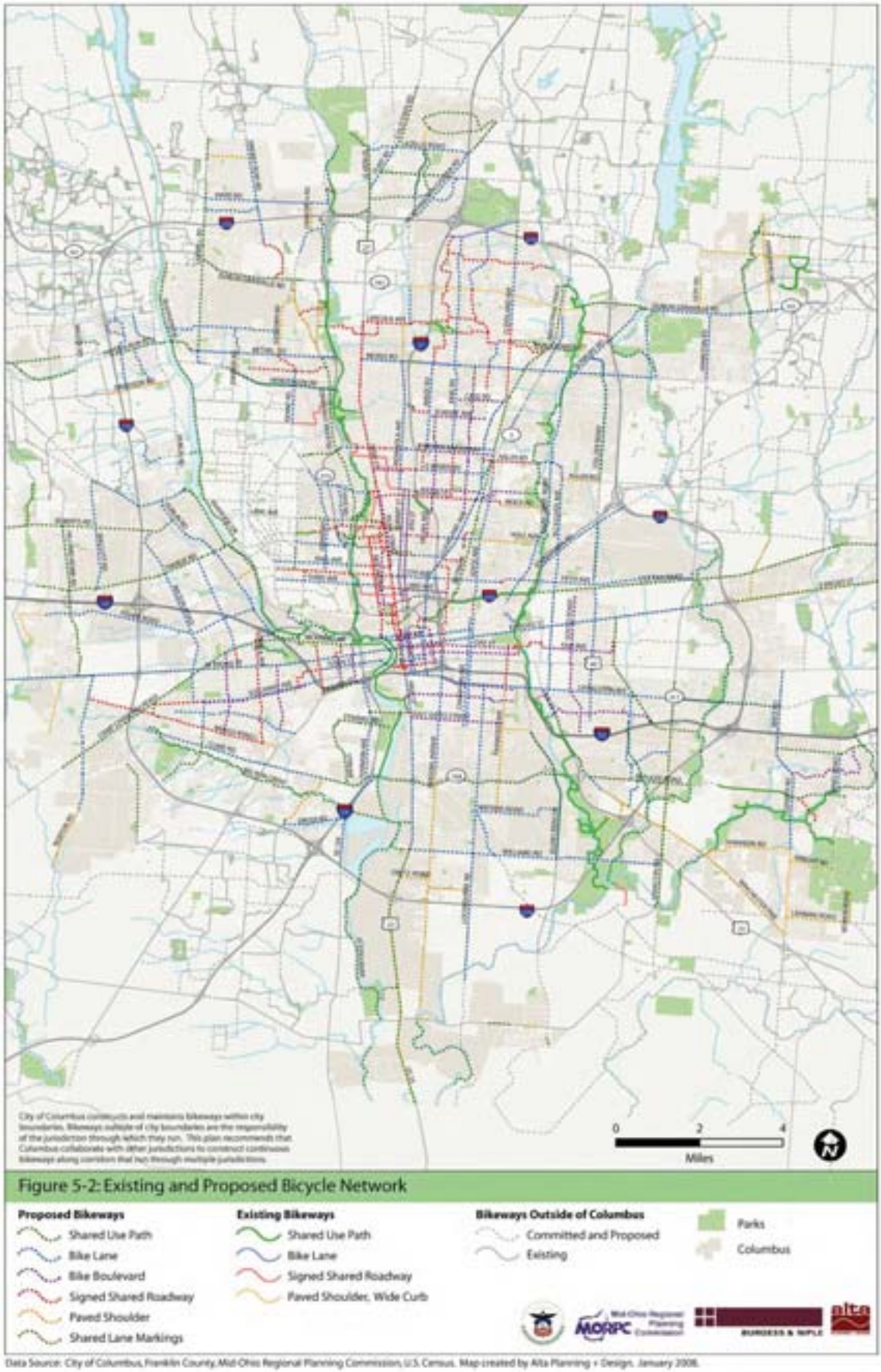
State Route 3/Westerville Road

Bike lanes are proposed on SR-3/Westerville Road between Minerva Lake Road to Schrock Road. This north-south connector crosses the Alum Creek Trail three times, providing access between the trail and residential neighborhoods and local businesses. SR-3/Westerville road provides bicycle access under I-270. Ohio Department of Transportation is planning to improve this multi-jurisdictional primarily two-lane road and is conducting a traffic study in 2008, providing an opportunity to incorporate bicycle facilities into the roadway.

East-West Routes

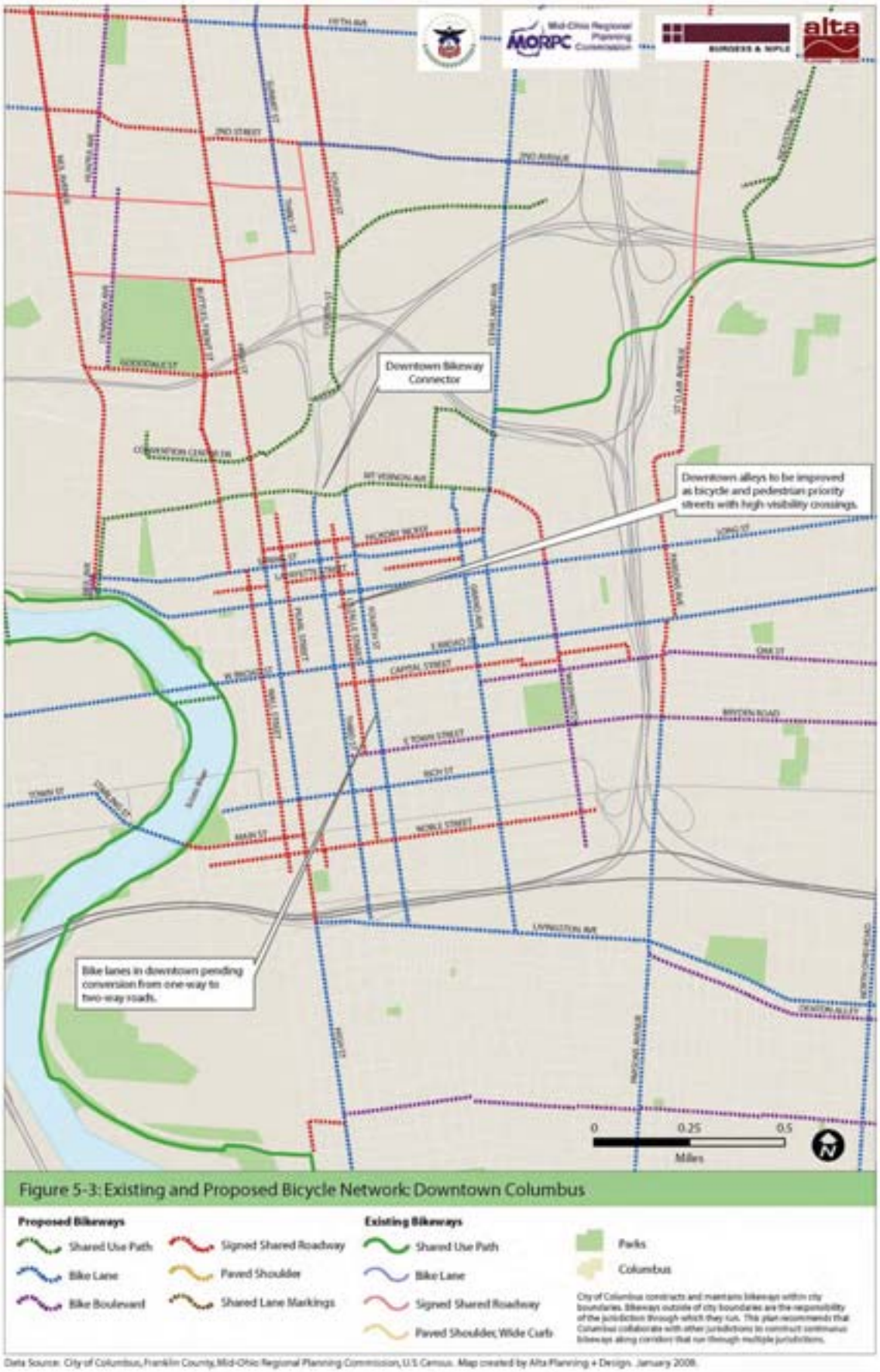
Key east-west routes identified in this plan include Refugee Road, 3rd Street, 5th Street, King, Greenlawn, and Tussing Road.

Figure 5-2: Existing and Proposed Bikeways



Data Source: City of Columbus, Franklin County, Mid-Ohio Regional Planning Commission, U.S. Census. Map created by Alta Planning + Design, January 2008.

Figure 5-3: Existing and Proposed Bikeways: Downtown Campus



Provide Access to The Ohio State University

Access to OSU is recommended along High Street, 17th Street, Neil Avenue, Hunter Avenue, and through connections to the northwest to Bethel Road.

Improve Existing Bicycle Facilities

This plan recommends bicycle facilities that will connect the gaps in the existing bicycle facilities, including Morse Road (no bike lanes under I-71) and the Olentangy River (no path near OSU, on-street segment at Milton Avenue).

5.2. Bicycle Parking and Support Facilities

5.2.1. Recommendation: Establish a Comprehensive Bicycle-Parking Program

Well-designed and ample bicycle parking is a necessary component of a bicycle-friendly community. In the past, the City of Columbus has installed bicycle racks through an informal request system. Columbus City staff average 10 hours per site to install bike racks, but believe the time required per site can be reduced.

Bicycle lockers are provided at several COTA bus stops, the Columbus Metropolitan Library has a bicycle rack program, and racks are provided at various locations around the City, but in general there is a need for additional bicycle parking. The City of Columbus should establish a comprehensive bicycle parking program that includes some or all of the components described below:

- Develop a program to install bicycle racks by request.[19] The program should be publicized and requests accepted through postcards, online, and by phone.
- Fund the construction of a bike station downtown and work with The Ohio State University to fund and construct a bike station at the University.
- Install and support citywide electronic locker facilities.
- Install uniform bicycle parking signage and create a bicycle parking map for downtown Columbus, the OSU area, and other neighborhoods.
- Continue to support and publicize bicycle valet service at major events.
- Provide indoor bicycle storage for all City employees, either as a formal bicycle parking area, or by allowing employees to bring bicycles into the building to store in their office or cubicle.

[19] The City of Oakland, California has an online bike rack request form and provides a document that outlines guidelines for placing bicycle racks. Bike racks should be placed on commercial streets no farther than 100 feet from the establishment they are meant to serve and must be placed so they do not block pedestrian, ADA ramp or bus stop access. Oakland has annual funding to provide a limited number of bike racks each year. http://www.oaklandpw.com/Page127.aspx

- Incorporate minimum bicycle parking requirements into the Zoning Code. The minimums should require bicycle parking in parking garages, with new or renovated development, and in all public financed buildings and public venues and facilities earmarked with Tax Increment Financing. Sample bicycle parking ordinances are included in Appendix E.

A recommended Bicycle Parking Policy is provided in Appendix E. Guidelines for the design and placement of bicycle parking, as well as examples of innovative bicycle parking facilities used by Chicago, Portland, Oregon, San Francisco, and other cities are provided in Chapter 8: Design Guidelines.

Table 5-2: Recommended Locations for Bicycle Parking

Location	Notes
Airports	Bike racks already provided at Columbus International Airport. Bike lockers should be provided for long-term storage and employee parking. Should be accompanied by significant improvements to bicycle access to the airport.
Public buildings	Short-term parking for visitors at locations such as the Department of Motor Vehicles, City Hall, and courthouses. Bike lockers for employees. The Columbus Metropolitan Library has a bike parking program.
Major transit stops	Bike lockers are already provided at several COTA bus stops. Other locations should be evaluated.
Pedestrian oriented commercial districts	Bike racks on sidewalks at regular intervals or bike corrals (see Chapter 8) every block as needed.
Auto-oriented shopping plazas	Bike racks near front entrances, bike lockers for employees.
Schools	Bike racks or bike cages (see Chapter 8) located on campus.
Downtown Columbus	The Downtown Circulation Plan calls for a bicycle rack on each corner.
Parking Garages	Bicycle racks should be located near the parking attendant. Secure bicycle parking is preferable. Columbus should include bike parking in the two new parking garages proposed downtown.

5.2.2. Recommendation: Continue to Support "Pedal Instead" Valet Bike Parking

The City of Columbus partners with the Central Ohio Bicycle Advocacy Coalition (COBAC) to provide bike parking at City festivals and other community events. The program has been dubbed "Pedal Instead." COBAC volunteers run the valet bicycle parking program. With the development of Pedal Instead, Columbus joins other cities across the country that provide bicycle valet parking, including Chicago, San Francisco, and Oakland, California.

The City of Columbus should continue to promote bicycle valet parking and should explore options for funding Pedal Instead.

5.2.3. Recommendation: Encourage Provision of Showers and Lockers

Encouraging employers to provide shower and locker facilities for employees should be a component of all commute and traffic demand management programs as these facilities are used by current bicycle commuters and may encourage more employees to ride their bicycles. While more extensive accommodations, such as bicycle storage areas and shower and locker facilities are recommended, simpler solutions may be more feasible. In many cases, simply providing a secure indoor space to park a bicycle is a significant improvement. Bicyclists are not the only employees that may benefit from shower and locker facilities; these facilities are useful for employees who wish to run or exercise on a work break.

Some cities in the United States have requirements for shower and locker facilities in new and reconstructed developments. For example, the model planning ordinance for the City of San Francisco requires that new industrial and commercial developments over 10,000 gross square feet in floor area must provide at least one shower and two clothes lockers. Columbus should consider requiring bicycle end-of-trip support facilities in new developments as appropriate. End-of-trip facilities could include: secure bicycle parking, drinking fountains, bathrooms, showers, lockers, changing rooms, and signage to direct people to them. Requirements would vary based on the size and type of the proposed development. The City should also consider providing shower and changing facilities at City Hall for employees.

5.2.4. Recommendation: Encourage Provision of Bicycle Air Stations

Ensuring that bicycle tires are properly inflated is one of the most important maintenance items for a bicyclist. While gas stations typically provide air compressors, providing publicly accessible air compressors at major bicycling destinations, particularly along trails, allows bicyclists to more easily fix flat tires or top off their tires. Public bicycle air stations are already in use in popular cycling cities such as Davis, California, and they have been found to be well-used by cyclists, vandal-resistant, and low-maintenance. Air pumps should be compatible with both Presta and Schrader valves. In Columbus, logical locations for public bicycle air stations include trailheads along the river trails, and at the major transit stops. Local employers should also be encouraged to provide bicycle air stations along with their secure bicycle parking facilities.

Public bicycle pump in Davis, California. Photo: Matt Jurach

5.3. Maintenance and Operations

Both on-street and off-street bikeways need regular maintenance. Bicycles are more susceptible than motor vehicles to roadway irregularities such as potholes, broken glass, and loose gravel. For example, after repaving, a vertical lip between a gutter pan and asphalt does not affect a motor vehicle, but may catch a bicycle tire and possibly result in a bicyclist loosing control of the bicycle.

Construction activities in Columbus present additional maintenance requirements. Construction affects bicyclists through increased roadway wear due to heavy vehicle traffic and increased debris such as sand and gravel from construction equipment. In addition to maintenance issues, construction activities may also hinder bicyclists if bicycle lanes are closed off or obstructed due to road maintenance, landscaping or other construction activities. Special accommodations may be made to provide for cyclists during construction periods.

5.3.1. Recommendation: Develop a Maintenance Policy that Addresses the Special Needs of Bicyclists

The City of Columbus should evaluate its current street maintenance and repair policies, as well as staffing availability to ensure that they reflect the needs of bicyclists. In many cases, these measures are already in place, but dedicated staff is needed to complete the maintenance in a timely manner.

Roadway resurfacing should ensure that the transition between the asphalt and the gutter pan is flush, with no lip.

Specific measures to review include:

Plowing. On-street bikeways and paths should be plowed and sanded after snowstorms.

Street sweeping. As motor vehicles travel along the roadway, debris is pushed to the outside lanes and shoulder. Debris also collects at the center of intersections. Roads striped with bike lanes or designated as bicycle routes should be swept more frequently than roads without designated bikeways. Street sweeping on these roadways should include removing debris on the shoulder and at intersections.

Minor repairs and improvements. Potholes and cracks along the shoulder of roadways primarily affect bicyclists and should be completed within a timely manner. All repairs should be flush to the existing pavement surface.

Drainage grates. When repaving or maintaining roadways, drainage grates should be inspected to ensure that grate patterns are perpendicular to the road. Replacement of bicycle-unfriendly drainage grates should be standard.

Street resurfacing. When streets are resurfaced, utility covers, grates and other in-street items should be brought up to the new level of pavement. Similarly, the new asphalt should be tapered to meet the gutter edge and provide a smooth transition between the roadway and the gutter pan. City of Columbus Standard Drawings call for a 3/8 inch elevation between the gutter pan and pavement.

Proactive identification of and response to maintenance needs. The City currently has a phone hotline (311) and online request system to identify needed repairs to roadways. The City should promote this hotline as a way of identifying maintenance needs on on-street bikeways and trails. In addition to this hotline, the City should proactively identify locations in need of maintenance. Maintenance needs should include street sweeping, minor repairs and improvements, identification

of hazards such as sunken utility covers or drainage grates with openings parallel to the roadway, and identification of bikeway facilities in need of restriping or resigning.

Regular Maintenance of shared-use paths. Shared-use paths require regular maintenance, including trimming adjacent vegetation, sweeping, plowing, and removing trash and debris. The Columbus Recreation and Parks Division should develop a schedule for these routine items and should consider assigning staff to monitor the pathways on a weekly basis to proactively identify maintenance needs.

Calibrate bicycle actuated signals. As part of general maintenance, the City should test and calibrate all bicycle actuated signals, including video detection, infrared detection and bicycle-sensitive loop detectors to ensure that they are working properly. Loop detectors are described in more detail below.

Actively coordinate with maintenance workers. The City should ensure that maintenance workers are aware of new bicycle related maintenance policies. Maintenance workers should be involved in the development of bicycle related maintenance policies in order to ensure that City staff and maintenance workers understand each other's needs and limitations. After establishing policies, the City should follow up with the maintenance staff to verify compliance and to modify policies or provide additional support, if necessary, to ensure future compliance.

Proactively sweep streets after collisions. The City should work with the police department to develop a system that ensures streets are swept after automobile collisions. This may include the police preliminarily sweeping after a collision, and then notifying the Public Service to send a street sweeper out to more thoroughly sweep the area. If debris from collisions cannot be immediately removed, it should be stored off the street, rather than on the shoulder, and should not block sidewalks or pathways.

Table 5-3: Recommended Bicycle-Related Maintenance Tasks and Frequency

Maintenance Item	Responsible Party	Frequency
Plowing	Recreation and Parks Department (paths), Transportation Division's Street Maintenance Section (roads)	With regular plowing. As needed on a request basis.
Pathway sweeping and debris removal	Recreation and Parks Department	Monthly during street sweeping season, after heavy rainstorms, and as needed.
Vegetation Trimming on Paths	Recreation and Parks Department	Monthly during the growing season and more frequently as needed.
Street sweeping	Transportation Division's Street Maintenance Section	Weekly to monthly during street sweeping season
Minor repairs and improvements	Public Service Department's Transportation Division	Ongoing, with outstanding repairs to be completed within three months of notification

Maintenance Item	Responsible Party	Frequency
Drainage grates	Public Service Department's Transportation Division	When streets are scheduled for resurfacing or major repairs
Proactive identification of and response to maintenance needs	Public Service Department's Transportation Division; Recreation and Parks Department	Ongoing
Calibrate bicycle actuated signals	Public Service Department's Transportation Division	As needed by request, and when traffic signals are being worked on.
Actively Coordinate with Maintenance Workers	Bicycle Planner, Public Service Department's Transportation Division	Ongoing
Proactively sweep streets after collisions	Transportation Division's Street Maintenance Section	As needed, within 5 days of a collision.

5.3.2. Recommendation: Consider Impacts on Bicycles while Performing Construction, Maintenance, and Repair Work on Roadways and Trails.

Construction and maintenance activities present challenges for cyclists; even the most experienced cyclists may feel anxiety when the bike lane is unexpectedly blocked by construction activities and they are forced out into travel lanes with vehicles that may be traveling in excess of 45 mph. Before implementing the following recommendations, project managers should contact Transportation Division MOT Coordinator (Mark Delong at 645-7144) for a pre-design consultation.

- If feasible, avoid parking construction or maintenance vehicles in bicycle lanes or on designated bicycle routes.
- Provide suitable construction warning signs for any activities that involve work in a designated bikeway. Signage should warn bicyclists well in advance of any location where the bicycle lane is closed for construction or maintenance activities.
- If possible, maintain a coned-off area between the construction zone and vehicle lane for bicycle travel. A 5-foot area is optimal, but the area can be reduced to 3 feet if necessary.
- Where necessary, provide detour routes for bicyclists around areas undergoing construction.
- Metal plates should be treated so that they are not slippery.
- Columbus does not typically reduce speed limits through or around construction zones. However, a temporary reduction of speed limits should be considered on

roadways where motor vehicles travel 35 mph or greater. The MOT Coordinator should be consulted to discuss speed limit reductions.

5.3.3. Recommendation: Consider Implementing Special Street Sweeping Programs for On-Street Bikeways

The Transportation Division's Street Maintenance Section is responsible for sweeping and cleaning streets. Street cleaning begins in April and is done on a citywide non-posted basis and in five Columbus neighborhoods with special sweeping programs. Sweeping programs are usually initiated by civic association request and considered in areas where there is a real need. The City should consider implementing special street-sweeping programs for on-street bikeways.

5.3.4. Recommendation: Seek Funding for Maintenance Activities through Non-Traditional Venues

A maintenance endowment can be established through private sector and non-profit fundraising to ensure long-term operations and programming needs can be met, in cooperation with public sector funding. The City of Columbus should encourage and support these types of fundraising efforts.

5.3.5. Recommendation: Improve the Existing 311 Notification System

The City should evaluate the existing 311 notification system for roadway facilities to ensure that bicycle facility requests are quickly directed to the city department and staff person who is able to respond to the request. The proposed spot improvement programs and maintenance requests should be linked to the City's 311 notification system. An online request form should be established specifically for bicycle facilities, and comment cards that can be mailed in should be made available at local retail shops and destinations and provided to bicycling organizations such as the Central Ohio Bicycle Advocacy Coalition.

5.4. Bicycle-Actuated Traffic Signals

Traffic lights are either set to change at regular intervals or are "actuated" when the signal detects that a motor vehicle, bicyclist or pedestrian is waiting at the intersection. Pedestrian push-buttons can be used by bicyclists to actuate a signal, but in general, providing automated bicycle detection at intersections is more convenient and safer for bicyclists. Systems that can detect bicyclists automatically include video detection systems, in-pavement loop detectors, and infrared sensors. The first two are commonly used for motor vehicle detection, but are not usually calibrated to detect bicyclists. The following recommendations are intended to improve bicycle detection at signalized intersections. Design guidelines for bicycle signal detection are provided in Chapter 8: Design Guidelines.

5.4.1. Recommendation: Install Bicycle Detection at Signalized Intersections

As a first priority, Columbus should install/calibrate detection systems to detect bicyclists at actuated signals along the City's existing and proposed bikeways. The City should make it a policy to install bicycle signal actuation at intersections during roadway construction. If the city uses in-pavement loop detectors, Type D loop detectors are recommended for lead loops in all lanes except bike lanes, where a narrow Type C may be appropriate. The City should ensure that a sufficient all-red phase is programmed into traffic signals so that cyclists can clear the intersection before cross-traffic starts. This is particularly important at single point urban interchanges. Guidelines for loop detectors are provided in Chapter 8: Design Guidelines.

5.4.2. Recommendation: Apply Pavement Stenciling above Bicycle-Sensitive Loop Detectors Where Service Must be Actuated by Detection

At some signalized intersections, vehicles (motor vehicles and bicycles) need to trigger loop detectors in order to activate a green light. Since many people do not know how loop detectors work, it may be necessary at some locations to mark a pavement stencil that shows cyclists where to stop to activate the loop.

The City has developed stencils for bicycle pavement detectors. Stencils should be repainted as part of regular bikeway maintenance. As opportunities arise, loop detector stencils should be installed in coordination with striping maintenance or resurfacing projects.

OMUTCD approved bicycle detection marking and signage.

Standard bicycle detection markings should be applied to show bicyclists the best place to wait. The best place to wait can be identified during the calibration process by placing a bicycle over the loop detector and marking the location where the bicycle is most strongly detected.

To increase understanding of how to use bicycle loop detectors, the City may want to include information about how to activate a bicycle loop detector in its bicycle educational materials.

5.4.3. Recommendation: Regularly Calibrate Bicycle Actuated Signals

While bicycle actuated signals facilitate faster and more convenient bicycle trips, if they are not calibrated properly, or stop functioning, they can frustrate bicyclists waiting for signals to change, unaware that the detection device is not working. The City should ensure that all bicycle actuation devices are tested, calibrated, and operable as part of routine signal maintenance.

5.5. Spot Improvement Programs

Spot Improvement Programs can be used to construct important improvements to bicycle facilities in small areas on an as-needed basis. The City of Columbus developed a Spot Improvement Program in the mid-1990's. Due to limited resources, the program was not advertised and many requests are outstanding.

An effective Spot Improvement Program requires a stable funding source for personnel and for capital improvement costs, a clear method of making requests, and a tracking system to ensure that requests are acted upon. In many cases, small improvements at key points, such as paving wider shoulders next to an oblique railroad crossing, calibrating a loop detector or video camera to detect bicyclists, or installing lighting in a dark undercrossing, can dramatically improve bicycling. The following sections detail proposed spot improvement programs for Columbus.

5.5.1. Recommendation: Establish an Intersection Improvement Program

An intersection improvement program can be used to identify and prioritize intersections that warrant improved signage, striping and signal timing. Of special interest are locations where freeway on and off ramps connect to surface streets. These intersections are generally designed to accommodate high volumes of motor vehicle traffic at high speeds and are generally uncomfortable for all but the most skilled bicyclists. General guidelines for improving intersections for bicyclists, as well as innovative treatments to accommodate bicyclists at freeway interchanges, are described in Chapter 8: Design Guidelines.

Intersections may be prioritized based on bicycle volumes, collision history, public input, and proximity to schools, trails, parks, and shopping centers. A list of intersections identified for improvement through the development of this plan is identified in **Table 5-5: Intersections Identified as Needing Bicycle Improvements**.

Table 5-4: Intersections Identified as Needing Bicycle Improvements

Location	Description	Suggested Improvements
Milton Avenue and North Broadway	North Broadway is a two-way five-lane arterial roadway with a left turn lane. It serves as a feeder to SR 315. Milton Avenue is a two lane residential roadway.	Bicycle sensitive traffic signals
Alum Creek Trail and Petzinger Road	At-grade crossing.	Intersection improvements already under design. Project expected to be completed in 2008
North Broadway and Olentangy River Road	Both roadways are two way five lane arterials with medians and left turn lanes. The intersection between SR 315 on and off ramps.	General improvements for cyclist safety
Gender and Lehman Road	Two-lane, two-way country roads.	General improvements for cyclist safety

Location	Description	Suggested Improvements
Indianola Avenue and Hudson Street	Part of proposed long term connection.	General improvements for cyclist safety
Olentangy River Road and 5th Avenue (King and Olentangy River Trail)		Construct bicycle access to trail from King Avenue
Rosehill Road and Rosedale Avenue	Both are two way roadways. Rosehill Road is an arterial and Rosedale Avenue is an access to a subdivision.	General improvements for cyclist safety
Morse Road and Indianola Avenue	Morse Road serves as a six lane arterial feeder to I-71 with two left turn lanes. Indianola Avenue is two way with a right turn lane.	Bike lanes through the intersection
E North Broadway and I-71		Shared use marking on sidewalk of overpass or add bike lane
Ackerman Road and Kenny Road	Near OSU athletic facilities. Part of proposed long term connection.	General improvements for cyclist safety
South High Street and Whitter Street	E Whitter serves as access to the Scioto Trail. Crossing at South High Street is offset. Part of proposed long term connection.	
Neil Avenue and West Lane Avenue	New West Lane bridge over Olentangy River provides bike/ped access to the river. OSU Athletic facilities are in the immediate area of the intersection.	Bicycle sensitive traffic signals, others?
Old State and Lazelle		General improvements for cyclist safety
Morse Road and North High Street	Opportunities and constraints map shows bike lane on Morse east of Indianola, however, they are not on the aerials.	General improvements for cyclist safety
Morse Road and Sharon Avenue	Sharon is two lane residential.	General improvements for cyclist safety
Downtown Intersections in general		General improvements for cyclist safety
Fishinger Road Bridge	Not bicycle friendly.	
Greenlawn and 662	Crossings not bicycle friendly.	
Olentangy River Road and SR-315	No connection at this intersection connecting Hard Road bike lanes and Olentangy Greenway Trail at Worthington Hills Park.	At grade crossing utilizing existing traffic signal or dedicated overpass

Source: Online Survey for Columbus Bicentennial Bikeways Master Plan 2007. Comments received from public meetings.

5.5.2. Recommendation: Establish an At-Grade Railroad Crossing Improvement Program

At-grade railroad crossings can be difficult for bicyclists to cross, especially when the tracks cross the bicyclist's line of travel at less than a 45 degree angle. To safely cross tracks, bicyclists should travel over tracks as close to a 90-degree angle as possible. Crossings of oblique railroad tracks can be improved by providing asphalt aprons on the shoulder to allow bicyclists to position themselves properly to cross the tracks. Specific guidelines for improving at-grade railroad crossings for

bicyclists are provided in Chapter 8: Design Guidelines. Improvements to these facilities are detailed at the end of this chapter as one of the high-priority demonstration projects.

The City of Columbus started a program to improve railroad crossings in the mid-1990's and several crossings have warning signs. Preliminary designs were developed for several crossing improvements during this time.

Table 5-5: Railroad-Road Crossings with 45 degree or Less Angle

Location	Description
McKinley Avenue and Harrison Road	T-intersection, RR 10 degrees right
Refugee Road and Hines Road	T-intersection, RR 35 degrees left
Williams Road East, west of speed way lane	RR crossing, 20 degrees left
Mound Street West, west of Central Avenue	RR crossing, 25 degrees right
Edgehill Road South, south of Fifth Avenue	RR crossing, 45 degrees left
Hall Road, east of Norton Road	RR crossing, 40 degrees right

Source: City of Columbus

5.5.3. Establish a Bridge and Undercrossing Bicycle Accommodation Program

Bridges and undercrossings may provide barriers to bicyclists if there is not adequate roadway width to provide bicycle access through the facility. The City of Columbus should inventory all bridges and undercrossings within the City for bicycle access and develop plans for improving bicycle access on these facilities. The inventory can be prioritized by routes that are on existing and proposed bicycle facilities, but eventually all bridges and undercrossings should be included in the program.

Improvements to bridges and undercrossings, such as retrofitting or rebuilding to widen them, can be prohibitively expensive. Alternative solutions can provide reasonable bicycle accommodation. One option is to provide a yellow warning sign with words "Bicyclist in Tunnel/on Bridge When Flashing" and flashing yellow beacons activated by bicycle push button. An accompanying sign informs bicyclists to activate beacon. The City should also ensure that all bridge and undercrossing retrofitting, widening and rebuilding projects incorporate improved bicycle access.

Table 5-6: Bridges and Undercrossings along Selected Bicycle Facilities provides an initial recommendation for areas where bicycle access should be improved. The list is developed from public input gathered from online surveys and public meetings developed for the Bicentennial Bikeways Master Plan.

Table 5-6: Bridges and Undercrossings along Selected Bicycle Facilities

Location	Description
RR Bridge over West Innerbelt, just north of I-670 intersection	Abandoned RR bridge for potential use
E North Broadway overpass of I-71	General improvements for cyclist safety
E Town Street over I-71	Part of suggested bikeway connecting downtown and Bexley

Location	Description
S Grant Avenue over I-71/70	Part of suggested bike lane on S Grant Avenue
Fishinger bridge over river	Part of suggested bike lanes on Fishinger Road.
Bridge over railroad at Groveport Road north of Williams Road	General improvements for cyclist safety
3rd 5th and King underpasses just west of Olentangy River Road	
Dempsey Road bridge over I-270	Dempsey Road will include shared use path in Westerville and connects to Alum Creek Trail at State Route 3.

Source: Online Survey for Columbus Bicentennial Bikeways Master Plan 2007. Comments received from public meetings.

5.5.4. Recommendation: Upgrade Existing Shared-Use Paths for Commuter Use

Existing shared-use paths should be upgraded to make them easier for commuters to use. Specific improvements include: widening shared-use pathways to at least a 10 feet paved width, installing lighting for commuting after dark, allowing bicyclists to use paths after dark, and regularly plowing paths during the winter.

5.5.5. Recommendation: Establish Staging Areas for Shared-Use Paths

Staging areas provide access to shared-use paths for recreational riders, and typically include motor vehicle parking, trail maps, seating areas, bathrooms, and drinking water. Recommended staging areas are listed in Table 5-8 below.

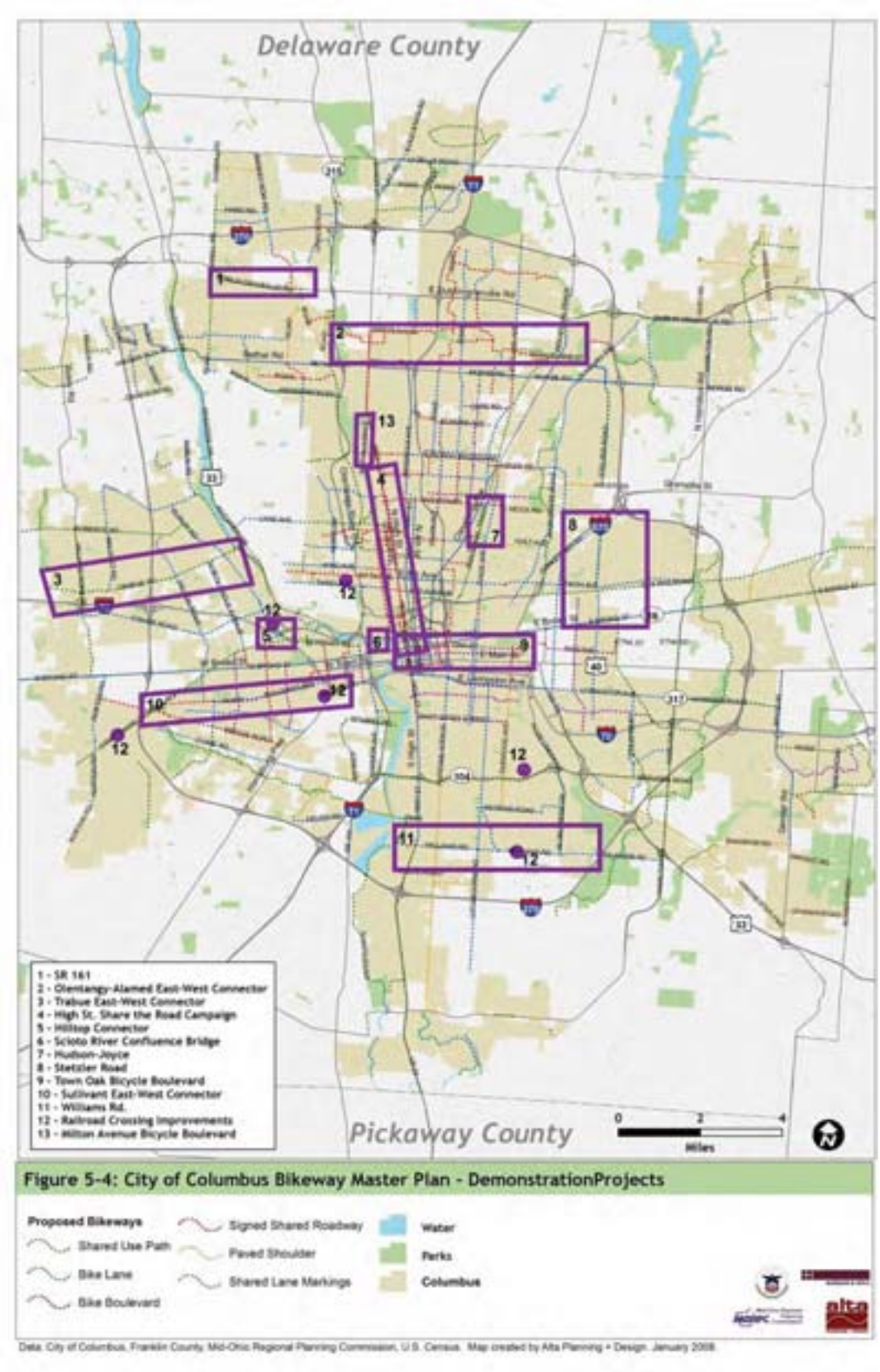
Table 5-7: Recommended Staging Areas

Trail	Location
Alum Creek Trail	Pumphouse Park at Main Street and Alum Creek Drive
Alum Creek Trail	Petzinger Road & State Route 33 (in collaboration with Mobil/UDF retail store)
Alum Creek Trail	Performance Way at Alum Creek Drive
Olentangy Trail	The Ohio State University Medical Center parking lot.
Stelzer Road Bike Path (proposed)	Stelzer & James Road

5.6. Demonstration Projects

Project description sheets have been developed for twelve demonstration projects to assist the City in securing funding for projects recommended by this plan. The project sheets include project descriptions, location maps (as applicable), a summary of issues and recommended improvements, design details and cost opinions. These projects were selected based on three characteristics: 1) their ranking in the overall prioritization scheme discussed in Chapter 7: Implementation and Funding, 2) to represent all quadrants of the City, and 3) to represent a variety of bicycle improvements, including bicycle lanes, bicycle boulevards, and education and encouragement programs. A full list of bicycle facility projects can be found in Appendix H: Recommended Bicycle Facilities.

Figure 5-4: Proposed Projects



5.7. Signed Shared Roadway and Shared Use Path Connector Hilltop Connector

Project Description

A future bicycle and pedestrian bridge across the Scioto River just south of Interstate 670 will connect the Scioto Trail on the north side of the Scioto River to the Hilltop neighborhood on the south side of the river. On-street connections from Hilltop to the bicycle and pedestrian bridge are not immediately apparent. This project proposes constructing bicycle facilities along Harper Road, Valleyview Drive, and North Eureka Avenue and installing wayfinding signage to direct bicyclists to the bridge.

Existing Conditions

Harper Road, looking west

Looking south along Eureka Avenue

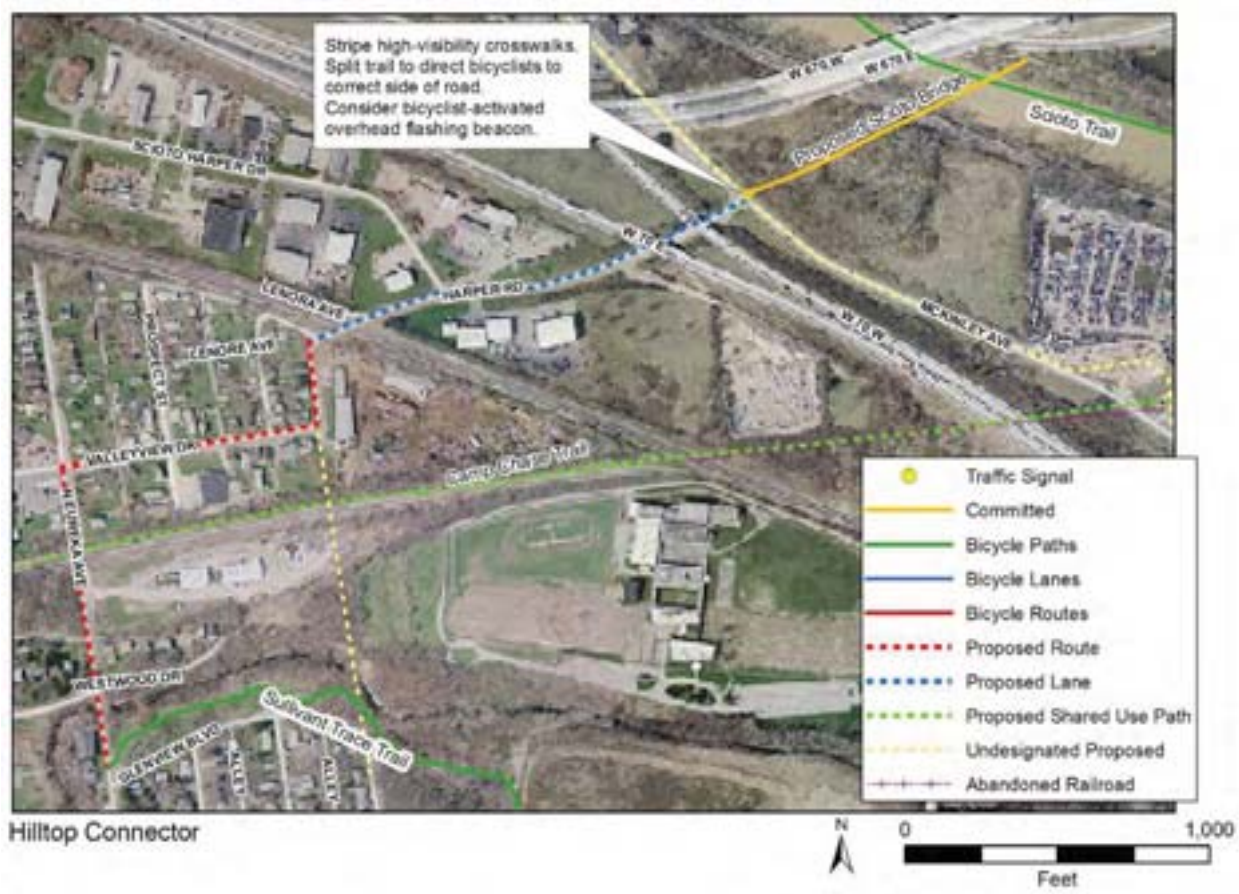
Looking west along Valleyview Drive

Looking west at railroad tracks

Opportunities and Constraints:

- Connection from Hilltop to proposed bike-ped bridge over Scioto River and Scioto Trail is not apparent.
- Connecting roadways are too narrow to accommodate bicyclists.
- Unpaved shoulders present opportunities for bicycle facilities.
- Harper Road is two 12' travel lanes and 7' unpaved shoulders.
- Heavy vehicles use on Harper Road.
- North Highlands Avenue is two 12' travel lanes, 5' unpaved shoulders, and parking on west.
- Valleyview Drive is two 11' travel lanes, 4' unpaved shoulders, and parking both sides.
- Connection to bridge requires crossing McKinley Avenue at Harper Avenue.
- Sullivant Trace Trail just 3000 ft from bridge by this route.

Improvement Options and Design Details



Improvement Options:

- Install wayfinding signage along Harper Road, Valleyview Drive and North Eureka Avenue directing bicyclists to the Scioto Trail and the Sullivant Trace Trail.
- Pave 5' shoulders on Harper Road between McKinley Avenue and North Highlands Avenue and stripe and sign bike lane.
- Pave 4' shoulder on Valleyview Drive and sign as shared roadway.
- Sign Valleyview Drive, North Highlands Avenue, and Eureka Avenue as signed shared roadway, with eventual upgrade to two 14' travel lanes when the road is scheduled for repaving.
- Stripe high-visibility crossing across McKinley Avenue at Harper Road. Install warning signage for motorists. Design path connection north of this to split so that bicyclists are slowed and directed to the correct side of the street. If warranted, consider installing bicyclist-activated overhead flashing beacon.

Cost Opinion

Cost Opinion: $81,100

Cost opinions are preliminary and subject to change upon further review.

5.8. Share the Road Campaign
High Street Share the Road with Bicycles Campaign

Project Description

High Street provides a key north-south connection between residential neighborhoods, The Ohio State University Campus, retail and food establishments, and Downtown. It is a heavily traveled corridor by bicyclists, motor vehicles, and busses, and provides access to OSU's football stadium. High Street had the highest concentration of bicycle crashes in the City from 2000 to 2004. This project proposes a Share the Road with Bicycles Campaign jointly sponsored by the City of Columbus and The Ohio State University. The campaign would include education, encouragement, enforcement and engineering improvements to help change the behavior of bicyclists and drivers in this neighborhood and create a positive and safe environment for all road users.

Existing Conditions

Opportunities and Constraints:

- Dedicated right-turn lanes for motor vehicles introduce conflicts with bicyclists.
- Bus-only lanes might be converted to shared bus and bike only lanes.
- High Street varies between three and five lanes during off-peak hours, with parking lanes converted to travel lanes during peak hours.
- At 18,000 to 30,000 ADT, motor vehicle volumes generally warrant maintaining existing four-lane configuration during peak hours.
- Heavily used corridor that connects residential neighborhoods, The Ohio State University and downtown.
- Highest concentration of bicycle collisions in the City.
- Many bicyclists use sidewalk, introducing conflicts at driveways and intersections.
- Streetscape improvements are planned for several sections of the corridor
- Pavement quality is poor on several sections

Improvement Options and Design Details

Improvement Options:

- Develop a coordinated Share the Road with Bikes Campaign with The Ohio State University that is targeted to motorists and bicyclists. The campaign can be modeled after similar campaigns, such as San Jose, California's award-winning Street Smarts program and Marin County's Share the Road campaigns. The campaign can include traffic stops to hand out educational material to motorists and bicyclists, incorporating bicycle safety into freshman orientation, City and University-sponsored encouragement events such as bike races, donation of bike lights and helmets to low-income youth, and advertising in the form of banners along High Street.
- Install permanent share the road signs along High Street.
- Install "right turn begins yield to bikes" signs at the start of dedicated right turn lanes.
- Evaluate traffic volumes and turning movements for long-term possibility of providing permanent bicycle lanes along sections of High Street, particularly near The Ohio State University Campus.
- Study the feasibility of converting bus-only lanes into bike and bus only lanes between Spring Street and Broad Street.

W11-1 & W16-1

Cost Opinion

Cost Opinion: $101,600 (Includes: Infrastructure: $24,100
Share the Road Campaign – 2 years:$17,500
Feasibility study: permanent bike lanes near OSU $10,000
Feasibility study: convert bus lanes to bike/bus lanes: $50,000)

Cost opinions are preliminary and subject to change upon further review.

5.9. Downtown Connectivity
Scioto River Confluence Bridge/ Downtown Bikeway Connector/Bike Station

Project Description

Downtown Columbus is well-served by north-south shared-use paths along the Olentangy and Scioto Rivers. However, bicycle-friendly east-west connections, particularly into Franklinton, are poor. This project proposes a signature bicycle and pedestrian bridge at the confluence of the Scioto and Olentangy Rivers. It will connect Franklinton to downtown and provide a regionally significant east-west connection, linking neighborhoods to the east of the rivers to the existing I-670 Path via proposed projects on Sullivant and Town Street and the proposed Downtown Bikeway Connector. This project is a key segment of the Ohio to Erie Trail.

Existing Conditions

Opportunities and Constraints:

- Bridge connection at Scioto-Olentangy Confluence provides key link in east-west route and restores downtown access to Franklinton neighborhood.
- The proposed Downtown Bikeway Connector provides access from bridge east to the I-670 path.
- The Franklinton Community Mobility Plan (in progress December 2007) offers opportunities to provide connections to the bridge.
- Wayfinding signage will be necessary to direct bicyclists to the bridge.

Improvement Options and Design Details

Improvement Options:

- Construct signature bicycle and pedestrian bridge at confluence of Scioto and Olentangy Rivers to provide gateway between Downtown and Franklinton.
- Connect to Neil Avenue and proposed Downtown Bikeway Connector.
- Use wayfinding signage to connect to Town Street in Franklinton, with possible bicycle lanes provided on Town Street as part of the Franklinton Mobility Plan.

Map: Google Earth, 2007.

Cost Opinion

Cost opinion: $7,560,500

5.10. Railroad Crossing Improvements
Improve Six At-Grade Railroad Crossings

Project Description

At-grade railroad crossings can be difficult for bicyclists to cross, especially when the tracks cross the bicyclist's line of travel at less than a 45 degree angle. To safely cross tracks, bicyclists should travel over tracks as close to a 90 degree angle as possible. This project recommends improving crossings at six at-grade railroad crossings in the City. To complete these projects, the City will have to coordinate with the appropriate railroad companies and secure permission to make these improvements.

Existing Conditions

Six at-grade railroad crossings are selected for improvement:

Location	Description
McKinley Avenue and Harrison Road	T-intersection, RR 10 degrees right, asphalt crossing, 2 tracks
Refugee Road and Hines Road	T-intersection, RR 35 degrees left, asphalt crossing, 1 track
Williams Road East, west of Speedway Lane	RR crossing, 20 degrees left, asphalt crossing, 1 track
Mound Street West, west of Central Avenue	RR crossing, 25 degrees right, rubberized crossing, 1 track
Edgehill Road, south of Fifth Avenue	RR crossing, 45 degrees left, rubberized crossing, 1 track
Hall Road, east of Norton Road	RR crossing, 40 degrees right

Please see the image on the next page for aerial photos of the locations.

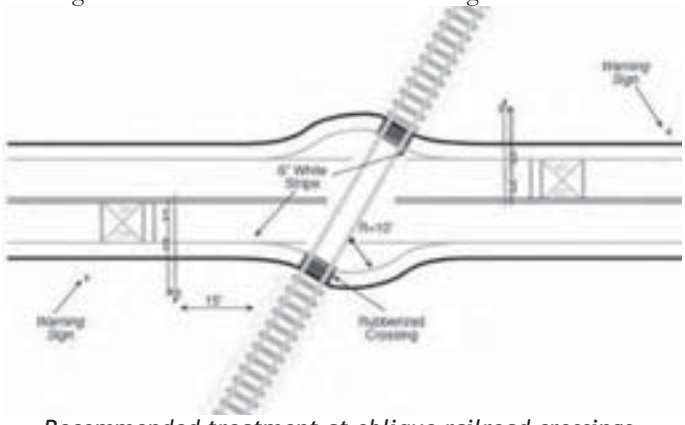
Opportunities and Constraints:

- Oblique railroad crossings are difficult for bicyclists to ride over.
- Asphalt crossings have deteriorated over time. Replacing asphalt crossings will benefit all road users.
- Improvements will require working in railroad-owned right-of-way.

Improvement Options and Design Details

Improvement Options:

- Install warning signage in advance of the crossings.
- The City will work with the railroad companies to:
  - Pave shoulders to provide bicyclists with enough room to turn to ride over the tracks at a 90 degree angle.
  - Pave over railroad tracks if the line is abandoned.
  - Replace asphalt crossings with concrete or rubberized crossings.



Recommended treatment at oblique railroad crossings.

Cost Opinion

Cost opinion: $361,000 (Includes $343,400 for shoulder paving, $1,200 for signage, and $16,400 for prefabricated concrete railroad crossings.)

Cost opinions are preliminary and subject to change upon further review.

5.11. East West Connection
Olentangy to Alum Creek Neighborhood Connector

Project Description

Columbus' residential roadways are, for the most part, comfortable for bicycling, with low vehicle volumes and speeds. Bicyclists of all skill levels and drivers can easily share these roads. This project creates a 7-mile east-west connection between the Olentangy Trail and the Alum Creek Trail, primarily using residential streets north of Morse Road. Most of the project can be implemented for low cost by using wayfinding signage. However, a key segment between Alum Creek Trail and Cleveland Avenue requires the construction of a shared-use path along a utility corridor. Once completed, the project will provide a key east-west connection for residents.

Existing Conditions

Opportunities and Constraints:

- Existing access to trails at each end of corridor provided by Alum Creek Bridge and Broadmeadows Bridge.
- Existing bicycle and pedestrian bridge provides access over I-71 at Woodward Park.
- Majority of corridor can be implemented using wayfinding signage.
- Key segment requires construction of shared-use path along utility corridor.
- Residential roads are comfortable for bicyclists of all abilities.
- Lincoln Avenue requires additional improvements to improve comfort level for bicycling.
- The route crosses several major roadways: North High Street, Sinclair Road, Karl Road, Cleveland Avenue, and Westerville Road. These are all signalized, but may require improvements.

EXISTNG CONDITIOS PHOTOS

Bridge over Alum Creek

Alum Creek Trail entrance at Wingfield

Residential roads are already suitable for bicycling

Bridge over I-71

Railroad crossing on Lincoln Avenue could be improved

Many crossings have pedestrian push buttons

Construction of Broadmeadows Bridge to Olentangy Trail

Improvement Options and Design Details

Improvement Options:

These options are listed from east to west.

- Sign Valley Park Drive as Shared Roadway.
- Construct median refuges at intersections of Westerville Drive/Valley Park Drive and Westerville Drive/Westerville Woods Drive to provide secure bicycle crossing of Westerville Drive.
- Construct shared-use path on west side of Westerville Drive between park driveway and Valley Park Drive.
- Construct shared-use path in utility corridor between Westerville Drive and Cleveland Avenue, working closely with adjacent residents.
- Construct median refuges at Cleveland Avenue/Bretton Woods Drive intersection.
- Sign as Shared Roadway: Edmonton Road, Northtowne Boulevard, Northcliff Drive, Riverbirch Drive, Penworth Drive,
- Construct shared-use path through Woodward Middle School on Karl Road, connecting to existing paths in Woodward Park.
- Sign Lincoln Avenue as a Shared Roadway. Improve railroad crossing west of Sinclair Road by paving 4' shoulders on each side. Evaluate feasibility of paving 4' shoulders on length of Lincoln between Sinclair Road and Indianola Avenue.
- Sign as Shared Route: Foster Avenue, E Kanawha Avenue, Milton Avenue, Highfield Drive, and Broadmeadows Boulevard.
- Future extension of route can continue on Sunbury Road under I-270, across Big Walnut Creek on a future bicycle and pedestrian bridge on Hildebrand Road, connecting to Cherry Bottom Road, Blendon Woods Metro Park and to old State Route 161 to access New Albany.

Please see map below for project location.

Cost Opinion

Cost opinion: $1,189,800 (Most of this project may be completed for $11,600. Includes $1,178,200 shared use path)
Cost opinions are preliminary and subject to change upon further review.

5.12. East-West Connector
Trabue Road/Renner Road Connection from Scioto River to Spindler Road

Project Description

This project proposes a shared use path along the north side of Trabue Road and Renner Road from the Scioto River to Spindler Road in Hilliard. This east-west connection will provide bicycle facilities to an area of Columbus that lacks facilities. Trabue Road is one of the only east-west connections in the area that cross esI-270, the railroad tracks, and provides access across the Scioto River. Trabue is currently signed as a bicycle route, but due to heavy truck volumes, narrow lanes, and 45 mph speed limit, it is not comfortable for bicycling.

Existing Conditions

Opportunities and Constraints:

- Trabue Road crosses the Scioto River, two railroad tracks and I-270, providing the only access across these facilities for motor vehicles and bicycles.
- The road is heavily traveled with 2 to 4 vehicle lanes and a posted speed of 45 miles per hour.
- Truck volumes are heavy on this roadway.
- Existing bridges over I-270 and railroad tracks have narrow shoulders that can accommodate bikes, but could be improved.
- Opportunities exist to provide a shared use path north of Trabue starting west of Hague Drive at Raymond-Memorial Golf Course.
- Existing sidewalk on north side of Renner after Whispering Willow Lane can be expanded to pathway.

Trabue Road is a signed shared route


Bridge over I-270


Bridge over railroad tracks


Trabue Road looking east toward Hilliard-Rome

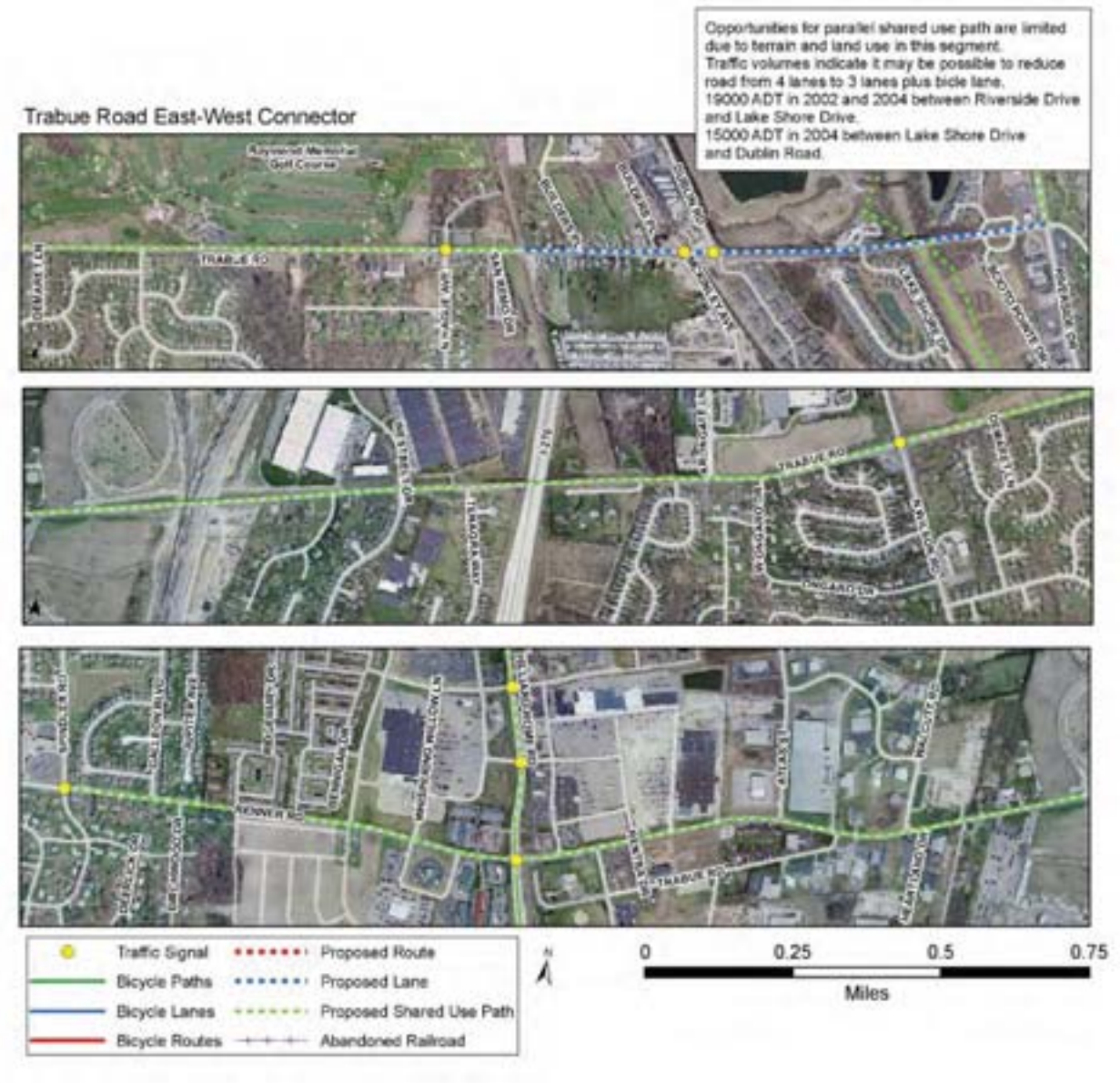
Pedestrian push buttons at Spindler Road

Spindler Road looking south toward Trabue Road

Improvement Options and Design Details

Improvement Options:

- Construct 10' wide shared use path north of Trabue Road and Renner Road from Riverside Drive to Spindler Avenue.
- Accommodate bicyclists on the north side of I-270 and railroad bridges by:
  - Option 1: Shifting the motor vehicle lanes south and constructing a separated 8' cycletrack on the bridges
  - Option 2: Constructing a cantilevered bicycle bridge off the north of the bridges, or
  - Option 3: Constructing a separate bicycle and pedestrian bridge to the north of the existing bridges.
- Expand existing sidewalk between Whispering Willow Lane and Spindler Road to a 10' shared use path.



Cost Opinion

Cost opinion: $1,936,300

Cost opinions are preliminary and subject to change upon further review.

5.13. Bicycle Boulevard
Town Street-Bryden Road Bicycle Boulevard

Project Description

Bicycle boulevards feature traffic calming solutions that slow motor vehicles and make it easier for bicycles and drivers to share the roadway. A route along East Town Street and Bryden Road was selected to provide connections between downtown and the Alum Creek Trail. This corridor is located in between Main Street and Broad Street (both identified as high-priority bicycle corridors) and provides alternatives to bicycling on these high-traffic roads.

Existing Conditions

Opportunities and Constraints:

- Two parallel roadways: Town Street/Bryden Road and Oak Street provide east-west connections between downtown and the Alum Creek Trail.
- Average daily traffic volumes are low to moderate on both corridors, with 2000 ADT on Oak Street in 2002 and 6000 ADT on Bryden Road in 2002.
- Both corridors provide crossings over I-71 and a rail corridor.
- Connection to Alum Creek Trail.
- Town and Oak Streets dead-end in downtown, necessitating wayfinding signage for bicyclists wishing to travel to the Olentangy Trail.
- Both corridors provide alternatives to riding on higher-volume Broad and Main Streets.

Improvement Options and Design Details

Improvement Options:

- Sign and stripe Town Street and Bryden Road as a bicycle boulevard between the Olentangy Trail and the Alum Creek Trail.
- Connect to Alum Creek Trail at Wolfe Park via Rhodes Avenue and Franklin Park South.
- Provide directional signage for eastbound and westbound bicyclists where East Town Street dead-ends at 3rd street.
- Install wayfinding signage along the route and install regionally approved trail entrance signs at Alum Creek and Olentangy Trails.
- Consider installing traffic calming along these roadways, including horizontal deflection such as traffic circles and chicanes, and low cost treatments, such as colored pavement, to visually narrow the roadway.
- Optional: Consider Oak Street for Bicycle Boulevard treatment.

NOTE: Due to a number of traffic and development efforts downtown, this project will require additional study for the segment west of I-71.

Cost Opinion

Cost opinion: $86,700 (Town-Bryden Street alignment)
$71,200 (Oak Street alignment)

Cost opinions are preliminary and subject to change upon further review.

5.14. East-West Connector SR-161 Shared-Use Path

Project Description

SR-161 currently has parallel shared-use paths west of Sawmill Road and east of Linworth Avenue. This project proposes the construction of a shared-use path south of SR-161 between Sawmill Road and Linworth Avenue, completing the gap in that network and providing an important east-west connection for the northern neighborhoods of Columbus.

Existing Conditions

Opportunities and Constraints:

- Existing shared-use paths on SR-161 west of Sawmill Road and east of Linworth Avenue.
- Agricultural land to south of SR-161 provides opportunity for shared-use path.
- Multiple driveways and street crossings on some parts of SR-161 will require special treatments.
- Will need to work with ODOT to construct facility.

Existing path south of SR-161 at Sawmill Road. (far left)

Grass ditch south of Sawmill Road (left)

Typical cross-section of SR-161 in residential (far left) and commercial (left) areas.

SR-161 crossing at railroad tracks (far left)

Existing shared use path south of SR-161 at Linworth

Road. (left)

Improvement Options and Design Details

Improvement Options:

- Construct shared-use path on the north side of SR-161 between Sawmill Road and Sawmill Place.
- Construct shared-use path on the south side of SR-161 between Sawmill Place and Linworth Avenue.
- Install high-visibility crosswalks and warning signage at major intersections.

Cost Opinion

Cost opinion: $1,267,700

Cost opinions are preliminary and subject to change upon further review.

5.15. East-West Connector
Williams Road Bicycle Lanes

Project Description

The southwestern quadrant of Columbus has limited bicycle facilities. Alum Creek Trail provides north-south access, and the City is committed to extend the Scioto Trail further south. This project proposes the construction of bicycle lanes on Williams Road between the future extension of the Scioto Trail to the existing Alum Creek Trail.

Existing Conditions

Opportunities and Constraints:

- Road provides east-west connection between proposed extension of Scioto Trail and Alum Creek Trail.
- Existing roadway is too narrow to accommodate bicyclists.
- Heavy truck volume on roadway.

Improvement Options and Design Details

Improvement Options:

- Pave 5' shoulders on both sides of roadway.
- Sign and stripe as bicycle lane.
- Provide regionally approved trail entrance markers and wayfinding signage to direct cyclists to the trails.

Cost Opinion

Cost opinion: $234,100
Cost opinions are preliminary and subject to change upon further review.

5.16. East-West Connector
Sullivant Avenue Corridor Improvements

Project Description

The Sullivant Avenue corridor provides access between the proposed Camp Chase Trail to the west and the Scioto Trail to the east. Sullivant Avenue is considered in the Franklinton Mobility Plan for traffic calming and possible bicycle facilities. This project recommends considering a four to three lane conversion with bicycle lanes on Sullivant Avenue, pending the findings of the Franklinton Mobility Plan. To provide access for bicyclists of all abilities, this project also recommends developing the alley just south of Sullivant Avenue into a Bicycle Boulevard. Access to the Scioto Trail can be provided via Town Street and the Town Street Bridge. This project is an example of how existing streets can be modified to provide bicycle facilities, per the proposed Complete Streets Policy.

Existing Conditions

Opportunities and Constraints:

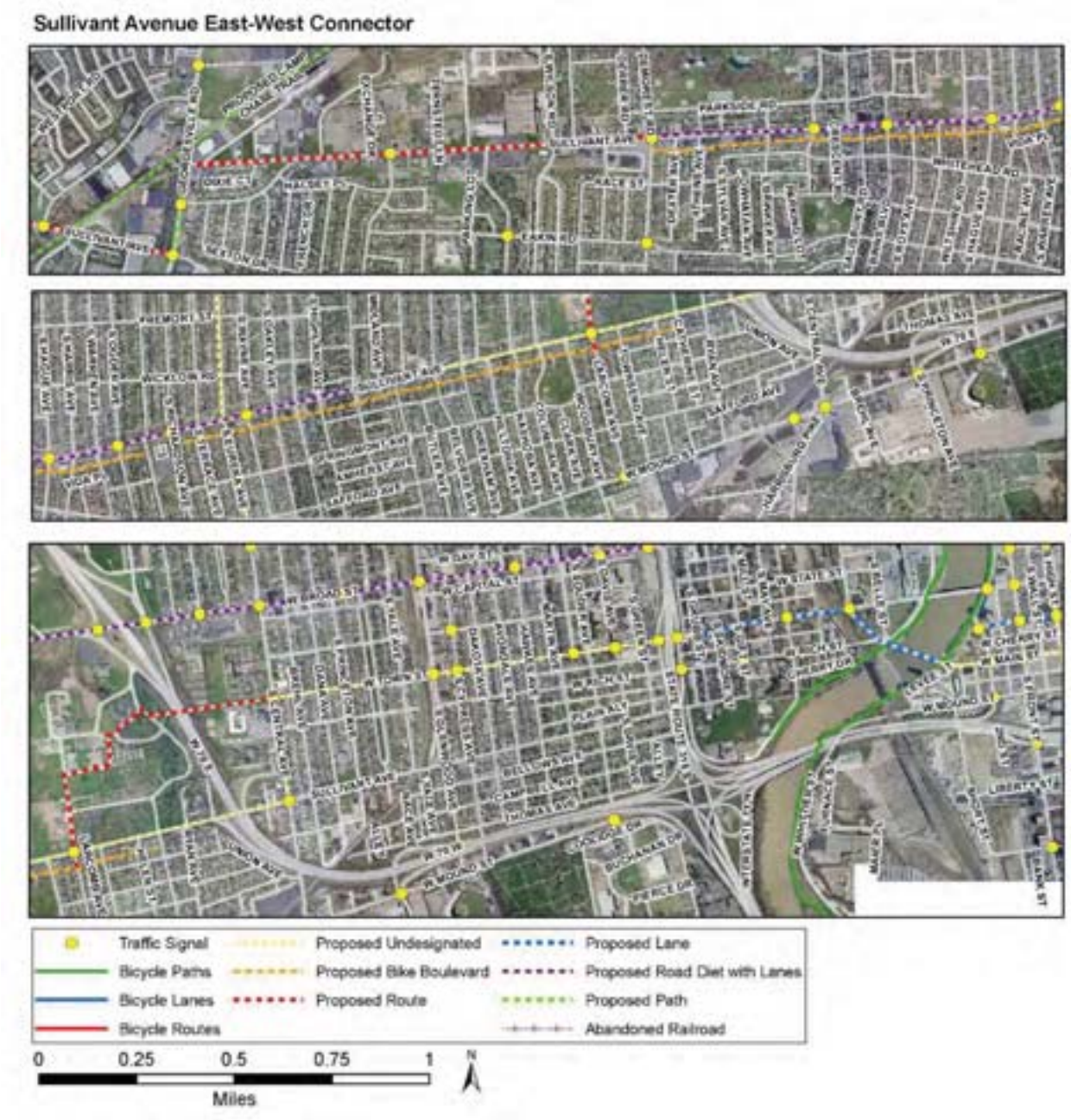
- Sullivant Avenue is a commercial corridor that links the proposed Camp Chase Trail to the existing Scioto Trail.
- Sullivant Avenue is four-lane roadway with ADT ranging from 15,000 to 21,600 vehicles per day.
- Alley parallels Sullivant Avenue just to the south for most of the corridor.
- Corridor would provide access to an area of Columbus without significant bicycle facilities.
- Corridor can be developed in conjunction with Franklinton Mobility Plan.

Improvement Options and Design Details

Improvement Options:

- Sign Sullivant Avenue as a bicycle route between Camp Chase Railroad and Georgesville Road.
- Construct shared-use path on west side of Georgesville Road between south and north sections of Sullivant Avenue.
- On-street option: Sign Sullivant Avenue as a bicycle route between Georgesville Road and Demorest Road. Consider restriping roadway to provide bicycle lanes.
- Separated path option: Construct shared-use path on south side of Sullivant Avenue between Georgesville Road and Demorest Road.
- Develop alley just south of Sullivant Avenue between Demorest Road and Catherine Street as a bicycle boulevard.
- Consider converting Sullivant Avenue between Demorest Road and from four travel lanes to two travel lanes, a center turn lane and bicycle lanes.

See map on next page.



Cost Opinion

Cost opinion: $557,200

Cost opinions are preliminary and subject to change upon further review.

5.17. Bicycle Lanes
Hudson Street/Joyce Avenue/Seventeenth Avenue Improvements

Project Description

The project area consists of three street segments: Joyce Avenue from Hudson to 17th Avenue, 17th Avenue from Joyce Avenue to the railroad tracks, and Hudson Avenue from Joyce Avenue to Cleveland Avenue. Hudson Street and part of 17th Avenue are considered in the Linden Area Traffic Calming Recommended Improvements. This project recommends bicycle lanes along Joyce Avenue and Hudson Street and along part of 17th Avenue, as well as a shared-use path along the abandoned railroad right-of-way.

Improvements Summary

Issues:

- Shoulders along Joyce Avenue, Hudson Street and Seventeenth Avenue are unpaved or pavement quality is poor.
- Lane widths are too narrow (10-10.5 ft) and traffic speeds and volumes are too high to provide comfortable on-street bicycling along Joyce Avenue, Hudson Street and Seventeenth Avenue.
- Multiple commercial driveways and wide driveways along Joyce Avenue.

Improvement Options:

- **Joyce Avenue** from Hudson Street to 17th Ave: Repave and restripe shoulder to provide 6' bike lanes (5' bike lanes between Hudson St. and Maynard Ave.)
- **Hudson Street** from Cleveland Ave to railroad ROW: Sign as signed shared roadway
- **Hudson Street** from railroad ROW to Joyce Ave: Repave and restripe shoulder to accommodate 6' bike lanes with 2' wide painted separator and 2' shoulder.
- **17th Avenue** from Joyce Avenue to just west of railroad ROW: Repave and restripe shoulder to provide 6' bike lanes.
- Consider shared-use path on railroad right-of-way, parallel to Joyce Avenue.
- Consider paving shared-use path from Joyce Avenue to existing path in Maloney Park.
- Hudson Street & Joyce Avenue: Consider removal of eastbound yielded right, square corner to decrease turning speeds, add bicycle merge signs, repaint crosswalks, and consolidate driveways on Hudson St.
- Consolidate commercial driveways on Joyce Avenue.
- 17th Avenue & Joyce Avenue: Consider removal of eastbound yielded right, construct curb/gutter at corners, square corner to decrease turning speeds, add bicycle merge signs, stripe crosswalks, and consolidate driveways at corners.
- 17th Ave & Louis Ave: Add crosswalks on north and south legs.
- If shared use path is constructed along railroad right-of-way, add trailhead signs alerting motorists of trail crossing/entrance at Hudson Street and at intersection of Seventeenth Ave, Billiter Blvd and railroad right-of-way.

Design Details

Cost Opinion

Cost opinion: Bike lanes: $484,700
Shared use path: $1,191,300

Note: high cost of providing bike lanes is due to need to pave shoulder.
Cost opinions are preliminary and subject to change upon further review.

5.18. Bike Lanes and Shared-Use Path Stelzer Road and James Road

Project Description

The Stelzer Road/James Road corridor provides north-south access over I-670 and the railroad tracks and serves Columbus International Airport. These roadways also connect to future proposed bikeways along Broad Street, Johnstown Road, and a rail-with-trail route south of 5th Avenue. As is, the roadway only serves experienced bicyclists. There is currently enough right-of-way to provide for a shared-use path on the east side of the corridor. By restriping the motor vehicle lanes and, in some cases, establishing a road diet, bicycle lanes can be provided. This project is an example of how existing streets can be modified to provide bicycle facilities, per the proposed Complete Streets Policy.

Improvements Summary

Typical cross-section of Stelzer Road

Issues:

- High speed roadways
- 2 to 3 lanes in each direction
- No sidewalk facilities along much of route

Improvement Options:

- **Stelzer Road** between Johnstown Road and 7th Avenue: construct 10' paved shared-use path along east side of roadway Connect shared-use path to existing sidewalk north of 7th Ave.
- **Stelzer Road** between 7th Avenue and James Road/Allegheny Road: Road diet to 5-foot Bike Lane|11|11|11|11|6-foot Bike Lane (Roadway can be configured either as four travel lanes, or one travel lane southbound and two northbound plus turn lane)
- **Stelzer Rd/James Rd** btw James Rd/Allegheny Ave & Ruhl Ave : Road diet to 6-foot Bike Lane|11|11 turn lane|11|12|6-foot Bike Lane
- **James Rd** between Ruhl Ave & Broad Street: Road diet to: 6-foot Bike Lane | 12 | 14 | 12| 6-foot Bike Lane. Install sidewalks on both sides.
- **Bridge over 5th Ave/railroad**: Stripe bicycle lanes

Crossing Improvements Associated with Shared Use Path

- **Stelzer Rd. & Johnstown Rd.**: Close southernmost driveway of business on SE corner. Create staging area for trail. Either install bike/ped bridge over creek (preferred) or create raised path adjacent to roadway over creek and connect with path south of creek.
- **Stelzer Rd. & International Gateway**: Intersection is being rebuilt as a local interchange; bikeways and sidewalks should be provided at all points to allow access. Warning signage for motorists; stripe crosswalks across east leg of International Gateway, provide paved refuge area in median; possible signal rephasing for cyclists/pedestrians on trail; possibly prohibit right turn on red for northbound motorists on Stelzer, westbound motorists on International Gateway.
- **Stelzer Rd & Seventeenth Ave**: Access driveway to airport on east side of Stelzer needs signage and striping.
- **Stelzer Rd. & Seventh Ave**: Shift to bike lanes on both sides of roadway; Clear signage indicating that southbound cyclists must use western bike lane and not continue south riding against traffic.

Design Details

Cost Opinion

Cost opinion: $2,690,606

Cost opinions are preliminary and subject to change upon further review.

6. Recommended Education, Encouragement and Enforcement Programs

The improved bicycle facilities recommended by the Bicentennial Bikeways Plan should be complemented by programs and activities designed to promote bicycling. There are many existing efforts to promote bicycling in Columbus. Many are provided by active concerned community groups and individual residents. The Bicentennial Bikeways Master Plan recognizes these efforts and encourages the City of Columbus to support, promote, and build upon these grassroots efforts.

Bicycle planning commonly talks about the four "Es": engineering, education, encouragement and enforcement. In the past, Columbus has focused primarily on the engineering component. This Plan recommends that the City support the softer side of bicycling-- education, encouragement and enforcement—through the programs outlined in this chapter.

This chapter is divided into the following sections:

- 6.1. Education Programs (Page 6-1)
- 6.2. Encouragement Programs (Page 6-4)
- 6.3. Community Involvement (Page 6-7)
- 6.4. Citywide and Regional Coordination (Page 6-8)
- 6.5. Safety and Security (Page 6-11)

The success of these recommendations is dependent on funding and staff time that is available to devote to these programs. In many cases, these programs can be implemented by independent groups, individuals and non-profits. Appendix F provides a list of staff resources and other costs required by the programs recommended in this chapter.

6.1. Education Programs

Education programs ensure that bicyclists, pedestrians, and motorists know how to travel safely and understand the regulations that govern these modes of transportation. Encouragement programs provide fun and creative opportunities for people to "try" biking and walking. Education and encouragement programs also increase the public awareness of bicycling and walking as means of transportation and increase public support for policies that promote biking and walking.

Current educational efforts are provided by the City of Columbus and interested residents. A small annual spring safety campaign was conducted for 7 years, but discontinued in 2007 due to lack of staff. Implementation of the following recommendations will require funding for staff and dedicated cooperative efforts among the City of Columbus, the Columbus Police Department, local school districts, local bicycle groups, and community members.

6.1.1. Recommendation: Educate Motorists and Bicyclists through a Share the Road Campaign

A Share the Road campaign is intended to educate motorists, bicyclists, and pedestrians about their legal rights and responsibilities on the road, and the need to increase courtesy and cooperation to improve safety. The campaign targets not just youth, but all residents and visitors to a community. This should be a combined effort between the City of Columbus' Public Safety Department, (or Police Division), the Central Ohio Bicycle Advocacy Coalition, and other partners to develop a Share the Road Campaign.[20] To establish a Share the Road campaign, the City of Columbus should:

- Develop **Share the Road** flyers, one targeting bicyclists and one targeting motorists, which outline safe and courteous behavior, collision reporting procedures, and local bicycling resources and hotlines.
- In conjunction with the Police Department, hold **periodic traffic checkpoints** during months with high bicycling rates. At checkpoints, motorists, bicyclists and pedestrians are stopped, given a Share the Road flyer and have the opportunity to provide feedback to officers regarding the campaign ideas. Checkpoints could be held along local bikeways such as the Olentangy River Trail and roadways commonly used by bicyclists.
- Create **public service announcements** on radio and TV to promote the Share the Road campaign, including publicity about the Share the Road checkpoints. Promote the campaign on the City's website.
- Develop public PowerPoint **presentations** with the Share the Road message for presentation to the public.
- Develop **adult bicycle safety classes** and hold them at regular intervals.
- Promote the purchase of "Share the Road" license plates.

6.1.2. Continue and Expand Bicycle Education Programs

The City of Columbus currently distributes three bicycle safety pamphlets:

- *Bicycle Safety: What Every Parent Should Know* This brochure was written for parents teaching children how to bicycle. It covers most of the basic skills needed for bicycling on local streets.
- *Bicyclist Survival* A general guide to bicycling for adult. The booklet discusses equipment, repairs, weather, clothing, and traffic skills.
- *Street Smarts* Describes safe techniques for bicycling on arterial streets.

[20] Other partners may include local hospitals, schools, or regional and state agencies. For example, in California, the Marin County Bicycle Coalition has partnered with Marin General Hospital, Marin County Law Enforcement and National Highway Traffic Safety Administration to develop its Share the Road Campaign. Marin County Bicycle Coalition's Share the Road Campaign can be found at www.marinbike.org/Campaigns/ShareTheRoad/Index.shtml
The City of San Jose Street Smarts Program is available at: http://www.getstreetsmarts.org/

6.1.3. Recommendation: Expand Existing Bicycle Safety Classes

The City should expand existing bicycle safety classes by incorporating them into recreation center programs and by working with the school districts to incorporate bicycle safety into the school curriculum. Typical bicycle education programs educate students about the rules of the road, proper use of bicycle equipment, biking skills, street crossing skills, and the benefits of biking. Education programs can be part of a Safe Routes to School program. These types of education programs are usually sponsored by a joint City/school district committee that includes appointed parents, teachers, student representatives, administrators, police, active bicyclists, and engineering department staff.

Education need not be limited to younger children. The City's current bicycle safety classes are available for adults as well as children. The City may consider working with the Sheriff's Department to utilize adult bicycle education programs as a "bicycle traffic school" in lieu of fines for bicycle or pedestrian-related traffic violations. These courses could be geared toward motorists as well as bicyclists and pedestrians.

6.1.4. Recommendation: Educate Motorists, City Staff, Maintenance, and Construction Crews

Bicycle related education should be targeted to motorists, City staff, developers, and others who directly or indirectly affect the biking environment. Information regarding the rights of bicyclists and the rules of the road are especially important. Many motorists mistakenly believe, for example, that bicyclists do not have a right to ride on the roadway or that bicyclists should only ride on sidewalks. Education about the rights and responsibilities of pedestrians and bicyclists can include:

- Incorporating bicycle and pedestrian safety into traffic school curriculum. (Ohio traffic school, also known as defensive driving, is taken to dismiss Columbus Ohio traffic tickets or reduce fines and also for auto insurance discounts.)
- Producing a brochure on bicycle and pedestrian safety and laws for public distribution.
- Enforcing traffic laws for bicyclists.
- Providing training for bicycle and pedestrian planning for all City planners.
- Working with contractors, subcontractors, and City maintenance and utility crews to ensure they understand the needs of bicyclists and pedestrians and follow standard procedures when working on or adjacent to roadways and walkways.

An educational presentation has been developed for City engineering staff, but has not yet been presented.

6.2. Encouragement Programs

Strategies for community involvement in bicycle and pedestrian improvements will be important to ensure broad-based support to help secure financial resources. Involvement by the private sector in raising awareness of the benefits of bicycling can range from small incremental activities by non-profit groups, to efforts by the largest employers in the City. Specific programs are described below.

6.2.1. Recommendation: Facilitate the Development of Employer Incentive Programs

Employer incentive programs to encourage employees to try bicycling and walking to work and include strategies such as providing bicycle lockers and shower facilities, offering more flexible arrival and departure times, and fun incentives such as entry into monthly raffle contests. The City may offer incentives to employers to institute these improvements through lowered parking requirements, reduced traffic mitigation fees, or other means.

The Mid-Ohio Regional Planning Commission has a bike matching program to link those with similar origins and destinations who are interested in riding together. Signing up for this program also entitles the participant for the Guaranteed Ride Home program which reimburses bicyclists for a taxi ride in case of unforeseen circumstances.

6.2.2. Recommendation: Develop System Identification for the On-Street Bikeways

System identification creates greater awareness of the bicycle and pedestrian network and provides wayfinding assistance for cyclists and walkers. System identification usually begins by identification of a series of bicycle and pedestrian routes, development of a unique logo and facility signage, development of a network map and publicity. Signage may also include informational kiosks, directional signage pointing out destinations, and mileage indicators. System identification plans are usually implemented and maintained by the City. Recommendations on wayfinding signage are provided in Chapter 7: Design Guidelines.

6.2.3. Recommendation: Support Community Bikeway/Walkway Adoption

Community Bikeway Adoption programs are similar to the widely instituted Adopt-a-Highway programs throughout the country. These programs identify local individuals, organizations, or businesses that would be interested in "adopting" a bikeway.

Bikeway adoption can be used for raising private funds from individuals, groups and corporations to construct bicycle facilities, in which case the donor can be recognized through the bikeway name, trail markers, a ribbon-cutting ceremony or other public recognition.

Alternatively, bikeways can be adopted by community members who provide funding or volunteer hours to maintain an existing bikeway. Adopting a bikeway for maintenance would mean that person or group would be responsible for maintenance of the bikeway either through direct action

or as the source of funding for the City's maintenance of that bikeway. For example, members of a local recreation group may volunteer every other weekend to sweep a bikeway and identify and address larger maintenance needs. Adopt-a-bikeway programs can involve more than neighborhood groups. A local bike shop may adopt a bikeway by providing funding for the maintenance costs. The managers of an adopted bikeway may be allowed to post their name on bikeway signs throughout the bikeway in order to display their commitment to bicycling in Columbus.

6.2.4. Recommendation: Create New Opportunities for Recreational Biking

Eighty percent of bicycle trips in Columbus are recreational in nature. Columbus should encourage recreational bicycling by providing new opportunities for mountain biking, BMX biking, and by encouraging support for recreational road bicycling clubs. By encouraging recreational bicycling, Columbus is supporting the health of its community members and supporting the larger world of bicyclists.

6.2.5. Communication: Create a Bike Map and Multi-Modal Access Guide

In the short term, Columbus, in coordination with COTA, should develop and publish a citywide bicycle map to be produced in print and online format. The map should include bicycle safety and information about sharing the road on the back.

In the long-term, Columbus should develop a multi-modal access guide. A multi-modal access guide provides concise customized information on how to access specific destinations with emphasis on biking, walking and transit. Access guides can be as simple as a map printed on the back as a business card or as complex as a multi-page packet distributed to employees. Some items commonly included in access guides are:

- A map of the area with rail and bus stops, recommended walking and biking routes, nearby landmarks, facilities such as restrooms and drinking fountains, locations of bicycle and vehicle parking and major roads.
- Information on transit service including: frequency, fares, accepted methods of payment, first and last runs, schedules, phone numbers and websites of transit service providers and taxis.
- Information on how long it takes to walk or bike from a transit station to a destination.
- Accessibility information for people with disabilities.

Best practices include using graphics, providing specific step-by-step travel directions, providing parking locations and pricing information, and providing information about the benefits of walking and biking. High-quality access guides should be concise and accurate and should incorporate input from key stakeholders, including public transportation operators, public officials, employees, staff who will be distributing the access guide, and those with disabilities. Access guides are usually developed by facility managers, employers or Transportation Management Associations.

6.2.6. Recommendation: Work with Businesses to Develop Incentives for Biking

Incentive programs to encourage biking and walking to local businesses can be developed in coordination with individual businesses, the Chamber of Commerce, local bicycling stores, and advocacy groups. Such efforts may include:

A trailside bicycle rental and café on the Katy Trail in Missouri

- Creating promotional events such as "Bicycle to the Grocery Store" days, when bicyclists get vouchers for or discounts on items in the store, or "Bicycle to the Video Store" days, when bicyclists receive free popcorn or a discount on a movie rental.
- Holding an annual community event to encourage residents to replace one car trip a week with a bicycle trip.
- Developing, promoting, and publicizing bicycle commuter services, such as bike shops selling commute gear, bike-on-transit policies, and regular escorted commute rides.
- Creating an annual commuter challenge for area businesses.
- Encouraging and facilitating the development of small satellite business services near bicycle trailheads, such as mobile cafes and stands that sell amenities like snacks, sunscreen, Band-Aids, and trail maps.

6.2.7. Recommendation: Commit to Becoming a Recognized Bicycle Friendly Community

The League of American Bicyclists sponsors an awards program that recognizes cities and counties that actively support bicycling. According to the League, a Bicycle Friendly Community is one that "provides safe accommodation for cycling and encourages its residents to bike for transportation and recreation." The league recognizes four tiers of bicycle friendly communities: bronze, silver, gold and platinum. The City of Columbus should develop an action plan to meet the League of American Cyclist's requirements to become a Bicycle Friendly Community.

Columbus is eligible to apply for the national Bicycle Friendly Community award program

The application process for being considered as a Bicycle Friendly Community involves an audit of the engineering, education, encouragement, enforcement, evaluation and planning efforts for bicycling. The League reviews the application and solicits feedback from bicyclists in the

community to determine if Bicycle Friendly Status should be awarded. The League provides technical assistance and other information for cities working toward Bicycle Friendly Community status at: www.bicyclefriendlycommunity.org.

6.3. Community Involvement

Involving the community in visioning, planning, and promoting the bikeway network can ensure that the community's needs are addressed, can foster support for biking, and can result in a better, more frequently used bicycle network. Projects with a broad base of support among citizens, staff, and elected officials will likely be more easily funded and implemented. Columbus residents and employees can be involved in the development and promotion of the bicycle network through the following recommendations:

6.3.1. Recommendation: Develop a Columbus Bikeways Website

A city website dedicated to bicycling in Columbus can provide an important way of communicating with bicyclists. City websites may include the following items:

- Maps of the bikeway network
- Rules of the road/rules of the trail
- Links to local bicycling organizations
- Information about bicycle education courses
- Notices about detours, path closures, maintenance
- A way to contact City staff about bikeway issues
- Information provided in multiple languages.

6.3.2. Recommendation: Promote Bike-to-Work Day

Columbus should join other Ohio cities such as Athens, Cincinnati, Cleveland, Dayton, and Toledo and promote an annual Bike-to-Work Week in May. The League of American Bicyclists promotes national bike to work day in May and the organization's website provides marketing, educational, and organizational materials to help cities promote and support bike to work week. (http://www.bikeleague.org/programs/bikemonth/).

Events described in the League's organizing handbook[21] include:

Energizer Stations
San Francisco, California hosts numerous bike tours during National Bike Month. On Bike-to-Work day, they set up 12 energizer stations in various neighborhoods so that people could stop in on their morning and evening commutes. The energizer stations had food, red blinky lights, and reflective leg bands.

[21] These event descriptions are taken from "National Bike Month 2007 51st Anniversary Celebration" published by the League of American Bicyclists.

Close a Street
Sarasota, Florida closed off a street for Bike-to-Work day and had booths from bicycle dealers, the public health department, and the bike pedestrian coordinator set up along the street so people could buy supplies and test ride bikes.

Ride with the Mayor
Riding with the Mayor is an excellent way to promote Bike Month and Bike-to-Work Day. Use this opportunity to showcase good facilities in your area highlight any needs for community improvement.

Commuter Challenge
New York City and many other cities host commuter challenges where businesses compete to have the highest percentage of employees who pledge to Bike-to-Work every day of bike week. Bonus points are given to companies with bicycle parking, safety materials, and or showers and changing facilities.

Car vs. Bus vs. Bike Commuter Race
The city of Dallas, Texas has played host to several Car vs. Bus vs. Bike Commuter Races. Motorist, bus driver and cyclist all start and end the morning rush hour at the same spots, but may take distinctly different routes. The bicyclist always wins. This is a sure-fire media event to run the week before Bike-to-Work Day to encourage folks to give bicycle commuting a try.

6.3.3. Recommendation: Actively Solicit and Promote Bike Fairs, Races and other Bicycle-Related Events

Hosting bike fairs, races, and other bicycle-related events in Columbus can raise the profile of bicycling in the area and provide entertainment for all ages. These events provide an opportunity to educate and encourage current and potential bicyclists. These events can also bring visitors to Columbus that may contribute to the local economy. These events could be sponsored and implemented through collaboration between City and local employers. The Columbus Health Department should play a role in the promotion of these events.

6.4. Citywide and Regional Coordination

Bicycle and planning, facility construction, maintenance and programming in Columbus are currently conducted by many different entities. There is a need for coordination between these different entities. This plan recommends that the City fill the role of Bikeways Coordinator and facilitate the development of a three-part advisory/implementation system consisting of:

Transportation, Pedestrian and Bicycle Advisory Commission: Citizen's group that advises City Council and City staff on bicycle- and pedestrian-related matters. This plan recommends that the City combine the former Bikeways Advisory Committee, which reported to the Department of Recreation and Parks, with the Transportation and Pedestrian Advisory Commission, which reports to the Public Service Department. This combined Advisory Committee would report to both departments and have shared leadership between the departments.

Inter-Agency Bicycle Working Group: A group of City and Regional staff that is charged with implementing Columbus' bicycle facilities.

Funding Foundation (200 Friends of Columbus): A private foundation to promote the Bicentennial Bikeways Plan and to raise necessary funding to construct and maintain the bicycle facilities.

6.4.1. Recommendation: Fund and Fill the Bikeways Coordinator Position

The City of Columbus does not currently have the Bikeways Coordinator position filled. To take full advantage of bicycle planning efforts in Columbus, and to assist with implementation of the many projects and programs recommended in this plan, the City of Columbus may wish to consider filling this position. The job duties for this staff person may include monitoring the design and construction of on-street bikeways and shared use paths, including those constructed in conjunction with private development projects, ensuring bicycle facilities identified in specific plans and as mitigation measures are designed appropriately and constructed expediently, coordinating the implementation of the recommended projects and programs listed in this plan, and identifying new projects.

6.4.2. Recommendation: Reorganize and Reestablish the Bikeways Advisory Committee

In 1993, the Columbus City Council established a Bikeways Advisory Committee. The Committee advises the Mayor and City Council with the mission "To integrate bicycles into the transportation systems of Columbus and central Ohio, by providing a safe convenient system of bikeways and other bicycle facilities." The BAC has been successful in spurring the City to update it's bicycle plan, and encouraging the City to maintain its bicycle police force. The BAC has been on hiatus since December 2006, though its members have been actively involved in developing this plan.

The City should re-establish a citizen advisory group capable of strong advocacy, coordination, and advice in implementing this plan.

The skill set of this group should include a cross-section of members, including bicycle advocates, politicians, and influential members of the private sector, capable of helping spread the message into board rooms, councils, and non-traditional audiences. The group should present a unified response to bicycle-related issues in Columbus.

Recommendations include:

- The Bikeways Advisory Committee should be combined with the Transportation and Pedestrian Advisory Commission, and shared leadership should be established between the Public Service Department and the Department of Recreation and Parks.

- New objectives should be designed to support the function of the committee.

- Committee members should be appointed by the Mayor and membership supported by city staff.
- Attendance by city staff members should be mandatory.
- The City should support the mission of the BAC, should ensure that members of the BAC are appointed in a timely manner, and should consult with the BAC on all bicycle-related items and on major transportation decisions.

6.4.3. Recommendation: Establish an Interagency Working Group

In addition to restructuring and strengthening the Bikeways Advisory Committee, an Interagency Working Group should be established in the office of the Mayor, with representatives from all city agencies with responsibility for building, maintaining, promoting and enhancing the bikeway system. This group should meet regularly to ensure that bikeways are integrated throughout all functional areas of city government.

6.4.4. Recommendation: Foster a Private Funding Foundation

The City of Columbus, to the extent possible, should foster the formation of a private foundation that promotes the Bicentennial Bikeways Plan and raises private funds to construct and maintain bicycle facilities. A suggested name for this foundation is 200 Friends of Columbus.

6.4.5. Recommendation: Continue to Coordinate with Mid-Ohio Regional Planning Commission, Ohio Department of Transportation, and other Agencies to Expand the Regional Bikeway Network

Expanding and enhancing the regional bikeway network is an important part of making bicycling a viable commute mode. Columbus' employers attract employees from outside the City limits and several regional and state trails pass through the City. The City of Columbus should actively encourage and facilitate the construction and improvement of bikeway facilities on regionally important routes. The City should place a high priority on constructing regional bikeways as identified in MORPC's 2006 Regional Bicycle Transportation Facilities Plan.

6.4.6. Recommendation: Support Citywide Shared Bicycle Program

Columbus should research the feasibility of supporting a citywide shared bicycle program. MORPC promotes bikesharing in its Regional Bicycle Transportation Plan:

> "Similar to carsharing, bikesharing allows flexible, short-range transportation options for an urban or dense setting. A community bike program comes in several

different forms. The basic premise is a collection of bicycles for the community to use for transportation, exercise, and entertainment."

"Bikesharing represents an opportunity to complement other demand reduction strategies. Transit-oriented development, college campuses, and urban centers all have qualities that could benefit from development of bicycle programs. Efforts to encourage bikesharing should be made as new sustainable development projects are pursued."

The first bicycle programs established in the United States were based on a let-loose system. Multiple locations used for lending with no membership and no tracking system. These programs tend to experience high rates of mechanical problems and rapid evaporation of their inventory, and subsequent burnout of volunteers. Europe has recently established bike rental programs that allow users to use a debit or credit card, or a prepaid swipe card to release a bicycle from a locked parking area and to ride it for a small hourly fee. These programs show more promise in providing bicycling to the public.

Adshel (subsidiary of Clear Channel) Commercial Electronic Bike-Sharing Facility
Source: MORPC

Bike Rental

In addition to promoting shared bicycle programs, the City should support businesses which provide bicycles for rental. Rental bicycles are particularly important in promoting Columbus' shared-use path system as a destination for tourists.

6.5. Safety and Security

6.5.1. Recommendation: Lights On Safety Campaign

Columbus should consider as a first priority sponsoring a safety campaign aimed at increasing the visibility of bicyclists at night. The campaign could consist of advertising (public service announcements, bus shelter ads, banners, and tags to hang on parked bicycles) and a way to provide reduced cost or free bicycle lights to bicyclists.

6.5.2. Recommendation: Continue to Enforce Traffic Laws for Motorists and Bicyclists

The Columbus Police Department should continue to perform enforcement of applicable laws on shared-use paths, depending on available resources and priorities. Enforcement of vehicle statutes relating to bicycle operation will be enforced on bikeways as part of the department's normal operations.

It is recommended that the Police Department proactively enforce bicycle-related violations at high-crash areas. This spot enforcement should be highly visible, and publicly advertised. It may take the form of crosswalk stings, handing out informational sheets to motorists, bicyclists and pedestrians, or enforcing speed limits and right-of-way at shared use path-roadway intersections.

As part of a National Highway Traffic Safety Administration grant awarded to Utah's Departments of Health, Transportation, and Public Safety to develop a Share the Road campaign, the State of Utah has developed an enforcement plan that targets motorists who do not share the road with bicyclists. Plainclothes officers on bicycles will stop motorists and cyclists not following the rules of the road and will provide educational material developed as part of the grant, as well as cite the transgressors. An officer on a bicycle will observe the offense and radio to an officer in a chase car who will make the stop.

Based on Columbus' crash records, bicycle enforcement should focus on running red lights and stop signs, traveling at night without lights, failure to yield at driveways, and failure to look and signal on left turns.

6.5.3. Recommendation: Increase Safety and Security through Proper Design and Maintenance

The following recommendations emphasize safety and security through design and maintenance efforts. These actions should be incorporated into the planning and development process of all bicycle facilities.

- Adhere to the established Federal and State design, operation, and maintenance standards (Ohio MUTCD, AASHTO).
- Supplement these standards with the sound judgment of professional planners, public safety officials and engineers.
- Maintain adequate recording and response mechanisms for reported safety and maintenance problems.
- Provide regular police patrols to the extent needed.
- Thoroughly research the causes of each reported accident within the City of Columbus' bikeways network. Respond to crash investigations with appropriate design or operation improvements.

6.5.4. Recommendation: Expand the Volunteer Trail Watch Program

A volunteer trail watch program has been established for a four-mile stretch of the Olentangy Trail in Whetstone and Tuttle Parks. This program is a collaboration among the city's Recreation and Parks Department, the Columbus Division of Police, and the Clintonville Community Crime Patrol. As many as 15 volunteers will provide information and education to trail users and monitor the trail for unsafe conditions and maintenance issues. Volunteers do not have enforcement powers, but

report emergencies to the police. The north end of the Alum Creek Trail is also patrolled by a volunteer Trail Watch.

Volunteer requirements are outlined on the City's website:

> "Each volunteer is required to attend a half-day training course, complete a background check, and volunteer a minimum of eight hours each month.
>
> Each volunteer should also have a bicycle or roller blades and a cell phone. The recreation and parks department will provide a uniform t-shirt, name tag, handbook, and educational and training materials.
>
> Volunteers will also be responsible for cleaning up the trail as necessary, periodically conducting trail user satisfaction surveys, and documenting any issues affecting the trail and its users."

The City of Columbus should continue to support this volunteer trail watch program, and expand it to other areas as neighborhood interest warrants.

6.5.5. Recommendation: Maintain the Columbus Police Department's Bicycle Patrol Unit

The Columbus Police Department currently has a bicycle patrol unit. Bicycles are an excellent community-policing tool, as officers on bikes are often viewed as more approachable, thus improving trust and relations between the citizens and police. Bicycle patrol units can work closely with citizens to address concerns before they become problems. Bicycle patrol units can have a direct impact on bicycle safety by enforcing bicycle traffic laws (e.g. wrong-way riding, sidewalk riding, obeying traffic controls, children wearing helmets), and providing bicycle safety education. The City of Columbus should increase the presence of the bicycle patrol unit on shared use paths.

6.5.6. Recommendation: Establish a Safe Routes to School Program

Columbus does not currently have a citywide Safe Routes to Schools program, though projects to make it safer to bike and walk to school have been encouraged by the Columbus Area Pedestrian Committee. Safe Routes to Schools programs encourage walking and biking to school through parent and student education and incentives. Programs generally address the safety concerns of parents by encouraging greater enforcement of traffic laws, educating the public, and redesigning streets to be safer. State and federal funding is available for Safe Routes to Schools programs. Identifying and

improving routes for children to walk or bicycle to school is one of the most effective means of reducing morning traffic congestion and addressing existing safety problems. School commute programs that are joint efforts of the school district and city, with parent organizations adding an important element, are usually most effective.

6.5.7. Recommendation: Support Community Bicycle Safety Programs

The City of Columbus should work with local schools, organizations and non-profits to continue to provide bicycle safety programs to the local community. In addition to continuing to provide the three bicycle safety handbooks, the City should consider programs such as free/low cost helmet or bicycle light giveaways for low-income youth, supporting and advertising bicycle safety education classes at community centers, encouraging City staff members to become League of American Bicyclists-certified bicycle instructors and provide training to neighborhood groups, and using posters, public service announcements and other media to advertise bicycle safety. Bicycle skill education courses should be offered through multiple venues, including public schools, community colleges, the YMCA, and boys and girls clubs.

7. Cost Opinions, Funding and Implementation

This chapter identifies steps towards implementation of the proposed facilities of this plan, the estimated costs for the proposed facilities, maintenance, and education and encouragement programs. The chapter also outlines funding sources and provides a 20-year phasing plan for implementing the recommendations in this plan.

This chapter includes the following sections:

7.1. Implementation Process provides general information about the steps needed to implement a project. (Page 7-1)

7.2. Cost Breakdown provides estimates for constructing the recommended bicycle facilities, maintaining the network, and developing education, encouragement and enforcement programs. (Page 7-2)

7.3. Funding Sources lists funding sources available for planning, designing and constructing recommended projects. (Page 7-5)

7.4. Phased Implementation Plan outlines the bicycle facilities and projects that are recommended for implementation within the next three, ten, and twenty years. (Page 7-10)

7.5. Implementation Strategies provides recommendations for implementing the projects identified in this plan and outlines criteria that can be used to measure how effective the City's efforts are at promoting the plan's vision. (Page 7-14)

7.6. Conclusion (Page 7-18)

7.1. Implementation Process

The steps required to implement the projects and programs identified in this Plan will vary. Many signing and striping projects can be completed by the City of Columbus Transportation Division and are exempt from NEPA requirements. Such projects can be implemented using City or grant funds with project level review by City Council, if required due to the visibility or importance of the project. Projects and programs with greater associated impacts typically include the following steps:

- Public outreach to introduce proposed project or program to appropriate Area Commissions, neighborhood groups, business groups and neighbors.
- Preparation of a Feasibility Study involving a conceptual design (with consideration of possible alternatives and environmental issues).

- Developing detailed cost estimates for individual projects or programs.
- Secure, as necessary, outside funding and any applicable environmental approvals.
- Approval of the project by the City Council.
- Completion of final plans, specifications and estimates, advertising for bids, receipt of bids, and award of contract(s).
- Construction of Project/ implementation of the program.

The City has a Capital Improvement Plan (CIP) that provides funding for capital improvements including new bicycle facilities as well as rehabilitation of existing facilities. The CIP is valid for a period of six years, the first of which is referred to as the Capital Improvements Budget. The CIP is updated annually to address the deletion of projects that have been completed and the addition of new projects as well as changes to budgets designated for particular improvements. The capital improvements program for 2007-2012 provides approximately $2.0 billion in funding. Bicycle projects are usually funded by a combination of sources including funds from the City that is designated through the CIP process.

CIP funding cannot be used for education and encouragement programs. Funding sources for these programs are listed in 7.3. Funding Sources.

7.2. Cost Breakdown

Cost opinions are listed for recommended bikeway projects (engineering), maintenance activities, and education, encouragement and enforcement activities.

7.2.1. Engineering

A citywide network of bicycle facilities was developed using input from MORPC, City of Columbus, and requests from community members received during the development of this plan. The final recommended network sets up a grid system of bikeways that are approximately 1 mile apart in outlying areas and approximately half a mile apart in the central areas of the city.

After the recommended network was finalized, each segment was reviewed to designate a recommended type of bicycle facility. Recommended bikeway types were selected using high-resolution aerial photos, posted speeds (MORPC GIS data 2006), average daily vehicle traffic (MORPC, 1995-2004), and planned roadway projects included in MORPC's 2030 Transportation Plan. Field visits were conducted at selected sites.

After designating recommended bicycle facility types, cost opinions were developed by applying per-mile unit construction costs for each type of bikeway. See **Table 7-1: Cost Summary of Proposed Improvements**. **Table 7-2: Bicycle Facility Types Used for Cost Estimates** describes the facility types used during the field work process. **Table 7-3: Unit Cost Assumptions** lists the unit costs and assumptions used in developing these costs. Where more detailed cost estimates were available, those cost estimates were used.

Cost opinions are based on per-mile averages of bikeway construction in Ohio. Cost opinions are in 2007 dollars. Cost opinions are planning level, and just include construction costs. They do not include preliminary engineering, design, feasibility, environmental clearance, inspection, utility or right-of-way acquisition costs. Project-specific factors such as grading, landscaping, intersection modification, right-of-way acquisition, and bridge construction may increase the actual cost of construction, sometimes significantly.

Before constructing any recommended facilities, additional field work will be required to verify conditions, including but not limited to: roadway widths, travel lanes, actual motor vehicle speeds, motor vehicle volumes and speeds, bicycle and motor vehicle travel patterns and conflicts, signal timing and actuation, and pavement conditions. Final bikeway treatments should be selected based on verified conditions.

Buildout of the recommended system will result in a total of more than 540 new miles of bicycle facilities. Of these, approximately 168 miles are proposed pathways and the remaining 370 miles are on-street facilities. The total cost of constructing the recommended bicycle projects is estimated at $148 million dollars.

Table 7-1: Cost Summary of Proposed Improvements

Bicycle Facility Type	Mileage	Total Cost
Bike Boulevard	45.6	$2,143,035
Lane	97.4	$1,204,212
Lane with Road Diet	61.6	$5,736,816
Lane with Road Widening	61.2	$14,129,902
Path (includes bike-ped bridges)	167.9	$118,462,807
Paved Shoulder	31.4	$6,443,392
Signed Shared Route/Alleys	73.4	$167,651
Shared Lane Markings	1.6	$8,260
TOTAL	**540.1**	**$148,296,075**

Notes: Costs are in 2007 dollars.

Table 7-2: Bicycle Facility Types Used for Cost Estimates

Bicycle Facility Type	Description
Lane	Minimum 5' bike lanes can be striped on roadway without modifying number of motor vehicle lanes or roadway width.
Lane Road Diet	Motor vehicle ADT is low enough to eliminate one or more motor vehicle lanes and stripe bike lanes.
Lane Road Widening	Roadway must be widened to provide 5' bike lanes.
Route	Install wayfinding signs and bike route signs along roadway.
Paved Shoulder	Recommend paving 4' minimum shoulder along roadway to provide extra room for bicyclists and motorists.
Bike Boulevard	Traffic calming, pavement stencils, and special signage indicating street is a bicycle priority street.
Path	Ten to twelve foot paved shared-use path.
Shared-Lane Markings	Pavement stencils in roadway indicating to motorists & bicyclists where bicyclists are expected to ride.
Alley	Special designation for downtown alleys. Develop alleys as bicycle/pedestrian priority streets and improve roadway crossings.

Table 7-3: Unit Cost Assumptions

Facility Type	Includes	construction cost per mile	survey/ design (12%)	contingency (10%)	admin (10%)	traffic control and mobilization (7%)	TOTAL COST PER MILE
Shared-Use Path	Construction costs. Based on ODOT construction awards 2003-2005.	included in ODOT estimate					$600,000
Bicycle Lane	5' bike lane. Includes just striping, pavement markings, signage.	$8,892	$1,067	$889	$889	$622	$12,360
Bike Lane with Road Diet	Four lane to three lane conversion.	$66,972	$8,037	$6,697	$6,697	$4,688	$93,091
Bike Lanes with Paved Shoulder	5' bike lane with 5' shoulder construction on both sides. Based on ODOT construction awards 2003-2005.	included in ODOT estimate					$230,797
Bicycle Boulevard - High	Pavement markings, signage, and two traffic calming improvements per mile.	$74,739	$8,969	$7,474	$7,474		$98,656
Bicycle Boulevard - Low	Pavement markings, signage, and two crossing improvements per mile.	$24,739	$2,969	$2,474	$2,474		$32,656
Signed Shared Roadway	Signage.	$1,571	$189	$157	$157		$2,074
Paved Shoulder	4' paved shoulder.	$147,840	$17,741	$14,784	$14,784	$10,349	$205,498
Shared Lane Markings	Pavement markings and signage.	$3,683	$442	$368	$368	$258	$5,120

7.2.2. Maintenance

Bicycle paths require regular maintenance and repair as needed. On-street bikeways are maintained as part of the normal roadway maintenance program and extra emphasis should be put on keeping the bike lanes and roadway shoulders clear of debris and keeping vegetation overgrowth from blocking visibility or creeping into the roadway. The typical maintenance costs for the bikeway network are shown in **Table 7-4: Bikeway Maintenance Frequency and Cost Opinions.**

Using cost opinions in Table 7-4, and assuming the bikeways are constructed given the proposed phasing schedule, it is estimated that maintenance of the bikeway network envisioned by this plan would cost an additional $2.1 million dollars between 2012 and 2028.

Table 7-4: Bikeway Maintenance Frequency and Cost Opinions

Resurface	Asphalt	Every 20 years	$15,000/mile
	Concrete	Every 20 years	$15,000/mile
	Aggregate	Every 3years	$3,000/mile
Replace signs	Worn	Every 10 years	$30/sign
	Stolen	As needed	$30/sign
Restripe		Every 3 years	$200/mile
	Move signs, patch and sweep	2 times/year	$200/mile

Source: Regional Bicycle Transportation Facilities Plan, Mid-Ohio Regional Planning Commission, 2003.Costs have been escalated to 2007 dollars.

7.2.3. Education, Encouragement and Enforcement

Education, encouragement and enforcement programs vary significantly in cost depending on the extent of the program. Cost estimates for the programs recommended in the Bicentennial Bikeways Plan are provided as an appendix. This plan recommends the city secure funding to support approximately $500,000 in funding for these programs from 2009 through 2012, with a goal of developing a $500,000 annual budget for education, encouragement, and enforcement programs by 2012.

7.3. Funding Sources

Funding for implementation of the Bicentennial Bikeways Plan will come from a range of sources, including federal and state transportation funds, parks and recreation funds private sector partnerships, and a proposed Bicentennial Bond package that is similar to the bonds that were issued for the City's sidewalk program. The phasing of the plan allows for implementation as resources become available. The key funding elements are described as follows:

Bicentennial Bikeways Bonds ("B3" Bonds): The City will include the Bicentennial Bikeways in the proposed 2008 bond package that will provide funding for key initiatives related to the City's celebration in 2012.

$25 M Federal transportation 'Green Tea' demonstration project funding: The reauthorization of the federal SAFETEA transportation legislation will provide a significant

opportunity for implementing the Bicentennial Bikeways plan. The City will work with Ohio's Congressional delegation and other partners to secure this funding.

$10 M Private sector 'adopt a bikeway' endowment campaign: Key private sector and philanthropic partners will be engaged in a fundraising effort to adopt each mile of the bikeways system. This program will enable community partnerships to sustain the trail system into the future.

$15 M Funding from other state and other local sources: There are a range of public, private and non-profit sources that can supplement the primary funding, including land conservation, public transit, utilities, environmental mitigation, health and physical activity, education, and other sources.

$10 M Parks & Recreation Funding: Metro Parks is planning to spend approximately $2,500,000 in 2008 for land acquisition, design and construction associated with shared-use trails in Central Ohio. Additional resources will also be spent for operations, programming, and management from recreation funding sources.

In addition to these funding sources listed above, there are a variety of competitive funding sources from local, state, regional, and federal programs. A list and description of these sources is provided in the Appendices.

Statewide funding sources include the Recreational Trails Program, Clean Air Trails Fund, Natureworks Grant, and Land and Water Conservation Fund. Particular emphasis of these funding sources is on recreational, off-street trails. Safe Routes to School program is also a statewide funding source that can be used for school-related bicycle facilities and education, encouragement and enforcement programs. Safe Routes to School is meant to encourage students to walk and bicycle to school through bicycle and pedestrian education and strategically constructing traffic calming and safety devices along identified school routes.

Regional funding sources are administered by MORPC. Eligibility of MORPC funds requires project sponsors to accommodate bicycles and pedestrians in the design of transportation projects. The Transportation Improvement Program is one such source for MORPC funds and requires all projects to meet funding eligibility criteria prior to fund availability to expedite project implementation. MORPC also solicits funds from the Transportation Enhancements, a designated federal fund for which bicycle facilities and education programs are eligible. If bicycle and pedestrian projects identify providing air quality benefits, they are eligible for Congestion Mitigation and Air Quality funds.

Non-traditional funding sources may include funding opportunities for bicycle and pedestrian projects. The Community Development Block Grant (CDBG) provides money for streetscape improvements (which include bicycle and pedestrian projects) when associated with property acquisition and public facility building and improvement. New developments are also a source of bicycle and pedestrian project funding. Bicycle and pedestrian facility improvements can be included in new development requirements and/or funded by development impact fees. Private donors and organizations may provide an additional source of funding for bikeway facilities and education, encouragement and enforcement programs.

7.3.1. Estimated Future Funds Through 2018

Table 7-5 and **Table 7-6** summarize the available funding sources that the City of Columbus can use to construct bicycle facilities and develop programs over the next ten years. Over the ten-year period between 2008 and 2018 approximately $75.2 million is available for constructing on-street bicycle facilities, $77.8 million for constructing shared use paths, and approximately $1.2 million for conducting education and encouragement programs.[22]

Funding source availability may vary from that shown in the table, depending on how the State, MORPC and City apportion the funds. These funds are generally available for environmental, feasibility, design, preliminary engineering and construction of bicycle facilities. Funds cannot be used to pay for a bicycle coordinator position, but some funding sources allow a portion of the monies to be used to administer the development and construction of specific bicycle facilities. It may be possible for the City to receive enough grant funding to hire a part-time or full-time staff person to administer the development and construction of all grant-funded bicycle projects.

Table 7-5: Bicycle Funding Sources 2008 through 2018

Agency	Total Available Source Funding		Total Possible Funding for Cyclists in Columbus		Methodology
	2008-2013	2008-2018	2008-2013	2008-2018	
MORPC Congestion Mitigation and Air Quality (CMAQ) (Non SOV Modes) 25% On street 75% Off street	$10 M Mid-Ohio Region	~$20 M	$165,000	~$330,000	Bicycle facility funding is estimated at 5% of the minimum apportionment. [23] *2008-2018 funding estimate assumes a continuation of MORPC funding.
Recreational Trails Program 100% off street	$8.5 M Ohio	N/A	$1.1 M	N/A	The State of Ohio was apportioned $1.7 M for the 2007 FY. [24] Funding is available until 2009.

[22] This funding is not guaranteed, however. Columbus will have to compete for some of the funding, and the implementation plan assumes that several funding sources will be developed, notably the proposed Bicentennial Bikeways Bond and federal funding in the next transportation bill.
[23] Approximately $1.3 M per year of non-committed funding is available until 2013. Bicycle, pedestrian, and transit projects receive 33-67% of that funding, of which 33% is used to obtain a conservative available funding estimate. Source: http://www.morpc.org/web/transportation/tip/documents/FundingWorkshopSlideshow6-15-06.pdf
[24] The population of Columbus is 12.7% of the State population, which is used to obtain a rough estimate of the Columbus fund apportionment.

Agency	Total Available Source Funding 2008-2013	Total Available Source Funding 2008-2018	Total Possible Funding for Cyclists in Columbus 2008-2013	Total Possible Funding for Cyclists in Columbus 2008-2018	Methodology
Clean Ohio Trails Fund	$31.2 M Ohio	$62.5 M Ohio	$2 M	$4 M	Assumes funding will be reauthorized in 2008 at $6.25 million per year, with Columbus receiving approximately $400,000 per year.
Safe Routes to School Program 30% On-street 60% Off-street 10% Programs	$5.3 M Ohio	$10.6 M Ohio (estimated)	$168,000	$336,550	The Ohio apportionment totaled $5.3 M for FY 2008. Funding is available until 2009.[2,25]
Transportation, Community and System Preservation Program 50% On-street 50% Off-street	$122.5 M Nationwide	$122.5 M Nationwide	~$393,000	~$786,000	$122.5 M is available through nationwide discretionary grants until 2009. The average 2007 funding award was $7.9 M. Funding for bicycle facilities is estimated at 5% of total funds.
NatureWorks Grants 50% On-Street 50% Off-Street	$10 M Ohio	$20 M	~$91,555	~$183,110	Awards equal $2 M per year. The average grant award is $18,311, which is used to estimate the possible funding available for Columbus.
Transportation Improvement Program 50% On-street 50% Off-street	$2.5 B Statewide	~$5 B	$15.9 M	$31.8 M	Statewide funding total is $1.5 B for FY 2008-2011.[2] Funding for bicycle facilities is estimated at 5% of total funds.
Transportation Enhancements 33% On-street 33% Off-street 33% Programs	$7.4 M Mid-Ohio Region	$14 M Mid-Ohio Region (estimated)	$370,000	$700,000	MORCP total available funding until 2013 is $7.4 M. Funding for bicycle facilities is estimated at 5% of total funds.

[25] Bicycle facility funding is estimated at 25% of the total available funding for Columbus.

Agency	Total Available Source Funding 2008-2013	Total Available Source Funding 2008-2018	Total Possible Funding for Cyclists in Columbus 2008-2013	Total Possible Funding for Cyclists in Columbus 2008-2018	Methodology
Community Development Block Grants (Neighborhood Commercial Revitalization Investment)	~$33 M Ohio	~$66 M	~$1.65 M	~$3.3 M	Housing related grants in Columbus totaled $6.6 M for FY 2007. Grants are available for sustainable development, of which bicycle facilities could be apart of. Funding for bicycle facilities is estimated at 5% of total funds.
Urban Infrastructure Recovery Funds (UIRF) 50% On-Street 50% Off-Street	$5 M Columbus	$10 M	$250,000	$500,000	An estimated $1 M per year is estimated given that the previous funding round (2005-2007) had $3 M available for parks, lighting, and roadway. Funding is available for individuals, corporations, developers, and investors. Funding for bicycle facilities is estimated at 5% of total funds.
Bicentennial Bikeways Bond	$10 M Columbus	n/a	$10M	n/a	Proposed Bond Package to fund bicycle projects in Columbus.
Federal transportation 'Green Tea' demonstration project funding Assumes 10% can be used for programs.	$25 M	$25 M	$25 M	$25 M	Assumes that Columbus will receive $25 Million in federal transportation funding with the reauthorization of SAFETEA-LU.
Private Sector "Adopt a Bikeway" Assumes 10% for programs.	$5 M	$10M	$5M	$10M	Assumes this plan's recommendation to establish an "adopt-a-bikeway" or other philanthropic organization is met.
MORPC 2030 Transportation Plan Complete Streets Projects	$302 M Region[26]	$605M Region	$7.5M	$15 M	Estimates that 2% of cost of regional transportation projects identified in MORPC's 2030 Transportation Plan will be used to provide bicycle facilities ($1,815M in new projects through 2030).

[26]

Agency	Total Available Source Funding 2008-2013	Total Available Source Funding 2008-2018	Total Possible Funding for Cyclists in Columbus 2008-2013	Total Possible Funding for Cyclists in Columbus 2008-2018	Methodology
Metro Parks Funding	$5 M	$10M	$5M	$10M	Estimates based on past Metro Parks trails funding.

Table 7-6: Total Estimated Available Funding 2008 through 2018

Eligible Projects	2008-2013	Total 10-Year Funding 2008-2018
On-Street Bicycle Facilities and Support	$35.8 M	$55.2 M
Off-Street Bicycle Facilities and Support	$37.3M	$57.8 M
Education, Encouragement, and Enforcement Programs	$640,010	$1,266,755
Total	**$73.7 M**	**$114.3 M**

7.4. Phased Implementation Plan

The phased implementation plan provided here is intended to guide the implementation of the Bicentennial Bikeways Plan. **Table 7-7:** lists the recommended costs and timeframe. **Figure 7-1: Columbus Phased Implementation Plan** illustrates the recommended implementation plan.

This plan recommends the following actions:

Complete Streets: adopt a new City policy consistent with the model adopted by the Mid Ohio Regional Planning Council to integrate bicycle facilities into infrastructure projects.

100 Miles of Bikeways by 2012: Phase one of the plan involves expanding the existing system to 100 miles with at least 50 miles of new projects created by integrating bike lanes into street paving and construction projects, implementing 'road diets' on streets with extra capacity, and continuing the development of shared use paths using current funding. Many Phase 1 priority projects are linked to improvement projects that were already in process prior to the development of the Bicentennial Bikeways Plan.

200 New Miles by 2018: The second phase of the plan involves the next 200 miles of bikeways, with a continued emphasis towards on-street facilities that link throughout the City. In the long term, if the resources and support are available, the completed system will reach a total of more than 500 miles.

City-wide Share the Road Campaign: The education, encouragement and enforcement elements of the plan are as important as the engineering elements. The Plan calls for a major campaign that provides bicyclists, motorists and other roadway users with the information they need to improve

traffic safety on the City's streets. This campaign will complement other programs including Safe Routes to Schools, Commit to be Fit, and employer-based commuter choice initiatives.

100 Bike Friendly Intersections: Safety at intersections is a critical issue for improving Columbus' success at becoming a Bicycle Friendly Community. Each year, ten intersections will be improved with enhanced signage, pavement markings, bicyclist actuated signals and other features.

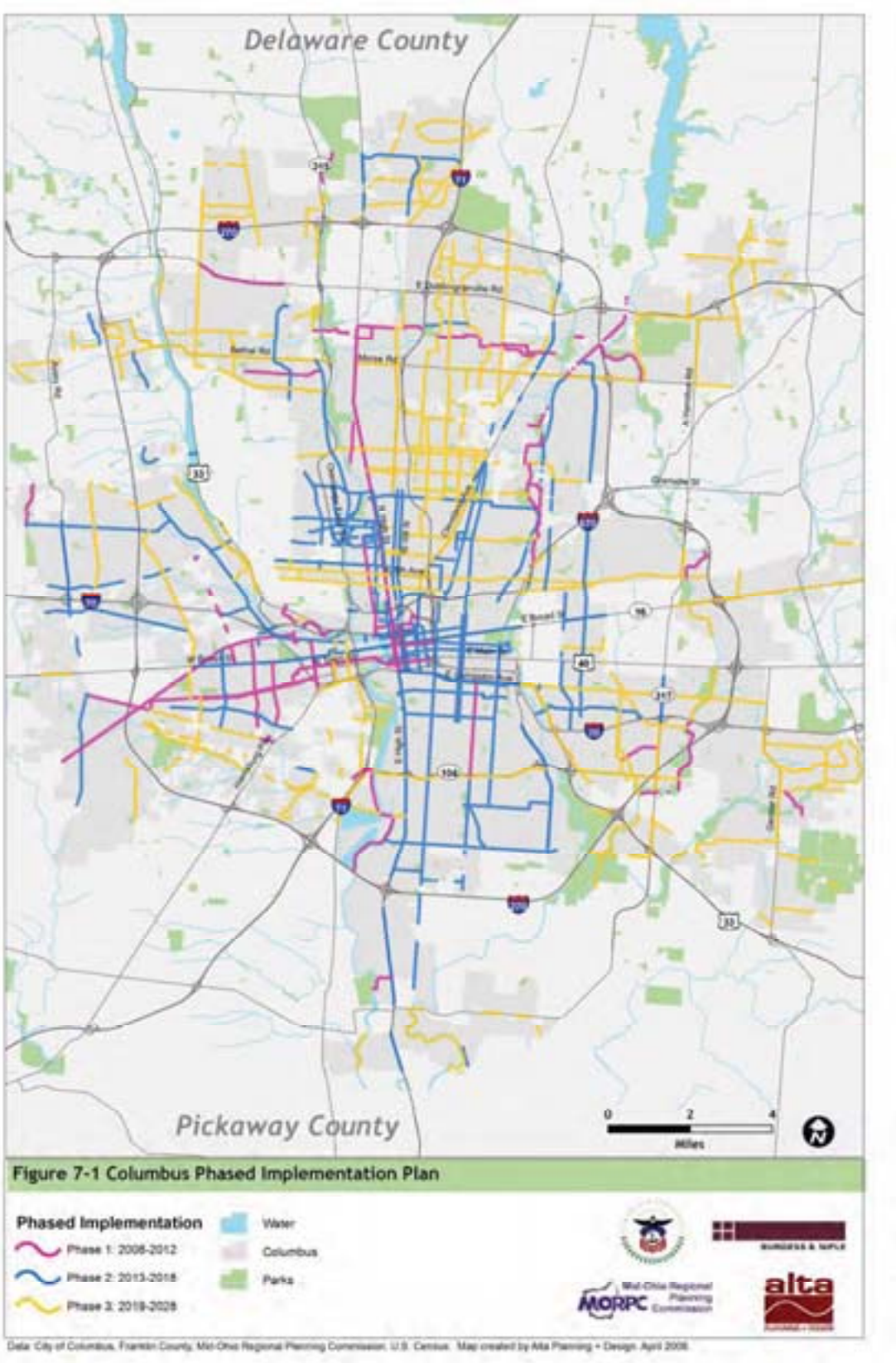
1000 New Bike Racks: Just like driving a car, having a secure place to park is essential for travel by bicycle. A new Bicycle Parking Ordinance has been proposed by the City of Columbus Bikeways Advisory Committee. New bike parking can be installed as a typical element of streetscape design, and worksites, public buildings, and schools throughout the City. This plan proposes 250 new bike racks by 2012 and 1,000 by 2028.

Table 7-7: Phase 1 (2008-2012) Multi-Agency Bikeway Improvements (Funded and Potential)

	2008	2009	2010	2011	2012	TOTAL
Ohio Department of Transportation						
Scioto Bikeway Connector			$4,543,000			$4,543,000
Franklin County Metro Parks						
ROW Acquisition, Design & Construction	$4,933,000	Future funding contingent on voter approval.				$4,933,000
Maintenance	$100,000					$100,000
City of Columbus Recreation & Parks Department						
ROW Acquisition, Design & Construction	$5,077,000	$2,782,000	$2,922,000	$4,057,000	$2,661,000	$17,499,000
City of Columbus Public Service Department						
ROW Acquisition, Design & Construction (including General Design Contract)	$872,500	$567,000	$1,275,000	$2,052,000	$2,500,000	$7,266,500
Bike Racks, Spot Improvements	$257,500	$350,000	$200,000	$200,000	$229,000	$1,236,500
Engagement, Education & Enforcement	$120,000	$100,000	$100,000	$100,000	$100,000	$520,000
Greenway Boulevard Demonstration Project		$687,000				$687,000
Maintenance		$10,000	$10,000	$10,000	$10,000	$40,000
Bike Plan Update					$250,000	$250,000
					TOTAL Public Service Dept	**$10,000,000**

Note: Cells highlighted in grey include potential funding in addition to committed funding.

Figure 7-1: Columbus Phased Implementation Plan



7.4.1. Project Prioritization

Recommended bicycle facilities were grouped into approximately 200 projects. These projects were prioritized using criteria identified in **Table 7-8: Bikeway Corridor Prioritization Criteria**. Prioritization ranking represents the sum of scores from all categories except for the cost categories. Once the prioritization ranking was established for each project, projects were weighted based on cost per mile and total project cost. A list of projects by phase is included in the appendices.

The intent of prioritizing corridors is to identify which projects should be considered for bicycle facilities first. As projects are constructed, lower priority corridors should be moved up the list. The corridor prioritization list and individual projects are flexible concepts that serve as implementation guidelines. The project list may change over time as a result of changing bicycling patterns, land use patterns, and implementation constraints and opportunities. Columbus City Staff, in conjunction with the newly established Transportation, Pedestrian and Bicycle Commission and community members, should review the project list and associated projects at regular intervals to ensure that it reflects the most current priorities, needs, and opportunities for implementing the bicycle network in a logical and efficient manner.

Table 7-8: Bikeway Corridor Prioritization Criteria

Criteria	Description and Scoring
Requests from Public	Streets and pathways identified by the public for bicycle facilities or improvements received a score of 8.
Gaps	Proposed bikeways connecting existing and committed facilities received a score of 10. Proposed Bikeways connecting these gap-fillers received the score of 9. Other proposed bikeways received subsequently lower rankings based on their immediate contribution to the existing and planned network.
Safety	This ranking is based on MORPC data identifying corridors with high incidents of crashes and accidents. Any proposed bikeway along a street with a high frequency of accidents received a score of 9. Bikeways with a moderate frequency of accidents received a score of 6. Bikeways with periodic low frequency of accidents received a score of 4. Proposed bikeways not included in the MORPC report received no score for Safety.
Connectivity	Proposed facilities intersecting existing or committed facilities received a score of 5 for connectivity.
Proximity to Destinations	This ranking was based on the "Attractors" layer, which calculated the density of major trip-generating destinations in any area of Columbus. Proposed bikeways providing access to areas with denser trip-generators received scores of 9.
Latent Demand, Potential Users	This ranking was based on the "Generators" map, which employed census data to assess the probability of bicycling in various census tracts. Proposed bikeways providing access to these areas received a score of 9. Since latent demand is a gradient expression, proposed bikeways in areas with fewer likely-to-bicycle characteristics received subsequently lower scores.
Neglected Areas	Proposed bikeways providing access to areas outside of a ½ mile buffer from any existing or committed bicycle facility received a score of 7.
Proximity to transit	Proposed bikeways providing access to COTA stops received a score of 5. Since bicycle lockers provide benefits to long-term bike parking, allowing greater multi-modal possibilities, Bikeways providing access to COTA stops near existing locker facilities received a score of 7.

Proximity to trail access	Proposed bikeways within ¼ mile of greenway and trailheads received a score of 4.
Street Widening Projects	Proposed bikeways on projects slated in the MORPC transportation plan as "Major Widening of an Arterial" received a score of 8.
TAG suggestions	Proposed bikeways, suggested by the Technical Advisory Group received a score of 8.

Weighting Factors	Description
Cost per Mile	Projects with a lower cost per mile ranked higher than projects with a higher cost per mile.
Total cost of project	Projects with a lower total cost ranked higher than projects with a higher total cost.

7.5. Implementation Strategies

The Columbus' Bicentennial Bikeways Plan provides the long-term vision for the development of a citywide biking network that can be used by all residents for all types of trips. Implementation of the plan will take place in small steps over many years. The following strategies, action items, and measures of effectiveness are provided to guide the City toward the vision identified in the plan.

Strategy 1: Establish Implementation Responsibility

The City should establish implementation responsibility by assigning tasks to appropriate city agencies with a central bikeways coordinator to manage the overall program. This Plan recommends that the City fill the existing but unfilled Bikeways Planner position. The Bikeways Planner should have the authority to coordinate implementation of the Bikeways Master Plan, and should ensure that the city implements the plan within the suggested time frame. This person should be supported by enough additional staff to ensure that high-priority projects and programs can be effectively implemented and maintained.

Action Item: The City shall determine the duties and time required for the Bikeways Planner and support staff to implement the Bicentennial Bikeways Plan. Once determined, the City shall pursue hiring for the position or assign duties as appropriate.

Strategy 2: Strategically Pursue Infrastructure Projects

City staff should strategically pursue infrastructure projects. Ideally, City staff should pursue capital improvements funding or grant funding for high-priority bicycle and pedestrian improvements first. However, if grant requirements, or construction in conjunction with another roadway project make construction of a lower priority project possible, then the City should pursue funding sources for that project regardless of priority. Additionally, regardless of the priority placed upon a bicycle or pedestrian project, it is intended that an approved bicycle or pedestrian project be installed simultaneous to road improvements projects scheduled in the same area.

Action Item: At the end of each fiscal year, City shall publish a public report documenting the status and ongoing actions for all bicycle and pedestrian projects. This report may be combined with the prioritization review discussed below.

Strategy 3: Regularly Revisit Project Prioritization

Projects have been prioritized based on transportation benefit, regional connectivity benefit, cost, safety and feasibility. This list should be reviewed every fiscal year, with new projects added, completed projects removed, and the priorities revised as conditions change.

Action Item: Annual review and update of non-motorized transportation plan project list with input from the newly established Transportation, Pedestrian and Bicycle Commission. Updated list to be shared with the public.

Strategy 4: Update the Plan

While this plan is intended to guide Columbus' bicycle planning for the next 10 years, it should be reviewed and updated on a regular basis. The plan should be reviewed every five years and updated as needed.

Action Item: Review and update the bicycle master plan every five years.

Strategy 5: Integrate Bicycle Planning into the City Process

The Bicentennial Bikeways Master Plan presents a vision for the future of bicycling in Columbus. To ensure that that vision is implemented, the Plan must become a living document that is incorporated into the day-to-day activities of planning, designing, funding, constructing and maintaining infrastructure in Columbus. This plan recommends several ways for bicycle planning to be integrated into the City process:

Action Items:

Incorporate a bicycle facilities checklist into the plan review process.

Adopt a bicycle parking ordinance and other city policies that promote bicycling. (See chapter 2 for a summary of recommended policy changes)

Adopt the Complete Streets Policy to ensure that bicycle and pedestrian facilities are included in all major construction and reconstruction projects. Bicycle and pedestrian facilities should be addressed at the project scoping stage. (See Chapter 2 for the proposed text of the Complete Streets Policy)

Develop a three-part bicycle advisory system with the power to effectively direct bicycle planning in Columbus. (See Chapter 5 for a discussion of the recommended advisory system.)

Strategy 6: Encourage Private Donors to Support the Bikeway System

Through an "Adopt a Bikeway" program, corporations, institutions and individual private donors can support the existing and proposed bikeway system. This program can be leveraged to enhance maintenance through volunteer work, and can connect philanthropy with fundraising to sustain the system.

Action Item: Evaluate the opportunities for establishing a philanthropic giving program that can be used to support the construction and maintenance of Columbus' bikeways.

Strategy 7: Evaluate the Progress toward Becoming a World-Class Bicycle City

Measures of effectiveness are used as a qualitative way to measure the City's progress toward implementing the Bicentennial Bikeways Master Plan and becoming a world-class bicycle City. Well-crafted measures of effectiveness measure progress toward meeting an agreed-upon goal, include measurable indicators of progress, and include time-sensitive targets for the City to meet.

Table 7-7, Potential Measures of Effectiveness describes several measures that the City may consider. Baseline conditions should be established and goal targets should be developed based on reasonable expectations within the time frame. As new baseline information is discovered as conditions change, and as the City implements more of the Bicentennial Bikeways Plan, the measures of effectiveness should be reevaluated, revised and updated. The City should regularly review the progress made toward these targets, preferably on an annual or biennial basis.

The City of Santa Monica, California has been using measures of effectiveness ("indicators") since 1994 to measure the progress the City has made toward becoming sustainable. Columbus should consider reviewing Santa Monica's sustainability report card and sustainability indicators as a guide for developing their own measures of effectiveness. Santa Monica provides its Sustainability Progress Report online at www.smgov.net/epd/scpr/index.htm

Table 7-9: Potential Measures of Effectiveness

Measure	Potential Target
Number of bikeway projects completed	Complete the Tier 1 Priority projects identified in the Bikeways Plan in the next five years (including priority projects linked to the 2012 Bicentennial) *Objective 1-1 in Chapter 2* Complete the proposed Bikeway system within 10 years, based on available funding and project costs *Objective 1-2 in Chapter 2*
Bicycle mode share	Increase the mode share of trips made by bicycling in Columbus to 10% of all trips in 10 years. *Objective 2-1 in Chapter 2*
Trail use	Increase the number of trail users by 10% per year as measured through annual count data. *Objective 2-2 in Chapter 2*
Number of collisions involving bicyclists and drivers	Reduce the number of injuries and fatalities by 10% by 2013, and maintain a crash rate (number of crashes in relation to bicyclist mode share) that is the same as or lower than the expected crash rate for a City with Columbus' population.[27] Identify areas with high numbers of bicycle crashes on roadways and the bikeway system and develop the means to mitigate the problem. *Objective 3-1 in Chapter 2*
Grant funding received for bikeway projects	Receive an annual average of $600,000 or more in non-motorized transportation grants.
Percentage of community with access to bicycle facility	90% of residents live within ½ mile of a bicycle facility by 2018
Public attitudes about biking in Columbus	Increase in positive attitudes about biking and about bicycle facilities.
Public attitudes toward bicyclists from drivers	Increase in positive attitudes toward bicyclist from drivers.
Proportion of Arterial Streets with Bike Lanes	Increase in the proportion of arterial streets with bicycle facilities. Suggested target of 25% of all roadway miles by 2018 to spur greater bicycle commuting.
Independent recognition of Columbus' efforts to promote bicycling	Independent recognition of efforts to promote biking and walking by 2013. League of American Cyclist's Bronze Award by 2010 and Silver or Gold Award by 2018

[27] According to the National Highway and Traffic Safety Administration, in 2004, crash rates for bicyclists are 140 per million population injured and 2.47 per million killed. NHTSA *Traffic Safety Facts, 2004 Data, Pedalcyclists* Columbus' crash rate for 2000 through 2004 is 368 per million injured and 1.75 per million killed.

7.6. Conclusion

Columbus has shown there is a definite enthusiasm for implementing this plan. The active expression of public interest shown during this master plan development, through a popular online survey, public meetings, and many email submissions, demonstrates several key items:

Many residents feel disengaged from the current system. They feel the city either does not respond to their bike/ped concerns, or is mired down in back logged projects. This plan provides the initial push to organize and tie together diverse neighborhoods, cycling styles, project priority, and communication networks. This is the first comprehensive look at biking in and through Ohio's largest city, and the opportunities far exceed the constraints.

More than ever, cycling and use of the street network and regional trail system has grown. Several trail sections show conditions of over-crowding. New sections of the trail are popular as soon as they are completed. Also, conflicts between cyclists and motorists are showing a steady increase.

The city is well poised to show immediate implementation of some high value, cost effective solutions to specific cycling challenges. This plan helps Columbus respond to several priority challenges in a timely manner, ensuring that the public base of interest stays involved, and will support further efforts.

The future direction of bicycling in Columbus is perhaps best summed up by a quote from Mayor Coleman's 2008 State of the City Address:

> "Let's take advantage of our City's flatness… flat is good.
>
> We haven't beaches and oceans… we haven't mountains to climb… but we do have hundreds of square miles of flat land… and we should make the most of it and make biking the #1 outdoor activity… something everyone can do.
>
> So, watch out Ford, wake up Chrysler, take a break Toyota, GM will no longer stand for General Motors… but Get Moving!
>
> We will be moving on bikes – all over our city."

8. Design Guidelines

This chapter provides design guidelines gathered from local, state and national best practices. It is intended to serve as a guide for City planners, engineers, and designers when designing and constructing bicycle facilities in the City of Columbus.

This chapter includes the following sections:

8.1. Design References describes the documents used to develop the Columbus bicycle facility design guidelines. (Page 8-2)

8.1. Design Principles describes the principles that should be used in implementing the Columbus design guidelines. (Page 8-2)

8.3. Bicycle Facility Classification Descriptions provides general descriptions of shared use paths, bicycle lanes, bicycle routes, and other bicycle facilities. (Page 8-3)

8.4. Bicycle Facility Selection Criteria outlines the criteria that should be followed when selecting a bicycle facility along a roadway. (Page 8-7)

8.5. Complete Streets: Integrating Bikeways into the Roadway illustrates cross-sections for including bicycle facilities in Columbus' standard roadway designs. (Page 8-9)

8.6. Innovative Treatments describes two innovative on-street bicycle facilities: bicycle boulevards and bicycle-bus lanes. (Page 8-13)

8.7 Bicycle Friendly Intersections provides design guidelines for accommodating bicyclists at signalized intersections, railroad crossings, and shared use path crossings. (Page 8-15)

8.7. Pavement Markings outlines pavement marking requirements for bicycle lanes, and includes innovative designs such as shared lane markings and colored bicycle lanes (Page 8-24)

8.9 Bike Facility Crossings provides design guidelines for bicycle undercrossings and overcrossings. (Page 8-26)

8.9. Signage and Wayfinding describes standard on-street signage, wayfinding and special purpose signage, and innovative signage treatments for shared use path crossings. (Page 8-33)

8.11. Bicycle-Parking describes guidelines for placing bicycle parking, and design guidelines for bicycle racks, bicycle lockers, and high-volume bicycle parking options such as bicycle corrals and bike stations. (Page 8-38)

8.1. Design References

The bikeway design principals outlined in this chapter are based on regional, state, and national documents listed below. Many of these documents are available online and are a wealth of information and resources available to the public.

- *Ohio Manual of Uniform Traffic Control Devices* (Ohio Department of Transportation, 2005) http://www.dot.state.oh.us/default.asp
- *Breaking Barriers to Bicycling: Bicycle Lanes Best Practices and Pilot Treatment*s (MORPC, 2005) http://www.transportation.morpc.org/documents
- *Guidelines for the Design of Bicycle Facilities* (Ohio Department of Transportation, March 2005) http://www.dot.state.oh.us/drrc/
- *Guidelines for Development of Bicycle Facilities* (American Association of State Highway and Transportation Officials, 1999) www.transportation.org
- Federal Highway Administration *Best Practices Design Guide Part 2, Designing Sidewalks and Trails for Access* (FHWA Pub# FHWA-EP-01-027, 1001)
- *AASHTO Green Book: Policy on Geometric Design of Streets and Highways* (American Association of State Highway and Transportation Officials, 2001) www.transportation.org
- *Bike Lane Design Guide* (City of Chicago and Pedestrian and Bicycle Information Center, 2002) http://www.bicyclinginfo.org/pdf/bike_lane.pdf
- *Bicycle Parking Design Guidelines* (Association of Pedestrian and Bicycle Professionals, 2002) http://www.bicyclinginfo.org/pdf/bikepark.pdf

All bikeway facilities are required at a minimum to meet the design guidelines outlined in the *Ohio Manual of Uniform Traffic Control Devices*. The City of Columbus may choose to go beyond these basic design guidelines and apply the innovative design treatments outlined in the other documents. When using design treatments not approved by the *Ohio Manual of Uniform Traffic Control Devices*, the City of Columbus should follow the protocol for testing innovative treatments, outlined in an Appendix to this document.

8.2. Design Principles

The following are key principles for designing the Columbus Bikeway Network:

1. Columbus will have both a complete network of greenways trails, and a complete network of on-street bicycling facilities. These two systems will be interconnected to make it possible for all destinations in Columbus to be accessible by bicycle.
2. All roads in Columbus are legal for the use of bicyclists, (except those roads designated as limited access facilities which prohibit bicyclists). This means that most streets are bicycle facilities, and will be designed and maintained accordingly.

3. Bicyclists have a range of skill levels, from "Type B/C" inexperienced / recreational bicyclists (especially children and seniors) to "Type A" experienced cyclists (adults who are capable of sharing the road with motor vehicles). These groups are not always exclusive – some elite level athletes still like to ride on shared-use paths with their families, and some recreational bicyclists will sometimes use their bicyclists for utilitarian travel.
4. At a minimum, facilities will be designed for the use of Type "A" cyclists, with a goal of providing for Type "B" cyclists to the greatest extent possible. In areas where specific user groups have been identified (for example, near schools) the needs of these user groups will be accommodated.
5. Design guidelines are intended to be flexible and should be applied with professional judgment by designers. Design guidelines approved by the *Ohio Manual of Uniform Traffic Control Devices* are differentiated from innovative design treatments that are not yet approved. When using design treatments not approved by the *Ohio Manual of Uniform Traffic Control Devices*, the City of Columbus should follow the protocol for testing innovative treatments.

8.3. Bicycle Facility Classification Descriptions

Bicycle facilities can be classified into several different types, including shared use paths and several variations of on-street facilities. **Table 8-1: Standard Bicycle Facility Treatments** provides basic descriptions. For specific design details refer to the *Ohio Manual of Uniform Traffic Control Devices, Chapter 9* and AASHTO's *Policy on Geometric Design of Streets and Highways*.

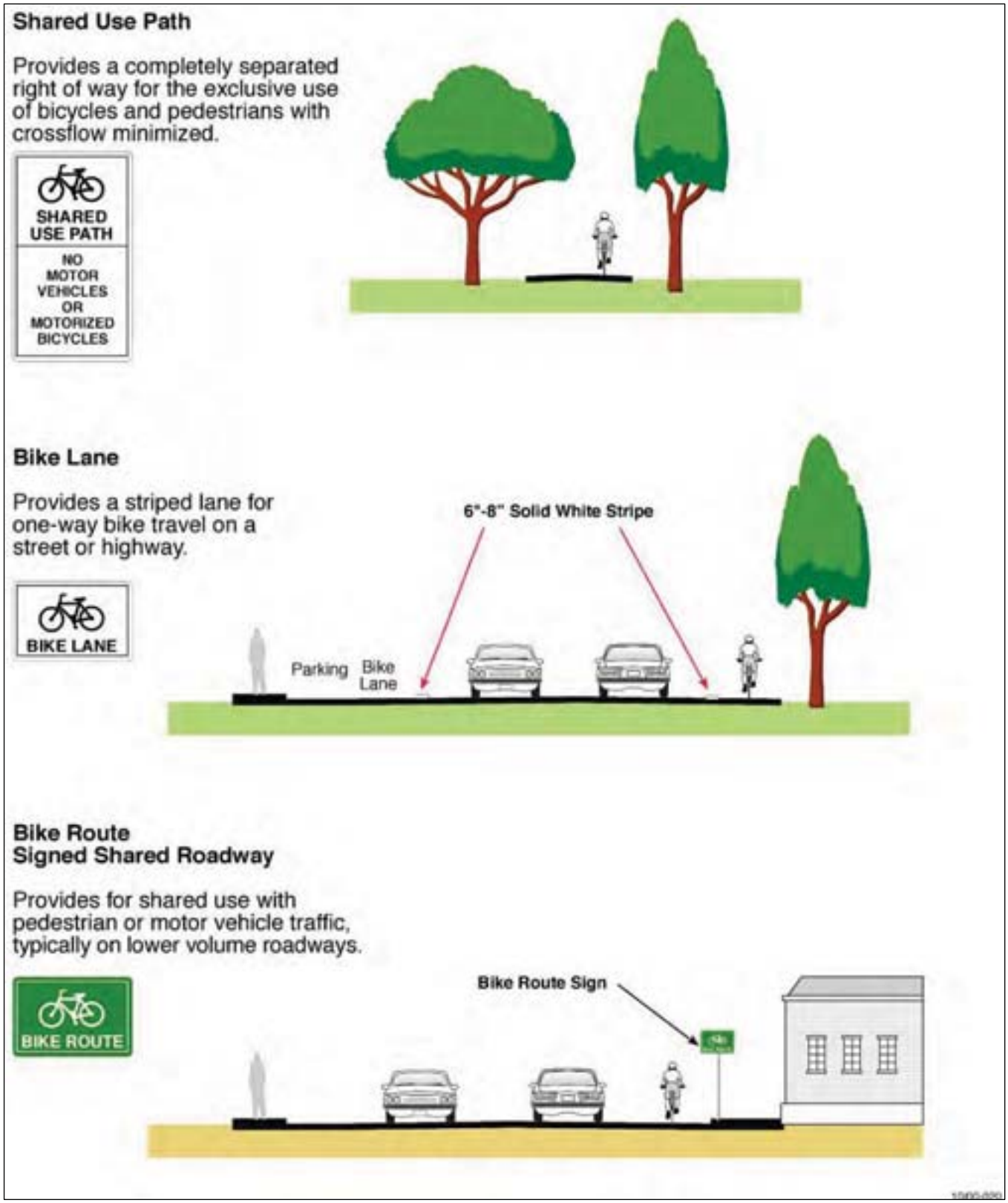


Figure 8-1: AASHTO Bicycle Facility Types

Table 8-1: Standard Bicycle Facility Treatments

2.3. Design Designation	2.4. Width	2.5. Surface	2.6. Treatment	2.7. Function	2.8. Illustration
Bike Lane	4-6' from curb face 5'-6' from edge of parallel parking	Asphalt	On-street lane striped and signed to MORPC and OMUTCD standards	For bicyclists on roadways. Each lane is one-way. Contra-flow bicycle lanes allow bicyclists to ride against the flow of traffic on a one-way street.	
Signed shared roadways	varies	Asphalt	May either be a low volume (less than 3000 cars per day) roadway with traffic calming and signage to create a safe shared use environment, OR a higher volume roadway with wide (14' or greater) outside lanes.	Used for designated bicycle routes; can include signage and pavement markings Bicyclists ride the same direction as motor vehicle traffic.	
Bicycle Boulevard	varies	Asphalt	Multiple traffic calming treatments combined with bike lanes and/or signed shared roadways to create priority streets for bicyclists	Provides a continuous facility on streets with varying widths, volumes and speeds. Bicyclists ride the same direction as motor vehicle traffic.	

Shared Curb Lane	9 - 12' from gutter pan	Asphalt	Common facility type in low-speed and low-volume street types.	Utilitarian cycling on streets which are not otherwise designated as elements of the bicycle network. Bicyclists ride the same direction as motor vehicle traffic.	
Wide Curb Lane	12- 14' From gutter pan	Asphalt	Smooth pavement, bicycle compatible storm grates	For skilled bicyclists who are capable of sharing the road with motor vehicles. Bicyclists ride the same direction as motor vehicle traffic.	
Paved shoulders	4' minimum	Asphalt	Smooth pavement, smooth transition to roadway, kept swept.	Typical way to accommodate bicyclists on rural roads with narrow motor vehicle lanes or high speeds. Bicyclists ride the same direction as motor vehicle traffic.	
Shared Use Path	10'-14'	Asphalt, concrete or other smooth hard surface	Designed to MORPC and OMUTCD standards. When parallel to roadway, separated by planting strip or fencing.	Typical application for regional trail and some community pathways and bikeways. Accommodates bicycles, pedestrians, wheelchairs. Minimizes potential trail crossing conflicts with autos. Facility is two-way.	

8.4. Bicycle Facility Selection Criteria

The appropriate bicycle facility for any particular roadway should be primarily dictated by vehicle volume and speed of the roadway. At low speeds and low volumes, bicyclists and motorists can comfortably travel in the same lane. As speeds or volumes increase, separation between bicyclists and motorists is desirable. Separation does not just refer to parallel shared use paths, but also to a wide shoulder with stripe, a bicycle lane with median-type striping, or an 8-foot wide bicycle lane.

The question of when to separate bicyclists from motor vehicle traffic is addressed in a study *Bicycle Facility Selection: A Comparison of Approaches*.[28] The study compiled bicycle facility selection criteria from seven different countries and ten United States communities. The compiled guidelines are illustrated in **Figure 8-2**[29]. These guidelines serve as rules of thumb, with the final decision to sign a roadway as a bike route or install a separate bicycle facility up to a traffic engineer with experience designing and using bicycle facilities. Along the left side of Figure 8-2 are total traffic volumes per day and along the bottom is the speed of travel lane. The different colors represent the type of bikeway facility prescribed given the volume and speed of the travel lane.

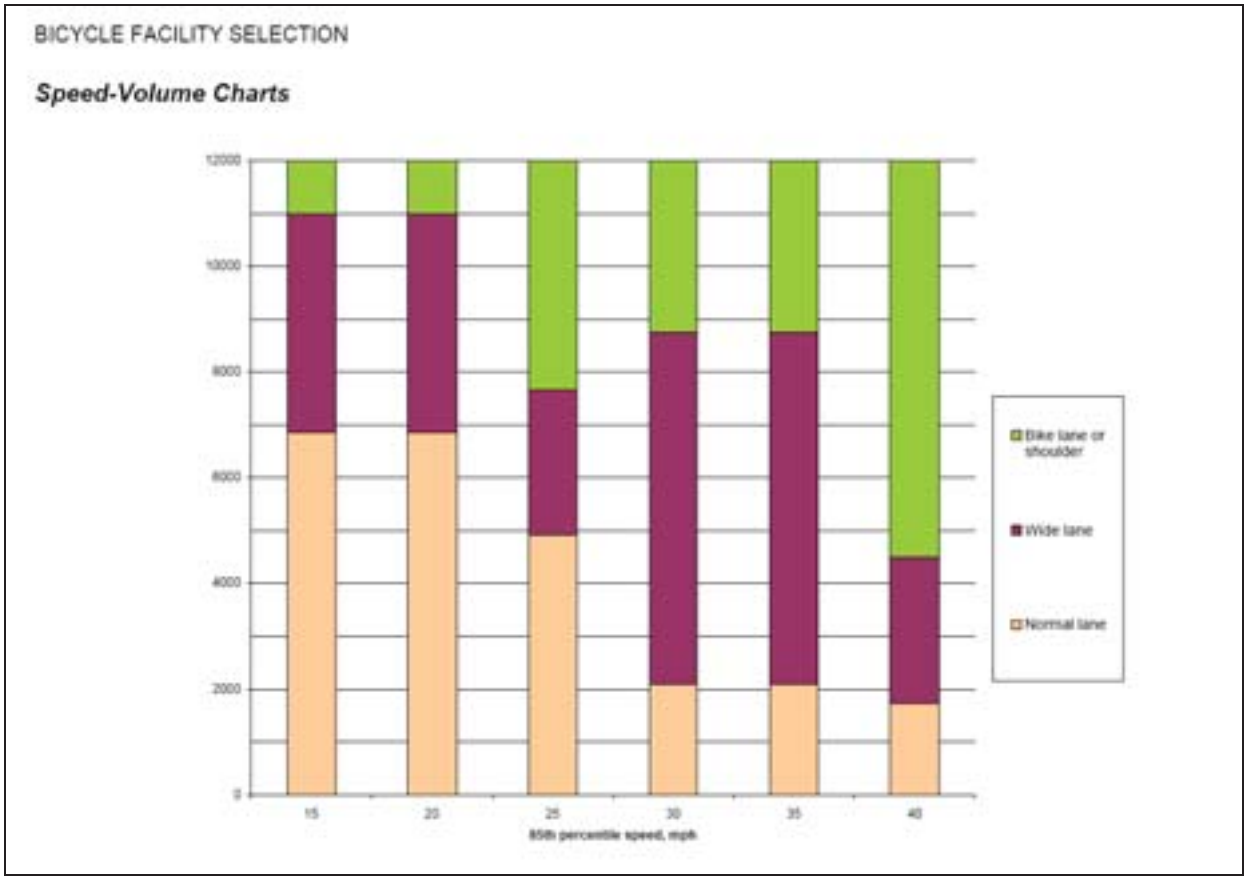
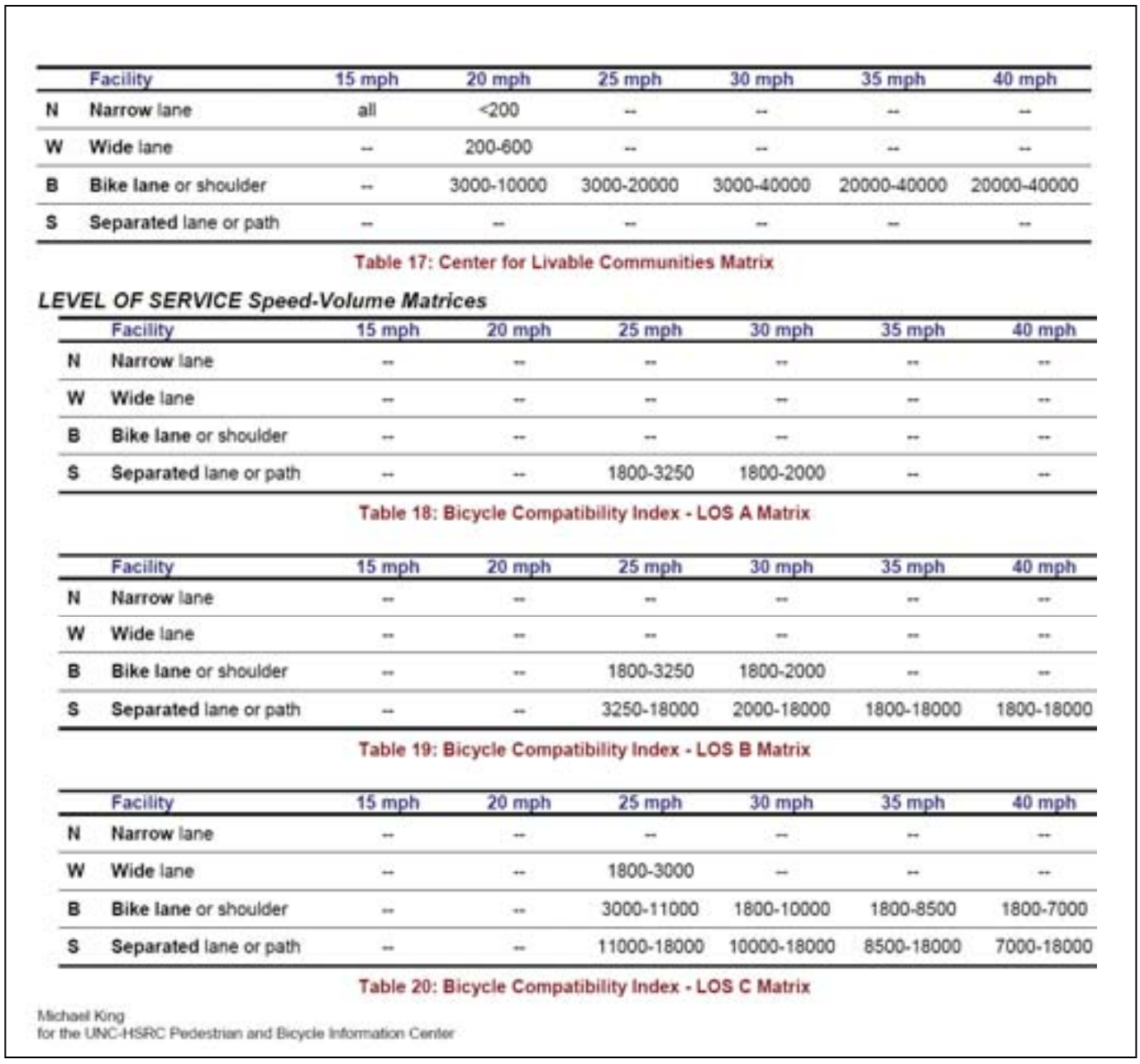


Figure 8-2: North American Speed-Volume Chart

[28] Michael King, *Bicycle Facility Selection: A Comparison of Approaches* for the Pedestrian and Bicycle Information Center and Highway Safety Research Center, University of North Carolina, Chapel Hill in August 2002.
[29] This figure is taken from Michael King's research.

The tables below represent four different versions of the bicycle facility selection parameters based on the matrix shown in **Table 8-1**. The selection criteria discussed in this section should be used as planning guidelines, rather than absolute design guidelines. If it is impossible to place a bicycle facility indicated by Figure 8-1 or Figure 8-2 along a roadway designated as a bicycle route, other options should be considered—it is more important to provide some sort of bicycle facility than to provide none at all.



	Facility	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	Narrow lane	all	<200	--	--	--	--
W	Wide lane	--	200-600	--	--	--	--
B	Bike lane or shoulder	--	3000-10000	3000-20000	3000-40000	20000-40000	20000-40000
S	Separated lane or path	--	--	--	--	--	--

Table 17: Center for Livable Communities Matrix

LEVEL OF SERVICE Speed-Volume Matrices

	Facility	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	Narrow lane	--	--	--	--	--	--
W	Wide lane	--	--	--	--	--	--
B	Bike lane or shoulder	--	--	--	--	--	--
S	Separated lane or path	--	--	1800-3250	1800-2000	--	--

Table 18: Bicycle Compatibility Index - LOS A Matrix

	Facility	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	Narrow lane	--	--	--	--	--	--
W	Wide lane	--	--	--	--	--	--
B	Bike lane or shoulder	--	--	1800-3250	1800-2000	--	--
S	Separated lane or path	--	--	3250-18000	2000-18000	1800-18000	1800-18000

Table 19: Bicycle Compatibility Index - LOS B Matrix

	Facility	15 mph	20 mph	25 mph	30 mph	35 mph	40 mph
N	Narrow lane	--	--	--	--	--	--
W	Wide lane	--	--	1800-3000	--	--	--
B	Bike lane or shoulder	--	--	3000-11000	1800-10000	1800-8500	1800-7000
S	Separated lane or path	--	--	11000-18000	10000-18000	8500-18000	7000-18000

Table 20: Bicycle Compatibility Index - LOS C Matrix

Michael King
for the UNC-HSRC Pedestrian and Bicycle Information Center

Figure 8-3: Tables from "Bicycle Facility Selection: A Comparison of Approaches" Illustrating the Variety of Approaches

8.5. Complete Streets: Integrating Bikeways into the Roadway

The complete streets concept is based on the principal that streets should consider all travel modes, particularly biking and walking, in addition to motor vehicles. In addition to fundamental bicycling design standards, complete streets incorporate innovative amenities, such as bicycle parking in the furniture zone.

Columbus' standard design details include roadway cross sections for 55-foot, 44-foot, 36-foot and 26-foot roadway widths. The standard design details do not indicate the number of motor vehicle lanes or the bicycle facilities that may be accommodated on these roadway widths. This section provides suggested cross sections for including bicycle facilities in Columbus' standard roadway cross-sections.

These cross-sections are intended as a starting point to the longer process of incorporating bike lanes into the City's roadway standards. Incorporating bike lanes in the City of Columbus roadway standards should be thoroughly examined and an official policy/position should be developed. It is recommended that special focus groups be formed to work through design details, similar to the various groups that were developed to work thorough details of Columbus' design manual sections. Group participants should be carefully assembled to represent various background disciplines.

8.5.1. High Volume Roadways

On high volume roadways, bicycle lanes or a parallel separated path should be used to improve bicyclist safety and comfort. A buffer or curb should separate the pathway from the roadway for bicyclist safety. The width of the bicycle lane, buffer, and sidewalk or path should appropriately reflect the volume and speed of the vehicles using the roadway. The minimum bike lane width is 4 ft on open shoulders and 5 ft from the face of a curb, guardrail, or parked cars, with 6 ft the preferred width in urbanized areas.[30] The minimum shared use path width is 8' with 10' preferred for facilities that will be shared by pedestrians.

Figure 8-4 illustrates three potential bicycle accommodations in urbanized areas with a 90 foot ROW and 55-foot roadway.

[30] AASHTO and MUTCD

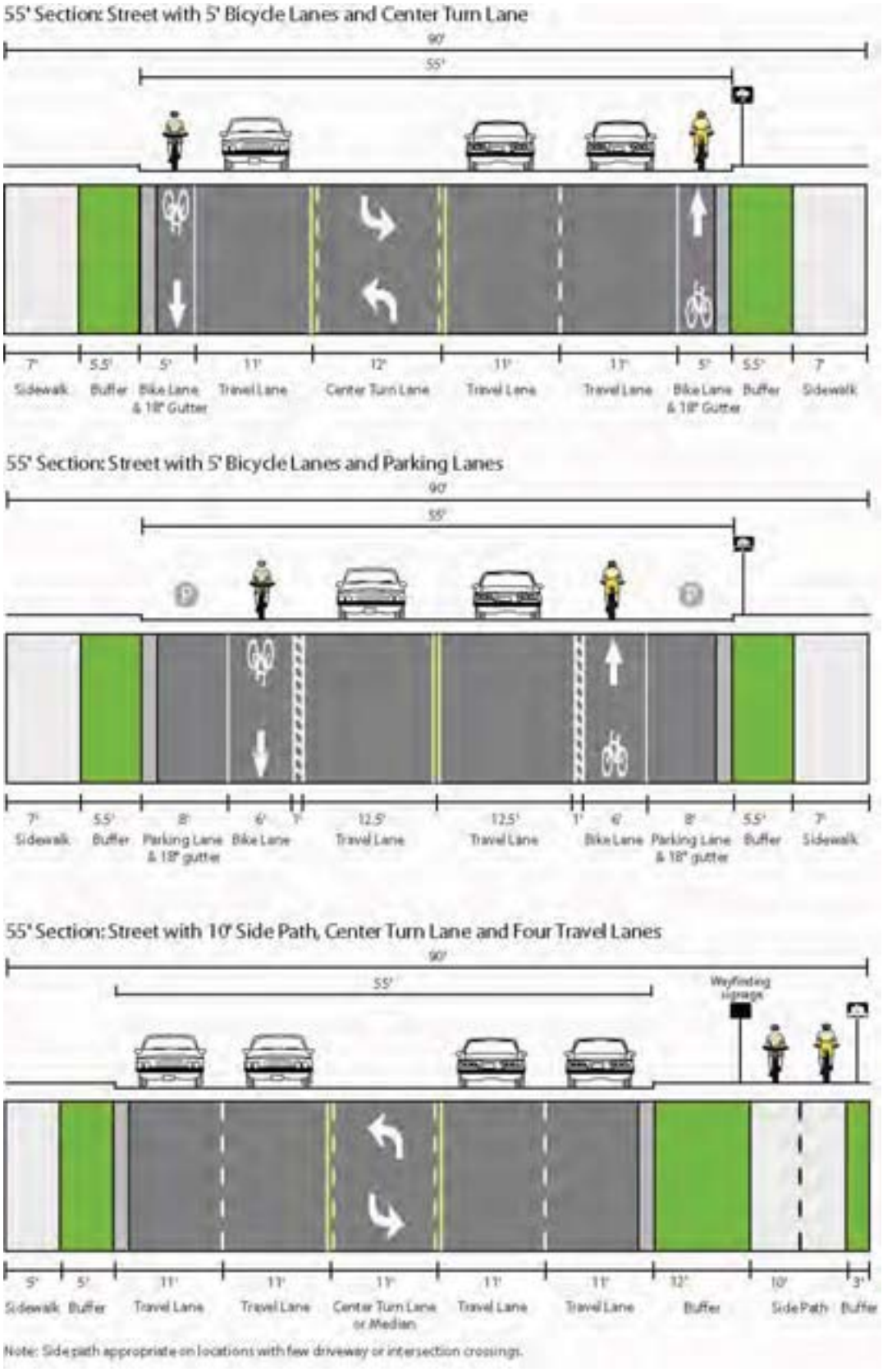


Figure 8-4: Bikeways on a 55-Foot High Volume Roadway

8.5.2. Moderate Volume Roadway

On moderate volume roadways, such as neighborhood collectors, bicycle lanes are located between the curb and the travel lane and between the bicycle lane and the sidewalk is a planting strip. The volumes of the roadway and the number of cross-streets and driveways determine the need for a left-turn lane.

Figure 8-5: Bikeways on 44-Foot Moderate Volume Roadway illustrates a typical bicycle accommodation in urbanized areas with a 60-foot ROW and a 44-foot travel area. Bicycle lanes are five or six feet wide with 11 or 12 foot travel lanes. When there are no driveways, the center turn lane can be transformed into a planting median.

Figure 8-5: Bikeways on 44-Foot Moderate Volume Roadway

8.5.3. Low Volume Roadways

On low volume roadways, such as neighborhood residential streets, bicycle lanes are generally not required. Bicyclists can usually be accommodated on these roadways through bicycle route signage, occasional traffic calming to slow traffic, and intersection improvements where low-volume roadways intersect high-volume roadways.

Figures 8-6 illustrates potential bicycle accommodations in urbanized areas with 50- and 60-foot ROW and a 26- and 32-foot travel area. Bicycle lanes are four or five feet wide with nine to 11 foot travel lanes.

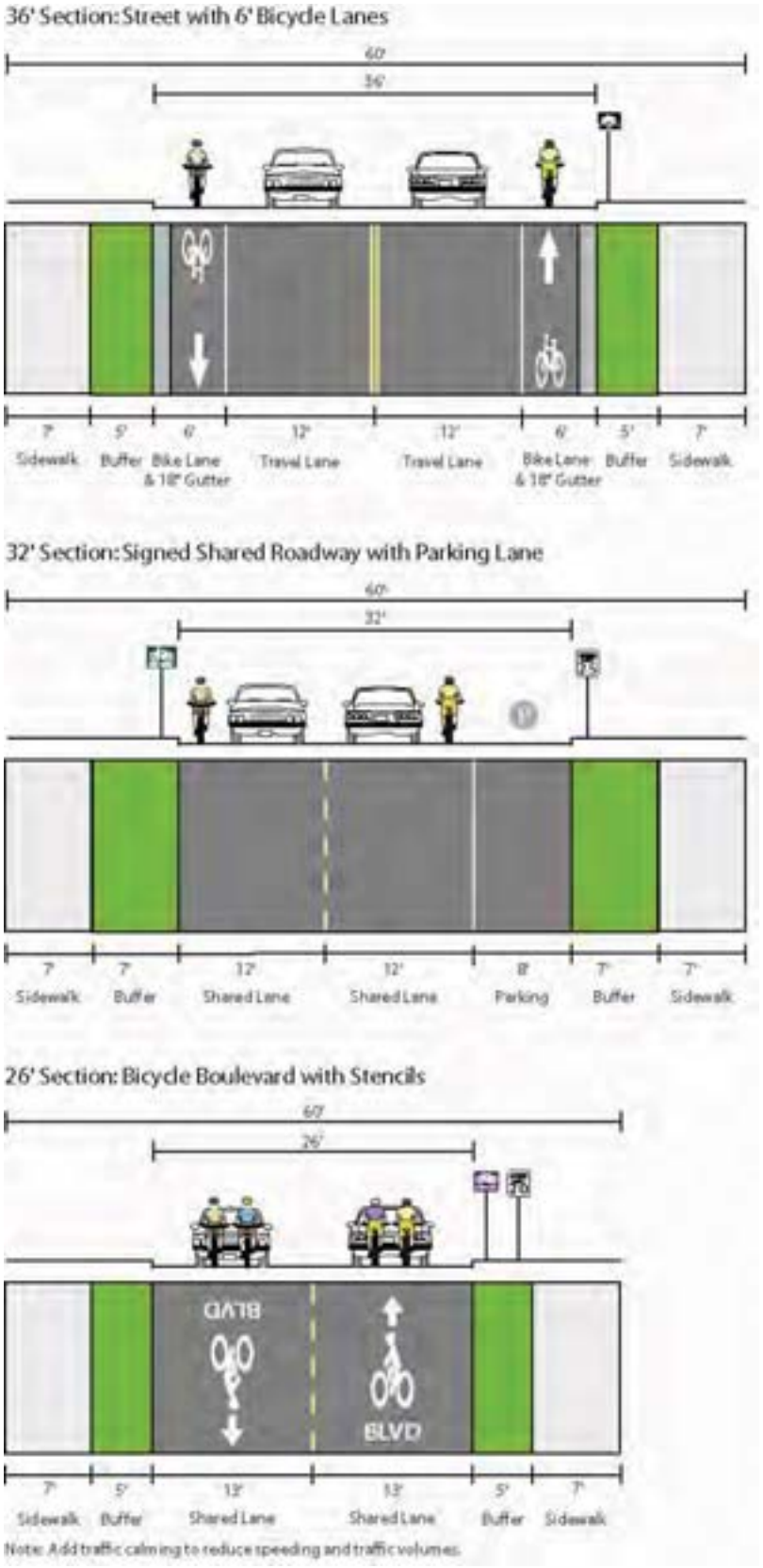


Figure 8-6: Bikeways on 32-Foot and 26-Foot Low Volume Roadways

8.6. Innovative Treatments

8.6.1. Bicycle Boulevards

Bicycle Boulevards have been implemented in a variety of locations including Berkeley, Palo Alto and Davis California, and Portland, Oregon. A Bicycle Boulevard, also known as bicycle priority road, is a roadway that allows all types of vehicles, but which has been modified to enhance bicycle safety and security. Roadways are designed to be places where cars and bicycles can equally share right-of-way. Bicycle Boulevards tend to be residential streets with lower traffic volumes, typically between 3000 to 5000 average daily vehicles, but can include secondary commercial streets.

Bicycle Boulevards typically include design features such as:

- Traffic calming devices such as traffic circles and curb bulbouts
- Bicycle destination signage
- Pavement stencils indicating status as a Bicycle Boulevard
- Crossing improvements at major arterials such as traffic signals with bicycle-detection, four-way stops and high-visibility crosswalks
- Bicycle-friendly signal preemption at high-volume signalized intersections.
- Stop signs on streets crossing the Bicycle Boulevard
- Some jurisdictions have implemented Bicycle Boulevards by removing on-street parking in select locations.

Bicycle Boulevards can be designed to accommodate the particular needs of the residents and businesses along the routes, and may be as simple as pavement markings with wayfinding signs or as complex as a street with traffic diverters and bicycle signals. Many good candidates for Bicycle Boulevards may benefit most from signage and public education. Substantial capital improvements may not be necessary.

To further identify a street as a preferred bicycle route, lower volume roadways may be modified to function as a through street for bicycles, while maintaining only local access for automobiles. Traffic calming devices can lower traffic speeds and through trips, limiting conflicts between motorists and bicyclists and providing priority to through bicycle movement.

A bicycle boulevard sign in Berkeley, CA

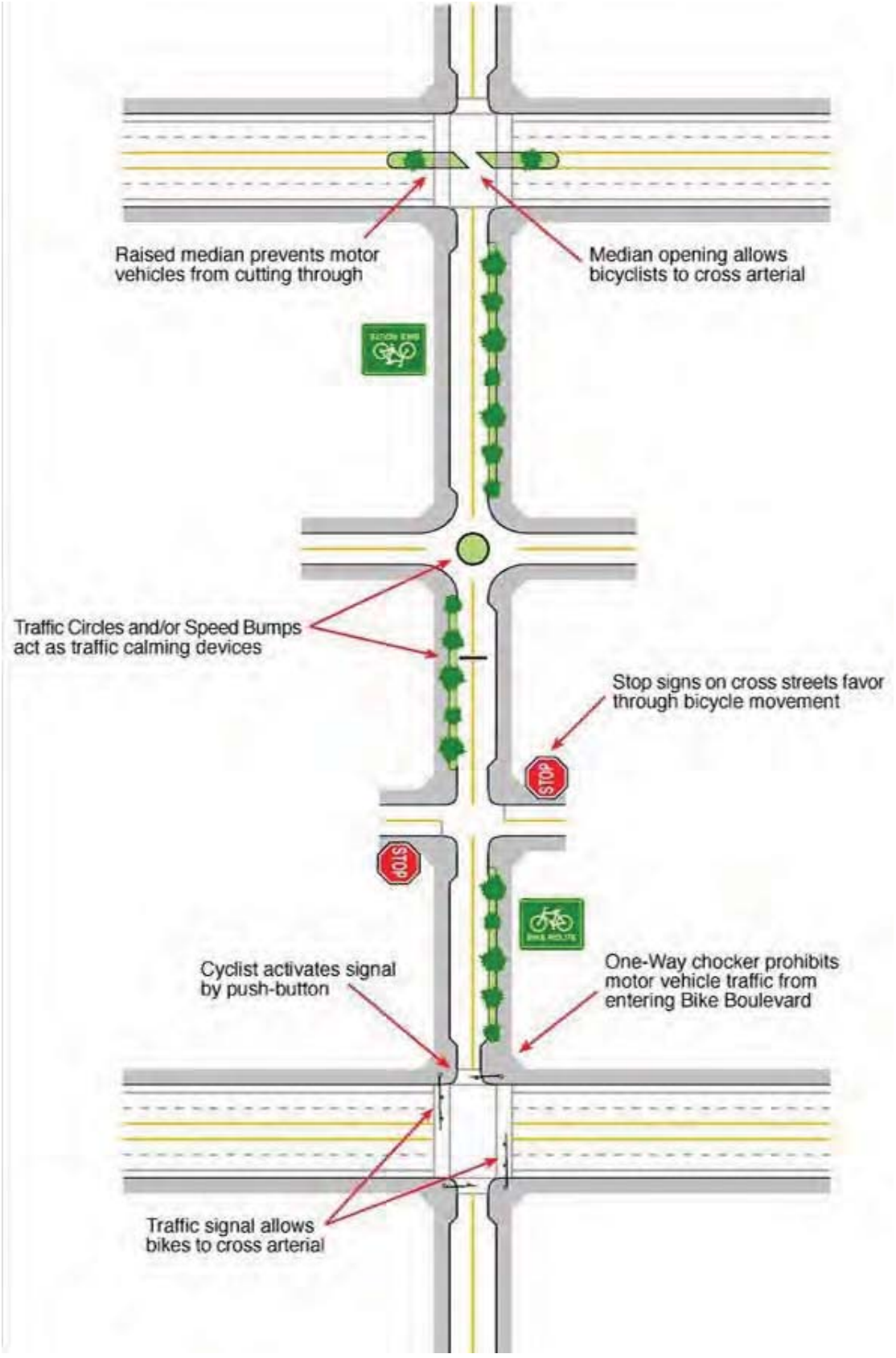


Figure 8-7: Bicycle Boulevard Lane Configuration

8.6.2. Shared Bicycle/Bus Lanes

Travel time for bikes and buses can be improved with a dedicated shared bicycle/bus lane, so that neither is hindered or endangered by congestion from other auto traffic. Shared bicycle/bus lanes are commonly used in central business districts where room for dedicated bicycle lanes is limited, and where motor vehicle congestion warrants a separate facility for buses.

Potential locations for bicycle/bus lane implementation include congested streets with moderate or long bus headways, streets with moderate bus headways during peak hours, or places that provide no reasonable alternative routing alignment.

Shared bicycle/bus lanes should be paved with colored asphalt and stenciled as a diamond lane with supporting signage and pavement legends to emphasize their designation. These lanes should be wide enough to allow bicyclists to comfortably pass stopped buses on the left. Twelve feet is the recommended minimum width of shared bicycle/bus lanes.

There are a couple of potential disadvantages of shared lanes. These include a leapfrogging between buses and bikes (when buses and bikes are continually passing one another in the lane) Leapfrogging creates a greater potential for conflicts. The second disadvantage is when vehicles are allowed to use the lane at intersections as a right turn lane. This creates potential conflict points between bicycles and vehicles and slows buses and bicycles significantly.

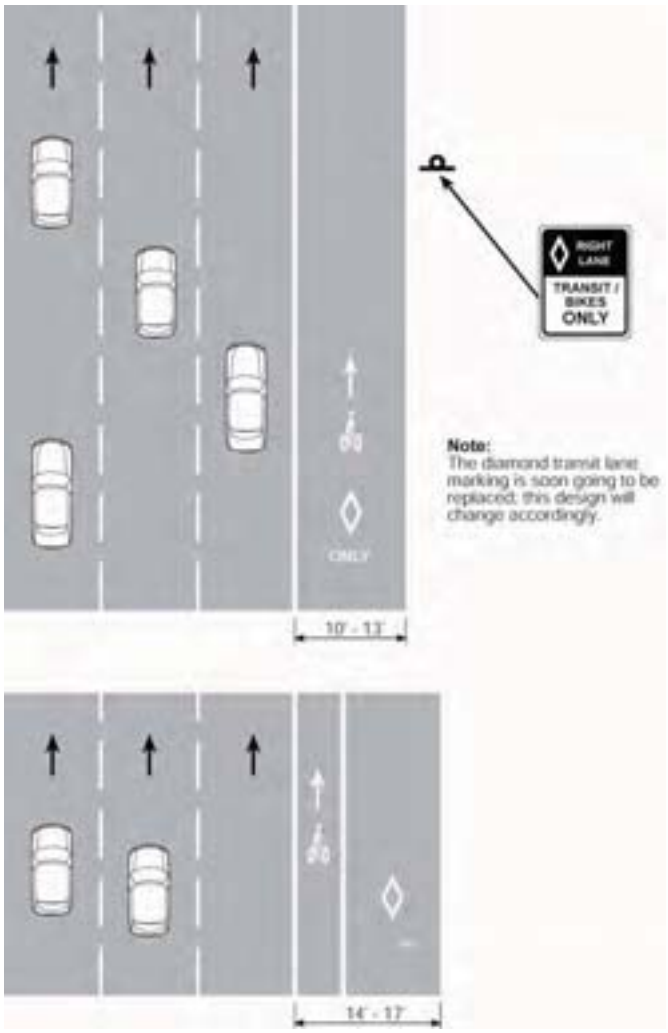
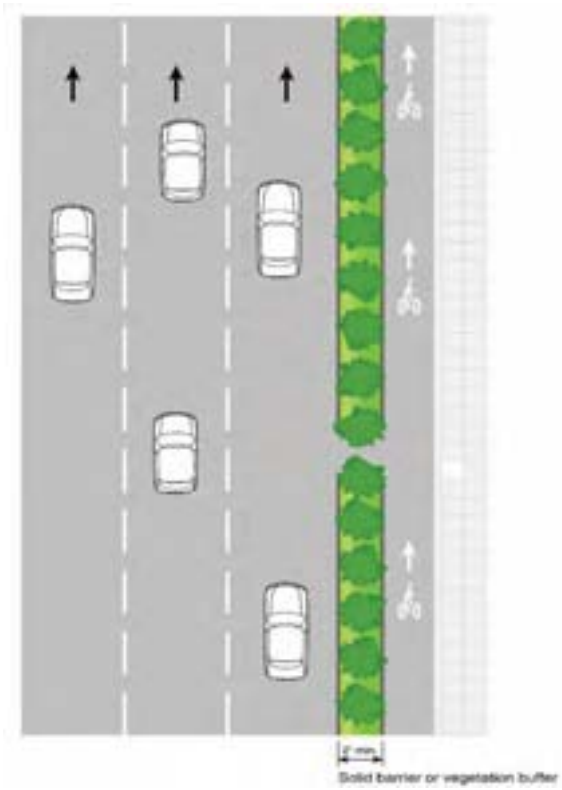


Figure 8-8: Shared Bicycle/Bus Lane Configuration

A Shared Bicycle/Bus Lane

8.6.3. Cycle Tracks

Cycle tracks are European bicycle facilities that are receiving an increasing amount of interest and attention from planners and engineers in the United States. Cycle tracks' are physically separated one-way bike lanes or two-way paths parallel to roadways. These bikeways are located between sidewalks and vehicle travel lanes or parking lanes and are a delineated area specifically for through bicycle traffic. Cycle tracks can be at the same plane as sidewalks but are usually separated by a low curb or barrier. There must be sidewalks adjacent to cycle tracks to prevent pedestrians from confusing cycle tracks with multi-use paths. When crossing cycle tracks, pedestrians always have the right-of-way. On the motor vehicle side of cycle tracks, if there is an on-street vehicle parking lane then there is normally a two to three foot buffer preventing car doors from entering the bikeway. If there is not on-street parking, a larger barrier is put in place to separate bicycles and vehicle traffic.



Cycle tracks are useful along streets with minimal crossings. Careful study is necessary at intersections where cycle track traffic and vehicle traffic cross paths because cycle tracks are off-set from intersection corners. Intersections should be designed to include signage that alerts motorists of bicyclists crossing from the cycle track, and vegetation and parking should be limited near intersections so that bicyclists and motorists can see each other. If cycle tracks are two-way, motorists should be alerted to the fact that bicyclists will be approaching from both directions. To help decrease the number of wrong-way riding bicyclists on one-way cycle tracks, complimentary facilities should be provided on the opposite side of the street. Other innovative treatments, such as colored pavement, can complement these facilities and improve warnings to motorists.

Example of a one-way cycle track from San Francisco Bicycle Plan Design Guidelines.
9th Avenue Cycle Track in New York City. Photo: www.streetsblog.org Oct. 5, 2007 post.

8.6.4. Bicycle-Friendly Intersections

Intersections represent a primary collision points for bicyclists. In Columbus, at least 13% percent of bicycle collisions occur at intersections[31]. Large, multi-lane intersections are more difficult for bicyclists to travel through than smaller, two-lane intersections. For this reason, treatments in this section focus on improving bicycling through large intersections.

At large intersections:

- Signals may not be timed to allow slower-moving bicyclists to travel across the intersection.
- Loop detectors or video detection that is used to actuate the signal may not be calibrated to detect bicyclists.
- Bicyclists may not know how to actuate the signal using loop detectors, even if it is calibrated.
- Bicyclists who wish to turn left may be required to travel across several motor vehicle lanes to reach the left hand turn lane.
- Bicyclists who wish to turn left like a pedestrian may experience long delays as they wait through several light cycles.
- Bicyclists who are traveling straight may have to merge across motor vehicle traffic that is turning right from a right-turn lane.
- Motorists may be less likely to be aware of bicyclists at large, multi-lane intersections due to higher traffic volumes, more lanes of traffic and the complexity of large intersections
- Large intersections without bicycle facilities are very auto-centric, leading motorists to assume that bicyclists are not supposed to be on the roadway.

Design treatments can help bicyclists travel through intersections and alert motorists of bicyclists' presence. Good intersection design alerts motorist to bicyclists, indicates to motorists and bicyclists where bicyclists may ride, and guides bicyclists through intersections. The following design treatments can be found in the OMUTCD. For specific design details, refer to the OMUTCD.

Figure 8-9: Bicycle Lane Configurations at Intersections illustrates how road striping and signage can accommodate bicyclists at critical locations.

[31] A study of bicycle crashes in Columbus, Ohio that occurred between 2000 and 2004 shows that at least 13.3% of crashes occurred at intersections. This number is likely to be higher. Overall, the location of the bicyclist when struck was not indicated or was listed as "unknown" in 610 of the 1053 bicycle crashes in Columbus during the study period. Of the known locations, 249 or 24 percent of the crashes were classified simply as "In roadway" accidents. Accidents classified as "Marked crosswalk at intersection" comprised of 72 crashes, or 6.8 percent. Accents classified as "At intersection, but no crosswalk" comprised of 69 crashes, or 6.5 percent.

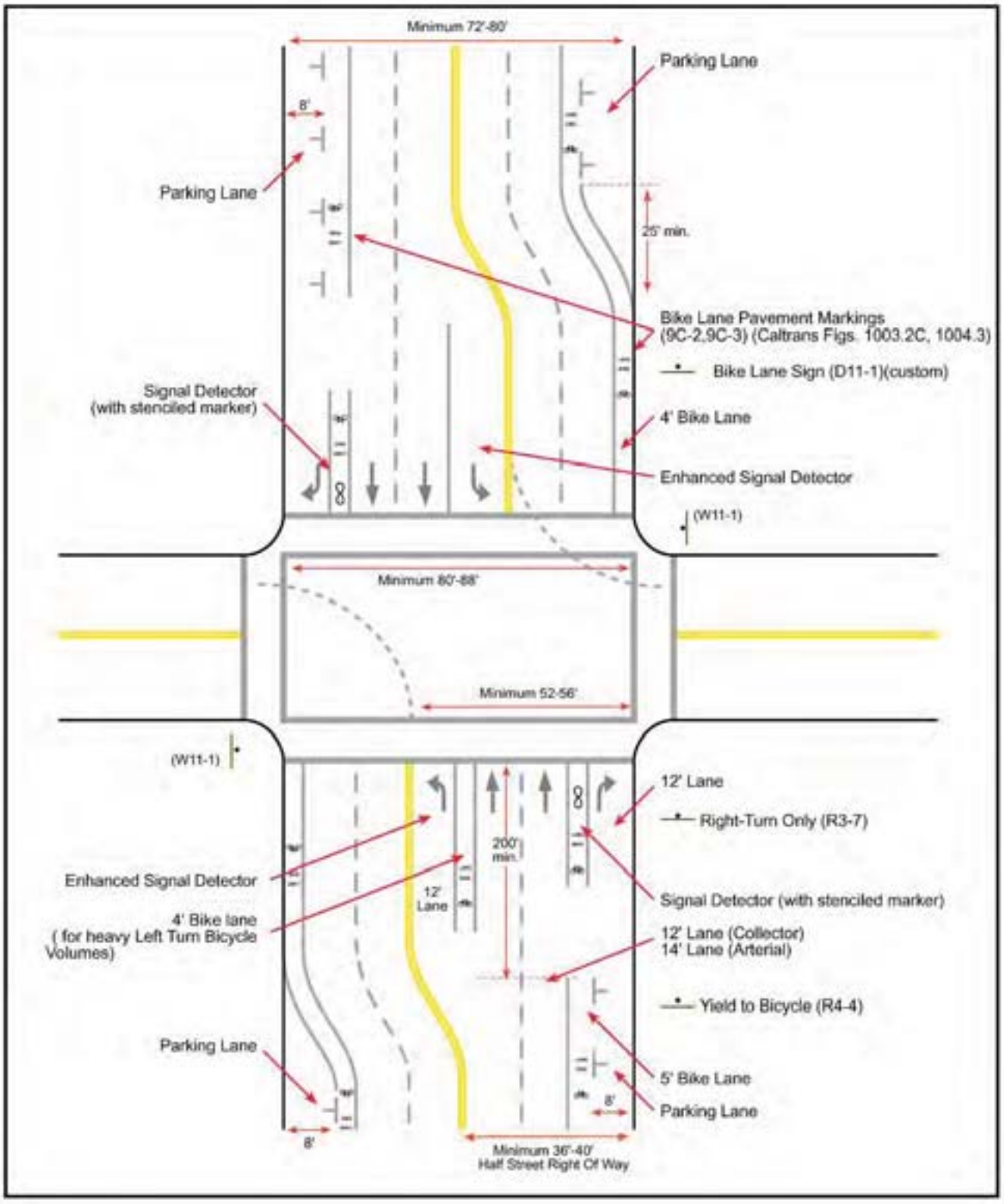


Figure 8-9: Bicycle Lane Configurations at Intersections (Illustrative purposed only. Further engineering would be required.)

Right-Turn Only Lanes

Right-turn only lanes can present challenges for bicyclists traveling through an intersection. Bicyclists must merge to the left to position themselves in the through travel lane. Jurisdictions will sometimes stripe bike lanes on the right-side of right-turn only lanes, which places the through-cyclist in direct conflict with a right-turning vehicle. The appropriate treatment for right-turn only lanes is to either drop the bike lane entirely approaching the right-turn lane, or to place a bike lane pocket between the right-turn lane and the right-most through lane.

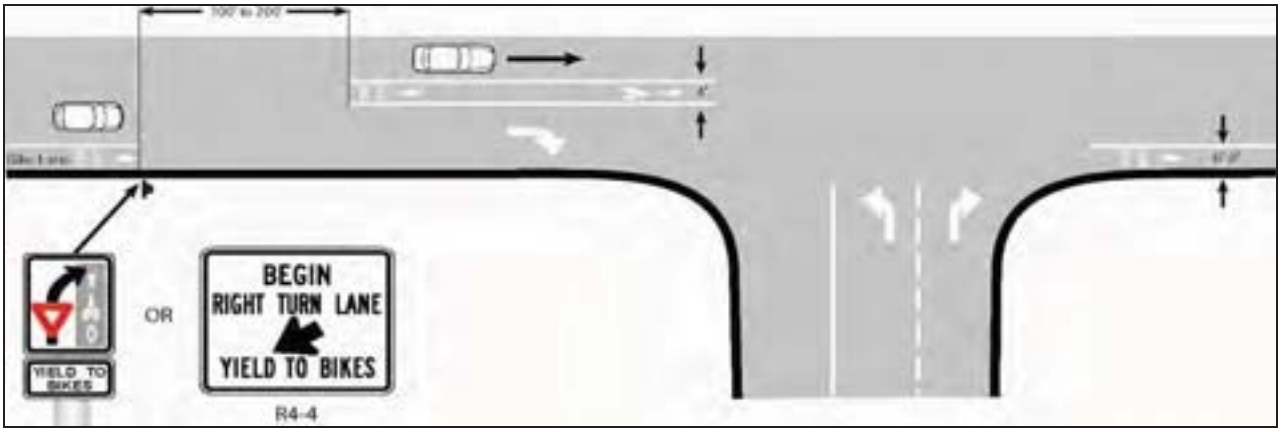


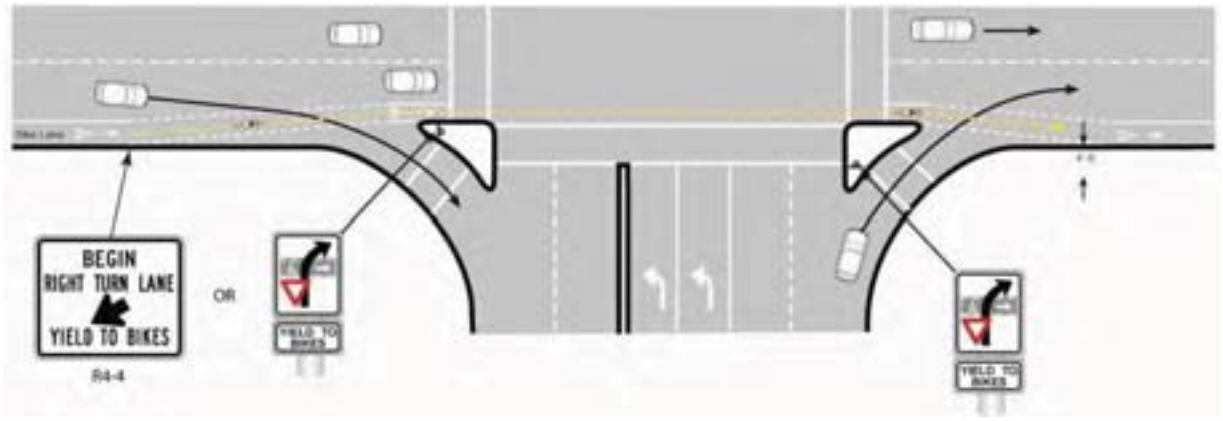
Figure 8-10: Bike Lane Adjacent to Right Turn Only Lane.

Free Right Turns with Porkchop Islands

Many arterial intersections are designed with free right-turn lanes at each corner, separated from the through lanes by triangular "pork chop" islands. The free right turn lanes are typically Yield controlled. While the pork chop configuration can provide a pedestrian refuge area, they can present some difficulties for bicyclists. The bike lane striping is typically dropped approaching the right-turn lane. Bicyclists traveling straight need to merge left across the right-turn lane in order to position themselves along the right side of the through lane. Some bicyclists may wait until too late to merge, which can cause conflicts because of the wider turn radius and relatively higher turning speeds afforded by the free right configuration. A vehicle in the free right lane would not be anticipating a bicyclist along the curb to suddenly merge over near the island to continue straight. In addition, the pork chop island configuration provides no dedicated space for bicyclists waiting to proceed straight, as the concrete island, if not well designed, cuts off the normally available shoulder width.

Figure 8-11 illustrates how a dedicated dashed bike channel through the merge zone and along the right side of the through lane helps guide bicyclists and alert motorists. This option may require a reduction in the travel lane widths at the intersection in order to provide a three or four foot bike lane channel.

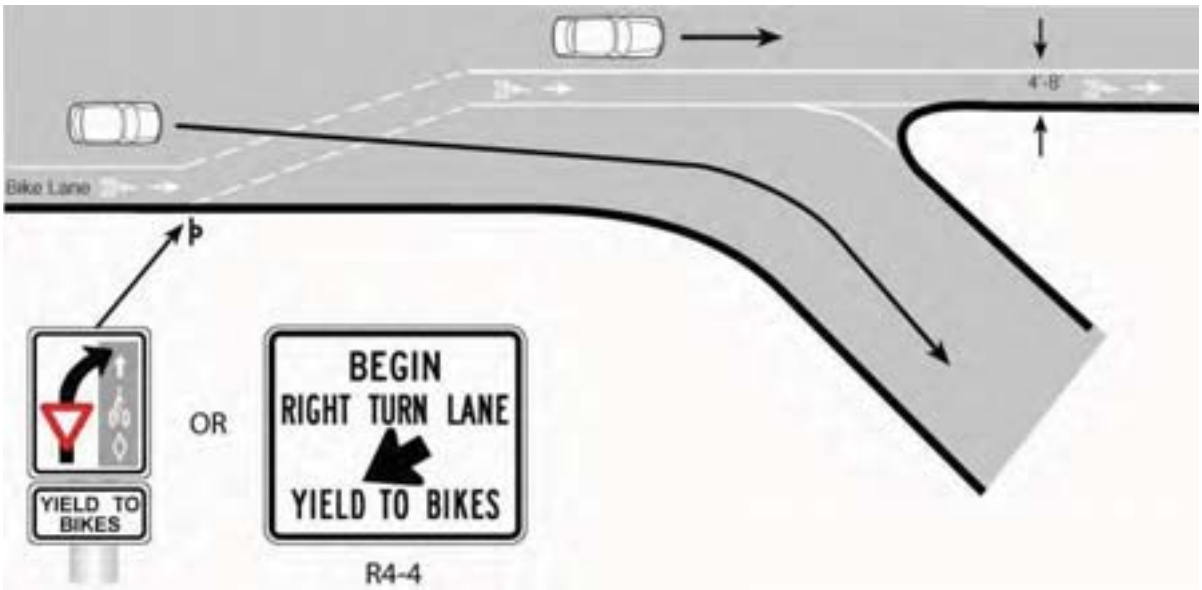
Figure 8-11: Bike Lane through Right Turn Island Intersection with Free Right Turn Lanes



Freeway on- and off-ramps

Freeway on- and off-ramp crossings present another potential conflict zone for bicyclists, as bike lanes are typically dropped and cyclists must merge across travel lanes where vehicles are accelerating or decelerating from freeway speeds. As with the free right turn lanes, the appropriate cyclist behavior is to merge left away from the curb so as to be positioned in the through lane well before the mouth of the on-ramp, and to remain out away from the curb until past the off-ramp. **Figure 8-12: Bike Lane through Freeway Ramps** shows this design.

Figure 8-12: Bike Lane through Freeway Ramps

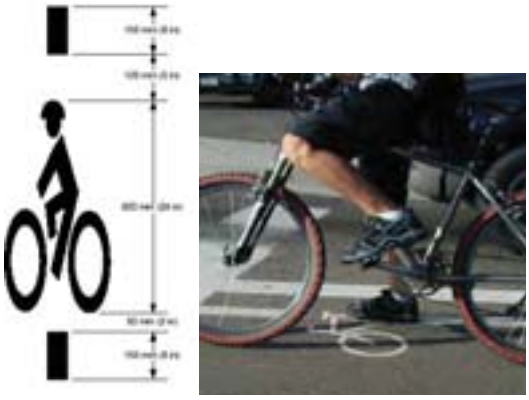


8.6.5. Bicycle Actuated Signals

Another way to make intersections more "friendly" to bicyclists, involves changing how they operate. Improved signal timing, calibrating loop detectors to detect bicyclists, and camera detection

make it easier and safer for cyclists to cross intersections. This section focuses primarily on loop detectors.

Loop detectors are installed within the roadway to allow the metal of a motor vehicle to trigger a change in the traffic signal. Many standard motor vehicle loop detectors can be calibrated to detect bicyclists. This allows the cyclist to stay within the lane of travel and avoid maneuvering to the side of the road to trigger a push button. Signals can be configured so that if a bicycle is detected, an extended green time can be provided.



OMUTCD standards suggest intersections utilize markings to indicate the location where a bicyclist is to be positioned in order to actuate a signal. Adjacent signage is also recommended to emphasize the connection between the marking and the signal.

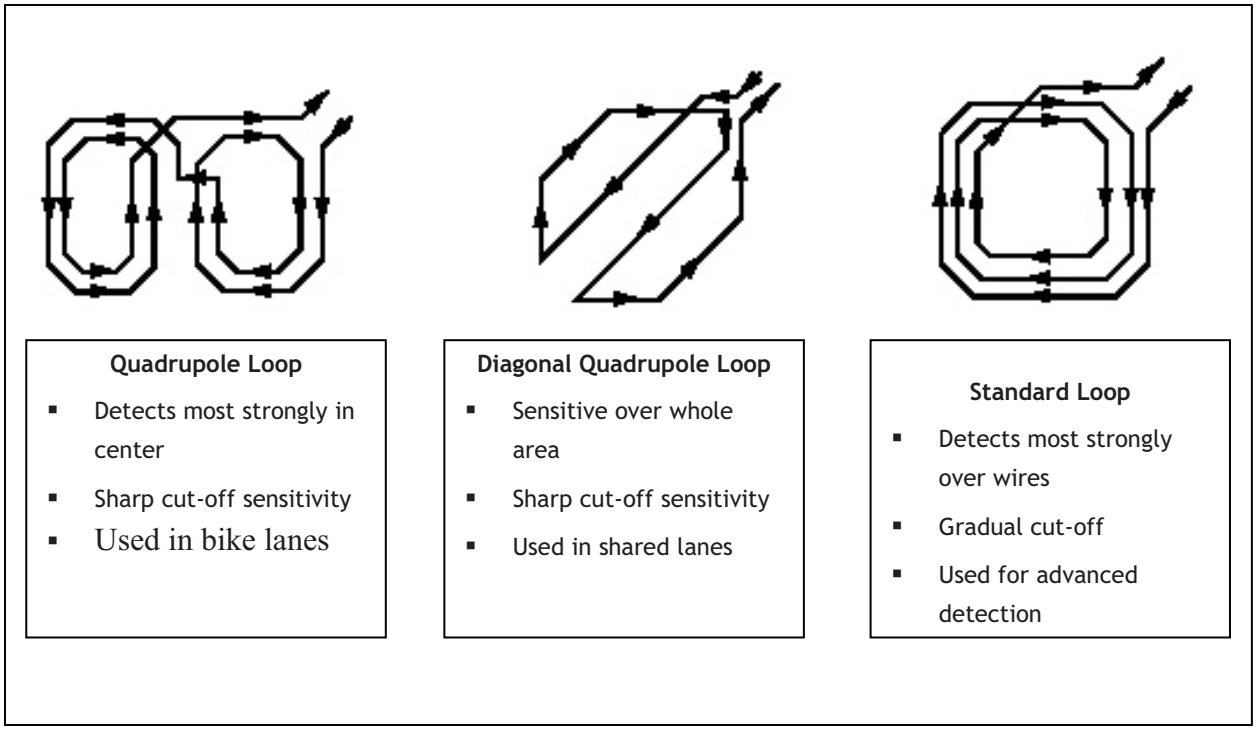


Figure 8-13: Types of Loop Detectors

8.6.6. Bicycle Specific Traffic Control Signals

A bicycle signal is an electrically powered traffic control device that may only be used in combination with an existing traffic signal. Bicycle signals may be used to address an identified safety or operational problem involving bicycles. Signals use green, yellow and red lighted bicycle

symbols, to control bicycle movement through an intersection. Germany uses bicycle signals that are mounted lower than motor vehicle traffic signals and located near the bicyclist.

The following is an example of a warrant used to justify the placement of a new signal or signal phase that serves bicyclists.

A bicycle signal may be considered for use only when the volume and collision or volume and geometric warrants have been met:

1. Volume. When W = B x V and W > 50,000 and B > 50.

   Where: W is the volume warrant.

   B is the number of bicycles at the peak hour entering the intersection.

   V is the number of vehicles at the peak hour entering the intersection.

   B and V shall use the same peak hour.

2. Collision. When 2 or more bicycle/vehicle collisions of types susceptible to correction by a bicycle signal have occurred over a 12-month period and the responsible public works official determines that a bicycle signal will reduce the number of collisions.

Bicycle traffic signal.

3. Geometric.

   a. Where a separate bicycle/multi use path intersects a roadway.

   b. At other locations to facilitate a bicycle movement that is not permitted for a motor vehicle.

Bicyclists use bicycle traffic signals leaving the University of California Davis campus

The Bicycle Specific Traffic Control Signal is not included in the Ohio MUTCD, however it is in the MUTCD 2003 and MUTCD 2003 California Supplement (May 20, 2004), Sections 4C.103 & 4D.104

http://www/dot.ca.gov/hq/traffopps/signtech/mutcdsupp/

8.6.7. Bike Box /Advance Stop Line

A bike box is a relatively simple innovation to improve turning movements for bicyclists without requiring cyclists to merge into traffic to reach the turn lane or use crosswalks as a pedestrian. The bike box is formed by pulling the stop line for vehicles back from the intersection, and adding a stop line for bicyclists immediately behind the crosswalk. When a traffic signal is red, bicyclists can move into this "box" ahead of the cars to make themselves more visible, or to move into a more comfortable position to make a turn. Bike boxes have been used in Cambridge, MA, and Eugene, OR and a number of other localities. **Bike Boxes are not included in the OMUTCD.**

Potential Applications:

- At intersections with a high volume of bicycles and motor vehicles
- Where there are frequent turning conflicts and/or intersections with a high percentage of turning movements by both bicyclists and motorists
- No right turn on red
- Can be combined with a bicycle signal (optional)

Bike box in Eugene, OR. (Photo: Evaluation of an Innovative Application of the Bike Box, FHWA, 2000.)

Bicycle Box in England filled in with color to emphasize allocation of space to bicycle traffic.

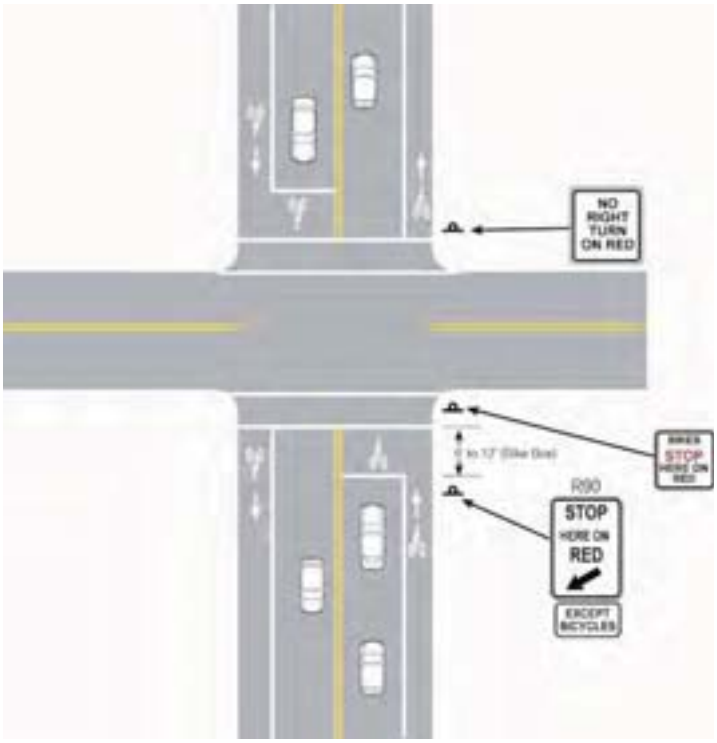


Figure 8-14: Plan View of a Bicycle Box

8.7. Pavement Markings

The *Ohio Manual on Uniform Traffic Control Devices* provides guidance for lane delineation, intersection treatments, and general application of pavement wording and symbols for on-road bicycle facilities and off-road paths.

8.7.1. Bike Lanes

The figure below provides examples for bike lane marking and striping. Further details regarding bicycle lane demarcation—specifically addressing turn movements—can be found in the OMUTCD.

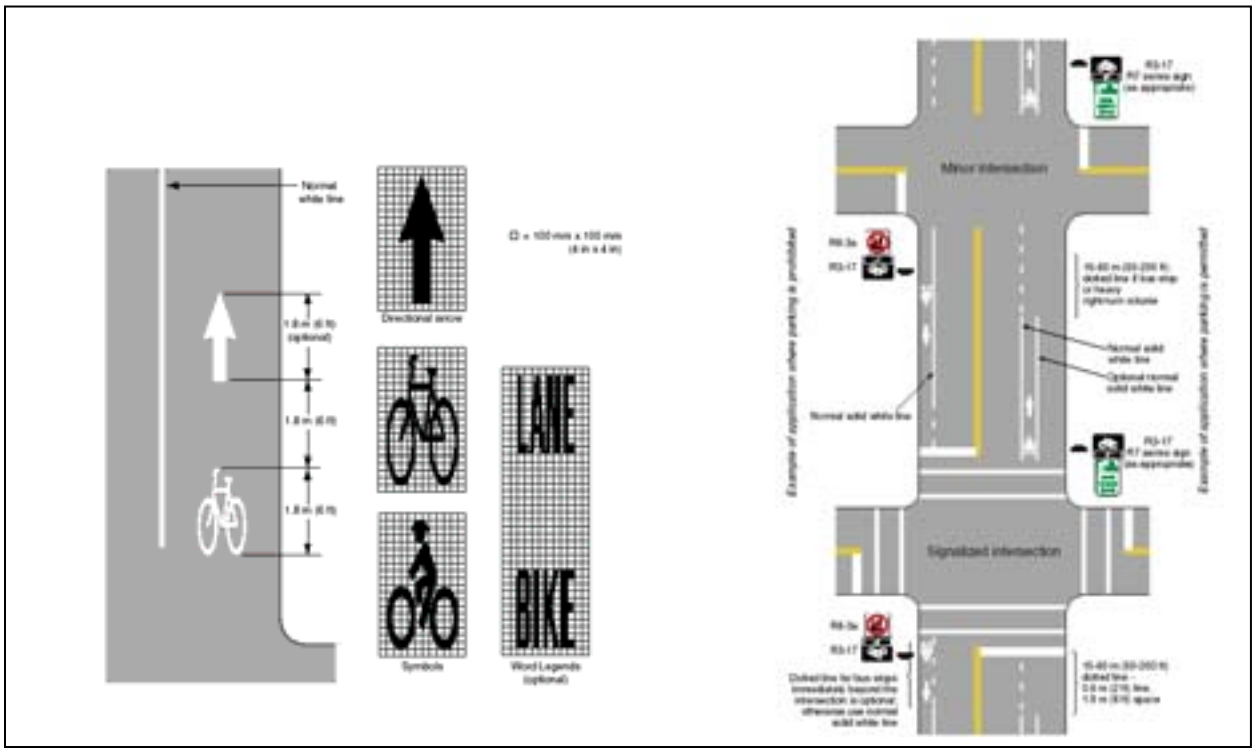


Figure 8-15: OMUTCD Examples of Optional Word and Symbol Pavement Markings for Bicycle Lanes.

Shared Lane Markings on Polk Street in San Francisco

8.7.2. Shared Lane Marking

In September 2005, the Shared Lane Marking was approved by the California Traffic Control Devices committee for use by California jurisdictions.[32] The primary purpose of the Shared Lane Marking (sometimes referred to as "sharrows") is to provide positional guidance to bicyclists on roadways that are too narrow to be striped with bicycle lanes and to alert motorists of the location a cyclist may occupy on the roadway.

[32] Policy Directive 05-10 "Shared Roadway Bicycle Marking", passed on September 12, 2005, outlines implementation guidelines for placing Shared Lane Markings. <http://www.dot.ca.gov/hq/traffops/signtech/signdel/policy.htm>

Shared Lane Markings are intended to reduce the chance of a cyclist colliding with an open car door of a vehicle parked on-street, parallel to the roadway. The California MUTCD only allows Shared Lane Markings to be used on urban roadways with on-street parallel parking. The next version of the Federal MUTCD will include shared lane markings, and will allow them to be included at all locations, not just next to parked cars.

Shared Lane Markings are appropriate on bicycle network streets that are too narrow for standard striped bicycle lanes, areas that experience a high level of "wrong-way" riding, along with bicycle network streets that have moderate to high parking turnover, typically commercial areas. Shared Lane Markings are intended for use on roadways without striped bicycle lanes or shoulders.

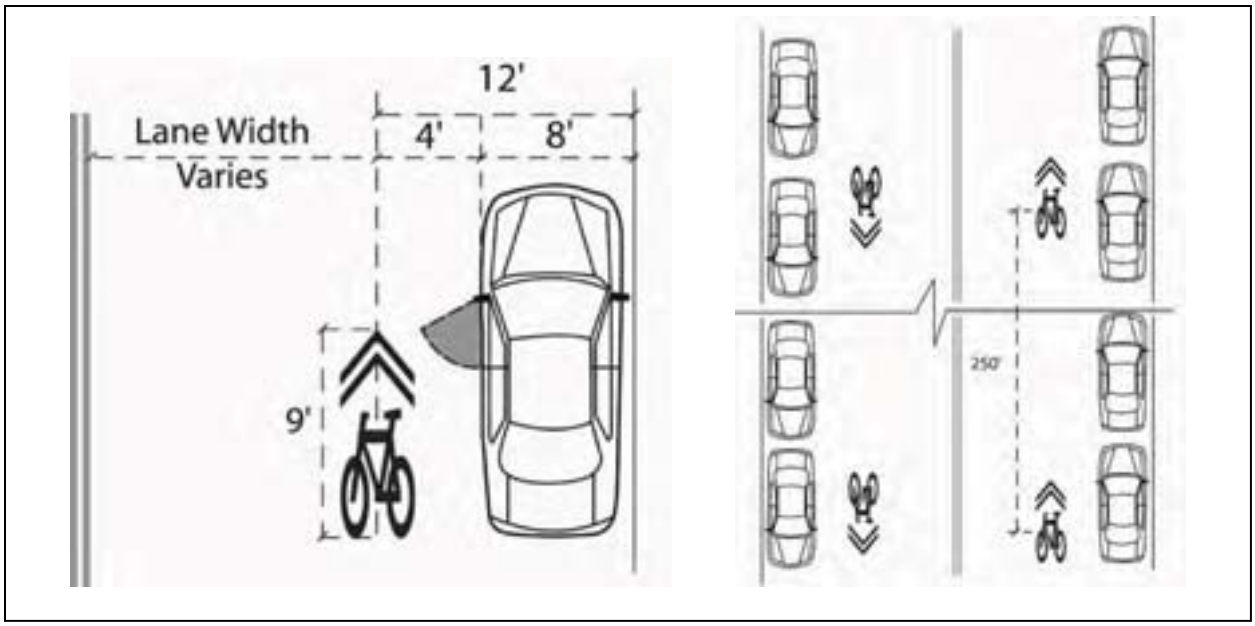


Figure 8-16: Shared Lane Marking Design Guidelines

Shared Lane Markings should be spaced approximately 250' center to center, with the first marking on each block or roadway segment placed immediately after the nearest intersection. On long blocks, supplemental markings may be necessary. **Shared Lane Markings are not included in the OMUTCD, but will be included in the next version of the Federal MUTCD.**

8.7.3. Colored Bike Lanes

European countries have used colored pavement – red, blue, yellow, and green—for bike lanes where this is a higher probability of vehicle conflicts. Examples of such locations are freeway on- and off-ramps where motorists move into a right turn pocket. In the United States, the City of Portland has experimented with blue bike lanes and supportive signage with favorable results. Studies showed that more motorists were using their turn signals and slowing or stopping at the blue

This blue bike lane in Portland is used to warn motorists approaching the on-ramp that bicyclists have a through lane.

lanes. **Colored Bike Lanes are not included in the OMUTCD.**

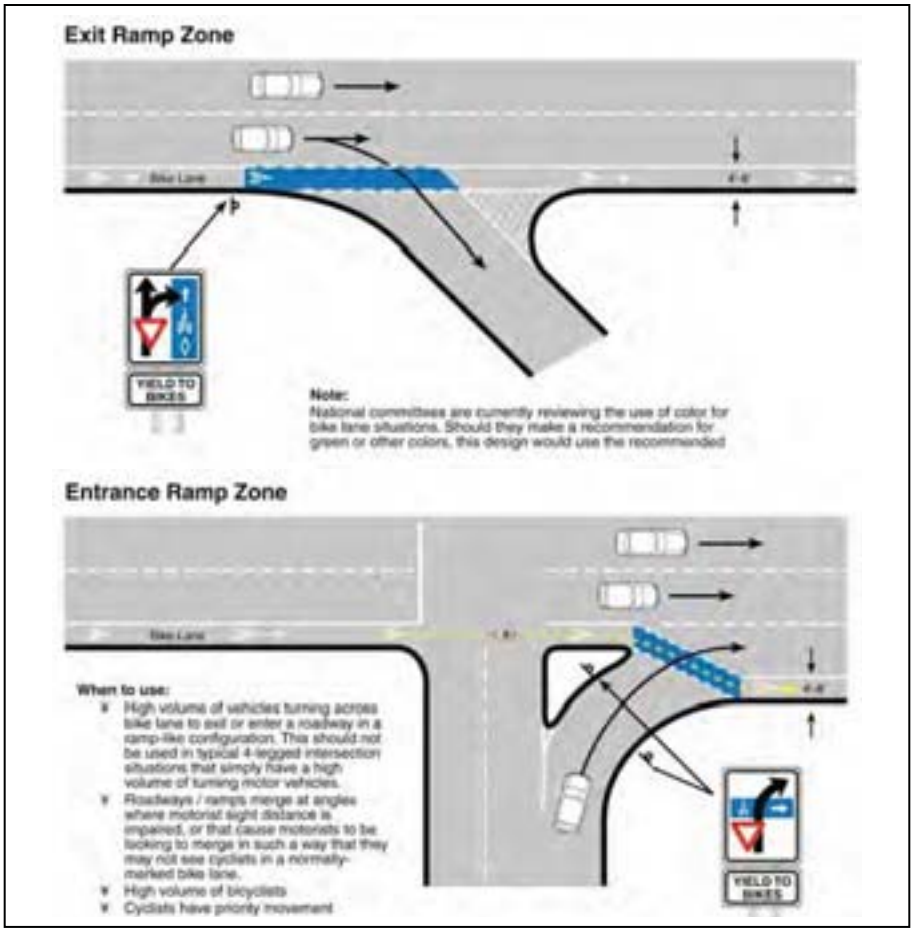


Figure 8-17: Colored Bike Lane Treatment through Conflict Areas

8.7.4. Contra-Flow Bicycle Lanes

Contra-flow bicycle lanes entail a striped lane for bicycles going against the flow of automobile travel. The lanes should be separated by a double-yellow line. **Contra-Flow Bike Lanes are not included in the Ohio MUTCD**

Contra-flow bike lanes are designated lanes that allow bicycles to move in the opposite direction of traffic on a one-way street. Functionally, streets with contra-flow bicycle lanes are set up so that motor vehicles can only move one way on the road, while bikes can move in both directions—with traffic or opposite traffic in the contra-flow lane.

A contra-flow bicycle lane in Cambridge, MA

Their implementation is controversial primarily because, contrary to standard road rules, they encourage cyclists to ride against motor-vehicle right of way, which can lead to increased bicycle/motor-vehicle crashes.

However, in some circumstances, they may offer substantial savings in out-of-direction travel, by providing more direct routes. For popular destinations and high-use bikeways, a contra-flow lane can increase safety by reducing the number of bicyclists, and the number of conflicts, along the longer indirect route.

Potential Applications:

- Provides direct access to key destination
- Improves safety
- Infrequent driveways on bike lane side
- Bicyclists can safely and conveniently re-enter traffic at either end
- Sufficient width to provide bike lane
- No parking on side of street with bike lane
- Existing high bicycle usage of street
- Less than three blocks in length
- No other reasonable route for bicyclist

Contra-flow lanes are most successful on streets with few intersecting driveways, alleys or streets on the side of the lane; on streets where bicyclists can safely and conveniently re-enter the traffic stream at either end of the lane; on streets where a substantial number of bicyclists are already using the street; and on streets with sufficient width to accommodate a bike lane.

The contra-flow lane on the left in Madison, WI is grade-separated.

Special features to incorporate into contra-flow bike lane design include the following.

- The contra-flow bike lane must be placed on the right side of the street (to motorists' left) and must be separated from oncoming traffic by at least a double yellow line; vertical separation or grade separation is encouraged. This indicates that the bicyclists are riding on the street legally, in a dedicated travel lane.
- Any intersecting alleys, major driveways, and streets must have signs indicating to motorists that they should expect two-way bicycle traffic.
- Existing traffic signals should be fitted with actuators for bicyclists (i.e. loop detectors, video cameras, infrared or push buttons).
- Existing traffic signals should be modified (if necessary) so that bicyclists traveling in the contra-flow direction can see the signal head, and any conflicting turn phasing shall be eliminated.

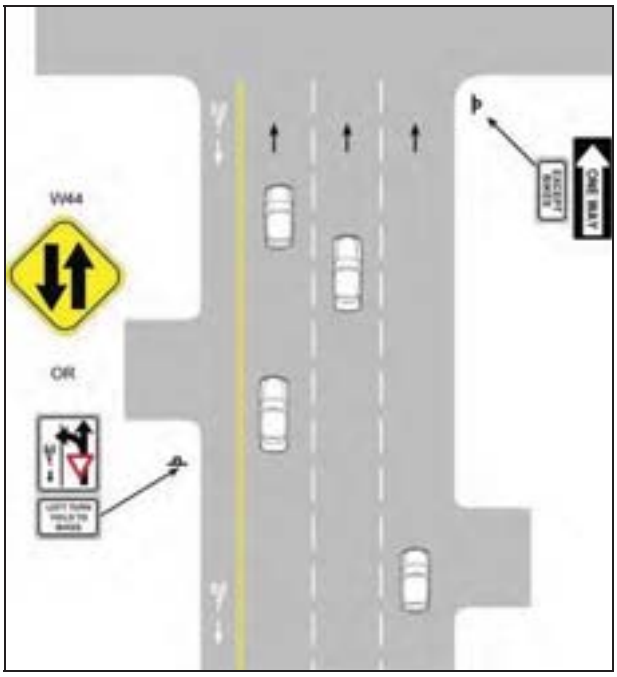


Figure 8-18: Plan View of a Contra-Flow Bicycle Lane

8.8. Bike Facility Crossings

8.8.1. At-Grade Intersection

When shared-use paths cross streets, proper design should be developed on the pathway as well as on the roadway to alert bicyclists and motorists of the crossing. Sometimes on larger streets, at mid-block pathway crossing locations as shown in **Figure 8-19: Shared Use Path Mid-Block Crossing** an actuated signal is necessary. A signal allows bicyclists a clear crossing of a multi-lane roadway. If a signal is or is not needed, appropriate signage and pavement markings should be installed, including stop signs and bike crossing pavement markings.

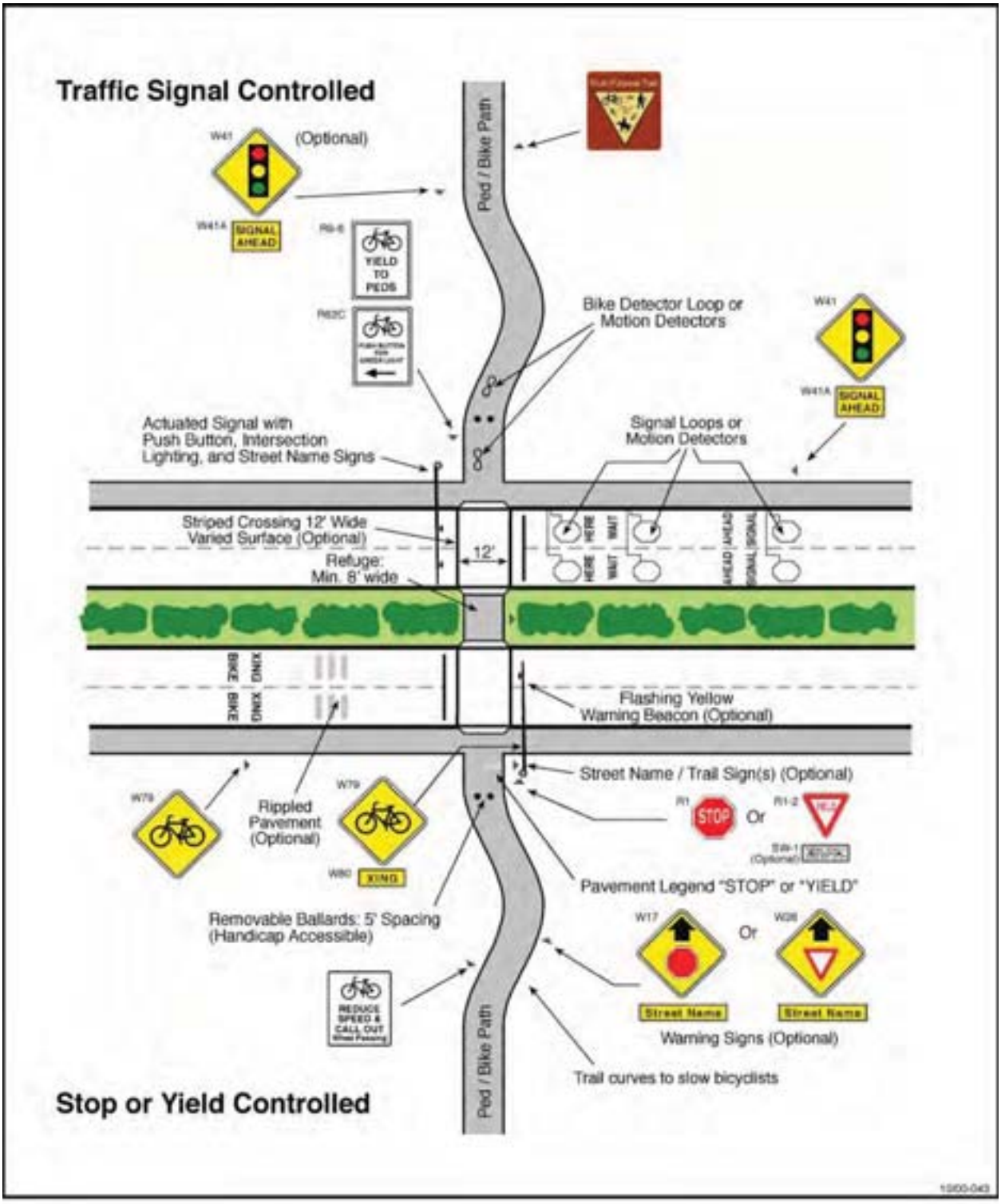


Figure 8-19: Shared Use Path Mid-Block Crossing

8.8.2. Undercrossings

Undercrossings are an important component of bikeway design.

Some design considerations for undercrossings include:

- Must have adequate lighting and sight distance for safety
- Must have adequate over-head clearance of at least 3.1 m (10 ft)
- Tunnels should be a minimum 4.3 m (14 ft) for several users to pass one another safely; a 3.0 m x 6.0 m (10 ft x 20 ft) arch is the recommended standard
- "Channeling" with fences and walls into the tunnel should be avoided for safety reasons
- May require drainage if the sag point is lower than the surrounding terrain.

This undercrossing provides ample vertical and horizontal clearance and a clear sight line through the structure, improving the feeling of safety.

8.8.3. Overcrossings

Overcrossings are also an important component of bikeway design. Barriers to bicycling often include freeways, complex interchanges, and rivers. When a route is not available to cross these barriers a bicycle overcrossing is necessary. **Figure 8-20: Undercrossing Design Guidelines** illustrates basic design standards for typical designs.

Some design considerations for overcrossings include:

- Pathways must be a minimum 6 feet wide, with a preferred width of 8 or 10 feet wide
- Slope of any ramps must comply with ADA Guidelines
- Screens are often a necessary buffer between vehicle traffic and the bicycle overcrossing

A freeway overcrossing in Davis, CA

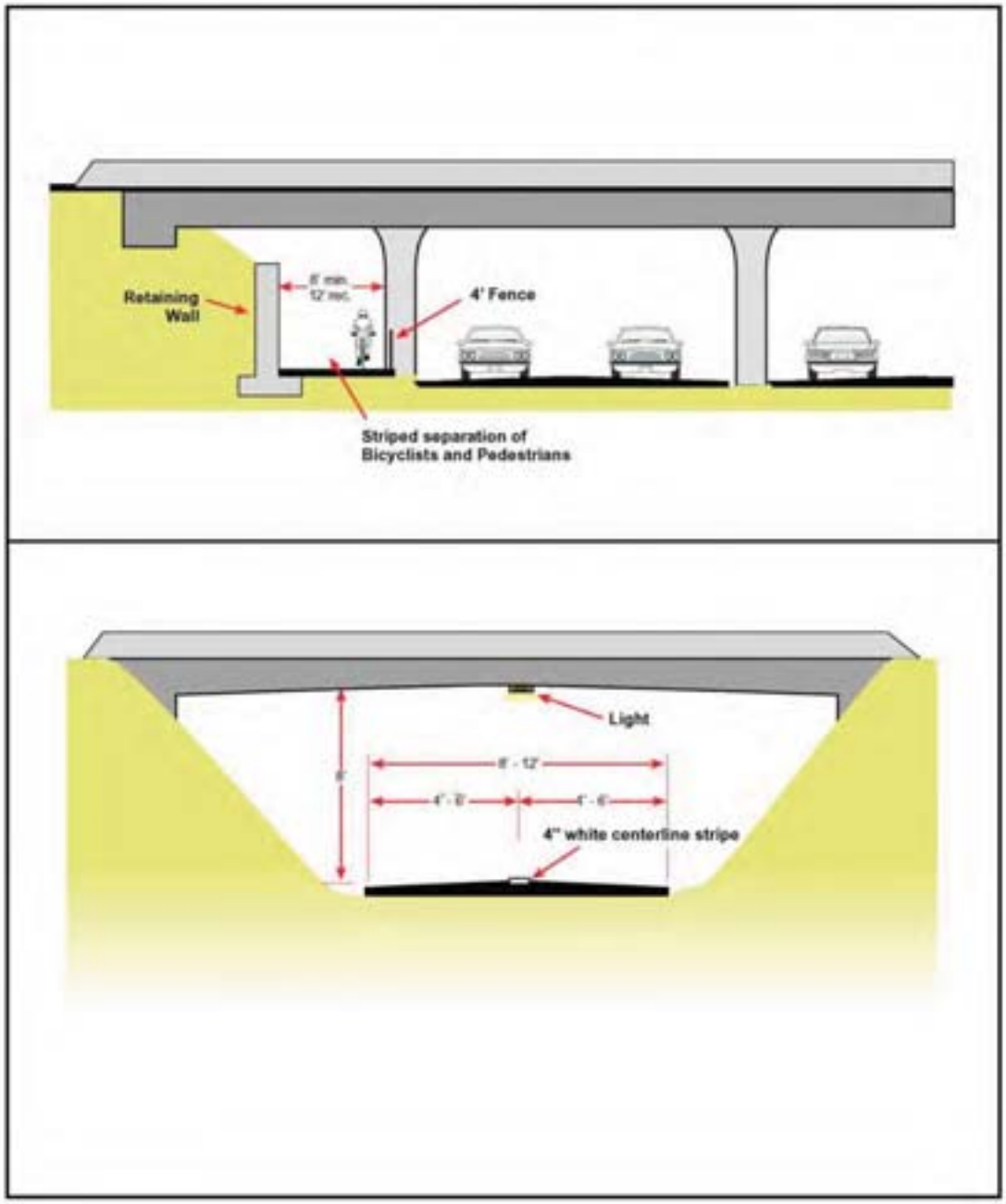


Figure 8-20: Undercrossing Design Guidelines

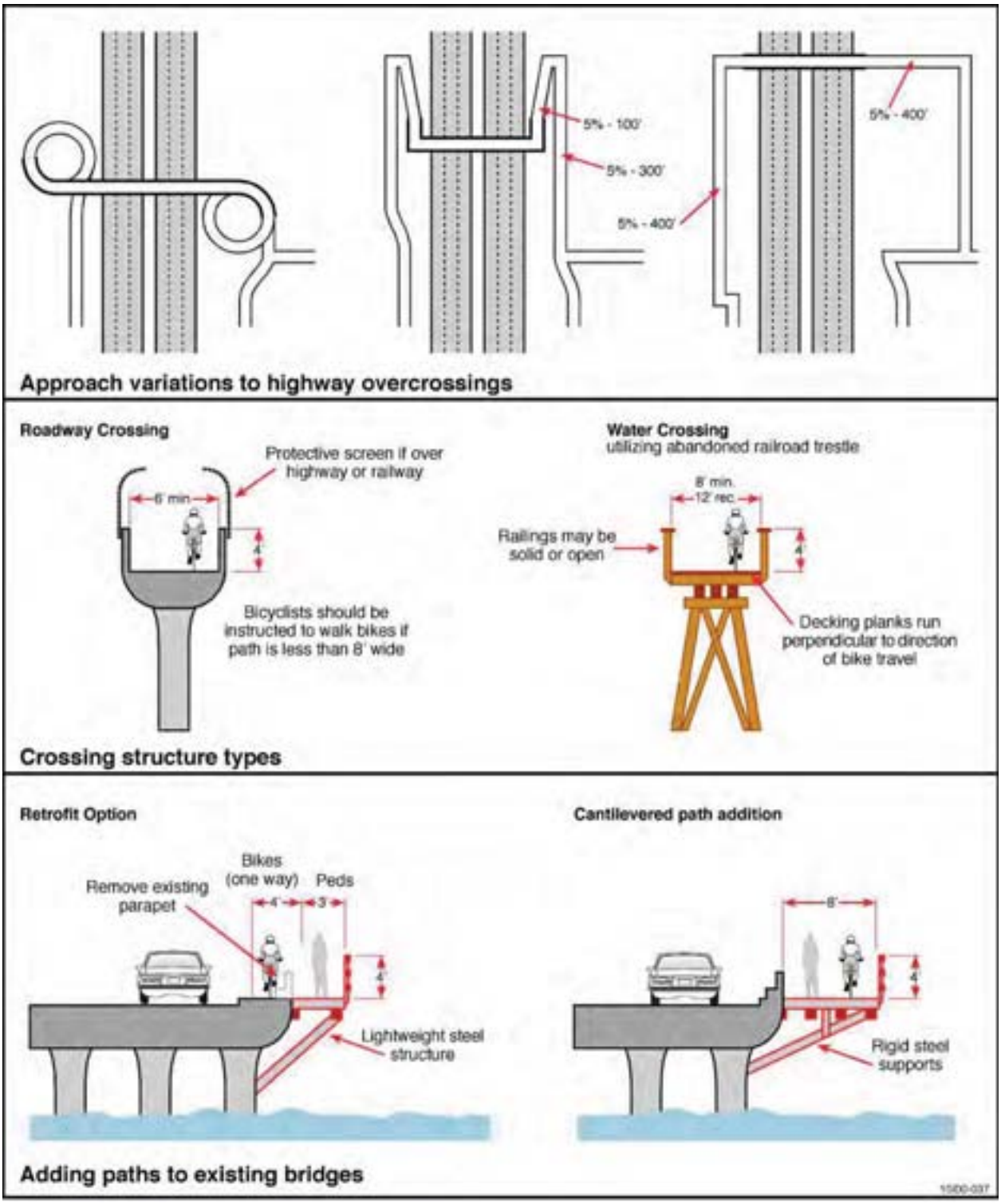


Figure 8-21: Overcrossing Design Guidelines

8.8.4. At-Grade Railroad Crossings

Railroad tracks can be a hazardous to bicyclists. If bicyclists do not ride at a 90 degree angle over the tracks, bicyclists' wheels can catch in the tracks and potentially lead to a collision. **Figure 8-22: Bike Lanes Crossing at Railroad Tracks** shows the proper design for a bike lane crossing railroad tracks. Bike lanes should cross train tracks at 90 degrees, helping to prevent collisions.

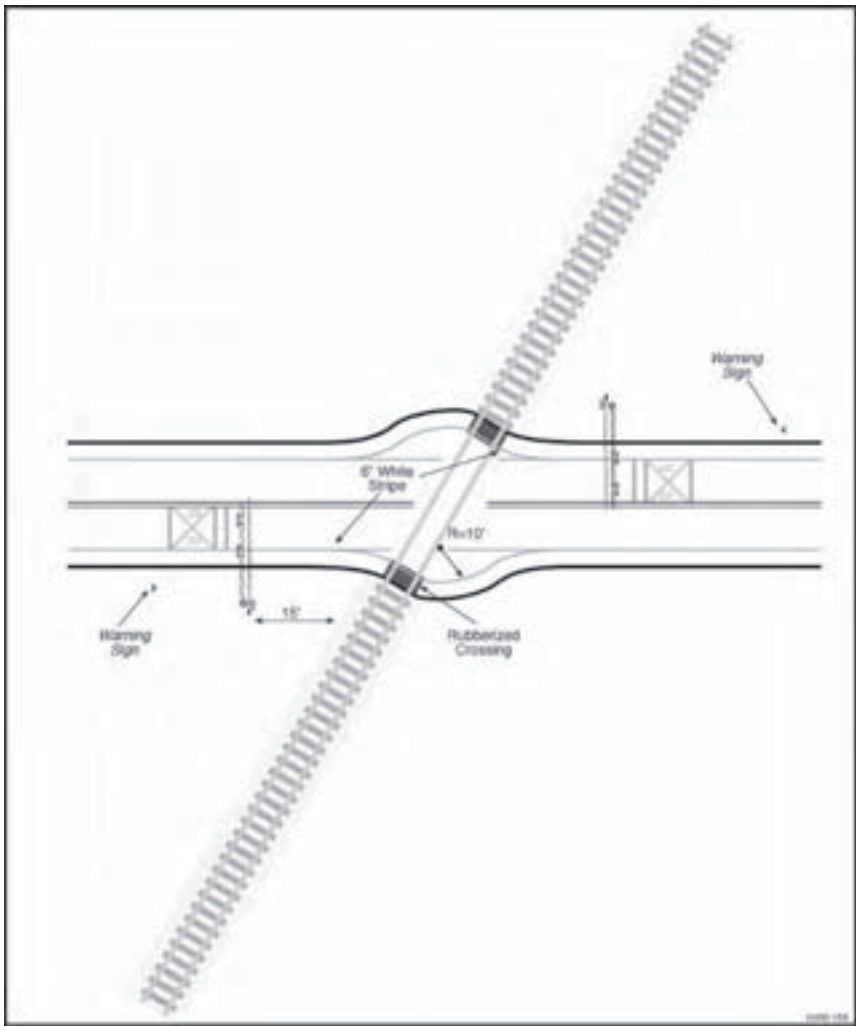


Figure 8-22: Bike Lanes Crossing at Railroad Tracks

8.9. Signage and Wayfinding

8.9.1. Wayfinding

Wayfinding signage is an important part of the bicycle network. Implementing a well-planned and attractive system of signage can greatly enhance bikeway facilities, making their presence aware to motorists, as well as existing and potential bicyclists. By leading people to city bikeways that offer safe and efficient transportation, effective signage can encourage residents and visitors to bicycle.

Way-finding can include mile-markers, road identification at undercrossings, and informational kiosks.

Figure 8-23: Example of Wayfinding Signage, Portland, Oregon shows a number of different signs and markings, both on poles and on the roadway, that the City of Portland has adopted for their new bicycle signage program. Signs such as these improve the clarity of travel while illustrating that destinations are really only a short ride away. The signs below are provided only as point of reference and not being adopted by Columbus.

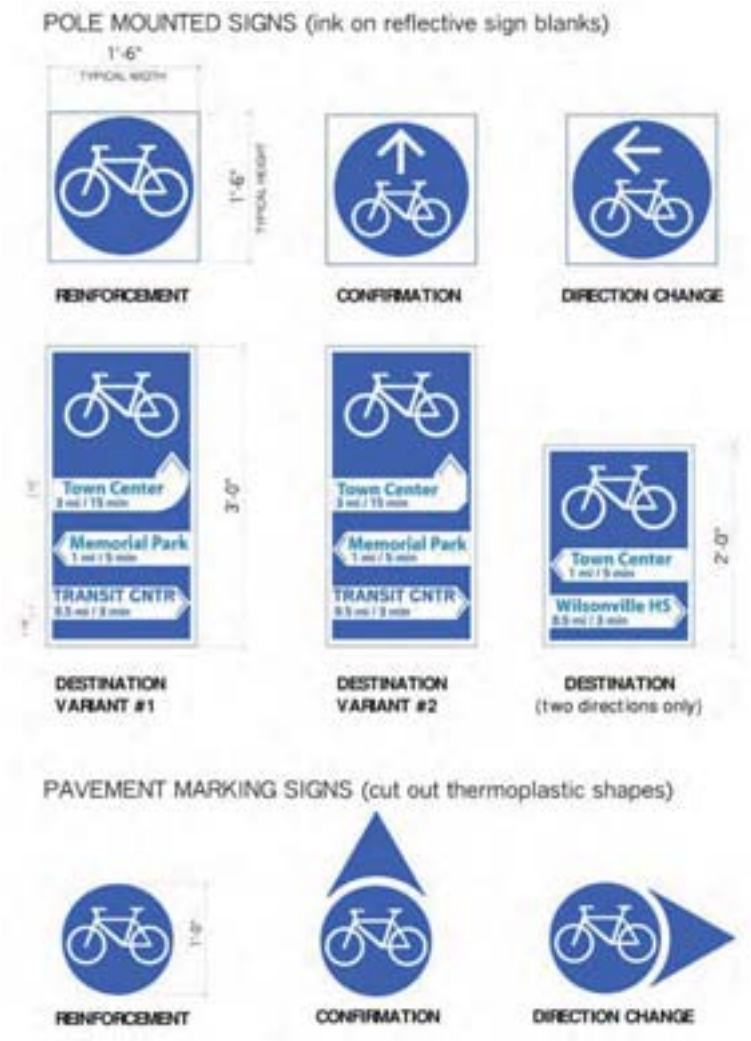


Figure 8-23: Example of Wayfinding Signage, Portland, Oregon

Destination Signage

Destination signage helps bicyclists use the bikeway network as an effective transportation system. These signs typically display distance, direction and in some cases, estimated travel time information to various destinations. In Columbus, destination signage would be helpful for destinations such as downtown, The Ohio State University, Easton, Polaris, the Arena District, or other shopping

centers, parks and schools. Signage can also assist users to navigate towards major bikeways, transit hubs, or greenway trails. Finally, way-finding can help bicyclists avoid difficult and potentially hazardous road scenarios, like steep terrain, dangerous intersections, highway and river crossings, or deteriorating road conditions. The signs below are provided only as point of reference and not being adopted by Columbus.

Figure 8-24: Example of Destination Signage for Columbus

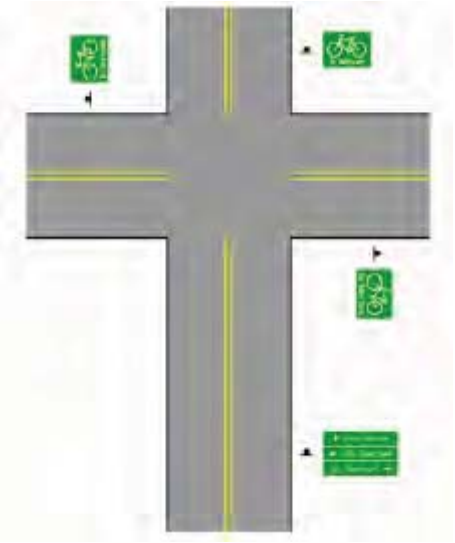
Regional Way-finding

For on-street facilities, MORPC primarily defers to the OMUTCD, which is consistent with MUTCD standards. These require both the use of the words "Bike Route" and a bicycle symbol for any route designation. Additional panels are required to provide destination name, route numbers or directional arrows.

For off-street facilities, like shared-use trails and pathways, MORPC policy states the need for informational signs to notify users where they are, where they are going, what cross streets they are crossing, how far away destinations are, and what services are available close to the path.

MORPC specifically implements the Central Ohio Greenways Signage Program for way-finding along greenways. This program details a color and posting system throughout the greenway network, which crisscrosses the Columbus metropolitan area.

Columbus Way-Finding Recommendations



Way-finding for the Columbus Bicentennial Bike Plan, should accommodate regional standards while implementing more recent innovations.

On-Street Route Signs

In terms of placement, route signs should consistently be located at every turn, after every major signalized intersection, or every quarter-mile.

Signage along straight portions of routes should use a single panel, simply showing a bicycle symbol and destination.

Signage where routes intersect should include panel signs that provide cyclists with destination, direction and distance.

This new signage system offers less sign clutter, lower costs, and greater clarity at locations with multiple bike routes, compared to the current OMUTCD and City standards.

Off-street Trail and Shared-Use Path Signs

The Central Ohio Greenways Signage Program presents thoroughly detailed design guidelines. Additionally, many communities neighboring the trail network have already agreed to the program, providing a convenient politically-approved system for incorporation and implementation of Columbus bikeway signage.

Facilities connecting to these greenways and trails should feature a hybridized system combining on-street route signs with the Central Ohio Greenways Signage Program. This system should encourage use of trails for recreational as well as functional bicycling trip-purposes, with amenities like informational kiosks.

Informational Kiosks

Informational kiosks, complete with maps of the surrounding area, can help provide initial orientation and bearings for bicyclists beginning their journeys at major transit hubs, or transitioning from off-street to on-street facilities.

8.9.2. Standard Facility Signage

The *Ohio Manual of Uniform Traffic Control Devices* provides specific design details for the placement, and size of standard bicycle facility signage. All bicycle facilities within Columbus should be signed per the OMUTCD.

In general, the sizes of signs used on bicycle paths are smaller than those used on roadways. If the sign applies to drivers and bicyclists, then the larger size used for conventional roads should apply.

Figure 8-25: OMUTCD Regulatory and Guide Signage for Bikeway Facilities illustrates a number of examples from the OMUTCD regarding both regulatory, warning and way-finding signage, approved for use on bicycle facilities in Ohio.

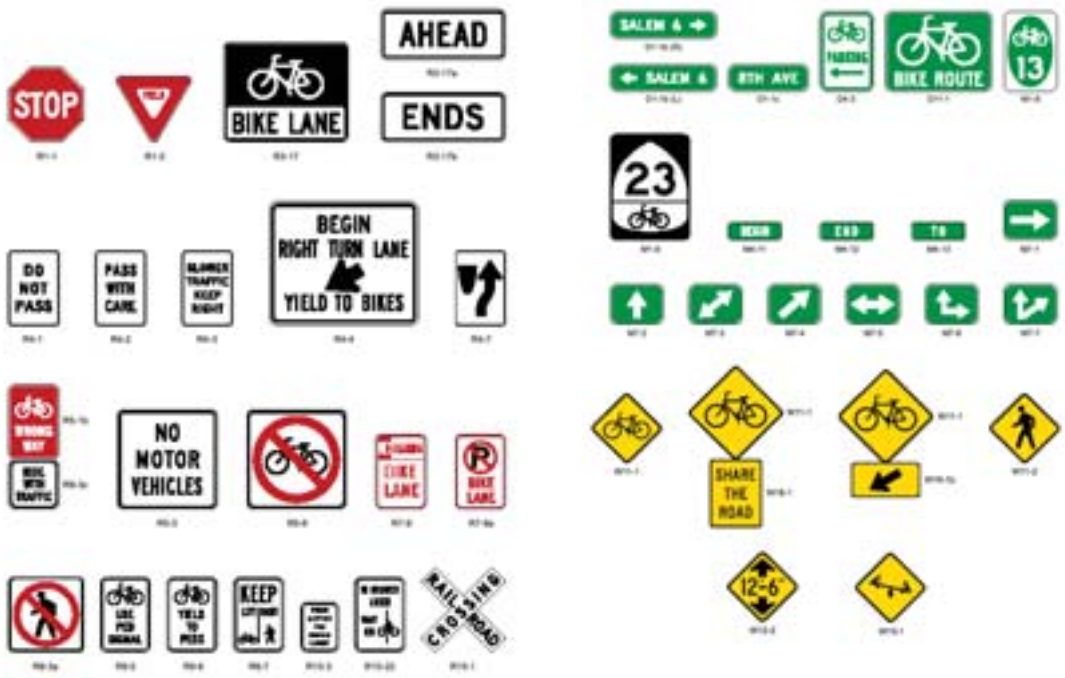


Figure 8-25: OMUTCD Regulatory and Guide Signage for Bikeway Facilities

8.9.3. Special Purpose Signage

Special Purpose signage can be developed for a number of purposes—as a standardized warning system, to assist with unique way-finding, or to help lend a sense of place to a signage system. Some

innovative signage is developed to increase bicycle awareness and improve visibility. Any signs to be installed on public roadways in Ohio must be approved by ODOT's Traffic Control Devices Committee. (See appendices for further information.)

New experimental designs can also be utilized after approval. This continuing process of developing better way-finding or safety-warning signs is important for designing safer and more enjoyable bicycling facilities, as well as improving the overall transportation system.

Additionally, customized signs provide an opportunity to make signage a unique feature of Columbus. Many communities in California have customized the bike route logo sign by modifying the upper third portion with a distinct graphic.

"Share the Road" signs, are designed to advise motorists that bicycles have as much of a right to a narrow roadway as motor vehicles. The "Bikes Allowed Full Use of the Lane" sign is currently used on an experimental basis in several American cities.

8.9.4. Parallel Path Warning Signage

When paths are located parallel and adjacent to roadways, vehicles turning into and out of streets and driveways must cross the path. Conflicts between bicyclists and pedestrians and turning motorists are common at these types of intersections. Turning motor vehicles do not expect to see bicyclists or pedestrians coming in the opposite direction of traffic.

An example of Denver's parallel path warning signage

Starting in the early 1990's, the City of Denver, Colorado began using experimental warning signage at its parallel paths. The signage is modified from the standard MUTCD railroad warning signage.

Experimental signage, similar to the Denver parallel path warning signs, could help alert motorists to the presence of bicyclists and pedestrians on parallel paths. This would involve the City working with the Ohio Department of Transportation Control Devices Committee (ODOTCDC) through their process for implementing and testing "experimental" signage.

An example of Denver's parallel path warning signage in context

8.10. Bicycle-Parking

As more bikeways are constructed and bicycle usage grows, the need for bike parking will increase. Short-term parking at shopping centers and similar land uses can support bicycling as well as long-term bicycle parking at transit stations and work sites.

8.10.1. Guidelines for Locating Bicycle Parking

Bicycle parking should be installed on public property, or available to private entities on an at-cost basis. Bicycle parking facilities should be provided at other public destinations, including government buildings, community centers, parks, schools and shopping centers.

All bicycle parking should be in a safe, secure area visible to passersby. Commuter locations should provide secure indoor parking, covered bicycle corrals, or bicycle lockers. Bicycle parking on sidewalks in commercial areas should be provided according to specific design criteria, reviewed by merchants and the public, and installed as demand warrants.

Figure 8-26: Recommended Guidelines for Bicycle Parking Locations and Quantities provides basic guidelines on ideal locations for parking at several key activity centers as well as an optimum number of parking spaces.

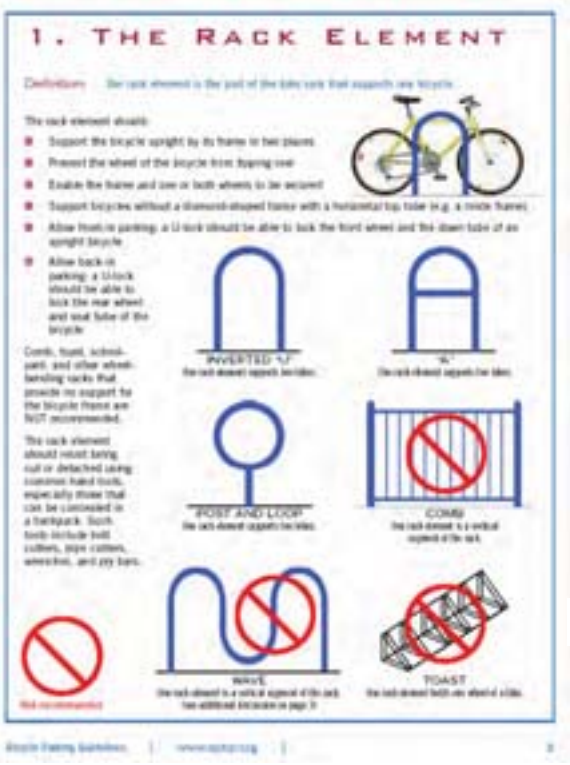
Land Use or Location	Physical Location	Bicycle Capacity
City Park	Adjacent to restrooms, picnic areas, fields, and other attractions	8 bicycles per acre
City Schools	Near office entrance with good visibility	8 bicycles per 40 students
Public Facilities (city hall, libraries, community centers)	Near main entrance with good visibility	8 bicycles per location
Commercial, retail and industrial developments over 10,000 gross square feet	Near main entrance with good visibility	1 bicycle per 15 employees or 8 bicycles per 10,000 gross square feet
Shopping Centers over 10,000 gross square feet	Near main entrance with good visibility	8 bicycles per 10,000 gross square feet
Commercial Districts	Near main entrance with good visibility; not to obstruct auto or pedestrian movement	2 bicycles every 200 feet
Transit Stations	Near platform or security guard	1 bicycle per 30 parking spaces

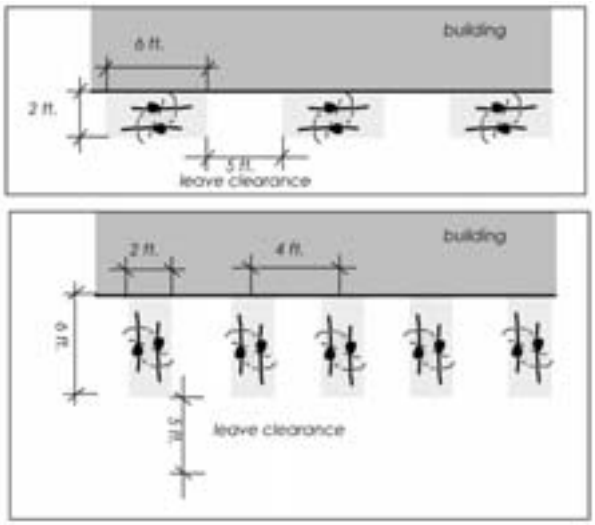
Figure 8-26: Recommended Guidelines for Bicycle Parking Locations and Quantities

8.10.2. Short Term Bicycle Parking

Short term bicycle parking facilities are best used to accommodate visitors, customers, messengers and others expected to depart within two hours. Bicycle racks provide support for the bicycle but do not have locking mechanisms. Racks are relatively low-cost devices that typically hold between two and eight bicycles, allow bicyclists to securely lock their frames and wheels, are secured to the ground, and are located in highly visible areas. They are usually located at schools, commercial locations, and activity centers such as parks, libraries, retail locations, and civic centers. See **Figure 8-27: Recommended Short-Term Bicycle Parking Facilities.**

Figure 8-27: Recommended Short-Term Bicycle Parking Facilities





Recommended bicycle parking spacing dimensions

Bicycle racks should be installed with the following guidelines in mind:

- The rack element (part of the rack that supports the bike) should keep the bike upright, supporting the frame in two places and allowing one or both wheels to be secured.
- Install racks so there is enough room between adjacent parked bicycles. If it becomes too difficult for a bicyclist to easily lock their bicycle, they may park elsewhere. A row of inverted "U" racks should be installed with 15 inches minimum between racks.
- Empty racks should not pose a tripping hazard for visually impaired pedestrians. Position racks out of the walkway's clear zone.

When possible, racks should be in a covered area protected from the elements. Long-term parking should always be protected.

Generally, 'U' type racks bolted into the sidewalk are preferred and should be located intermittently or in front of key destinations. Bicycle racks should be installed to meet ADA standards and not block pedestrian through traffic.

U-locks with shelter installed near a building entrance.

The City may want to consider custom racks that can serve not only as bike racks, but also public artwork or as advertising for a specific business. The "post and ring" style rack is an attractive alternative to the standard inverted-U, which requires only a single mounting point and can be customized to have the city name or emblem stamped into the rings. These racks can also be easily retrofitted onto existing street posts, such as parking meter posts. While custom racks can add a decorative element and relate to a neighborhood theme, the rack function should not be overlooked: All racks should adhere to the basic functional requirement of supporting the bicycle by the frame (not only the wheel) and accepting a U-lock.

Possible alternatives to the inverted-U bike rack include the simple post-and-ring style (left), or a custom artistic rack such as the heart shaped rack (middle) or the abstract rack (right) . All styles allow the bicycle to be secured by the frame with a U-lock.

8.10.3. Long Term Bicycle Parking

For long-term parking, the city may want to consider bicycle lockers. Bicyclists are usually more comfortable storing their bicycles in lockers for long periods because they offer increased security and protection from natural elements. Although they may be more expensive to install, they can make the difference for commuters deciding whether or not to bicycle.

Lockers can be controlled with traditional key systems or through more elaborate subscription systems. Subscription locker programs, like e-lockers, or park-by-phone systems allow even more flexibility within locker use. Instead of restricting access for each patron to a single locker, subscribers can gain access to all lockers within a system, controlled by magnetic access cards, or caller ID. These programs typically have fewer administrative costs because they simplify or eliminate key management and locker assignment.

Long Term bicycle parking facilities accommodate employees, students, residents, commuters, and others expected to park more than two hours. This parking, as shown in **Figure 8-28: Recommended Long-Term Bicycle Parking Facilities** should be provided in a secure, weather-protected manner and location. Long-term bicycle parking will either be a bicycle locker, or a secure area like a 'bike corral' that may be accessed only by bicyclists.

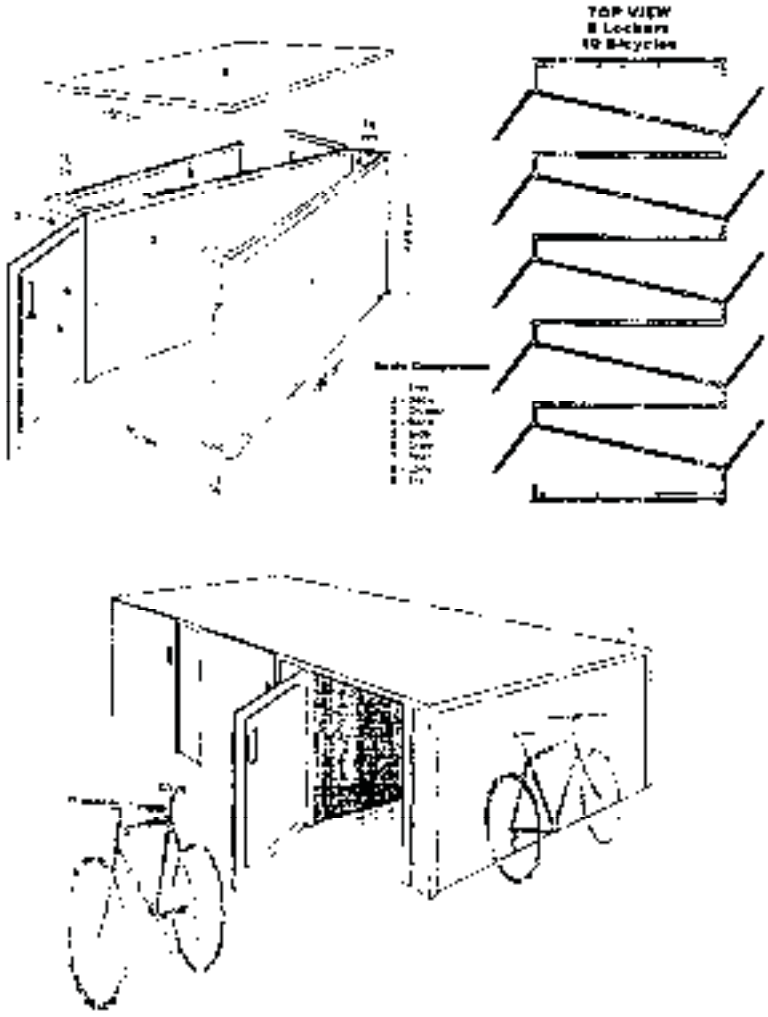


Figure 8-28: Recommended Long-Term Bicycle Parking Facilities

8.10.4. Innovative High Volume Bicycle Parking

In many locations, individual U-racks located on the sidewalk can be sufficient to meet bicycle parking demand. Where bicycle parking demand is higher, more formal structures and larger facilities need to be provided. Several options for high-volume bicycle parking are outlined below.

On-Street Bike Parking Corral

A relatively inexpensive solution to providing high-volume bicycle parking is to convert one or two on-street motor vehicle parking spaces into on-street bicycle parking. Bike racks are installed in the street and protected from motor vehicles with removable curbs and bollards. These Bike Parking Corrals

Bike Corral in Portland, Oregon
Photo: Bill Stiles

move bicycles off the sidewalks, and leave space for sidewalk café tables or pedestrians. Bicycle parking does not block sightlines like motor vehicles do, so it may be possible to locate bicycle parking in no-parking zones near intersections and crosswalks. Installing a Bike Corral for thirteen bikes in Portland, Oregon costs approximately $8000.

Bike Oasis.

In 2008, the City of Portland, Oregon began installation of several "Bike Oases" in commercial districts. These signature bicycle parking facilities are installed on curb extensions and consist of attractive covered bike parking and an information panel. Portland's Bike Oases provide parking space for ten bikes. Bike and walking maps are installed on the information panel.

Bike Oasis installed in Portland, OR near NE 43rd and Hancock

Bike Stations

Bike stations serve as one-stop bicycle service centers for bicycle commuters. They include 24-hour secure bicycle parking and may provide additional amenities such as a store to purchase items (helmets, raingear, tubes, patch kits, bike lights, and locks), bicycle repair facilities, showers and changing facilities, bicycle rentals, and information about biking. Some bike stations provide free bike parking, while others charge a fee or require membership.

Bike stations have been installed in several cities in California, including Long Beach, San Francisco, Los Angeles and Berkeley, as well as Chicago, Illinois and Seattle, Washington.

Mayor Daley of Chicago at the ribbon-cutting ceremony for Chicago's Millennium Bicycle Station
Photo: Chicagoland Bicycle Federation

Valet Bike Parking

As described in Chapter 5, the City of Columbus partners with the Central Ohio Bicycle Advocacy Coalition (COBAC) to provide valet bike parking at City festivals and other community events. Indoor locations for storing bicycles should be designed into venues that host sporting events, festivals, and other events where large numbers of people gather.

In San Francisco, attended bicycle parking is provided at the AT&T Stadium, home of the San Francisco Giants. The bicycle valet sees between 100 and 180 bicycles per game on average. (The stadium's capacity is 41,503.) In addition to

Valet bicycle parking at the San Francisco Giant's stadium
Photo: San Francisco Bicycle Coalition and StreetFilms

providing bicycle valet parking, the City and stadium heavily promote using alternative modes to get to the stadium, emphasizing that "if you drive you will get stuck in traffic."

Their valet parking system works much like a coat check: the bicyclist gives their bicycle to the attendant, who tags the bicycle with a number and gives the bicyclist a claim stub. The valet also will take non-motorized devices such as rollerblades, baby strollers and push scooters. When the bicyclist returns to get their bicycle, they present the claim stub and the attendant retrieves their bicycle for them. Locks are not needed. The valet is open from two hours before the game to thirty minutes after.

Appendix A: Model Policy Goals

This policy, goals and legislation review provides a framework for the Columbus Bikeways Plan. This Appendix provides relevant policy models, including examples both locally and internationally.

Mayor's Green Team

Green Principles March 17, 2006

The **City of Columbus** is committed to achieving an environmentally sustainable community that meets today's needs without compromising the ability of future generations to meet their needs, and accepts the responsibility to promote these **Green Principles** in policy decisions and programs.

1. **Promote and implement environmental quality** for current and future generations when making decisions regarding growth management, transportation, energy, water, air quality and economic development.

2. **Provide for the needs of a growing population in a manner that enhances prosperity and sustains a diverse, resilient and healthy environment** when establishing policy on land use, infrastructure development, open space preservation, healthy lifestyles, preservation of natural resources, growing food locally, and the greening of the city through tree planting and parks development. Prioritize the impact of regional consequences and opportunities.

3. **Strengthen economic vitality** and economic security within the community through environmentally based policies that create jobs, promote entrepreneurship, and expand green business opportunities. Promote products and services that enhance environmental, social and economic vigor by adopting and implementing sustainable procurement practices. Utilize research & development as a vital tool in promoting green economic development, seeking advancements and break-through technologies.

4. **Reduce demand for natural resources** through energy efficiency, water conservation and sustainable land use. Promote construction of high-performance, green buildings based on long-term environmental impact and operating costs.

5. **Promote waste management strategies** that seek to reduce, reuse and recycle. Vastly improve awareness and participation in recycling programs in the community. Seek opportunities to reduce the waste stream of solid waste. Implement programs that address all forms of waste, including solid waste, wastewater and organic waste.

6. **Encourage transportation and mobility alternatives** that decrease use and dependence on petroleum-based fuels while improving outdoor air quality. Promote energy independence by

seeking non-petroleum, renewable fuel sources. Support a variety of choices to the community that promote pedestrian access, transit, bikeways, and healthy lifestyles.

MORPC's 2004 Routine Accommodations Policy
RESOLUTION T-15-04

Accommodating Bicycle and Pedestrians in Transportation Projects:
A Policy Statement
(Emphasis added)

Many state, county and local jurisdictions are beginning to recognize the value and the need of routinely providing facilities for pedestrians or bicyclists. The inclusion of facilities in the early planning phases of new highway construction and residential and commercial development reduces the complexity and costs of attempting to retrofit years later. MORPC encourages and supports those communities that have taken the step toward routinely accommodating pedestrians and bicyclists in the planning process. To others, **MORPC encourages and supports the inclusion of routine accommodation by providing the following policy:**

Project sponsors are required to accommodate bicycles and pedestrians in the planning and design of all proposed transportation projects using MORPC-attributable federal funds. Sponsors using local, state, or other federal funds are encouraged to accommodate bicycles and pedestrians in the planning and design of all proposed transportation projects. All transportation facilities on which bicyclists and pedestrians are permitted by law, including but not limited to streets, roads, highways, bridges, buses, trains, transit stops and facilities, and all connecting pathways shall be designed, constructed, operated and maintained so that all modes and pedestrians, including people with disabilities, can travel safely and independently.

Project sponsors are responsible for determining, for each project and within the context of the regional long range plans, the most appropriate facility or combination of facilities for accommodating bicycling and walking, including but not limited to marked bicycle lanes on the roadway, paved shoulders, wide outside lanes, signed bike routes, shared use paths, sidewalks, bike racks on buses, bicycle parking facilities, marked or raised street crossings (including over- and under-crossings), and pedestrian signals and signs.

Providing access for people with disabilities is a civil rights mandate that is not subject to limitation by project costs, levels of use, or "exceptional circumstances." While the Americans with Disabilities Act does not require pedestrian facilities in the absence of a pedestrian route, it does require that pedestrian facilities, when newly constructed or altered, be accessible.

To this end, project sponsors must provide in the written request for federal funding:

Documentation providing for the inclusion of a bikeway and pedestrian facilities in the proposed project seeking MORPC-attributable funds. Application materials must include a description of the facilities.

Specifically, **every transportation project sponsor, when presenting its request for federal funding, must submit with its request a fully completed "Bicycle/Pedestrian Facilities Planning and Programming Checklist" form prescribed by MORPC**, a copy of which is attached to this policy, showing that accommodating bicycling and walking, as well as accessibility for the disabled, have been properly considered throughout the planning of the proposed project.

The existing, committed, and proposed bikeways and pedestrian pathways in the bikeway and pedestrian plans created by MORPC should be considered the priority bikeways and pathways for the Central Ohio community. Planners and designers must accommodate bicycling and walking in all transportation projects for which MORPC attributable federal funding is requested, regardless of whether or not a bikeway is included and/or designated as a priority in bikeway and pedestrian pathway plans. Below are specific planning and design guidelines to assist project sponsors in the accommodation of bicycles, pedestrians and people with disabilities. Project sponsors shall use these guidelines in planning for and designing their projects. The guidelines will be used by MORPC staff and relevant committees as the proposed project is processed through Project Selection and Planning Review.

1. **Bikeways and pedestrian ways, including the appropriate facilities to accommodate people with disabilities to transit stops, shall be established in new construction and reconstruction of road and bridge projects unless one or more of the following conditions are met:**

- Bicyclists and pedestrians are prohibited by law from using the roadway. In this instance, the applicant shall accommodate bicyclists and pedestrians elsewhere within the right of way or within the same transportation corridor.
- The cost of establishing bikeways or pedestrian ways that meet applicable standards would exceed 20% of the cost of the larger transportation project.
- Where the project consists of minor maintenance or repair (reconstruction is not included).
- Where the project consists primarily of the installation of traffic control or safety devices and little or no additional right-of-way is to be acquired.
- There are extreme topographic or natural resource constraints.
- The ADT is projected to be less than 1,000 vehicles per day over the life of the project.
- Where scarcity of population or other factors indicate an absence of need.
- An existing bikeway/pedestrian way currently exists or a bikeway/pedestrian way is scheduled for construction within the corridor.

2. **On proposed projects that do not increase capacity bicycle and pedestrian facilities shall be included in the following ways:**

- Resurfacing including striping for additional shoulder width and/or crosswalks.

- Signalization including installation of pedestrian activated signals, review proper operation or timing of pedestrian phase.

- Re-striping sufficiently wide pavements and bridge decks for additional shoulder width.

- Bridge deck replacement with extension of bridge deck (or other means) to accommodate bicyclists and pedestrians.

- In cases where an adopted regional or local plan proposes a bikeway or pedestrian way that would pass under or over a bridge that is to be reconstructed, the bridge shall be reconstructed to accommodate the bikeway or pedestrian way.

- Intersection upgrades including crosswalks and pedestrian actuated signals.

- In rural areas, paved shoulders should be included in all new construction and reconstruction projects on roadways used by more than 1,000 vehicles per day. Paved shoulders have safety and operational advantages for all road users in addition to providing a place for bicyclists and pedestrians to operate.

3. **The design and development of the transportation infrastructure shall improve conditions for bicycle and pedestrian movement by**:

Planning projects for the long-term. The design and construction of new facilities should anticipate likely future demand for bicycle and pedestrian movement and not preclude the provision of future improvements. In particular, where development is projected to change the character of an area from rural to suburban to urban over the long-term, bicyclists and pedestrians must be accommodated in near-term transportation projects in order to create a bicyclist and pedestrian friendly transportation system over the long-term. Appropriate right-of-way or width should be set aside to accommodate future facilities. Every project should be planned and designed with the ultimate, long-term goal of creating, over time, a complete system of bikeways and pedestrian pathways. Even where a road or bridge project may create an unconnected bicycle or pedestrian facility for the short term, it should be expected and planned that when the roads or other transportation facilities adjacent to that project are created or improved, the appropriate bicycle and pedestrian facilities will be included.

Connecting bicycle and pedestrian facilities across jurisdictional boundaries. As the metropolitan planning organization, MORPC has a vantage point from which to recommend to the jurisdictions within MORPC the connection and continuity of bicycle and pedestrian facilities for the purpose of qualifying for federal funding. MORPC does this through the Bikeway Plan which is updated every three years.

Designing context-appropriate facilities to the best currently available standards and guidelines. The design of facilities for bicyclists and pedestrians should follow commonly used design guidelines and standards such as the AASHTO Guide for the Development of Bicycle Facilities, AASHTO's Policy on Geometric Design of Highways and Streets, the ITE Recommended Proactive "Design and Safety of Pedestrian Facilities," and the Americans with Disabilities Act's Accessibility Guidelines.

Addressing the need for bicyclists and pedestrians to cross corridors as well as travel along them. Even where bicyclists and pedestrians may not commonly travel along a corridor that is being improved or constructed, they will likely need to be able to cross that corridor safely and conveniently. For instance, a roadway project that does not contain a bike facility (interstate highway) should address bridge crossings that are hostile for bicycles and pedestrians. Therefore, the design of intersections and interchanges shall accommodate cyclists and pedestrians in a manner that is safe, accessible and convenient.

4. Any questions about the meaning, intent, or application of this policy should be directed to the Transportation Division of MORPC.

Selected Bicycle Policy Goals

(Source: Alta Planning + Design, 2007)

The following are goals from recent Bicycle Plans in selected North American cities. These goals provide useful background for the development of goals and objectives in Columbus.

San Francisco, California

Overall goal: Make bicycling an integral part of daily life in San Francisco.
Goal 1: Increase safe bicycle use
Goal 2: Refine and expand the existing bicycle route network
Goal 3: Ensure plentiful, high quality bicycle parking to complement the bicycle route network
Goal 4: Adopt bicycle-friendly practices and policies
Goal 5: Promote safe bicycling
Goal 6: Increase enforcement of bicycle-related violations
Goal 7: Prioritize and increase bicycle funding

Toronto, Canada

Goal 1: To double the number of bicycle trips made in the City of Toronto, as a percentage of total trips, by 2011; and
Goal 2: To reduce the number of bicycle collisions and injuries

Austin, Texas

Goal 1: To *institutionalize bicycle transportation* in all transportation and recreation planning, design, and construction activities in order to meet the needs of the cycling public
Goal 2: To *improve bicycle safety* by recommending actions which reduce bicycle related collisions and falls
Goal 3: To *increase the level of commuting and utilitarian bicycling* as a cost-effective and efficient transportation alternative by providing coordinated bicycle facilities, enforcement of traffic laws, and promotional campaigns for bicycling
Goal 4: To *fund, create and maintain a functional system* of on- and off-street bicycle routes that will enable safe bicycle transportation until overall roadway improvements are made that allow travel on all roadways

Goal 5: To establish and maintain safe *standards and guidelines* for bicycle facilities, programs and projects, and
Goal 6: To *integrate* and coordinate multiple modes of transportation through provision of *bicycle/transit interfaces* on buses and light rail, and bike & ride facilities at transit stations so that bicycling can play an important role in congestion demand management

Chicago, Illinois

Goal 1: To increase bicycle use so that 5 percent of all trips less than five miles are by bicycle
Goal 2: To reduce the number of bicycle injuries by 50 percent from current levels

The City of Grandview Heights: Bikeway Goals and Objectives

Promote bikeways routes that serve all major trip generators

Promote bicycling and walking to reduce automobility and emissions
-Support accommodations for cyclists at public facilities and at places of employment
-Develop bicycle facilities along with mixed use developments

Reduce traffic and parking congestion in commercial areas
-Support bike racks in the streetscape

Promote bicycle and pedestrian safety
-Identify hazardous locations on roadways and the bikeway system and develop the means to mitigate problem areas
-Assist the Grandview Heights School District and Grandview Heights Division of Police in conducting safety programs
-Promote the use of bike helmets
-Develop a signage program that increases motorist awareness of cyclists and pedestrians

Integrate transit and bikeways systems as the city redevelops

Inventory and catalog funding sources and methods for bikeway planning and system improvements

Take on an advocacy role within the region for bicycling issues
-Work closely with neighboring jurisdictions and the Mid-Ohio Regional Planning Commission to develop the needed connections to the regional system
-Participate in regional and state conferences on bicycling and pedestrianism
Source: Grandview Heights Bikeway System Plan, 2007

Dutch National Bike Master Plan 1992

The Netherlands is one of the most advanced nations in the world, combining high technology, innovative town planning and a very high quality of life. More than 20% of all trips in the Netherlands are made by bicycle, and mode shares are even higher in many cities. One town, Houten, was designed as a model community for cycling, and more than 50% of all trips there are made by bicycling. Even more impressive is the fact that Houten has not had a traffic fatality of any kind since the plan was developed. While the United States is not ready to match the Dutch levels of support for cycling, the Dutch Bike Master Plan provides a valuable comparison for communities around the world – especially considering that it was written more than a decade ago. The following sections illustrate the level of commitment in the plan:

Page 8:

"Quantitative objectives Structured Scheme for Traffic and Transport
The Structured Scheme for Traffic and Transport (SVV) sets out a limitation for growth of mobility. In 1986 the average use of cars on workdays was expected to rise by 70% until 2010. The measures mentioned in the Structured Scheme should halve this growth: the use of cars was to increase by "only" 35%."

Page 9:

"Global Warming:
The gradual warming of the earth is mainly caused by the CO2 that is produced when fossil fuels are burnt. In the long-run climates may change and the sea level may rise. Traffic is responsible for 15% of the CO2 emissions in the Netherlands."

Page 17:

The Changeover from Car to Bicycle:

"Objectives
-The number of kilometers covered by the bicycle will be increased by 3.5 billion (30%) in 2010 compared to 1986. This will account for 8.75 of the desired reduction of motor traffic.
-In 2010, the traveling time for cyclists to economic and crowd pulling centres will have been decreased by 20% owing to the construction of short cuts by improved infrastructure.
-The traveling time by bicycle for distances up to 5 kilometres will be shorter or equal to those by car.
-In 1995, all businesses and institutes with over 50 employees will have a company transport plan, which will include the bicycle.
-In 2010 the number of journeys by bicycle in commuter traffic will be increased by 50% compared to those in 1986."

Source:
Bicycles First: Bicycle Master Plan, 1992. Structured Scheme for Traffic and Transport. Ministry of Transport, Public Works and Water Management, The Hague, The Netherlands. V&W/RWS/12/92

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Appendix B: MORPC Collision Analysis Maps

Bicycle Crashes

A synopsis of the ten top roads for bicycle crashes in the planning area follows. The top ten crash locations represent 25 percent of total reported crashes. These locations indicate bicycle usage on minor and major arterials.

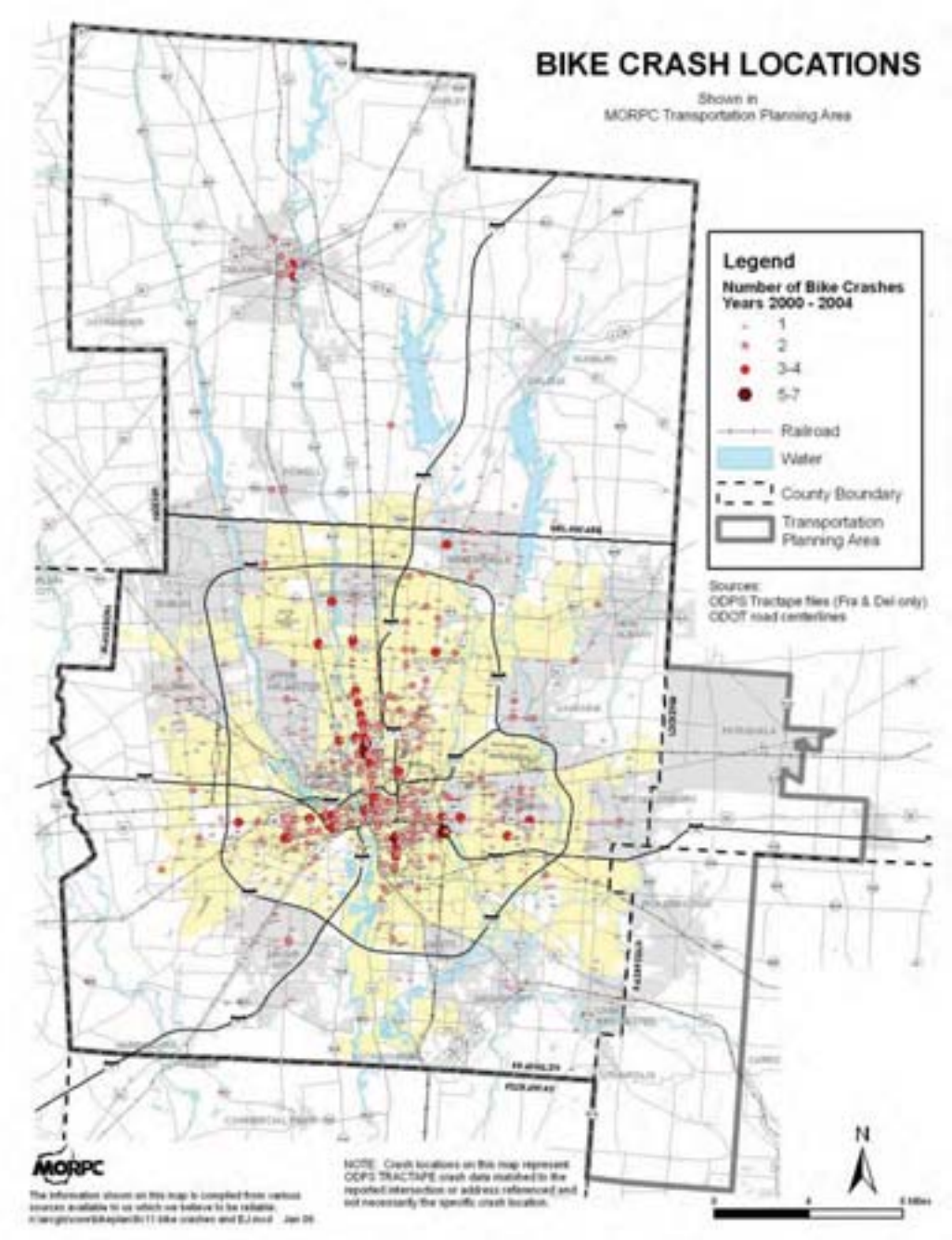
For the purpose of analysis, each road has cluster areas where a concentration of bicycle crashes has been identified. Characteristics of the road are also provided.

The Top 10 Bicycle Crash Streets (2000-2004)

Road	Bike Crashes	Mileage	Crash Per Linear Mile	Annual Crash Per Linear Mile	Functional Classification
High St – Downtown to Morse Rd	105	7.15	14.7	2.9	Urban Principal Arterial[10]
Parsons Ave – Groveport Rd to Livingston Ave	29	2.33	12.4	2.5	Urban Minor Arterial[11]
Broad St – I-270 (West) to Ohio Ave	67	7.98	8.4	1.7	Urban Principal Arterial
Sullivant Ave – Georgesville Rd to Davis Ave	35	4.95	7.1	1.4	Urban Minor Arterial
Cleveland Ave - Downtown to Morse Rd	39	7.02	5.6	1.1	Urban Principal Arterial
Main St – Ohio Ave to Reynoldsburg	49	9.34	5.2	1.0	Urban Principal Arterial
Livingston Ave – Downtown to Hamilton Rd	30	6.18	4.9	1.0	Urban Principal Arterial
Mound St – Hague Ave to Souder Ave	12	2.95	4.1	0.8	Urban Minor Arterial
Champion Ave – Marion Rd to Leonard Ave	15	3.86	3.9	0.8	Urban Principal Arterial
5th Ave – US 33 to I-71	14	4.41	3.2	0.6	Urban Minor Arterial
Total	392 (25%)	56.19	7.0	1.4	

[10] Principal arterials serve the major centers of activity, the highest traffic volume corridors, the longest trips and the highest proportion of vehicle miles of travel.

[11] Minor arterials interconnect with and enhance the major arterial system. This system carries travel of moderate length at a lower level of service than major arterials.


BIKE CRASH LOCATIONS
Shown in
MORPC Transportation Planning Area
Legend
Number of Bike Crashes
Years 2000 - 2004
1
2
3-4
5-7
Railroad
Water
County Boundary
Transportation
Planning Area
Sources:
ODPS Tractape files (Fra & Del only)
ODOT road centerlines
MORPC
N

High Street

High Street has seven cluster areas that have a concentrated number of bicycle crashes: Graceland Area, North Broadway Area, North Campus Area, OSU Area, Short North Area, Nationwide Arena Area and the Franklin County Courthouse Area.

High Street is a major arterial that bisects Franklin County running north-south. It has been identified in COTA's North Corridor Light-Rail Study as a major corridor and houses many major destinations such as Graceland Shopping Center, The Ohio State University (OSU), the Short North District, Nationwide Arena District, the Central Business District (CBD), the Ohio State House, the City Center Mall, the Franklin County Government Complex, German Village/Brewery Districts, and Great Southern Shopping Center.

Residential housing completes those sections of High Street that are not occupied by commercial development. Average daily traffic on High Street ranges from 16,700 to 30,500.

High Street Bicycle Crashes (105)

Cluster	ADT	Posted Speed	[12]Number of Lanes
Graceland	29,807	35	5
North Broadway	n-20,008 s-18503	35	5
North Campus (Hudson)	27,508	25	5
OSU (16th)	23,108	25	5
Short North (2nd)	w-20,204 e-16,704	25	5
Nationwide Arena	14,204	35	5
County Complex	18,703	35	5

[12] 2004 Orthos, ER Mapper


COLUMBUS
GRANDVIEW HEIGHTS
Legend
Number of Bike Crashes Years 2000 - 2004
1
2
3-4
5-7
Railroad
Water
Park
Golf Course
Cemetery
N
BIKE CRASH CLUSTERS
along High Street

Broad Street

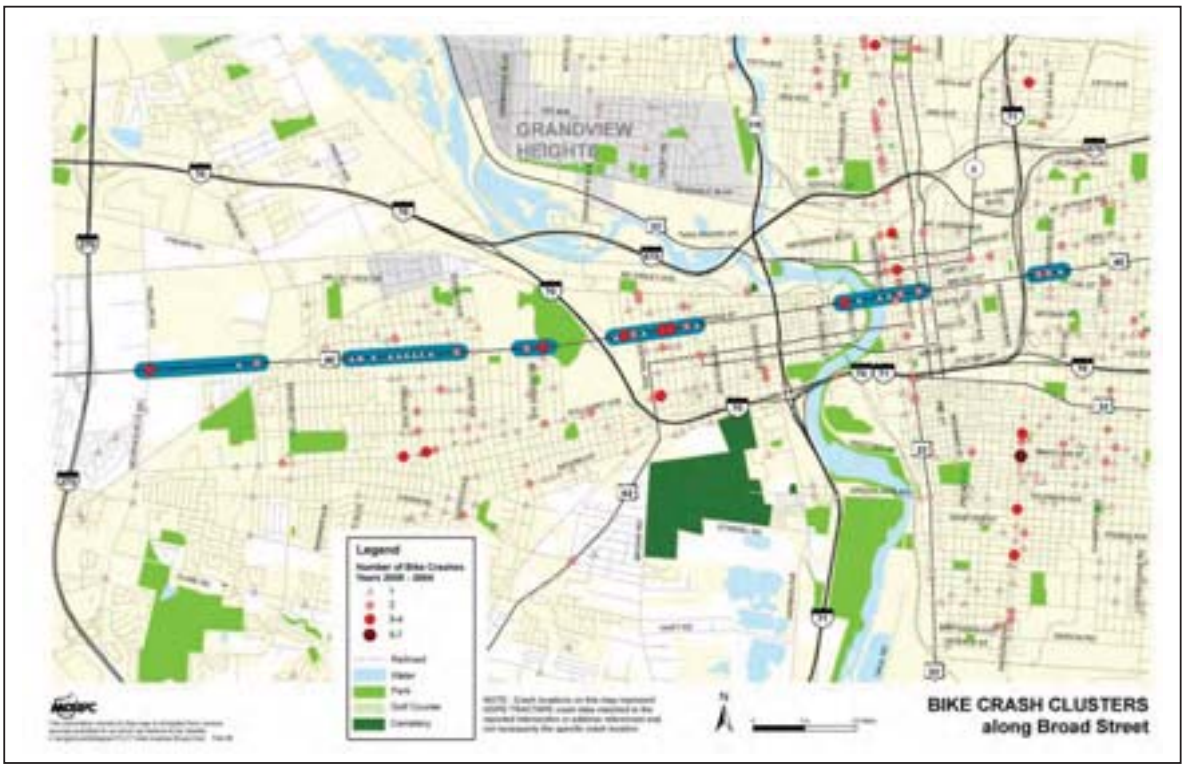
Broad Street is a major arterial that bisects Franklin County running east-west. It houses many destinations such as Battelle Darby Creek Metro Park, Doctors Hospital West, Westland Mall, Great Western Shopping Center, the Ohio Department of Transportation, the Ohio Department of Public Safety, Rhodes Park, Glenwood Park, the Columbus Development Center, Mt. Carmel Medical Center, Veterans Memorial, COSI, Alexander Park, Genoa Park, the Ohio State Capital, Columbus Museum of Art, East High School, Franklin Park and Conservatory, Wolfe Park, St. Charles Prep School, the Columbus School for Girls, the Columbus County Club, and Mt. Carmel East. The ADT for Broad Street ranges from 5,800 to 61,000.

There are six clusters of bicycle crashes concentrated along the Broad Street corridor: Westland Mall (Phillipi Road), Hague, ODOT/ODPS (I-70), Central Avenue, High Street, and Hamilton Park.

Broad Street Bicycle Crashes (67)

Cluster	ADT	Posted Speed	Number of Lanes
Westland Mall	29,003	45	6
Hague	28,906	35	6
ODOT/ODPS	38,000	35	7
Central Avenue	w-24,704 e-22,607	35	6
High Street	30,009	35	8
Hamilton Park	31,403	35	7

Broad Street, from Norton Road to Hague Avenue, has been identified for widening in the 2030 Transportation Plan. The Westland Mall (Phillipi Road) and Hague Avenue clusters would benefit from bicycle facilities placed within these improvements.


GRANDVIEW HEIGHTS
Legend
Number of Bike Crashes
Years 2000 - 2004
1
2
3-4
5-7
Railroad
Water
Park
Golf Course
Cemetery
BIKE CRASH CLUSTERS
along Broad Street

Cleveland Avenue

Cleveland Avenue is a major arterial that runs from Broad Street to Polaris Parkway in southern Delaware County. There are five clusters of bicycle crashes that are concentrated along this corridor: Morse Road, Westerville Road, Linden McKinley High School/26th Avenue, Seventeenth Avenue, and Long Street.

Cleveland Avenue and Morse Road provide access to many retail and fast food establishments. Morse Road is a major arterial that runs east-west, while Cleveland Avenue runs north-south. The ADT for this corridor ranges from 9,200 to 51,900.

Cleveland Avenue houses many destinations such as the Westerville Sports Complex and Community Center, Heritage Park, Sharon Woods Metro Park, Mt. Carmel St. Ann's Hospital, Northern Lights Shopping Center, Fort Hayes Career Center, Columbus State College, Columbus College of Art and Design, and the Columbus Museum of Art.

Cleveland Avenue Bicycle Crashes (39)

Cluster	ADT	Posted Speed	Number of Lanes
Morse Road	n-24,109 s-18,409	45/35	n-6 s-5
Westerville Rd	17,504	35	4
Linden McKinley	18,705	35	4
17th Avenue	9,203	35	4
Long Street	n-14,803 s-10,403	35	4


COLUMBUS
Legend
Number of Bike Crashes
Years 2000 - 2004
1
2
3-4
5-7
Railroad
Water
Park
Golf Course
Cemetery
BIKE CRASH CLUSTERS
along Cleveland Ave
N

Main Street

Main Street is a major arterial that runs east-west. Located east of the Scioto River, Main Street houses several destinations: City Center Mall, Franklin University, Capital University, Big Walnut Park and J. F. Kennedy Park. The ADT for Main Street ranges from 11,000 in Franklin County to 39,500.

Although the bicycle crashes are somewhat evenly distributed along Main Street, there are six clusters of bicycle crashes: Linwood Avenue, Nelson Road, Cassady Avenue, Beechwood Road and Hamilton Road and Huber Park (Big Walnut).

Main Street Bicycle Crashes (49)

Cluster	ADT	Posted Speed	Number of Lanes
Linwood Avenue	11,004	35	5
Nelson Road	e-30,505	35	5
Cassady Avenue	26,605	25	5
Beechwood Road	w-28,205 e-21,203	25	5
Hamilton Road	w-21,203 e-27,005	35	5
Huber Park	28,809	35	5

Parsons Avenue

Parsons Avenue is a minor arterial that travels north-south from Broad Street south to SR 317. While there are only a few large destinations along Parsons, Children's Hospital and Indian Mound Park, the area between Broad Street and Marion Road is made up of small retail, fast food restaurants, family restaurants, libraries, thrift stores, post offices, doctors' offices and other neighborhood-scaled commercial developments. There are three clusters of bicycle crashes concentrated along Parsons Avenue: Whittier Street, Frebis Avenue and Innis Avenue. The ADT ranges from 1,600 to 22,600.

Parsons Avenue Bicycle Crashes (29)

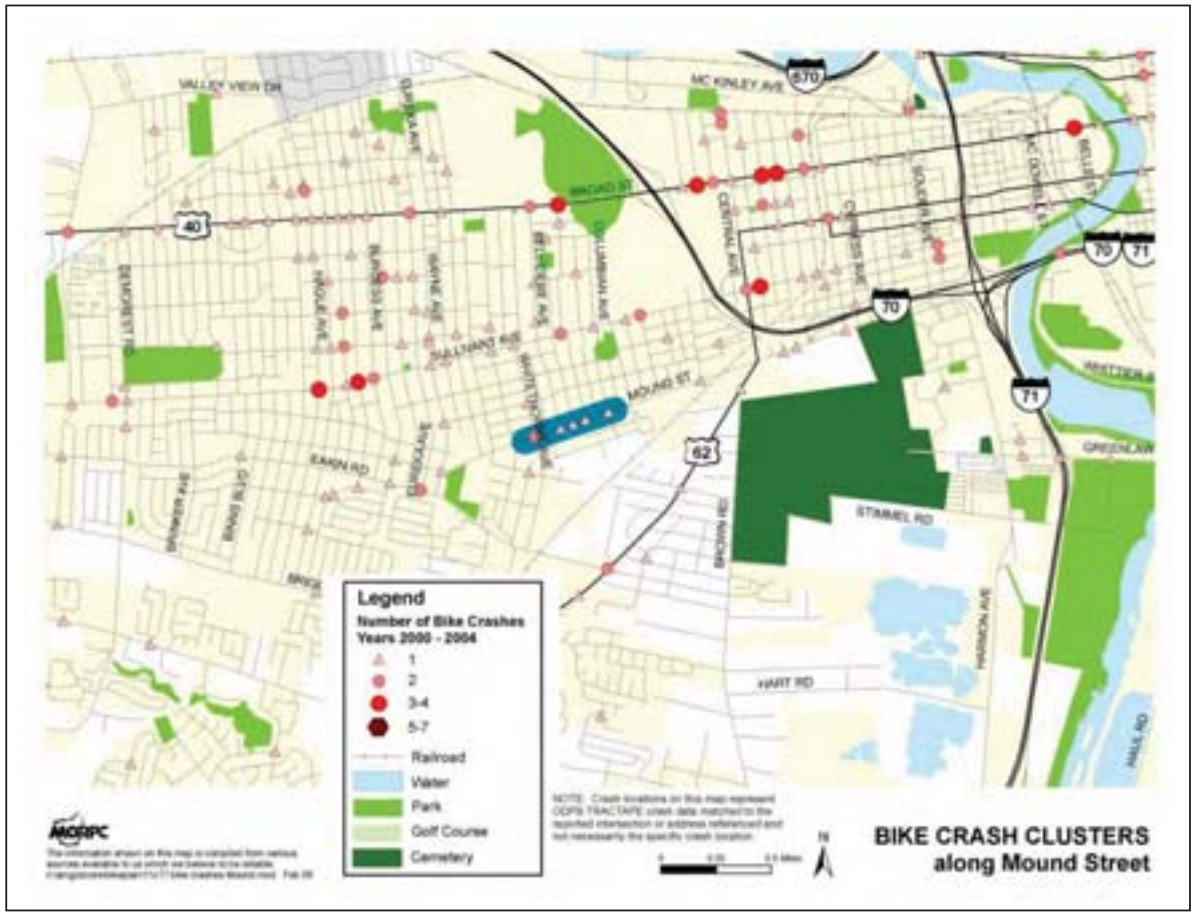
Cluster	ADT	Posted Speed	Number of Lanes
Whittier Street	21,204	35	4
Frebis Avenue	22,608	35	4
Innis Avenue	22,608	25	4

Mound Street

Mound Street is a minor arterial that runs east-west between the Scioto River and Alum Creek. It also runs west from the I-70/71 split to Brinker Avenue. A major destination, the Franklin County Courthouse complex, is located at Mound and High streets. Cooper Stadium is located on Mound Street west of the I-70/71 split and a small shopping center is located at Mound and Central Avenue. The crashes on Mound Street are clustered in one area near Whitethorne Avenue. The ADT ranges from 600 to 36,000.

Mound Street Bicycle Crashes (12)

Cluster	ADT	Posted Speed	Number of Lanes
Whitethorne Avenue	10,001	35	4



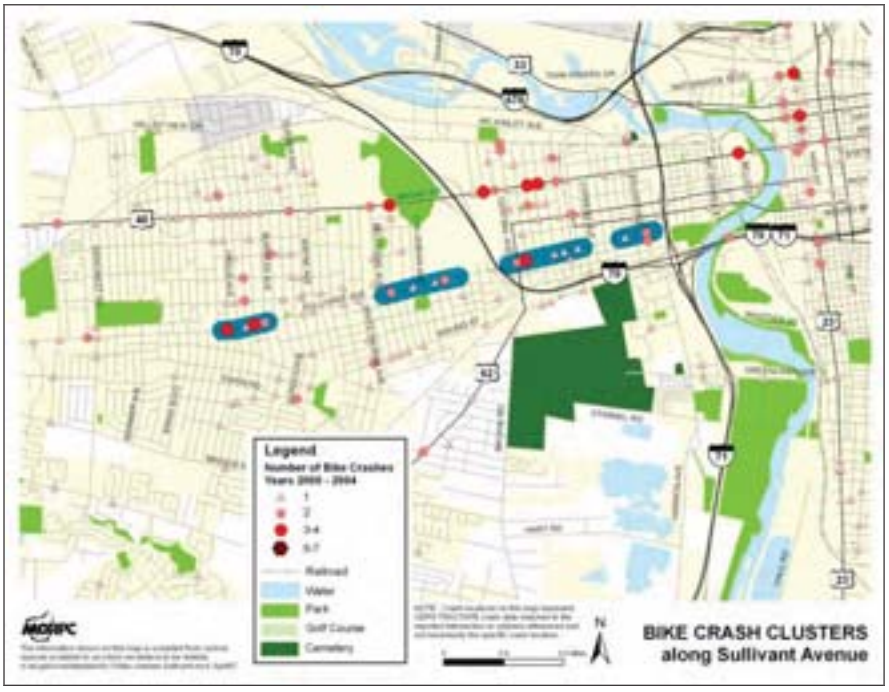
Sullivant Avenue

Sullivant Avenue is a minor arterial that runs east-west between Galloway Road and the Scioto River. Except for Dodge Park at the Scioto River, there are no major destinations along Sullivant Avenue. However, Sullivant Avenue is similar to Parsons Avenue in that there are small retail, fast food establishments and neighborhood-scaled commercial development mixed with residential located along this arterial. There are four clusters of crashes concentrated along Sullivant Avenue - Hague Avenue, Woodbury Avenue, Central Avenue, and Souder Avenue. The ADT ranges from 3,200 to 23,000.

Sullivant Avenue, from Georgesville Road to Central Avenue, has been identified in the 2030 Transportation Plan for widening. The Hague Avenue, Woodbury Avenue and Central Avenue clusters would benefit from bikeways constructed with this widening.

Sullivant Avenue Bicycle Crashes (35)

Cluster	ADT	Posted Speed	Number of Lanes
Hague Avenue	15,908	35	2
Woodbury Avenue	w-19,107 e-21,105	35	4
Central Avenue	w-24,704 e-22,607	35	4
Souder Avenue	6301	25	4

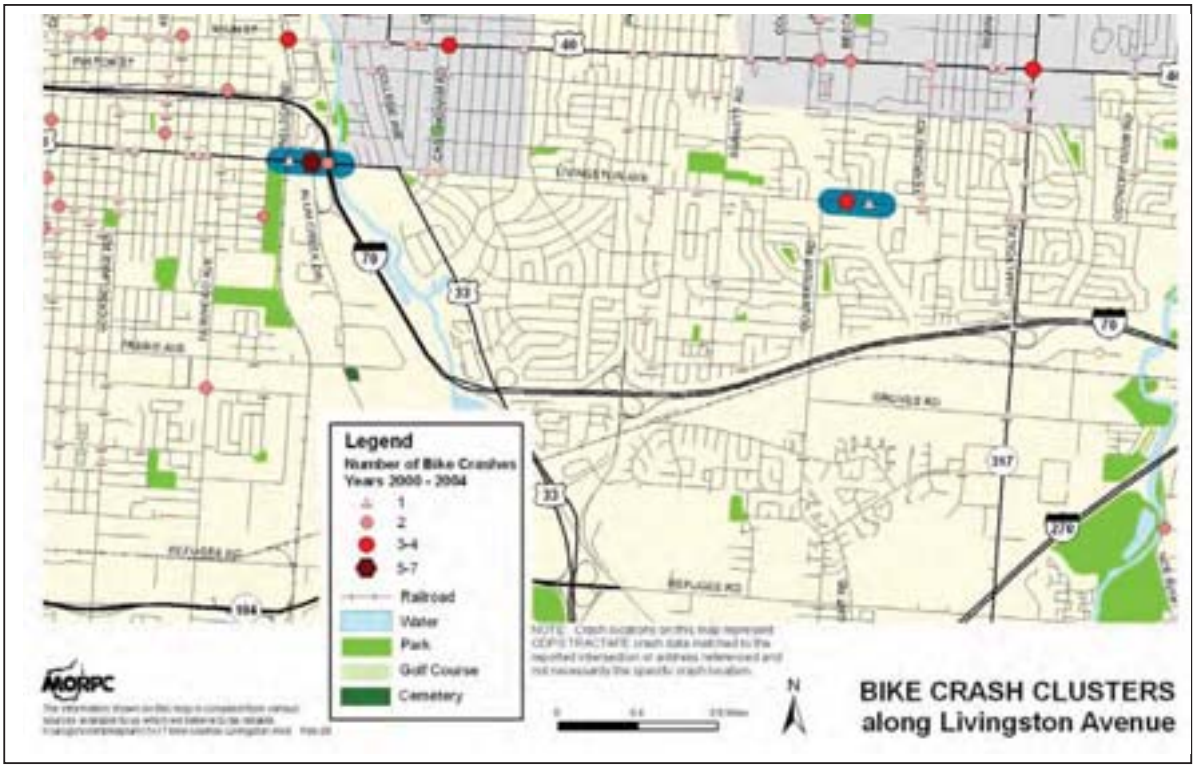


Livingston Avenue

Livingston Avenue is a minor arterial that runs east-west between High Street and SR 256. There are several major destinations along this corridor: the Afrocentric High School, Children's Hospital Complex, Driving Park Recreation Center, Bishop Hartley High School, Walnut Ridge High School, Big Walnut Park, Reynoldsburg High School and Blacklick Woods Metro Park. There are two clusters of bicycle crashes concentrated along this corridor: Alum Creek Drive and Beechwood Road. The ADT ranges from 12,200 to 39,900.

Livingston Avenue Bicycle Crashes (30)

Cluster	ADT	Posted Speed	Number of Lanes
Alum Creek Drive	34,403	35	6
Beechwood Road	39,900	35	5

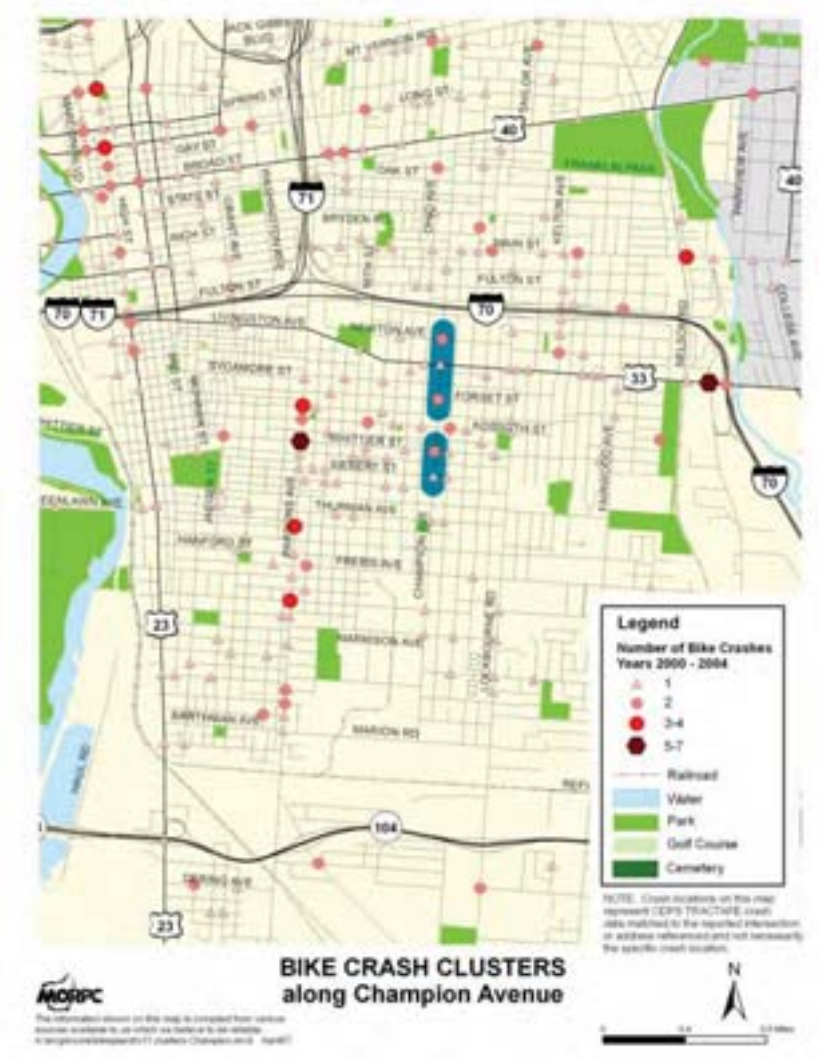


Champion Avenue

Champion Avenue is a one-way collector that runs north from Marion Road to Mt. Vernon Avenue. There is one main cluster of crashes concentrated from Newton Street to Whittier Avenue. The ADT ranges from 2,100 to 6,300.

Champion Avenue Bicycle Crashes (15)

Cluster	ADT	Posted Speed	Number of Lanes
Newton(N) - Whittier(W)	1,500(N)- 2,700(W)	25(N) 35(W)	1



Fifth Avenue

Fifth Avenue is a major arterial that runs east-west from McKinley Avenue to US 33 and a minor arterial from US 33 to Hamilton Road. A major destination located along this corridor is Port Columbus International Airport. This corridor houses a lot of neighborhood-scaled commercial and retail development. There are three clusters of crashes concentrated along Fifth Avenue: Grandview Avenue, Neil Avenue, and Lexington/I-71. The ADT ranges from 8,300 to 21,600.

Fifth Avenue Bicycle Crashes (14)

Cluster	ADT	Posted Speed	Number of Lanes
Grandview Avenue	18,009	25	4
Neil Avenue	12,304	25	4
I-71/Lexington Ave	16,608	25	4

Appendix C: Bicycle Crash Data 2000 through 2004

Bicycle crashes in Columbus, Ohio were reviewed using data provided by the Ohio Department of Public Safety. The data consisted of 1,053 bicycle reports in Columbus from 2000 through 2004. Every crash analyzed involved an instance where a bicyclist interacted with some type of motor vehicle. It is important to note that crash data are usually based on crash reports from a reporting municipality police agency and all important data is not always recorded in every crash report.

Bicyclist location when struck	Number	Percent
Marked crosswalk at intersection	72	6.84%
At intersection, but no crosswalk	69	6.55%
Non-intersection crosswalk	7	0.66%
Driveway access crosswalk	2	0.19%
In Roadway	249	23.65%
Not in roadway	2	0.19%
Median (but not on shoulder)	1	0.09%
Shoulder	8	0.76%
Sidewalk	16	1.52%
Within 10 ft. of roadway (but not shoulder, median, sidewalk, or island)	2	0.19%
Beyond 10 ft. of roadway (within traffic way)	2	0.19%
Outside traffic way	1	0.09%
Shared use paths or trails	3	0.28%
Unknown	553	52.52%
Not indicated on report	66	6.27%
Total crashes	1053	100.00%

Streets with greatest number of cyclist crashes	Number
High Street	94
Broad Street	34
Parsons Avenue	25
Sullivant Avenue	19
Cleveland Avenue	18
Livingston Avenue	16
5th Avenue	15
Main Street	14
Mound Street	14
Champion Avenue	12

Bicyclist injury	Number	Percent
Fatal	5	0.47%
Incapacitating injury	86	8.17%
Non-incapacitating injury	485	46.06%
Non stated	28	2.66%
Possible injury	215	20.42%
Unknown	82	7.79%
No injury	152	14.43%
Total	1053	100.00%

Motorist contributing circumstances	Number	Percent
None-motorist	683	64.86%
Failure to yield	125	11.87%
Ran red light/ signal	23	2.18%
Unsafe speed	1	0.09%
Improper Turn	5	0.47%
Left of center	2	0.19%
Followed too closely	11	1.04%
Improper lane change	10	0.95%
Improper start from parked position	1	0.09%
Operating vehicle in erratic, reckless, negligent, or aggressive manner	10	0.95%
Swerving to avoid	3	0.28%
Failure to control	14	1.33%
Vision obstruction	2	0.19%
Driver inattention	14	1.33%
Other improper action	20	1.90%
Unknown	129	12.25%
Total	1053	100.00%

Bicycle contributing circumstances	Number	Percent
Unknown- non-motorist	344	32.67%
None- non-motorist	138	13.11%
Improper crossing- non-motorist	111	10.54%
Failure to yield right of way non-motorist	99	9.40%
Other- non-motorist	75	7.12%
Darting- non-motorist	59	5.60%
Failure to obey traffic signals, signs or officer	52	4.94%
Wrong side of road- non-motorist	47	4.46%
Inattentive- non-motorist	41	3.89%
Other improper action- motorist	24	2.28%
Not visible (dark clothing) non-motorist	15	1.42%
None- motorist	14	1.33%
Lying and/or illegally in roadway- non-motorist	12	1.14%
Driver inattention-motorist	6	0.57%
Ran red light, or stop sign- motorist	6	0.57%
Failure to yield- motorist	5	0.47%

Operating defective equipment- motorist	2	0.19%
Followed too closely/acda- motorist	1	0.09%
Improper lane change/drove off road/improper passing	1	0.09%
Unknown- motorist	1	0.09%
Total	1053	100.00%

Driver drug/alcohol use	Number	Percent
None	844	80.15%
Yes-alcohol suspected	2	0.19%
Yes-HBD not impaired	1	0.09%
Yes-alcohol and drugs suspected	2	0.19%
Unknown	119	11.30%
Not indicated on report	85	8.07%
Total crashes	1053	100.00%

Bicyclist drug/alcohol use	Number	Percent
None	917	87.08%
Yes-alcohol suspected	15	1.42%
Yes-HBD not impaired	3	0.28%
Yes-drugs suspected	2	0.19%
Yes-alcohol and drugs suspected	1	0.09%
Unknown	82	7.79%
Not indicated on report	33	3.13%
Total crashes	1053	100.00%

Weather Conditions	Number	Percent
Clear	758	71.98%
Cloudy	214	20.32%
Rain	66	6.27%
Snow	2	0.19%
Severe crosswinds	2	0.19%
Other	1	0.09%
Unknown	10	0.95%
Total crashes	1053	100.00%

Road Conditions	Number	Percent
Dry	944	89.65%
Wet	100	9.50%
Snow	1	0.09%
Ice	2	0.19%
Sand, mud, dirt, oil, gravel	1	0.09%
Other	1	0.09%
Unknown	4	0.38%
Total crashes	1053	100.00%

Light Conditions	Number	Percent
Daylight	804	76.35%
Dawn	7	0.66%

Dusk	49	4.65%
Dark-lighted	137	13.01%
Dark-unlighted	30	2.85%
Dark-unknown lighting	3	0.28%
Other	1	0.09%
Unknown	22	2.09%
Total crashes	1053	100.00%

Road contour	Number	Percent
Straight level	972	92.31%
Straight grade	57	5.41%
Curve level	6	0.57%
Curve grade	8	0.76%
Unknown	10	0.95%
Total crashes	1053	100.00%

Crash location	Number	Percent
On roadway	1007	95.63%
On shoulder	10	0.95%
In median	1	0.09%
On Roadside	12	1.14%
Outside traffic way	17	1.61%
Unknown	6	0.57%
Total crashes	1053	100.00%
Collision type	Number	Percent
Not collision between two vehicles in motion	515	48.91%
Rear-end	20	1.90%
Head-on	30	2.85%
Rear-to-rear	1	0.09%
Backing	6	0.57%
Angle	400	37.99%
Sideswipe in same direction	40	3.80%
Sideswipe in opposite direction	14	1.33%
Unknown	27	2.56%
Not indicated on report	1053	100.00%

Intersection type	Number	Percent
Not at intersection	295	28.02%
Four-way	446	42.36%
T-intersection	228	21.65%
Y-intersection	6	0.57%
Traffic circle/roundabout	1	0.09%
On ramp	2	0.19%
Off ramp	5	0.47%
Driveway	55	5.22%
Unknown	15	1.42%
Not indicated on report	1053	100.00%

Month	Number	Percent
January	22	2.09%
February	23	2.18%
March	36	3.42%
April	82	7.79%
May	126	11.97%
June	152	14.43%
July	160	15.19%
August	150	14.25%
September	116	11.02%
October	111	10.54%
November	55	5.22%
December	20	1.90%
	1053	100.00%

Year	Number	Percent
2000	216	20.51%
2001	223	21.18%
2002	222	21.08%
2003	207	19.66%
2004	185	17.57%
	1053	100.00%

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Appendix D: Response to Public Comments, Bicycle Counts and Survey Summary

Public Process

June 7, 2007 – First public meeting is held, stakeholder meeting is held.

June 26, 2007— Mayor Coleman announces the launch of the Columbus Bicentennial Bikeway Master Plan.

September 26, 2007 – Second public meeting held.

December 14, 2007 – Open stakeholder meeting is held.

The public was able to comment on the Draft Plan through January 11, 2008.

An abbreviated summary of the comments received and the response to comments is provided below.

Columbus Bicentennial Bikeways Plan Public Comments

Priorities & Funding	**Response**
Why are bike lanes recommended in the Plan? Shouldn't cyclists have to same rights to the road as motorists?	The plan recognizes that the majority of bicyclists prefer to ride on bike facilities that provide some separation from motor vehicle traffic. Well-designed bike lanes and education and enforcement programs that target motorists and bicyclists about their rights and responsibilities are key to helping more people ride. Bicyclists have the same rights and responsibilities of motorists, and bike lanes do not restrict these rights.
Columbus should adopt a Complete Streets Policy because the current MORPC language of "routine accommodation" isn't effective enough	The plan proposes a complete streets policy for the City of Columbus to adopt.
How do we prioritize funding for shared use paths vs. on-street bikeways?	The phased implementation plan outlined in Chapter 7 prioritizes bikeways based on total cost, cost per mile, public request, gaps in the network, safety, connectivity, proximity to destinations, potential bicycle use, neglected areas, proximity to transit, proximity to trail access, street widening projects, and technical advisory group suggestions. Given these priorities, the majority of projects in Phase I are on-street bikeways, 70% in Phase II are on-street bikeways, and 60% in Phase III are on-street bikeways.

The projected budget seems skewed towards engineering improvements but we need stronger education initiatives. How do we balance these competing financial needs? What is most cost-effective?	The Bicentennial Bikeways Plan recommends the city secure funding to support approximately $500,000 in funding for these programs from 2009 through 2012, with a goal of developing a $500,000 annual budget for education, encouragement and enforcement programs by 2012.
Private sponsorship should be considered for implementing portions of the plan	The plan recommends that the City support a private endowment organization to "adopt-a-bikeway."
Clarify availability of funding and how it will be appropriated	Funding from 2008 through 2010 is outlined in Chapter 7.
Enforcement & Safety	
We need a stronger police presence on greenways	Chapter 6 recommends that the City continue to support and expand trail patrols.
A bikeway maintenance plan with allocated funding for street cleaning is needed	Chapter 5 recommends that the City adopt a maintenance policy that considers the special needs of bicyclists. Chapter 7 recommends that the City allocate an additional $2.1 million dollars for bikeway maintenance between 2008 and 2028
Safety of bicyclists should be improved	This plan recommends several safety-based programs: Share the Road Program, Safe Routes to School program, spot improvements and railroad crossing improvements, a Lights On campaign, and enforcement of traffic laws for bicyclists and motorists.
We need stronger police enforcement	The plan recommends that the City increase the number of bicycle patrols, and work with the Police Department to conduct targeted enforcement campaigns.
Education	
Bicyclists should be educated with respect to traffic laws	This plan recommends that the City support bicycle education classes for adults through adult education courses and for children as part of the school curriculum.
Better media coverage is key to educating the public about sharing the road and encouraging bicycling trips	This plan recommends that the City establish a citywide share the road campaign, continue to support bike to work and bike to school days, and support other education, encouragement and enforcement programs.
Proposed Bikeway Facilities	
Numerous specific requests for bicycling facilities and bike parking from the online survey, the public meetings and draft plan comments	Requests for a specific bicycle facility along a roadway or corridor were entered into GIS maps during project development, and used as one criteria for developing the bicycle network. Requests for bicycle support facilities (parking, trailheads, showers, etc…) were incorporated into the plan document.

Can we look for more trail opportunities along utility corridors, greenways, and railroads?	Several greenways, railroads, and utility corridors have been identified for potential trail alignments.
High Street is a high priority for safer biking facilities. Multiple recommendations for High Street as a 'Complete Street'. Reducing bus/bike conflicts must be considered, and many comments note support for a combined bus/bike lane.	This plan recommends a share the road campaign along High street, and associated improvements to Hunter Avenue to provide parallel bicycle access to High Street.
Lack of East-West connections pose a challenge for the bicycling community	This plan recommends numerous East-West connections for both experienced and less-experienced bicyclists.
Policies	
We should include a 5th 'E' for evaluation, particularly programs like Safe Routes to School	
The Bicycle Advisory Committee should be an executive committee with a Bicycle Coordinator serving as a central organizer	This plan recommends that the City adopt a three-part advisory group that includes a citizen-based Bicycle Advisory Group, an agency-based Interagency Working Group and a privately-based private funding foundation. These three groups will work together with the assistance of Columbus' Bikeways Coordinator to implement the plan.
Columbus needs a citywide Safe Routes to School Program	This plan recommends that Columbus develop a citywide Safe Routes to School Program.
There is a need for more accurate cyclist counts and data collection. The Census only captures work-related trips at one point in time. This methodology likely underestimates true numbers – on-street cyclist counts should be done.	This plan recommends that Columbus continue to conduct its annual bicycle and pedestrian counts.

Bicycle Counts

The City of Columbus through the Mid-Ohio Regional Planning Commission participates in the Bicycle and Pedestrian National Documentation research initiated by Institute of Transportation Engineers (ITE) Pedestrian and Bicycle Council (BPC). This effort proposes the following objectives:

1. Establish a consistent national approach to counting and surveying bicycle and pedestrian traffic.
2. Establish a national database of bicycle and pedestrian count information.
3. Use the count and survey information to begin analysis on the correlations between various factors and bicycle and pedestrian activity.

The National Documentation program has developed a consistent bicycle and pedestrian count and survey methodology based on input from the Institute of Transportation Engineers Pedestrian and Bicycle Council, interested professionals, and groups such as the Transportation Research Board, American Association of State Highway and Transportation Officials and the Association of Pedestrian and Bicycle Professionals. Participating agencies and organizations use the forms and methodology to conduct annual counts and surveys during the official National Documentation Days in the second week of September. Supplementary counts and surveys can be conducted during January, May and July to provide seasonal data.

As a part of MORPC's National Documentation Project efforts, the City of Columbus conducted bicycle counts at several locations in July 2007. Weekday counts were collected between 7 am and 9am and between 11 am and 1 pm. Counts were primarily conducted on on-street facilities, but included one location on the Olentangy River Trail. A total of 124 bicyclists and 1,123 pedestrians were counted during the morning peak period, and 121 bicyclists and 3,376 pedestrians counted during the mid-day period.

Below is a summary from July, 2007 of counts from count locations throughout Columbus.

5 July 2007 – Bicycle and Pedestrian Count Results, 7-9 a.m.

Loc ID	Location Description	7 a.m. to 9 a.m.				
		Weather: Cloudy and wet				
	(Jurisdiction,Location)	Bicycles	Pedestrians	Mobility Aid	Other	Total
1	Columbus; S. Grant @ Town	0	118	1	0	**119**
2	Columbus; S. High @ Mound	10	535	6	0	**551**
3	Columbus; W. Broad @ Front	12	242	4	1	**259**
4*	Columbus; E. State @ S. High	-	-	-	-	-
5*	Columbus; Mt. Vernon @ Cleveland	-	-	-	-	-
6	Columbus; Nationwide @ Front	5	76	0	0	**81**
7	Columbus; N. High @ Poplar	21	58	0	0	**79**
8*	Columbus; Park @ Lincoln	-	-	-	-	-
9*	Columbus; Cleveland @ 11th Ave.	-	-	-	-	-
10*	Columbus; N. High @ 15th Ave.	-	-	-	-	-
12	Columbus; N. High @ Pacemont	11	28	0	0	**39**
14*	Worthington; N. High @ New England	-	-	-	-	-
18*	Bexley; E. Main @ Drexel	-	-	-	-	-
26*	Columbus; S. 3rd St. @ Sycamore	-	-	-	-	-
27*	Columbus; S. High @ Blenkner	-	-	-	-	-
28*	Columbus; W. Broad @ Souder	-	-	-	-	-
29*	Columbus; W. Broad @ Wheatland	-	-	-	-	-
36*	Columbus; Cleveland @ 23rd Ave.	-	-	-	-	-
37	Grandview Heights; Grandview Ave. @ Haines	2	37	0	2	**41**
38*	Columbus; Neil @ 10th Ave.	-	-	-	-	-
40*	Columbus; Neil @ Lane Ave.	-	-	-	-	-
47	Columbus; Olentangy Bkwy. @ bridge south of Weber	63	29	0	0	**92**
		124	**1123**	**11**	**3**	**1261**

Source: MORPC, 2007

5 July 2007 – Bicycle and Pedestrian Count Results, 11 a.m. to 1 p.m.

Loc ID	Location Description (Jurisdiction;Location)	11 a.m. to 1 p.m. Weather: Cloudy				
		Bicycles	Pedestrians	Mobility Aid	Other	Total
1	Columbus; S. Grant @ Town	4	179	2	0	**185**
2	Columbus; S. High @ Mound	26	859	5	0	**890**
3	Columbus; W. Broad @ Front	5	101	1	0	**107**
4	Columbus; E. State @ S. High	13	1276	4	0	**1293**
5*	Columbus; Mt. Vernon @ Cleveland	-	-	-	-	-
6	Columbus; Nationwide @ Front	3	307	0	0	**310**
7	Columbus; N. High @ Poplar	11	167	1	0	**179**
8	Columbus; Park @ Lincoln	7	80	1	0	**88**
9*	Columbus; Cleveland @ 11th Ave.	-	-	-	-	-
10*	Columbus; N. High @ 15th Ave.	-	-	-	-	-
12	Columbus; N. High @ Pacemont	5	25	0	0	**30**
14	Worthington; N. High @ New England	5	98	0	0	**103**
18*	Bexley; E. Main @ Drexel	-	-	-	-	-
26*	Columbus; S. 3rd St. @ Sycamore	-	-	-	-	-
27*	Columbus; S. High @ Blenkner	-	-	-	-	-
28*	Columbus; W. Broad @ Souder	-	-	-	-	-
29*	Columbus; W. Broad @ Wheatland	-	-	-	-	-
36*	Columbus; Cleveland @ 23rd Ave.	-	-	-	-	-
37	Grandview Heights; Grandview Ave. @ Haines	9	74	1	0	**84**
38	Columbus; Neil @ 10th Ave.	24	152	0	0	**176**
40	Columbus; Neil @ Lane Ave.	9	58	0	0	**67**
47*	Columbus; Olentangy Bkwy. @ bridge south of Weber	-	-	-	-	-
		121	**3376**	**15**	**0**	**3512**

Survey Summary

The City of Columbus Bikeways survey was open from May 11th, 2007 through August 17th, 2007. In that time period, 917 people either completed the on-line survey or filled out and returned a paper copy of the survey. The survey asked questions about: where bicyclists are from, how much they ride, reasons that they ride, where they like to ride, where they don't like to ride, and suggestions for improving bicycling within the City.

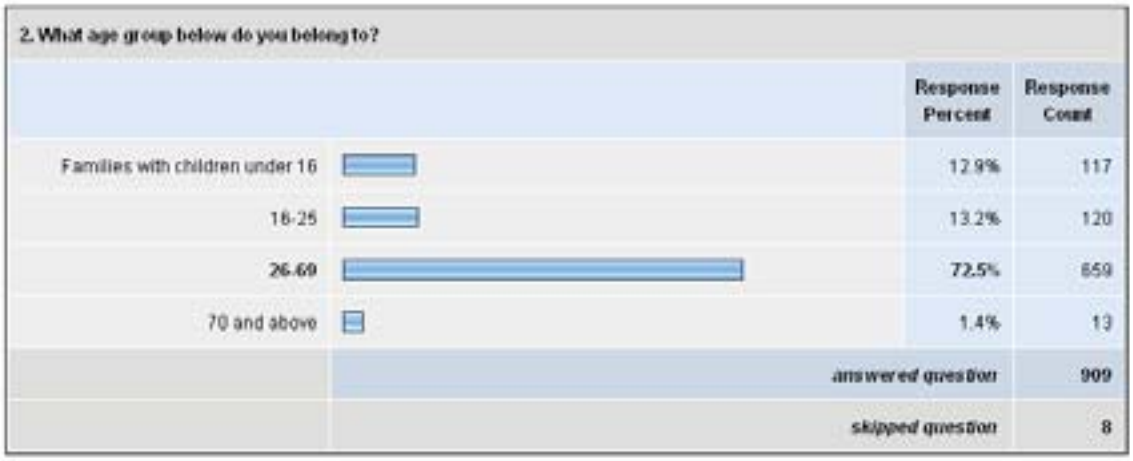
General Trends of Survey

Of the 917 survey respondents, the dominant age group is 26-69 (72%). When asked why they bike, most cited for recreation (88%) or for exercise (87%) There is a discrepancy between why respondents currently bike and where they would like to bike. For example, although about half of the respondents indicated that they bike to get to work, 73% responded that they would like to bike to work. Similarly, 9.9% ride to connect to transit, while 25.1% indicated they would like to bike to connect to a transit stop.

When asked how often they bike, half of the respondents indicated that they ride their bikes several times a week, while 21% indicated that they ride everyday. The range for the average distance of bike rides varies considerably: 28% ride 3-5 miles, 23% ride 11-24 miles, and 21% ride 6-10 miles. The most frequently cited reasons that prevents bikers from biking more often are lack of bike facilities near their residences (67%) and too many cars/motorists drive too fast (67%).

The top three most cited projects that respondents would like to see included in the City of Columbus Bicycle Master Plan are: 1. on-road bike lanes or paved shoulders (85%), 2. new paved shared-use paths (76%), and 3. bicycle parking (59%). Similarly, when asked to rank their preference for bicycle facilities, respondents cited paved, shared-use paths and on-street bike lanes as their most preferred.

Finally, when asked if their school has a Safe Routes to School Program, only 5% responded "yes," while 30% responded "no" and 65% responded "n/a."



2. What age group below do you belong to?

	Response Percent	Response Count
Families with children under 16	12.9%	117
16-25	13.2%	120
26-69	72.5%	659
70 and above	1.4%	13
answered question		909
skipped question		8

3. Why do you bike? (Please check more than one if appropriate)

	Response Percent	Response Count
To get to work	48.7%	441
To get to school	13.6%	123
To get from school to after school activity	6.4%	58
For exercise	87.7%	795
For recreation	**88.0%**	797
For shopping / errands	47.8%	433
To connect to transit	9.9%	90
Other (please specify)	8.6%	78
	answered question	906
	skipped question	11

4. Where would you like to bike to from your home? (Please check more than one if appropriate)

	Response Percent	Response Count
Work	73.4%	665
Transit stop	25.1%	227
School	24.0%	217
Shopping Center	56.0%	507
Small stores	69.0%	625
Restaurant or cafe	71.3%	646
Park, swimming pool, etc	71.5%	648
Off-road Paths	64.2%	582
Other (please specify)	11.0%	100
	answered question	906
	skipped question	11

5. How often do you ride a bike?

	Response Percent	Response Count
Every day	20.6%	187
Several times a week	**50.0%**	454
Several times a month	19.6%	178
Less than once a month	6.5%	59
Not at all	1.1%	10
Other (please specify)	2.2%	20
answered question		908
skipped question		9

6. What is the average distance of your ride?

	Response Percent	Response Count
Under 2 miles	11.8%	106
3 to 5 miles	**28.0%**	253
6 to 10 miles	20.8%	188
11 to 24 miles	22.7%	205
More than 25 miles	14.4%	130
Other (please specify)	2.2%	20
answered question		902
skipped question		15

7. What prevents you from biking more often? (Please choose more than one if appropriate)

	Response Percent	Response Count
Too many cars / motorists drive too fast	66.9%	595
No paths near my residence	39.8%	354
No bike lanes or on-street bike routes near my residence	**67.0%**	**596**
Existing bicycle facilities are in poor condition	17.7%	157
Destinations are too far away	23.3%	207
Not enough lighting	9.6%	85
I have to carry things	17.1%	152
I travel with small children	7.4%	66
I don't own a bicycle	1.3%	12
I don't have enough time	16.5%	147
Other (please specify)	20.0%	178
	answered question	**889**
	skipped question	**28**

8. Do you have specific projects you would like to see included in the City of Columbus Bicycle Master Plan? (Check all that apply)

	Response Percent	Response Count
New paved shared-use paths	75.9%	683
On-road bike lanes or paved shoulders	**84.6%**	761
Signed on-road bike routes	53.3%	480
Safe Routes to School	29.0%	261
Bicycle Parking	59.3%	534
Intersection Improvements	44.3%	399
Access to Transit	20.4%	184
Education or Promotional Programs	27.2%	245
Improved End-of-Trip Facilities (Bike Hub/BikeStation, showers, lockers, etc)	42.3%	381
Other (please specify)	15.2%	137
	answered question	**900**
	skipped question	**17**

10. Please rank your preference for bicycle facilities (1 = Most Preferred; 7 = Least Preferred)

	1	2	3	4	5	6	7	Rating Average	Response Count
Paved Shared Use Paths (separated from road)	**52.0% (425)**	16.2% (132)	11.5% (94)	11.4% (93)	3.8% (31)	2.1% (17)	3.1% (25)	2.17	817
Natural Surface Trails (separated from road)	5.2% (39)	16.3% (123)	14.7% (111)	16.3% (123)	**25.1% (190)**	17.1% (129)	5.4% (41)	4.13	756
On-street bike lanes (on road with lane striping, bike stencils, and signage)	**34.4% (278)**	30.7% (248)	15.7% (127)	5.2% (42)	5.6% (45)	4.4% (36)	4.1% (33)	2.47	809
Signed on-road bike routes (on road with no lane striping)	4.8% (37)	9.0% (70)	17.0% (132)	**26.3% (204)**	16.1% (125)	13.0% (101)	13.9% (108)	4.34	777
Paved Shoulders (on road with striping)	5.5% (45)	20.2% (165)	**29.2% (238)**	17.9% (146)	14.6% (119)	9.1% (74)	3.6% (29)	3.57	816
Single track dirt paths (separated from road)	3.0% (23)	4.9% (38)	5.4% (42)	8.1% (63)	15.9% (124)	**36.2% (282)**	26.6% (207)	5.44	779
Sidewalks	4.0% (33)	4.8% (39)	7.2% (59)	13.3% (108)	13.9% (113)	16.3% (133)	**40.5% (330)**	5.39	815
							answered question		**895**
							skipped question		**22**

11. Please tell us the bicycling improvements you would like to see in the Columbus area. This could include new bike lanes, paths, or routes, enhancements to existing bikeways or intersections, additional signage, or educational and encouragement programs to promote bicycling.

		Response Count
		638
	answered question	638
	skipped question	279

14. Does your school have a Safe Routes to School (SR2S) Program?

		Response Percent	Response Count
Yes, we have completed plans that comply with Ohio standards		5.0%	1
No, we do not have a SR2S program		30.0%	6
N/A		65.0%	13
	answered question		20
	skipped question		897

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Appendix E: Draft Bicycle Parking Policy

This Draft Bicycle Parking Policy was developed by the Bikeways Advisory Committee's 1999 Draft Bicycle Parking Standards (Version 18C of 11/18/1999, based upon Version 18B of 11/25/96)

Applicability

Bicycle parking spaces shall be provided for all new uses, new buildings, and for existing buildings and uses whenever these undergo expansion or change of use. Herein the terms "use" and "expansion" are as defined in the Columbus Zoning Code.

Bicycle Parking Space

A space refers to a place to park one bicycle.

Level of Security

Bicycle parking facilities offer two levels of security:

Low security parking facilities are intended for use as short term parking. These provide a fixed object, such as a bike rack, to which a bicycle can be locked.

High Security facilities are intended for use as long term parking. High Security facilities control access to the bicycle and attached equipment through bicycle lockers, locked rooms, racks monitored by an attendant, storage in an area under surveillance of the bicyclist or other approved facilities.

Acceptable Types of Facilities

The parking facility design, location, installation and operation must be of a type approved by the Traffic Engineering and Parking Division. All bicycle parking devices shall not damage the bicycle's finish and, at minimum, support the bicycle by its frame.

Special Bicycle Parking Zones

High Security bicycle parking facilities are required within the following zones:

Downtown Zone

The boundaries of this area start where Goodale Boulevard crosses the Olentangy River and proceed west along Goodale to Route 315, south along Route 315 to I-70, east along I-70 to I-71, and north along I-71 to that portion of I-670 south of Fort Hayes. From this point they proceed west along I-670 south of Fort Hayes. From this point they proceed west along I-670 to Neil Avenue, north along Neil to Goodale Boulevard and west along Goodale to the Olentangy River.

Transcampus Zone

'The boundaries of this area start where Goodale Boulevard crosses the Olentangy River and proceed west and north along Columbus's boundaries with; Grandview Heights, Marble Cliff and Upper Arlington to North Broadway. Thereafter, these proceed east along North Broadway to I-71, south along I-71 to that portion of I-670 south of Fort Hayes. From this point they proceed west along I-670 to Neil Avenue, north along Neil to Goodale Boulevard and west along Goodale to the Olentangy River.

Location of Parking

Unless another location is approved by the Division of Traffic Engineering and Parking, required bicycle parking must be located within fifty feet of the main entrance to the building. On site parking shall be located behind the parking or building set back lines, whichever is less.

Signs

If the bicycle parking is not visible from the main entrance, then a sign must be posted indicating its location. If a facility has several entrances, signs must be posted at each public entrance (if the bicycle parking is not visible from that entrance). When fixed objects, other than bike racks, are used for short term parking, they must be labeled in an approved manner.

Parking Credits

Required bicycle parking facilities shall be credited toward provision of motor vehicle parking. Each ten required bicycle parking spaces, or fraction thereof, may be substituted for one code required motor vehicle parking space.

Quantities and Applicable Uses

All commercial and institutional uses listed in Chapter 3384 of the Columbus Zoning Code shall provide the following quantities of bicycle parking.

Transcampus Zone

All uses, except non-accessory parking garages, shall provide one low security space for each 5,000 square feet or fraction thereof, with a minimum of three spaces being provided. In addition, one high security space shall be provided for each 50,000 square feet or fraction thereof. Non-accessory parking garages shall provide one high security space for each 25 motor vehicle parking spaces.

Downtown Zone

All uses, except non-accessory parking garages, shall provide one low security space for each 10,000 square feet or fraction thereof, with a minimum of three spaces being provided. In addition, one high security space shall be provided for each 100,000 square feet of fraction thereof. Non-accessory parking garages shall provide one high security space for each 75 motor vehicle parking spaces.

All Other Areas

All uses, except non-accessory parking garages, shall provide a minimum of three low security spaces. Non-accessory parking garages shall provide one high security space for each 150 motor vehicle parking spaces.

Schedule for Implementation

These Standards shall be phased in gradually. The following times refer to the time at which these standards are approved by the Service Director. The following shall go into effect:

Starting one year after approval, these standards, except for the high security provisions, shall apply to listed uses only within the Transcampus Zone. All other areas of the City shall be exempt from these standards.

Starting two years after approval, these standards, except for the high security provisions, shall apply to listed uses only within the Downtown and Transcampus Zones. All other areas of the City shall be exempt from these standards.

Starting three years after approval, these standards, except for the high security provisions, shall apply to the Downtown Zone and those parts of the City which are north of Broad Street. The remainder of the City shall be exempt from these standards.

Starting four years after approval, these standards shall apply to the entire City. The high security provisions shall apply only to the Transcampus Zone.

Starting five years after approval, these standards shall apply to the entire City. The high security provisions shall apply only to the Downtown and Transcampus Zones.

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Appendix F: Programmatic Cost Estimates

The following Table provides cost estimates for the programs recommended by the Bicentennial Bikeways Plan

$ = $0 to $50,000

$$ = $50,000 to $100,000

$$$ = $100,000+

		Soft costs - Staff time requirements	Hard costs	Notes
EDUCATION				
Share the Road Campaign				
Develop Share the Road Flyers	$-$$	Production, printing, and distribution	printing	may be possible to buy existing flyer instead of starting from scratch
Periodic Traffic Checkpoints	$-$$	Training of police and police time		
Public Service Announcement	$-$$$	Development, production, and placement	media time	may be possible to lower costs by buying existing campaign and/or soliciting reduced or waived media placement fees
Presentations for Public Meetings	$	Develop presentation and coordinate meetings		
Adult Bicycling Classes	$-$$	Training and teaching	curriculum	LAB Curriculum
Continue and Expand Bicycle Education Programs				
Continue Printing Existing Safety Pamphlets	$		printing	
Expand Existing Bicycle Safety Classes				
School-based Education Programs	$$-$$$	Program management and education instruction	printing	
Bicycle Traffic School for Traffic Violations	$$	Training and teaching	printing	
Educate Motorists, City Staff, Maintenance and Construction Crews				
Traffic School Curriculum	$	Curriculum development	printing	
Bicycle Safety and Laws Brochure	$	Development	printing	
Enforcing Traffic Laws for Bicyclists	$-$$	Training of police and police time		
Training on pedestrian and bicycle design for all City Planners	$	Training		curriculum exists
Training for contractors and subcontractors on bicycle and pedestrian needs	$-$$	Curriculum development and training		

		Soft costs - Staff time requirements	Hard costs	Notes
ENCOURAGEMENT				
Facilitate Development of Employer Incentive Programs	$-$$	Coordination of incentive programs		
Develop System Identification for the On-Street Bikeways	$$	Program management		
Support Community Bikeway/Walkway Adoption	$-$$	Program management and stakeholder coordination		
Create a Bike Map and Multi-Modal Access Guide	$$-$$$	Development and compilation of materials	printing	
Work with Businesses to Develop Incentives for Biking				
Promotional Event such as "Bike to the Grocery Store"	$	Coordination of event and incentives	incentives	
Promotional Event such as "Bike to the Video Store"	$	Coordination of event and incentives	incentives	
Community Event encouraging car replacement trips	$	Coordination of event and incentives	incentives	This assumes a one-time event only
Create a Commuter Challenge for Area Businesses	$-$$$	Coordination of event and incentives	incentives	
Encourage Small Businesses Near Bicycle Trail Heads	$-$$	Program management		
Commit to Becoming a Recognized Bicycle Friendly Community				
Submit Application to League of American Bicyclists	$	Application process		
Create an Action Plan on How to Become a Bicycle Friendly Community	$-$$	Plan development		
Institute Improvements from Action Plan to become a Bicycle Friendly Community	$$$	Project management	facility costs	
COMMUNITY INVOLVEMENT				
Promote Bike-to-Work Day				
Energizer Stations	$	Coordination of event and incentives	incentives	
Close a Street	$	Coordination of event and incentives	incentives	
Ride with the Mayor	$	Coordination of event and incentives	incentives	
Commuter Challenge	$	Coordination of event		
Car vs. Bus vs. Bike Commuter Race	$	Coordination of event		
Actively Solicit and Promote Bike Fairs and Races				
Implement and Sponsor Bike Fairs and Races	$$	Coordination of event	materials	

		Soft costs - Staff time requirements	Hard costs	Notes
CITYWIDE AND REGIONAL COORDINATION				
Fund and Fill the Bikeways Coordinator Position	$$	Program management		
Reorganize and Reestablish the Bikeways Advisory Committee	$	Coordination of meetings		
Establish an Interagency Working Group	$	Coordination of meetings		
Continue to Coordinate with Mid-Ohio Planning Commission, Ohio DOT and other Agencies to Expand the Regional Bikeway Network	$	Coordination of updates and materials		
Support Citywide Shared Bicycle Program	$$$	Program management	bicycles and facilities	
Bike Rental	$	Support		
Encourage Provision of Shower and Locker Facilities	$-$$$	Program management	facilities	
SAFETY AND SECURITY				
Continue to Enforce Traffic Laws for Motorists and Bicyclists	$$	Location determination, police time for operations		
Increase Safety and Security through Proper Design and Maintenance	$$$	New design and re-design and construction	construction materials	
Expand Volunteer Trail Watch Program	$	Coordination and training of volunteers		
Maintain the Columbus Police Department's Bicycle Patrol Unit	$$$	Program and staff management		
Establish a Safe Routes to School Program	$$$	Program and staff management	printing	
Support Community Safety Programs	$	Coordination of literature and incentives	printing and helmets	

Appendix G: Bikeway Funding Sources

The primary federal source of surface transportation funding—including bicycle facilities—is SAFETEA-LU, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users. SAFETEA-LU is the fourth in a series of federal transportation funding bills. The $286.5 billion SAFETEA-LU bill, passed in 2005, authorizes federal surface transportation programs for the five-year period between 2005 and 2009.

SAFETEA-LU information can be found at: www.fhwa.dot.gov/safetealu/index.htm

Federal funding is administered through the Ohio Department of Transportation (ODOT) and the Mid Ohio Regional Planning Commission (MORPC). Most, but not all, of the funding programs are transportation (versus recreation) oriented, with an emphasis on (a) reducing auto trips and (b) providing inter-modal connections. Funding criteria often requires quantification of the costs and benefits of the system (such as saved vehicle trips and reduced air pollution), proof of public involvement and support, and commitment of some local resources. In most cases, SAFETEA-LU provides matching grants of 80 to 90 percent – but prefers to leverage other funds at a lower rate. Specific grants available from SAFETEA-LU are described more in the regional sections because MORPC screens the applications and provides the funds.

MORPC's Transportation Improvement Package (TIP) is a list of projects eligible for federal aid. Bikeway projects must be listed on MORPC's Regional Bikeway Plan in order to receive federal SAFETEA funds.

Specific programs funded under SAFETEA-LU include: Congestion Mitigation and Air Quality, Recreational Trails Program, Safe Routes to School Program, Transportation, Community and System Preservation Program and Federal Lands Highway Funds. These funding sources are described below.

In addition to these standard funding sources, federal transportation funding includes "Demonstration Projects." These are the line-item projects added by members of Congress. Columbus may be a candidate for this type of funding during the SAFETEA re-authorization process in 2009-10. During the last reauthorization process, a $100 million Model Communities Program was established to demonstrate how bicycle and pedestrian infrastructure, and education and encouragement programs can be used to increase biking and walking. Four communities, Columbia, Missouri; Marin County, California; Sheboygan, Wisconsin and Minneapolis, Minnesota each received $25 million to implement bicycle and pedestrian projects. This program may be expanded in the future and would be a great opportunity for Columbus.

Statewide Funding Sources

The State of Ohio uses both federal sources and its own budget to fund bicycle projects and programs. In some cases, project sponsors apply directly to the State for funding. In others, sponsors apply to the regional agency MORPC.

Recreational Trails Program (RTP)

Eligible projects for the Recreational Trails Program include trail linkages, facilities; maintenance, restoration, ADA improvements, acquisition, and construction. The Recreational Trails Program is up to 80 percent reimbursable and in the 2007 fiscal year, the State of Ohio was apportioned $1,740,801. The deadline for the application is February 1.

www.fhwa.dot.gov/environment/rectrails/index.htm

Clean Ohio Trails Fund

In Ohio, the Clean Ohio Trails Fund was available for four rounds of funding and ended in 2006. At this time, there is no funding available, however there is a considerable push to have the fund put on the ballot again for reauthorization. The grants were administered by the Ohio Department of Natural Resources and totaled $25 million in grants over the four cycles.

http://www.dnr.state.oh.us/default/tabid/10771/Default.aspx

NatureWorks Grants

The NatureWorks grant program is administered by the Ohio Department of Natural Resources. The grants provide up to 75 percent reimbursement assistance for local governments, including cities and park districts. Grants are for acquiring, developing, and rehabilitating recreational areas and are applicable to bicycle trails. The program started in 1993 and since then, it has funded over $63 million in projects. Over the last several years, the NatureWorks grants have funded approximately $2 million in projects per year. The deadline is February 1.

http://www.dnr.state.oh.us/default/tabid/11089/Default.aspx

Land and Water Conservation Fund

The Land and Water Conservation Fund is a federal program that provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. The Fund is administered by the Ohio Department of Natural Resources. Congress has yet to determine whether this program will be funded in 2008.

Cities, counties and districts authorized to acquire, develop, operate and maintain park and recreation facilities are eligible to apply. Applicants must fund the entire project, and will be reimbursed for 50 percent of costs. The grant process for local agencies is competitive and if funding levels are like the previous years, there will be a $50,000 maximum grant request.

http://www.dnr.state.oh.us/default/tabid/11089/Default.aspx

Safe Routes to School (SR2S)

Recent SAFETEA-LU legislation, which requires each state's Department of Transportation to designate a Safe Routes to School Coordinator, also contains a SR2S program. This program is meant to improve the safety of walking and bicycling to school and to encourage students to walk and bicycle to school through identifying existing and new routes to school and constructing bicycle

safety and traffic calming projects. ODOT requires a Comprehensive Safe Routes to school Plan to be eligible for funding. The next round of funding will likely take place in January 2008.

http://www.dot.state.oh.us/SafeRoutes/Default.htm

Regional Funding Sources

Regional transportation funds are administered by MORPC. To be eligible for MORPC administered funds, all projects must comply with MORPC's Routine Accommodations Policy - project sponsors are required to accommodate bicycles and pedestrians in the planning and design of all proposed transportation projects using MORPC-attributable federal funds. Sponsors using local, state, or other federal funds are encouraged but not required to accommodate bicycles and pedestrians in the planning and design of all proposed transportation projects.

Transportation Improvement Program

In 2007, the State of Ohio awarded approximately $1.5 billion in funds for highway, transit, and bicycle/pedestrian projects for FY 2008-2011. Projects programmed in the Transportation Improvement Program must provide for public comment to the funding list, provide specific project information, be consistent with planning documents, provide a financial plan, establish priorities, and conform to air quality standards. Therefore, when funding becomes available, the project will be ready for implementation.

Transportation Enhancements

Transportation Enhancements are designated SAFETEA-LU funds. MORPC solicits applications and funds regional projects and programs with these dollars. In 2007, MORPC awarded approximately $1.6 million per year or approximately $10.1 million total for FY 2008-2013. Bicycle facilities are eligible for these funds as well as bicycle education programs.

http://www.morpc.org/web/transportation/tip/MORPCFunds.html

http://www.fhwa.dot.gov/environment/te/principles_pt1.htm

Congestion Mitigation and Air Quality (CMAQ)

CMAQ funds are allocated as part of SAFETEA-LU and MORPC is the regional agency that solicits applications and uses these dollars to fund projects. In 2007, MORPC awarded funding for FY 2008-2013. Approximately $8.1 million per year or $49.1 million are allocated for 2008-2013. Bicycle and pedestrian facilities are eligible for these funds if they provide air quality benefits.

http://www.morpc.org/web/transportation/tip/MORPCFunds.html

http://www.fhwa.dot.gov/environment/cmaqpgs/

Non-Traditional Funding Sources

Integration into Larger Projects

One of the most effective ways of getting bicycle facilities constructed quickly is to ensure that proposed facilities are constructed as part of larger transportation projects. MORPC's "complete streets" policy requires agencies using MORPC funds to design, construct, operate, and maintain transportation facilities using best practices for pedestrians and bicyclists. Some portion of proposed bicycle facilities will be built as MORPC funds are used in projects throughout the City. If Columbus adopts the complete streets policy outlined in this plan, bicycle facility construction in Columbus should increase significantly.

http://www.morpc.org/web/transportation/bikeped/bikepedplan.html

Community Development Block Grants

The Community Development Block Grant (CDBG) program provides money for streetscape revitalization, which may be largely comprised of bicycle and pedestrian improvements. Federal Community Development Block Grant Grantees may use CDBG funds for activities that include (but are not limited to) acquiring real property; building public facilities and improvements, such as streets, sidewalks, and recreational facilities; and planning and administrative expenses, such as costs related to developing a consolidated Plan and managing CDBG funds.

CDBG funds totaling $50 million were distributed statewide in 2007.

www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm

Requirements for New Development

Due to MORPC's routine accommodation policy and its active role in funding new developments, and road widening, there is more opportunity to construct bicycle facilities more efficiently. As a requirement for new developments, bicycle projects can be included in larger, more expensive projects.

Impact Fees

One potential local source of funding is developer impact fees. These one time costs associated with new developments are typically tied to trip generation rates and traffic impacts produced by a project. These fees can be directed to bicycle projects to help alleviate negative traffic impacts of new developments.

Dedicated Transportation Division Funding

Columbus should consider dedicating a portion of Transportation Division funds to the bicycle program.

RTC 2010 Campaign

Columbus is planning on participating in this funding, which may provide up to $50 million in bicycle facility funding.

Appendix H: Recommended Bikeway Projects

Recommended Phasing by Project Number

Phasing is recommended as a guideline. Bikeways that can be completed as part of a planned roadway project should be constructed regardless of phasing. Future conditions may affect phasing. These conditions may include community and political support, new funding sources, planned roadway projects, or changed roadway conditions.

highlighed projects are demonstration projects identified in the Bicentennial Bikeways Plan.

PHASE 1

Project Number	Cost	Miles	Implementation Score
209	$160,000	1.1	75.20
93	$29,000	2.3	74.75
206	$5,000	2.5	73.89
54	$13,000	1.0	73.00
203	$35,000	5.1	72.75
167	$65,000	1.6	72.33
64	$600,000	12.6	71.92
176	$4,000	1.9	70.00
197	$2,000	0.7	70.00
36	$25,000	8.6	69.20
213	$250,000	1.0	69.00
72	$500,000	2.6	62.56
18	$1,200,000	7.5	61.63
14	$2,000,000	2.1	57.83
171	$636,186	1.1	53.75
151	$750,000	1.6	53.17
131	$221,784	0.9	52.83
61	$1,089,984	1.8	50.00
182	$459,550	0.8	48.00
39	$2,948,545	4.9	46.90
89	$602,276	1.0	45.33
67	$6,000	0.5	43.33
23	$1,230,528	2.8	42.02
105	$1,437,817	2.4	41.44
74	$3,594,247	6.0	40.68
57	$2,974,226	5.0	39.67
38	$346,909	0.6	39.00
170	$3,513,563	1.6	33.54
214	$687,000	1.0	n/a
TOTAL	**$25,386,615**	**82.4**	

Note: This is not a complete list of all planned projects. Projects listed here are linear bikeway projects that are within City of Columbus. Additional planned projects include spot improvements, and projects outside of city limits undertaken in collaboration with other jurisdictions. Total funding for these projects is listed in Chapter 7, table 7-7

PHASE 2

Project Number	Cost	Miles	Implementation Score
157	$2,690,606	10.9	67.95
204	$7,560,536	2.0	72.48
90	$157,954	5.2	69.89
42	$26,867	2.5	62.67
50	$1,936,263	3.2	61.39
96	$234,075	4.2	59.06
66	$5,151	0.4	71.00
56	$233,634	0.6	54.34
141	$13,145	1.1	95.00
205	$7,525,248	1.2	74.23
97	$139,828	1.2	37.28
48	$835,646	1.4	69.00
58	$211,087	0.9	71.33
75	$2,687,668	5.9	67.39
87	$130,705	1.4	67.38
125	$11,160	0.9	65.50
175	$334,039	2.7	65.40
47	$2,181,972	3.6	64.94
79	$208,750	2.2	64.94
59	$443,337	1.9	64.11
100	$2,018,736	6.6	64.00
159	$89,989	2.8	63.11
115	$5,437,689	21.9	62.38
168	$66,980	2.1	62.33
94	$21,519	1.7	62.00

continues in next column

PHASE 2 - continued

Project Number	Cost	Miles	Implementation Score
76	$210,205	2.5	61.41
41	$2,331,158	4.0	61.10
166	$28,213	2.3	61.00
207	$770,724	5.7	60.78
34	$264,711	3.8	60.69
169	$496,305	3.0	60.00
173	$11,987	1.0	60.00
91	$314,918	3.4	59.67
29	$251,058	3.7	59.57
132	$731,126	1.2	59.25
165	$71,930	2.3	57.50
208	$451,721	4.1	57.50
35	$14,609	1.2	57.40
92	$58,937	4.8	57.00
188	$1,230,736	5.3	56.74
156	$468,857	2.4	56.33
161	$1,279,814	11.6	56.24
123	$1,113,354	1.9	56.18
55	$241,713	2.6	56.10
81	$49,472	0.5	56.00
135	$185,490	3.7	55.67
49	$846,400	1.4	55.33
200	$226,753	1.1	55.33
52	$1,882,236	6.2	55.33
80	$1,122,816	4.2	54.75
85	$221,049	2.6	54.43
183	$558,880	2.4	54.40
143	$2,064	1.0	54.22
11	$920,350	2.7	54.09
116	$141,246	0.9	53.75
158	$257,528	2.9	53.63
83	$351,598	2.4	53.51
133	$10,308	0.8	59.00
126	$628,037	4.0	58.83
86	$255,975	2.7	58.62
160	$58,320	1.8	58.17
95	$14,046	1.1	58.00
33	$27,687	2.2	57.87
TOTAL	**$53,304,916**	**199.9**	

Phase 3

Project Number	Cost	Miles	Implementation Score
26	$14,157	1.1	53.17
78	$41,088	3.9	53.15
211	$990,055	5.8	52.27
24	$298,568	4.0	52.00
187	$135,077	2.9	52.00
106	$1,466,883	6.8	51.90
84	$56,850	4.6	51.63
25	$19,182	1.6	51.50
154	$46,375	3.4	51.33
163	$2,597,922	4.3	51.13
40	$191,519	0.8	51.00
174	$584,348	2.5	51.00
192	$136,488	0.7	51.00
22	$1,354,083	2.3	50.77
144	$140,355	0.5	50.41
142	$1,799,650	3.0	50.40
77	$113,670	3.2	50.35
65	$15,225	1.2	50.00
102	$20,371	0.0	50.00

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	Project Number	Cost	Miles	Implementation Score
PHASE 3 - continued	108	$527,536	3.2	49.80
	107	$562,965	1.7	49.67
	37	$525,945	7.5	49.56
	88	$2,576,051	5.0	49.53
	140	$1,150,386	4.0	49.30
	212	$81,067	2.2	49.17
	82	$245,682	2.8	49.11
	15	$351,986	4.0	49.08
	202	$33,364	1.0	49.00
	178	$1,542	0.7	48.50
	201	$575,074	1.4	48.50
	32	$14,945	0.5	48.40
	130	$1,618,045	2.7	48.37
	21	$587,377	4.2	48.29
	155	$275,161	2.8	48.26
	30	$165,141	2.1	47.41
	180	$16,309	1.3	47.33
	46	$604,065	2.6	47.00
	139	$118,899	0.2	46.75
	53	$68,336	0.7	46.39
	111	$1,487,585	4.1	46.38
	153	$75,779	2.0	46.22
	121	$501,727	2.2	46.19
	70	$320,319	1.4	46.17
	194	$81,276	2.5	46.00
	6	$178,470	0.8	45.75
	16	$1,877,194	7.0	45.73
	193	$1,248,366	2.1	45.67
	101	$2,036,581	5.6	45.47
	120	$287,062	1.2	45.00
	191	$482,319	0.8	45.00
	195	$282,320	1.2	45.00
	9999	$31,965	0.1	45.00
	20	$889,354	15.5	44.65
	8	$253,941	1.2	44.50
	181	$165,974	0.8	44.00
	5	$549,012	2.4	43.98
	104	$1,669,658	2.8	43.97
	110	$728,785	2.7	43.95
	43	$253,624	0.4	43.78
	31	$386,201	3.6	43.62
	2	$2,400,381	4.2	43.57
	185	$725,132	1.2	43.50
	69	$3,704,396	6.2	43.46
	4	$15,147	1.2	43.25
	71	$91,058	0.4	43.20
	3	$256,414	0.4	42.75
	124	$253,696	0.4	42.33
	152	$162,061	0.3	42.33
	73	$333,299	1.4	42.23
	184	$1,305,254	3.1	42.00
	196	$2,292,715	3.8	41.92
	198	$1,303,830	2.2	41.80
	127	$759,774	2.9	41.40
	12	$468,017	2.0	41.33
	13	$1,035,758	2.7	41.15
	186	$286,757	6.3	41.00
	117	$632,073	1.2	40.38

	Project Number	Cost	Miles	Implementation Score
PHASE 3 - continued	10	$54,908	0.1	40.17
	28	$683,286	5.1	40.11
	27	$823,479	6.6	39.74
	44	$1,208,163	2.0	39.64
	103	$50,188	1.4	39.46
	51	$1,420,630	2.4	39.27
	118	$1,186,292	2.0	39.17
	68	$724,447	1.2	39.00
	109	$1,171,022	2.0	38.75
	99	$1,247,338	2.1	38.17
	149	$1,843,935	3.1	38.01
	136	$275,802	0.5	38.00
	172	$683,590	1.1	38.00
	177	$542,804	1.9	37.03
	60	$943,572	1.6	37.00
	113	$580,360	1.0	37.00
	7	$136,687	0.7	36.50
	134	$529,977	0.9	36.50
	179	$156,372	0.7	36.21
	145	$30,376	2.5	36.20
	9	$2,185,520	3.6	35.11
	148	$75,460	0.1	35.00
	98	$171,334	0.3	34.67
	190	$194,976	0.9	33.63
	45	$368,498	1.6	33.44
	128	$123,024	0.5	33.00
	137	$390,818	0.7	32.50
	119	$403,295	2.0	32.17
	112	$296,536	1.4	32.00
	114	$1,887,123	3.1	31.67
	150	$36,242	0.1	31.00
	199	$202,657	1.0	30.00
	146	$47,879	0.1	28.50
	TOTAL	**$70,611,607**	**257.9**	

Recommended Bikeways by Roadway/Corridor

Recommended bikeway types were selected using high-resolution aerial photos, posted speeds (MORPC GIS data 2006), average daily vehicle traffic (MORPC, 1995-2004), and planned roadway projects included in MORPC's 2030 Transportation Plan. Field visits were conducted at selected sites. Before constructing any recommended facilities, additional field work will be required to verify conditions, including but not limited to: roadway widths, travel lanes, actual motor vehicle speeds, motor vehicle volumes and speeds, bicycle and motor vehicle travel patterns and conflicts, signal timing and actuation, and pavement conditions. Final bikeway treatments should be selected based on verified conditions.

Bikeway Type **Description**

Lane: Minimum 5' bike lanes can be striped on roadway without modifying number of motor vehicle lanes or roadway width.
Lane Road Diet: Motor vehicle ADT is low enough to eliminate one or more motor vehicle lanes and stripe bike lanes.
Lane Road Widening: Roadway must be widened to provide 5' bike lanes.
Route: Install wayfinding signs and bike route signs along roadway.
Paved Shoulder: Recommend paving 4' minimum shoulder along roadway to provide extra room for bicyclists and motorists.
Bike Boulevard: Traffic calming, pavement stencils, and special signage indicating street is a bicycle priority street.
Path: Ten to twelve foot paved shared use path.
Shared Lane Markings: Pavement stencils in roadway indicating to motorists & bicyclists where bicyclists are expected to ride.
Alley: Special designation for downtown alleys. Develop alleys as bicycle/pedestrian priority streets and improve roadway crossings.

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
11th Avenue	Lane Road Diet	153	0.7	$69,584
	Shared Lane Markings	153	0.6	$3,061
11th Avenue Sum			1.3	$72,645
19Th Avenue, Louis, Bonham, Camden, St. Clair	Route	207	1.9	$3,991
19Th Avenue, Louis, Bonham, Camden, St. Clair Sum			1.9	$3,991
2Nd Avenue	Lane	78	1.1	$12,989
2Nd Avenue Sum			1.1	$12,989
2Nd Street	Route	78	0.3	$519
2Nd Street Sum			0.3	$519
Abandoned Railroad	Path	101	2.7	$1,616,276
Abandoned Railroad Sum			2.7	$1,616,276
Ackerman Road	Lane	115	1.3	$15,531
Ackerman Road Sum			1.3	$15,531
Agler Road	Lane	30	0.4	$4,648
	Paved Shoulder	30	0.7	$152,746
	Route	30	0.4	$853
Agler Road Sum			1.5	$158,247
Alley	Bike Boulevard	64	2.5	$80,399
Alley Sum			2.5	$80,399
Alum Creek	Path	38	0.3	$182,930
		39	4.9	$2,948,545
Alum Creek Sum			5.2	$3,131,475
Alum Creek Drive	Lane	100	3.3	$40,746
	Path	100	3.3	$1,977,990
		201	0.2	$140,981
Alum Creek Drive Sum			6.8	$2,159,717
Ambleside Drive, Sandalwood Boulevard	Route	186	2.7	$5,514
Ambleside Drive, Sandalwood Boulevard Sum			2.7	$5,514
Barnett Road	Route	103	0.3	$598
Barnett Road Sum			0.3	$598
Bennel Drive/Harbour Town Drive	Bike Boulevard	194	2.5	$81,276
Bennel Drive/Harbour Town Drive Sum			2.5	$81,276
Bethel Road	Lane	15	3.5	$43,290
Bethel Road Sum			3.5	$43,290
Big Run Creek	Path	69	4.9	$2,921,158
Big Run Creek Sum			4.9	$2,921,158
Big Walnut Creek	Path	23	1.7	$1,028,975
		89	0.0	$3,262
		98	0.3	$171,334
		99	2.1	$1,247,338
		104	2.8	$1,669,658
		105	2.4	$1,437,817
		110	0.5	$275,187
		114	3.1	$1,887,123
Big Walnut Creek Sum			12.9	$7,720,693
Binns Boulevard/Haladayavenue	Bike Boulevard	168	2.1	$66,980
Binns Boulevard/Haladayavenue Sum			2.1	$66,980

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
Biretta Avenue	Path	191	0.1	$48,369
Biretta Avenue Sum			0.1	$48,369
Blacklick Creek	Path	109	2.0	$1,171,022
	Paved Shoulder	110	0.3	$51,981
Blacklick Creek Sum			2.2	$1,223,002
Bowen Road	Paved Shoulder	112	0.4	$85,060
Bowen Road Sum			0.4	$85,060
Brentnell Avenue	Route	31	0.1	$150
Brentnell Avenue Sum			0.1	$150
Bretton Woods Drive	Route	18	0.9	$1,964
Bretton Woods Drive Sum			0.9	$1,964
Briarwood Avenue	Bike Boulevard	155	1.6	$53,446
Briarwood Avenue Sum			1.6	$53,446
Brice Road	Lane	108	0.9	$11,397
Brice Road Sum			0.9	$11,397
Bridge Over Railroad	Path	9999	0.1	$31,965
Bridge Over Railroad Sum			0.1	$31,965
Bridge Over Scioto River	Path	51	0.1	$34,846
Bridge Over Scioto River Sum			0.1	$34,846
Briggs Road	Paved Shoulder	72	0.4	$76,528
	Route	212	2.1	$4,385
Briggs Road Sum			2.5	$80,913
Britton Parkway	Lane	133	0.5	$6,538
Britton Parkway Sum			0.5	$6,538
Broad Meadows Boulevard	Route	18	0.3	$633
Broad Meadows Boulevard Sum			0.3	$633
Brown Road	Paved Shoulder	70	1.4	$283,965
Brown Road Sum			1.4	$283,965
Bryden Road	Bike Boulevard	90	2.3	$73,906
Bryden Road Sum			2.3	$73,906
Buttles, Front Street	Route	207	0.9	$1,814
Buttles, Front Street Sum			0.9	$1,814
Camp Chase Inds Railroad	Path	57	4.6	$2,731,691
		61	1.8	$1,089,984
Camp Chase Inds Railroad Sum			6.4	$3,821,675
Campus Loop Drive	Lane	115	0.2	$2,468
Campus Loop Drive Sum			0.2	$2,468
Campus Loop Road	Lane	115	0.5	$6,063
Campus Loop Road Sum			0.5	$6,063
Campus Sidewalk	Path	115	0.2	$94,631
Campus Sidewalk Sum			0.2	$94,631
Campus View Boulevard	Path	13	0.6	$383,597
Campus View Boulevard Sum			0.6	$383,597
Cannon Drive	Route	115	0.5	$1,076
Cannon Drive Sum			0.5	$1,076
Capital Street	Alley	203	0.8	$4,310
Capital Street Sum			0.8	$4,310
Carmack Road	Route	115	0.3	$684
Carmack Road Sum			0.3	$684
Case Road	Bike Boulevard	32	0.5	$14,945
	Lane Road Widening	174	2.5	$584,348
Case Road Sum			3.0	$599,293
Cassady Avenue	Lane	30	0.6	$6,894
	Lane Road Diet	156	0.3	$26,837
	Lane Road Widening	156	1.9	$439,950
Cassady Avenue Sum			2.8	$473,680
Central Avenue	Route	64	1.2	$2,591
Central Avenue Sum			1.2	$2,591
Central College Road	Paved Shoulder	119	2.0	$403,162
Central College Road Sum			2.0	$403,162
Champion Avenue	Lane	83	0.5	$6,247
		92	2.1	$26,488
	Route	83	0.4	$747
Champion Avenue Sum			3.0	$33,482
Cherry Bottom Road	Lane Road Widening	127	1.5	$346,765
Cherry Bottom Road Sum			1.5	$346,765
Chittenden Avenue	Shared Lane Markings	153	0.6	$3,135
Chittenden Avenue Sum			0.6	$3,135

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
Cleveland Avenue	Lane	37	3.9	$47,899
	Lane Road Diet	21	1.8	$166,414
		37	0.3	$30,598
		81	0.5	$49,472
		135	0.6	$57,778
	Path	21	0.7	$417,395
	Route	21	1.7	$3,567
Cleveland Avenue Sum			9.6	$773,123
Clime Road	Lane	65	1.2	$15,225
		66	0.4	$5,151
	Path	67	0.3	$192,515
Clime Road Sum			2.0	$212,892
Clover Groff Ditch	Path	171	1.1	$636,186
Clover Groff Ditch Sum			1.1	$636,186
College Avenue	Lane Road Diet	111	0.0	$256
College Avenue Sum			0.0	$256
College Road	Route	115	0.6	$1,249
College Road Sum			0.6	$1,249
Convention Center Drive	Path	80	0.6	$346,616
Convention Center Drive Sum			0.6	$346,616
Courtright Road	Lane	101	1.3	$16,404
	Lane Road Widening	101	0.9	$203,428
Courtright Road Sum			2.2	$219,832
Cranwood Drive, Bella Via Avenue, Blendon Woods Boulevard	Route	187	2.7	$5,540
Cranwood Drive, Bella Via Avenue, Blendon Woods Boulevard Sum			2.7	$5,540
Csx Railroad	Path	142	3.0	$1,799,650
Csx Railroad Sum			3.0	$1,799,650
Curl Road	Route	115	0.4	$897
Curl Road Sum			0.4	$897
Cypress Avenue	Bike Boulevard	140	0.3	$8,184
Cypress Avenue Sum			0.3	$8,184
Datz Circle	Lane	145	0.8	$9,951
Datz Circle Sum			0.8	$9,951
Demorest Road	Lane Road Widening	211	0.6	$143,872
	Path	211	0.9	$530,393
Demorest Road Sum			1.5	$674,265
Dennison Avenue	Bike Boulevard	79	0.5	$15,535
Dennison Avenue Sum			0.5	$15,535
Denton Alley	Bike Boulevard	160	1.8	$58,320
Denton Alley Sum			1.8	$58,320
Dexter Falls Road	Lane	173	1.0	$11,987
Dexter Falls Road Sum			1.0	$11,987
Dierker Road	Lane	16	0.7	$8,208
	Paved Shoulder	16	0.5	$100,878
Dierker Road Sum			1.2	$109,086
Dodridge St	Route	115	0.2	$446
Dodridge St Sum			0.2	$446
Downtown Bikeway Connector	Path	151	0.4	$231,101
Downtown Bikeway Connector Sum			0.4	$231,101
Dresden St	Bike Boulevard	20	0.4	$12,646
Dresden St Sum			0.4	$12,646
Driveesden St	Path	20	0.1	$42,849
Driveesden St Sum			0.1	$42,849
Driveesden Street	Bike Boulevard	20	2.3	$75,226
Driveesden Street Sum			2.3	$75,226
Driveway	Path	74	0.7	$422,257
Driveway Sum			0.7	$422,257
Dryer Road	Lane Road Widening	71	0.4	$91,058
Dryer Road Sum			0.4	$91,058
Dublin Granville Road	Lane Road Widening	120	1.2	$287,062
		127	1.1	$250,659
	Path	14	2.1	$1,270,000
		127	0.3	$162,350
Dublin Granville Road Sum			4.7	$1,967,806

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
Dublin Road	Lane	52	1.3	$16,142
	Lane Road Widening	45	0.4	$95,738
		52	0.6	$128,671
		128	0.5	$123,024
	Path	170	0.0	$27,795
Dublin Road Sum			2.9	$391,370
E Broad St	Lane Road Diet	86	2.7	$255,975
		87	1.4	$130,705
		88	0.9	$80,670
	Path	88	4.2	$2,495,380
E Broad St Sum			9.2	$2,962,731
E North Broadway	Bike Boulevard	27	1.4	$44,658
	Lane Road Diet	27	0.8	$77,171
	Route	27	0.8	$1,630
E North Broadway Sum			3.0	$123,460
E Town Street	Bike Boulevard	90	0.4	$12,107
E Town Street Sum			0.4	$12,107
Eakin Road	Lane	169	0.9	$11,268
	Lane Road Widening	169	2.1	$485,037
Eakin Road Sum			3.0	$496,305
East Gates Street	Bike Boulevard	165	2.2	$71,783
East Gates Street Sum			2.2	$71,783
East Weber Road	Route	154	1.0	$2,160
East Weber Road Sum			1.0	$2,160
Edmonton Road	Route	18	0.4	$756
Edmonton Road Sum			0.4	$756
Eisenhower Road	Route	27	0.1	$263
Eisenhower Road Sum			0.1	$263
Elmore Avenue	Bike Boulevard	20	0.8	$26,141
Elmore Avenue Sum			0.8	$26,141
Emerald Pkwy	Lane	133	0.3	$3,770
Emerald Pkwy Sum			0.3	$3,770
Etna St	Path	103	0.0	$17,192
Etna St Sum			0.0	$17,192
Euclaire Avenue	Lane	156	0.2	$2,071
Euclaire Avenue Sum			0.2	$2,071
Eureka Avenue	Paved Shoulder	72	2.2	$457,469
Eureka Avenue Sum			2.2	$4,617
Fair Avenue	Bike Boulevard	103	1.0	$32,096
	Route	103	0.1	$302
Fair Avenue Sum			1.1	$32,398
Fairwood Avenue	Paved Shoulder	126	3.0	$625,989
	Route	126	1.0	$2,048
Fairwood Avenue Sum			4.0	$628,037
Fashion Place	Path	9	1.0	$588,450
Fashion Place Sum			1.0	$588,450
Fifth Avenue	Lane	84	4.6	$56,850
	Lane Road Diet	82	2.6	$245,358
	Paved Shoulder	77	0.5	$108,110
	Route	77	2.7	$5,560
Fifth Avenue Sum			10.4	$415,878
Fisher Road	Lane Road Diet	208	3.6	$338,316
	Lane Road Widening	208	0.5	$113,405
Fisher Road Sum			4.1	$451,721
Fishinger Boulevard	Lane	125	0.7	$8,815
Fishinger Boulevard Sum			0.7	$8,815
Fishinger Road	Lane	125	0.2	$2,345
Fishinger Road Sum			0.2	$2,345
Flint Road	Lane Road Widening	117	0.3	$64,722
Flint Road Sum			0.3	$64,722
Fodor Road	Path	136	0.2	$123,207
Fodor Road Sum			0.2	$123,207
Foster Avenue/Kanawha Avenue	Route	18	0.7	$1,456
Foster Avenue/Kanawha Avenue Sum			0.7	$1,456
Fourth St	Lane	135	1.2	$14,220
	Lane Road Diet	80	2.4	$223,362
	Path	80	0.4	$269,426
	Route	80	0.3	$611
Fourth St Sum			4.3	$507,620

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
Francisco Road, Weybridge Road, Archer Lane, Knightsbrid	Route	176	1.9	$3,849
Francisco Road, Weybridge Road, Archer Lane, Knightsbrid Sum			1.9	$3,849
Frank Road	Path	67	0.2	$6,000
Frank Road Sum			0.2	$136,508
Franklin Park S	Route	90	0.1	$123
Franklin Park S Sum			0.1	$123
Frantz Road	Lane	177	0.1	$1,102
Frantz Road Sum			0.1	$1,102
Franz Road	Lane	177	0.9	$11,066
Franz Road Sum			0.9	$11,066
Fyffe Road	Lane	115	1.0	$11,923
Fyffe Road Sum			1.0	$11,923
Gantz Road	Path	70	0.1	$36,354
Gantz Road Sum			0.1	$36,354
Gender Road	Lane Road Widening	108	2.2	$516,138
Gender Road Sum			2.2	$516,138
Georgesville Road	Path	64	0.3	$167,440
Georgesville Road Sum			0.3	$167,440
Glenwood Avenue	Bike Boulevard	140	0.5	$16,576
Glenwood Avenue Sum			0.5	$16,576
Godown Road	Paved Shoulder	175	1.5	$303,539
	Route	175	0.6	$1,281
Godown Road Sum			2.1	$304,820
Golf Course	Lane Road Widening	59	0.5	$124,661
Golf Course Sum			0.5	$124,661
Goodale Boulevard	Path	79	0.2	$141,466
Goodale Boulevard Sum			0.2	$141,466
Goodale Bridge	Path	79	0.0	$17,049
Goodale Bridge Sum			0.0	$17,049
Gooddale Street	Route	79	0.4	$832
Gooddale Street Sum			0.4	$832
Gould Road	Bike Boulevard	159	1.0	$32,808
Gould Road Sum			1.0	$32,808
Grand Avenue	Lane	35	1.2	$14,609
Grand Avenue Sum			1.2	$14,609
Grandview Avenue	Path	57	0.4	$242,535
	Shared Lane Markings	144	0.3	$1,314
Grandview Avenue Sum			0.7	$243,849
Greenlawn Avenue	Path	140	0.7	$433,516
	Route	165	0.1	$147
Greenlawn Avenue Sum			0.8	$433,663
Greenridge Road	Route	178	0.7	$1,542
Greenridge Road Sum			0.7	$1,542
Greenway	Path	185	1.2	$725,132
Greenway Sum			1.2	$725,132
Groveport Road	Lane	95	1.1	$14,046
Groveport Road Sum			1.1	$14,046
Hamilton Avenue	Route	20	1.2	$2,456
Hamilton Avenue Sum			1.2	$2,456
Hamilton Road	Lane Road Widening	121	1.6	$376,052
	Path	130	2.7	$1,618,045
		132	1.2	$731,126
		191	0.7	$433,949
Hamilton Road Sum			6.3	$3,159,173
Hard Road	Lane	4	1.2	$15,147
	Lane Road Widening	6	0.6	$130,160
Hard Road Sum			1.8	$145,307
Harlem Road	Paved Shoulder	190	0.9	$194,976
Harlem Road Sum			0.9	$194,976
Harmon Avenue	Lane Road Widening	140	1.9	$446,596
Harmon Avenue Sum			1.9	$446,596
Harper Road	Lane	56	0.2	$3,071
Harper Road Sum			0.2	$3,071
Hayden Run Road	Path	15	0.5	$308,696
		118	2.0	$1,186,292
Hayden Run Road Sum			2.5	$1,494,988

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
Henderson Road	Lane	16	2.8	$34,068
	Lane Road Widening	16	0.3	$80,234
	Path	16	2.8	$1,653,806
Henderson Road Sum			5.9	$1,768,108
Hiawatha Boulevard	Bike Boulevard	37	1.9	$61,900
	Path	37	0.1	$41,162
Hiawatha Boulevard Sum			2.0	$103,062
Hiawatha Park Drive	Bike Boulevard	37	0.3	$9,148
	Shared Lane Markings	20	0.1	$751
Hiawatha Park Drive Sum			0.4	$9,899
Hickory Mckee	Alley	203	0.6	$2,972
Hickory Mckee Sum			0.6	$2,972
High St	Lane	36	0.6	$7,584
		75	1.2	$14,324
		76	0.3	$4,103
	Lane Road Diet	76	2.2	$206,103
	Lane Road Widening	75	0.5	$120,154
	Path	75	0.8	$498,963
		123	0.1	$55,949
	Route	36	8.0	$16,508
High St Sum			13.7	$923,727
Highfield Drive	Route	18	0.3	$689
Highfield Drive Sum			0.3	$689
Hildebrand Road	Path	23	0.0	$13,561
Hildebrand Road Sum			0.0	$13,561
Hilliaroad Rome Road	Path	48	1.4	$835,646
		49	1.4	$846,400
Hilliaroad Rome Road Sum			2.8	$1,682,046
Hines Road	Lane Road Widening	195	1.2	$282,320
Hines Road Sum			1.2	$282,320
Holt Avenue	Paved Shoulder	31	0.5	$108,399
Holt Avenue Sum			0.5	$108,399
Holt Road	Path	60	1.6	$943,572
Holt Road Sum			1.6	$943,572
Hudson St	Lane	42	0.3	$3,948
	Route	20	0.4	$749
		29	2.4	$4,893
Hudson St Sum			3.0	$9,589
Hunter Avenue	Bike Boulevard	79	1.0	$33,867
Hunter Avenue Sum			1.0	$33,867
Ilo Drive, Atwater Drive, Urban Drive, Almont Drive, Maize Road	Route	186	1.0	$2,153
Ilo Drive, Atwater Drive, Urban Drive, Almont Drive, Maize Road Sum			1.0	$2,153
Indianola Avenue	Lane Road Diet	28	3.1	$285,661
	Paved Shoulder	28	0.9	$185,954
Indianola Avenue Sum			4.0	$471,615
Industrial Track	Path	22	2.3	$1,354,083
		41	3.9	$2,329,493
Industrial Track Sum			6.1	$3,683,576
Jackson Pike	Lane Road Widening	73	1.2	$271,395
Jackson Pike Sum			1.2	$271,395
Johnstown Road	Lane Road Widening	40	0.8	$191,519
Johnstown Road Sum			0.8	$191,519
Joyce Avenue	Lane	42	1.6	$19,189
	Lane Road Widening	83	1.5	$344,603
	Route	42	0.4	$768
Joyce Avenue Sum			3.4	$364,560
Karl Road	Lane	20	0.9	$11,685
	Lane Road Diet	20	4.2	$386,680
Karl Road Sum			5.1	$398,364
Kenny Road	Lane	175	0.4	$4,398
	Lane Road Diet	115	2.1	$196,054
Kenny Road Sum			2.5	$200,452
Kenwick Road	Bike Boulevard	159	1.8	$57,181
Kenwick Road Sum			1.8	$57,181
Kimberly Pkwy	Lane	54	1.0	$12,484
Kimberly Pkwy Sum			1.0	$12,484
King Avenue	Lane	115	1.9	$23,053
	Route	115	0.8	$1,604
King Avenue Sum			2.6	$24,657

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
Kinnear Road	Lane	115	0.7	$8,797
Kinnear Road Sum			0.7	$8,797
Kossuth Street	Bike Boulevard	161	2.7	$86,785
Kossuth Street Sum			2.7	$86,785
Kossuth Street/Front Street	Route	161	0.2	$371
Kossuth Street/Front Street Sum			0.2	$371
Lafayette Street	Alley	203	0.5	$2,742
Lafayette Street Sum			0.5	$2,742
Lane Avenue	Lane Road Diet	115	0.0	$886
	Path	115	2.1	$1,232,145
Lane Avenue Sum			2.1	$1,233,031
Lazalle Street	Alley	203	0.8	$3,859
Lazalle Street Sum			0.8	$3,859
Lazelle Road	Lane Road Widening	183	2.4	$558,880
Lazelle Road Sum			2.4	$558,880
Lee Road	Route	119	0.1	$133
Lee Road Sum			0.1	$133
Lehman Road	Paved Shoulder	199	1.0	$202,657
Lehman Road Sum			1.0	$202,657
Leonard Avenue	Route	82	0.2	$324
Leonard Avenue Sum			0.2	$324
Lexington Avenue	Route	20	0.1	$134
Lexington Avenue Sum			0.1	$134
Lincoln Avenue	Route	18	1.2	$2,411
		28	0.2	$351
Lincoln Avenue Sum			1.3	$2,762
Lincoln Avenue N	Route	18	0.3	$718
Lincoln Avenue N Sum			0.3	$718
Linworth Road	Lane Road Widening	8	0.3	$75,604
	Paved Shoulder	7	0.7	$136,687
		8	0.6	$121,273
Linworth Road Sum			1.6	$333,564
Livingston Avenue	Lane Road Diet	91	3.4	$314,918
		106	5.1	$475,027
		107	0.9	$81,040
	Path	106	1.7	$991,856
		107	0.8	$481,925
Livingston Avenue Sum			11.8	$2,344,766
Lockbourne Road	Lane	93	2.3	$28,738
		94	1.7	$21,519
	Lane Road Diet	116	0.5	$43,792
	Lane Road Widening	116	0.4	$97,455
Lockbourne Road Sum			5.0	$191,504
London Groveport Road	Path	201	0.5	$295,869
	Paved Shoulder	201	0.7	$138,224
London Groveport Road Sum			1.2	$434,093
Long Road	Route	197	0.7	$1,509
Long Road Sum			0.7	$1,509
Long St	Lane	33	2.2	$27,687
Long St Sum			2.2	$27,687
Loretta Avenue	Route	20	0.1	$163
Loretta Avenue Sum			0.1	$163
Main St	Lane	64	0.2	$2,079
	Path	102	0.0	$20,371
	Route	64	0.3	$649
Main St Sum			0.5	$23,098
Maize Road	Lane	186	0.8	$10,021
	Lane Road Widening	186	1.2	$267,674
	Route	186	0.7	$1,395
Maize Road Sum			2.6	$279,089
Mason Pl	Route	6	0.2	$345
Mason Pl Sum			0.2	$345
Mckinley Road	Lane Road Widening	52	2.4	$555,351
	Path	52	2.0	$1,182,072
Mckinley Road Sum			4.4	$1,737,423
Mcvey Boulevard	Route	5	0.0	$20
Mcvey Boulevard Sum			0.0	$20
Milton Avenue	Bike Boulevard	213	1.0	$32,329
Milton Avenue Sum			1.0	$32,329

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
Mock Road	Paved Shoulder	29	1.2	$245,966
Mock Road Sum			1.2	$245,966
Morse Road	Lane	24	0.9	$11,370
		25	1.6	$19,182
		26	1.1	$14,157
	Lane Road Diet	24	3.1	$287,199
Morse Road Sum			6.7	$331,908
Mound St	Path	124	0.4	$253,696
		140	0.4	$245,117
Mound St Sum			0.8	$498,813
Mt Vernon Avenue	Path	135	0.2	$91,948
		151	1.1	$650,484
Mt Vernon Avenue Sum			1.2	$742,432
Mt Vernon Street	Route	205	0.3	$561
Mt Vernon Street Sum			0.3	$561
Mt. Vernon Secondary Industrial Track	Path	37	0.3	$158,602
Mt. Vernon Secondary Industrial Track Sum			0.3	$158,602
Myrtle Avenue	Bike Boulevard	155	0.9	$28,479
Myrtle Avenue Sum			0.9	$28,479
N High St	Path	123	1.8	$1,057,406
N High St Sum			1.8	$1,057,406
Neil Avenue	Bike Boulevard	151	0.1	$2,916
	Route	206	2.5	$5,133
Neil Avenue Sum			2.6	$8,050
Nelson Road	Route	90	0.2	$430
Nelson Road Sum			0.2	$430
New Albany Road	Path	136	0.1	$68,660
New Albany Road Sum			0.1	$68,660
New Albany Road East	Path	136	0.1	$83,935
New Albany Road East Sum			0.1	$83,935
Noble Street	Alley	203	1.0	$5,272
Noble Street Sum			1.0	$5,272
Norris Drive	Route	20	0.5	$1,069
Norris Drive Sum			0.5	$1,069
North Bank Park Bicycle-Pedestrian Bridge	Path	204	0.1	$7,500,000
North Bank Park Bicycle-Pedestrian Bridge Sum			0.1	$7,500,000
North Hague Avenue	Lane Road Widening	209	0.6	$140,820
	Route	209	0.5	$945
North Hague Avenue Sum			1.1	$141,765
North Ohio Road	Lane	92	2.6	$32,449
North Ohio Road Sum			2.6	$32,449
North Oval	Route	115	0.3	$560
North Oval Sum			0.3	$560
North Starr Road	Path	144	0.2	$139,042
North Starr Road Sum			0.2	$139,042
Northcliff Drive	Route	18	0.8	$1,722
Northcliff Drive Sum			0.8	$1,722
Northland Food Court	Path	20	0.3	$159,843
Northland Food Court Sum			0.3	$159,843
Northtowne Boulevard	Lane	20	0.6	$7,882
	Route	18	0.4	$928
		20	0.3	$644
Northtowne Boulevard Sum			1.4	$9,454
Norton Road	Lane Road Widening	58	0.9	$211,087
		59	1.4	$317,911
	Paved Shoulder	59	0.0	$765
Norton Road Sum			2.3	$529,764
Oak St	Bike Boulevard	90	2.2	$71,242
Oak St Sum			2.2	$71,242
Oakland Park Avenue	Lane	27	1.8	$22,550
Oakland Park Avenue Sum			1.8	$22,550
Obetz Road	Paved Shoulder	200	1.1	$226,753
Obetz Road Sum			1.1	$226,753
Olen Road	Path	179	0.0	$18,051
Olen Road Sum			0.0	$18,051
Olentangy River	Path	182	0.8	$459,550
Olentangy River Sum			0.8	$459,550
Olentangy River Road	Path	115	4.7	$2,843,976
		134	0.9	$529,977
	Paved Shoulder	179	0.7	$138,320
Olentangy River Road Sum			6.3	$3,512,273

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
Open Space	Lane	145	1.1	$13,072
	Path	6	0.1	$47,965
		9	0.3	$199,421
		18	0.2	$105,856
		38	0.3	$163,979
		44	0.3	$159,663
		56	0.4	$230,563
		69	1.0	$597,878
		80	0.5	$282,801
		89	1.0	$599,014
		96	0.3	$187,396
		115	0.4	$221,296
		137	0.7	$390,818
		148	0.1	$75,460
		150	0.1	$36,242
		155	0.3	$193,237
		158	0.2	$128,050
		172	1.1	$683,590
		177	0.4	$250,178
		187	0.2	$129,537
		198	2.2	$1,303,830
		205	0.1	$7,500,000
		207	0.1	$43,072
		212	0.0	$27,898
Open Space Sum			11.3	$13,570,816
Open Space North Of Twelfth Avenue	Path	115	0.4	$267,652
Open Space North Of Twelfth Avenue Sum			0.4	$267,652
Orion Place	Path	9	0.3	$194,634
Orion Place Sum			0.3	$194,634
Overbrook Drive	Path	20	0.2	$137,438
Overbrook Drive Sum			0.2	$137,438
Park	Path	18	0.3	$195,779
		69	0.3	$185,360
		146	0.1	$47,879
Park Sum			0.7	$429,018
Park Road	Lane Road Widening	13	0.3	$58,788
Park Road Sum			0.3	$58,788
Park/Easment	Path	18	0.5	$308,493
Park/Easment Sum			0.5	$308,493
Parkwood Avenue	Route	29	0.1	$199
Parkwood Avenue Sum			0.1	$199
Parsons Avenue	Lane	161	0.6	$7,275
	Lane Road Diet	161	2.3	$213,620
	Paved Shoulder	161	4.7	$969,350
	Route	161	0.8	$1,564
Parsons Avenue Sum			8.4	$1,191,809
Pearl Street	Alley	203	0.5	$2,647
	Bike Boulevard	204	1.9	$60,536
Pearl Street Sum			2.4	$63,183
Polaris Parkway	Path	9	1.3	$761,994
Polaris Parkway Sum			1.3	$761,994
Polaris Pkwy	Path	9	0.7	$441,020
Polaris Pkwy Sum			0.7	$441,020
Railroad	Path	37	0.3	$158,602
Railroad Sum			0.3	$158,602
Refugee Expressway	Path	163	4.3	$2,597,922
Refugee Expressway Sum			4.3	$2,597,922
Refugee Road	Path	101	0.2	$98,790
		196	3.8	$2,292,715
Refugee Road Sum			4.0	$2,391,505
Renner Road	Path	50	0.5	$290,707
Renner Road Sum			0.5	$290,707
Rhodes Avenue	Route	90	0.1	$147
Rhodes Avenue Sum			0.1	$147
Rich St	Lane	135	0.7	$8,850
Rich St Sum			0.7	$8,850
Riverside Drive	Path	3	0.4	$256,414
		43	0.4	$253,624
Riverside Drive Sum			0.9	$510,037

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
Road	Lane Road Widening	184	1.6	$362,599
	Path	184	1.6	$942,656
Road Sum			3.1	$1,305,254
Roads End Place	Route	158	0.1	$163
Roads End Place Sum			0.1	$163
Roberts Road	Path	47	3.6	$2,181,972
Roberts Road Sum			3.6	$2,181,972
Roche Ct	Route	18	0.0	$74
Roche Ct Sum			0.0	$74
Roche Drive	Route	18	0.0	$88
Roche Drive Sum			0.0	$88
Rocky Fork Run	Path	149	3.1	$1,843,935
Rocky Fork Run Sum			3.1	$1,843,935
Rodgers Avenue	Route	140	0.2	$397
Rodgers Avenue Sum			0.2	$397
S Old State Road	Path	117	0.9	$567,351
S Old State Road Sum			0.9	$567,351
Salem Drive	Path	212	0.1	$48,783
Salem Drive Sum			0.1	$48,783
Sancus Boulevard	Lane	11	1.2	$15,208
	Path	11	1.5	$905,141
Sancus Boulevard Sum			2.7	$920,350
Sandalwood Pl	Route	143	0.6	$1,297
Sandalwood Pl Sum			0.6	$1,297
Sawbury Boulevard	Lane	180	1.3	$16,309
Sawbury Boulevard Sum			1.3	$16,309
Sawmill Road	Lane	2	0.2	$2,599
	Path	2	4.0	$2,397,782
Sawmill Road Sum			4.2	$2,400,381
Scioto & Darby Creek Road	Lane Road Widening	45	1.2	$272,760
Scioto & Darby Creek Road Sum			1.2	$272,760
Scioto River	Path	44	1.7	$1,048,500
		51	2.3	$1,385,785
		74	5.3	$3,171,990
		113	1.0	$580,360
		170	0.9	$3,411,033
Scioto River Sum			11.2	$9,597,668
Scott St	Route	85	0.3	$524
Scott St Sum			0.3	$524
Scottwood Road	Path	158	0.1	$47,389
Scottwood Road Sum			0.1	$47,389
Scottwood Road/Roswell Drive	Bike Boulevard	158	2.5	$81,926
Scottwood Road/Roswell Drive Sum			2.5	$81,926
Seventeenth Avenue	Lane	31	0.6	$7,854
		41	0.1	$1,665
		42	0.2	$2,962
	Paved Shoulder	31	0.9	$177,772
	Route	31	0.9	$1,819
		115	0.3	$551
Seventeenth Avenue Sum			3.0	$192,624
Shannon Road	Paved Shoulder	110	2.0	$401,618
Shannon Road Sum			2.0	$401,618
Sharon Woods Boulevard	Lane	20	1.6	$20,021
Sharon Woods Boulevard Sum			1.6	$20,021
Sinclair Road	Lane Road Widening	28	0.9	$211,320
Sinclair Road Sum			0.9	$211,320
Smokey Row Road	Lane Road Widening	5	2.4	$548,992
Smokey Row Road Sum			2.4	$548,992
Souder Avenue	Bike Boulevard	202	1.0	$33,364
Souder Avenue Sum			1.0	$33,364
South Oval	Route	115	0.3	$596
South Oval Sum			0.3	$596
Spring Sandusky	Path	152	0.3	$162,061
Spring Sandusky Sum			0.3	$162,061
Spring St	Lane	135	1.0	$12,694
Spring St Sum			1.0	$12,694
Sr 104	Lane Road Widening	73	0.3	$61,904
Sr 104 Sum			0.3	$61,904
St Clair Avenue	Route	161	0.4	$848
St Clair Avenue Sum			0.4	$848

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
Starling St	Lane	64	0.1	$1,369
Starling St Sum			0.1	$1,369
Stelzer Road	Lane	157	2.8	$34,581
	Lane Road Diet	157	2.1	$192,351
	Path	157	3.9	$2,327,253
Stelzer Road Sum			8.7	$2,554,184
Stelzer Road/James Road	Lane	141	1.1	$13,145
		157	0.8	$9,493
	Lane Road Diet	157	1.4	$126,929
Stelzer Road/James Road Sum			3.2	$149,567
Stimmel Road	Path	68	0.6	$373,235
Stimmel Road Sum			0.6	$373,235
Stock Road	Route	18	0.1	$140
Stock Road Sum			0.1	$140
Stream	Path	68	0.6	$351,212
		115	0.8	$501,479
Stream Sum			1.4	$852,692
Sullivant Avenue	Lane	64	1.0	$12,086
	Lane Road Diet	64	1.9	$175,748
	Route	64	2.8	$5,799
Sullivant Avenue Sum			5.7	$193,633
Summit St	Lane Road Diet	34	2.5	$235,455
Summit St Sum			2.5	$235,455
Summit View Road	Paved Shoulder	181	0.8	$165,974
Summit View Road Sum			0.8	$165,974
Sunbury Road	Lane Road Widening	23	0.8	$187,528
		131	0.8	$187,857
		188	5.3	$1,230,736
	Path	131	0.1	$33,926
Sunbury Road Sum			7.0	$1,640,048
Tamarack Boulevard	Route	20	0.7	$1,426
Tamarack Boulevard Sum			0.7	$1,426
Tamarack Cir	Route	20	0.3	$580
Tamarack Cir Sum			0.3	$580
Taylor Station Road	Paved Shoulder	192	0.7	$136,488
Taylor Station Road Sum			0.7	$136,488
Third Avenue	Lane	78	2.2	$26,713
Third Avenue Sum			2.2	$26,713
Third St	Lane	34	1.1	$13,809
	Lane Road Diet	34	0.2	$15,447
Third St Sum			1.3	$29,256
Tibet Road	Bike Boulevard	154	0.8	$24,795
Tibet Road Sum			0.8	$24,795
Town St	Lane	64	0.4	$4,876
	Lane Road Diet	64	1.1	$102,252
Town St Sum			1.5	$107,128
Town Street	Route	64	0.9	$1,872
Town Street Sum			0.9	$1,872
Trabue Road	Path	50	2.7	$1,645,556
Trabue Road Sum			2.7	$1,645,556
Tremont Road	Lane Road Diet	175	0.3	$24,820
Tremont Road Sum			0.3	$24,820
Trueman Boulevard	Lane	145	0.6	$7,353
Trueman Boulevard Sum			0.6	$7,353
Tussing Road	Path	193	2.1	$1,248,366
Tussing Road Sum			2.1	$1,248,366
Twelfth Avenue	Route	115	0.4	$835
Twelfth Avenue Sum			0.4	$835
Ulry Road	Path	121	0.0	$5,371
	Paved Shoulder	121	0.6	$120,304
Ulry Road Sum			0.6	$125,675
Urlin Avenue	Path	170	0.1	$68,375
Urlin Avenue Sum			0.1	$68,375
Us 23	Path	75	3.4	$2,054,226
Us 23 Sum			3.4	$2,054,226
Us 33	Lane Road Diet	111	0.7	$61,146
	Path	111	1.0	$588,851
Us 33 Sum			1.6	$649,998
Utility Corridor	Path	18	0.9	$568,049
Utility Corridor Sum			0.9	$568,049

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
Velma Avenue	Bike Boulevard	37	0.6	$18,035
Velma Avenue Sum			0.6	$18,035
Vernon Tharp Street	Route	115	0.2	$344
Vernon Tharp Street Sum			0.2	$344
Vinewood Ct	Route	143	0.0	$57
Vinewood Ct Sum			0.0	$57
Vinewood Drive	Route	143	0.3	$709
Vinewood Drive Sum			0.3	$709
W Broad St	Lane Road Diet	53	0.7	$68,336
		55	2.6	$241,713
		85	2.4	$220,525
W Broad St Sum			5.7	$530,574
W North Broadway	Lane Road Diet	27	0.3	$28,620
	Path	27	1.1	$647,995
	Route	27	0.3	$592
W North Broadway Sum			1.7	$677,206
W Woodruff Avenue	Route	115	0.4	$776
W Woodruff Avenue Sum			0.4	$776
Walcutt Road	Lane Road Widening	46	2.6	$604,065
Walcutt Road Sum			2.6	$604,065
Walford St	Route	20	0.5	$973
Walford St Sum			0.5	$973
Wall Street	Alley	203	0.8	$4,102
Wall Street Sum			0.8	$4,102
Washington	Bike Boulevard	205	0.8	$24,687
Washington Sum			0.8	$24,687
Watermark Drive	Lane	170	0.5	$6,360
Watermark Drive Sum			0.5	$6,360
Watkins Road	Lane	166	2.3	$28,213
	Paved Shoulder	101	0.5	$101,682
Watkins Road Sum			2.8	$129,896
Watt Road	Route	23	0.2	$465
Watt Road Sum			0.2	$465
Weber Road	Lane	154	1.6	$19,420
Weber Road Sum			1.6	$19,420
Weiler Park	Path	31	0.1	$89,326
Weiler Park Sum			0.1	$89,326
West Starr Avenue	Route	78	0.4	$867
West Starr Avenue Sum			0.4	$867
Westerville Road	Lane Road Widening	207	2.6	$595,871
Westerville Road Sum			2.6	$595,871
Westerville-Arena District Bikeway	Path	207	0.2	$125,976
Westerville-Arena District Bikeway Sum			0.2	$125,976
Whitethorne Avenue	Bike Boulevard	167	1.6	$51,813
Whitethorne Avenue Sum			1.6	$51,813
Wilcox Road	Path	177	0.5	$280,457
Wilcox Road Sum			0.5	$280,457
Williams Road	Lane	96	3.8	$46,364
		97	0.6	$7,289
	Lane Road Widening	97	0.6	$132,540
	Route	96	0.2	$315
Williams Road Sum			5.1	$186,508
Wilson Bridge Road	Lane Road Widening	8	0.2	$57,064
Wilson Bridge Road Sum			0.2	$57,064
Wilson Road	Lane	211	3.1	$38,792
	Lane Road Widening	211	1.2	$276,998
Wilson Road Sum			4.3	$315,790
Winchester Pike	Lane Road Widening	111	0.4	$90,667
	Path	111	0.8	$479,867
	Paved Shoulder	111	1.3	$266,797
Winchester Pike Sum			2.5	$837,331
Woodruff Avenue	Route	31	0.4	$880
Woodruff Avenue Sum			0.4	$880
Woody Hayes Dr	Route	115	0.2	$428
Woody Hayes Dr Sum			0.2	$428
Woody Hayes Drive	Route	115	0.8	$1,649
Woody Hayes Drive Sum			0.8	$1,649
Worthington Galena Road	Lane Road Widening	12	2.0	$468,017
Worthington Galena Road Sum			2.0	$468,017

Roadway/Corridor	Type of Bikeway	Project #	Sum of Miles	Sum of Costs
Worthington Road	Path	10	0.1	$54,908
Worthington Road Sum			0.1	$54,908
Worthington Wood	Lane Road Widening	13	1.4	$315,839
	Path	13	0.5	$277,534
Worthington Wood Sum			1.8	$593,373
Wright Road	Paved Shoulder	112	1.0	$211,476
Wright Road Sum			1.0	$211,476
York Temple County Road	Path	139	0.2	$118,899
York Temple County Road Sum			0.2	$118,899
Grand Total			540.1	$148,296,075

Recommended Bikeway Projects by Project Number

NOTE: Start and end points occasionally refer to the entire roadway corridor, not the segment. Refer to Columbus Existing and Proposed Bikeways Map to verify start and stop points.

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
2	Sawmill Road	Bethel Road	Henderson Road	Lane	0.2
		Delaware County line	Federated Boulevard	Path	1.4
		Dublin-Granville Road	Bethel Road	Path	2.2
		Federated Boulevard	Dublin-Granville Road	Path	0.3
2 Total					4.2
3	Riverside Drive	Wyandotte Woods Boulevard	Trabue Road	Path	0.4
3 Total					0.4
4	Hard Road	Smoky Row Road	Sawmill Road	Lane	1.2
4 Total					1.2
5	Mcvey Boulevard	Snouffer Road	Dublin-Granville Road	Route	0.0
	Smokey Row Road	Delaware County line	Snouffer Road	Lane Road Widening	2.4
5 Total					2.4
6	Hard Road	SR 315	Linworth Road	Lane Road Widening	0.6
	Mason Pl	Olentangy River	Hard Road	Route	0.2
	Open Space	Rivers Edge Drive	Olentangy Trail	Path	0.1
6 Total					0.8
7	Linworth Road	Hard Road	Wilson Bridge Road	Paved Shoulder	0.7
7 Total					0.7
8	Linworth Road	Olentangy River Road	Dublin Granville Road	Paved Shoulder	0.6
		Snouffer Road	Parsiphony Place	Lane Road Widening	0.3
	Wilson Bridge Road	Linworth Road	Olentangy River Road	Lane Road Widening	0.2
8 Total					1.2
9	Fashion Place	Gemini Parkway	Sancus Boulevard	Path	1.0
	Open Space	Gemini Parkway	Orion Place	Path	0.3
	Orion Place	End of Orion Place	Polaris Parkway	Path	0.3
	Polaris Parkway	Sancus Boulevard	Orion Place	Path	1.3
	Polaris Pkwy	Orion Place	Worthington Road	Path	0.4
		Sancus Boulevard	Gemini Parkway	Path	0.3
9 Total					3.6
10	Worthington Road	Hanawalt Road	I 71	Path	0.1
		Polaris Pkwy	Hanawalt Road	Path	0.0
10 Total					0.1
11	Sancus Boulevard	Delaware County line	Worthington Woods Boulevard	Lane	1.2
				Path	1.2
		Worthington Woods Boulevard	Worthington-Galena Road	Path	0.3
11 Total					2.7
12	Worthington Galena Road	Delaware County line	Park Road	Lane Road Widening	0.8
		Park Road	Huntley Road	Lane Road Widening	1.3
12 Total					2.0
13	Campus View Boulevard	Worthington Woods Boulevard	North High Street	Path	0.6
	Park Road	I-71	Worthington Woods Boulevard	Lane Road Widening	0.3
	Worthington Wood	Park Road	Campus View Boulevard	Lane Road Widening	1.4
				Path	0.5
13 Total					2.7
14	Dublin Granville Road	Linworth Road	Sawmill Road	Path	1.8
		McVey Boulevard	Linworth Road	Path	0.3
14 Total					2.1
15	Bethel Road	Dierker Road	Hayden Run Road	Lane	1.2
		Jasonway Avenue	End of Bethel Road	Lane	0.7
		Portland Road	Jasonway Avenue	Lane	1.7
	Hayden Run Road	Bethel Road	Madison County line	Path	0.5
15 Total					4.0

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
16	Dierker Road	Henderson Road	Bethel Road	Paved Shoulder	0.5
		West Case Road	Bethel Road	Lane	0.7
	Henderson Road	Chevy Chase Court	Dierker Road	Lane	0.4
				Path	0.4
		Olentangy River	Dierker Road	Lane	2.4
				Path	2.4
		Riverside Drive	Chevy Chase Court	Lane Road Widening	0.3
16 Total					7.0
18	Bretton Woods Drive	Pittston Court	Cleveland Avenue	Route	0.9
	Broad Meadows Boulevard	High Street	Olentangy River Bikeway	Route	0.3
	Edmonton Road	Cleveland Avenue	Northtowne Boulevard	Route	0.4
	Foster Avenue/Kanawha Avenue	High Street	Lincoln Avenue	Route	0.7
	Highfield Drive	Broad Meadows Boulevard	Rosslyn Drive	Route	0.3
	Lincoln Avenue	Stock Road	High Street	Route	1.2
	Lincoln Avenue N	Roche Drive	Stock Road	Route	0.3
	Northcliff Drive	Northtowne Boulevard	Tamarack Boulevard	Route	0.8
	Northtowne Boulevard	Tamarack Circle	Morse Road	Route	0.4
	Open Space	Broad Meadows Boulevard	Bike path west of Olentangy River	Path	0.1
		Olentangy Trail	Linworth Road	Path	0.1
	Park	Karl Road	Ilo Drive	Path	0.3
	Park/Easment	Wingfield Street	Bretton Woods Drive	Path	0.5
	Roche Ct	End of Roche Ct	Roche Drive	Route	0.0
	Roche Drive	Roche Ct	Lincoln Avenue N	Route	0.0
	Stock Road	Lincoln Ave N	Lincoln Avenue	Route	0.1
	Utility Corridor	Westerville Road	Cleveland Avenue	Path	0.9
18 Total					7.5
20	Dresden St	Cross Street	Huy Avenue	Bike Boulevard	0.4
	Driveesden St	Fenton Street	Lehner Road	Path	0.1
	Driveesden Street	Lehner Road	Coronet Drive	Bike Boulevard	0.4
			Morse Road	Bike Boulevard	1.7
		Northland Food Court	Belcher Drive	Bike Boulevard	0.1
		West side of Circle.	(blank)	Bike Boulevard	0.1
	Elmore Avenue	Walford Street	Cross Street	Bike Boulevard	0.8
	Hamilton Avenue	Oakland Park Avenue	Loretta Avenue	Route	1.2
	Hiawatha Park Drive	Hudson St	Velma Avenue	Shared Lane Markings	0.1
	Hudson St	Lexington Avenue	Howey Road	Route	0.4
	Karl Road	E Cooke Street	Schrock Road	Lane Road Diet	4.2
		Oakland Park Ave	E Cooke Road	Lane	0.9
	Lexington Avenue	Loretta Avenue	Hudson Street	Route	0.1
	Loretta Avenue	Hamilton Avenue	Lexington Avenue	Route	0.1
	Norris Drive	Maize Road	Overbrook Drive	Route	0.5
	Northland Food Court	Blecher Drive	Morse Road	Path	0.3
	Northtowne Boulevard	Edmonton Road	Tamarack Cir E	Route	0.3
		Tamarack Circle	Morse Road	Lane	0.6
	Overbrook Drive	Overbrook Drive	Indianola Avenue	Path	0.2
	Sharon Woods Boulevard	Schrock Road	Dublin-Granville Road	Lane	1.6
	Tamarack Boulevard	Dublin-Granville Road	Tamarack Circle	Route	0.7
	Tamarack Cir	Tamarack Boulevard	Northtowne Boulevard	Route	0.3
	Walford St	Morse Road	Elmore Avenue	Route	0.5
20 Total					15.5
21	Cleveland Avenue	Minerva Lake Road	Ferris Road	Route	1.7
		Newtown Drive	Minerva Lake Road	Lane Road Diet	1.8
		Schrock Road	Newtown Drive	Path	0.7
21 Total					4.2

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
22	Industrial Track	Alum Creek	I-670	Path	2.3
22 Total					2.3
23	Big Walnut Creek	Hildebrand Road	Academy Park	Path	1.7
	Hildebrand Road	Sunbury Road	end of Hildebrand Road	Path	0.0
	Sunbury Road	I 270	Watt Road	Lane Road Widening	0.8
	Watt Road	Sunbury Road	Park	Route	0.2
23 Total					2.8
24	Morse Road	Big Walnut Creek	High Street	Lane Road Diet	3.1
		US 62	Hamilton Road	Lane	0.9
24 Total					4.0
25	Morse Road	Cleveland Avenue	East of Karl Road	Lane	1.6
25 Total					1.6
26	Morse Road	I 71	High Street	Lane	1.1
26 Total					1.1
27	E North Broadway	Eisenhower Road	High Street	Bike Boulevard	1.4
				Lane Road Diet	0.8
				Route	0.8
	Eisenhower Road	Oakland Park Avenue	East North Broadway	Route	0.1
	Oakland Park Avenue	Railroad	Eisenhower Road	Lane	1.8
	W North Broadway	High Street	Kenny Road	Lane Road Diet	0.3
				Path	1.1
				Route	0.3
27 Total					6.6
28	Indianola Avenue	Lincoln Avenue	Arcadia Avenue	Lane Road Diet	3.1
			Torrence Road E.	Paved Shoulder	0.9
	Lincoln Avenue	Sinclair Road	Indianola Avenue	Route	0.2
	Sinclair Road	Dublin-Granville Road	Lincoln Avenue	Lane Road Widening	0.9
28 Total					5.1
29	Hudson St	Cleveland Avenue	Lexington Avenue	Route	0.7
		Hiawatha Park Drive	Neil Avenue	Route	1.4
		Parkwood Avenue	Cleveland Avenue	Route	0.3
	Mock Road	Sunbury Road	Parkwood Avenue	Paved Shoulder	1.2
	Parkwood Avenue	Mock Road	Hudson St	Route	0.1
29 Total					3.7
30	Agler Road	Stygler Road	Cassady Road	Paved Shoulder	0.7
		Sunbury Road	Westerville Road	Lane	0.4
				Route	0.4
	Cassady Avenue	Agler Road	Sunbury Road	Lane	0.6
30 Total					2.1
31	Brentnell Avenue	Holt Avenue	Seventeenth Avenue	Route	0.1
	Holt Avenue	Sunbury Road	Brentnell Avenue	Paved Shoulder	0.5
	Seventeenth Avenue	Brentnell Avenue	I 71	Lane	0.6
			Joyce Avenue	Paved Shoulder	0.9
		I 71	Third Avenue	Route	0.9
	Weiler Park	East side of park	Sunbury Road	Path	0.1
	Woodruff Avenue	Third Avenue	High Street	Route	0.4
31 Total					3.6
32	Case Road	Karl Road	Cleveland Avenue	Bike Boulevard	0.5
32 Total					0.5
33	Long St	Neil Avenue	Champion Avenue	Lane	2.2
33 Total					2.2
34	Summit St	Arcadia Avenue	Broad Street	Lane Road Diet	2.5
	Third St	First Avenue	Broad Street	Lane Road Diet	0.2
		Nationwide Boulevard	Livingston Avenue	Lane	1.1
34 Total					3.8

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
35	Grand Avenue	Nationwide Boulevard	Livingston Avenue	Lane	1.2
35 Total					1.2
36	High St	First Avenue	Warren St	Route	0.3
		Flint Road	First Avenue	Route	1.4
			I-270 (south cols)	Lane	0.6
				Route	6.2
		Lincoln Avenue	Broad Meadows Boulevard	Route	0.1
36 Total					8.6
37	Cleveland Avenue	Elmore Avenue	Oakland Park Avenue	Lane	0.1
		Ferris Road	Elmore Avenue	Lane	0.2
		Oak Park Avenue	Westerville Road	Lane	0.7
		Republic Avenue	I-670 Overcrossing	Lane	2.9
		Westerville Road	Republic Avenue	Lane Road Diet	0.3
	Hiawatha Boulevard	Norris Drive	Hudson Street	Bike Boulevard	1.9
				Path	0.1
	Hiawatha Park Drive	Hudson St	Velma Avenue	Bike Boulevard	0.3
	Mt. Vernon Secondary Industrial Track	Alum Creek	I-670	Path	0.3
	Railroad	Westerville Road	Oakland Park Avenue	Path	0.3
	Velma Avenue	Hiawatha Park Drive	Seventeenth Avenue	Bike Boulevard	0.6
37 Total					7.5
38	Alum Creek	Easton Soccer Fields	Innis Park	Path	0.3
	Open Space	Alum Creek Trail	Southridge Drive	Path	0.3
38 Total					0.6
39	Alum Creek	Innis Park	Airport Drive	Path	4.1
		Mock Road	Innis Park	Path	0.8
39 Total					4.9
40	Johnstown Road	Granville Street	East of Kelenard Avenue	Lane Road Widening	0.8
40 Total					0.8
41	Industrial Track	Alum Creek	I-670	Path	3.9
	Seventeenth Avenue	Columbus Avenue	RR Tracks	Lane	0.1
41 Total					4.0
42	Hudson St	Parkwood Avenue	Cleveland Avenue	Lane	0.3
	Joyce Avenue	Agler Road	Hudson Street	Lane	0.6
				Route	0.4
		Hudson Street	17th Avenue	Lane	1.0
	Seventeenth Avenue	RR tracks	Joyce Avenue	Lane	0.2
42 Total					2.5
43	Riverside Drive	Wyandotte Woods Boulevard	Trabue Road	Path	0.4
43 Total					0.4
44	Open Space	Dublin Road	Scioto Trail	Path	0.3
	Scioto River	Riversedge	Grandview Avenue	Path	1.7
44 Total					2.0
45	Dublin Road	Frantz Road	Trabue Road	Lane Road Widening	0.4
	Scioto & Darby Creek Road	Dublin Road	Scioto Darby Road	Lane Road Widening	0.0
			Walcutt Road	Lane Road Widening	1.1
45 Total					1.6
46	Walcutt Road	Scioto Darby Road	Roberts Road	Lane Road Widening	2.6
46 Total					2.6
47	Roberts Road	Dublin Road	Westbelt Drive	Path	0.6
		Frazell Road	Alton & Darby Creek Road	Path	0.2
			Hilliard-Rome Road	Path	0.7
		Westbelt Drive	Alton & Darby Creek Road	Path	1.6
			Wilson Road	Path	0.5
47 Total					3.6

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
48	Hilliaroad Rome Road	Roberts Road	Westchester Woods Boulevard	Path	1.3
		Whilwind Cove Drive	Roberts Road	Path	0.1
48 Total					1.4
49	Hilliaroad Rome Road	Roberts Road	West Broad Street	Path	0.8
		Westchester Woods Boulevard	West Broad Street	Path	0.6
49 Total					1.4
50	Renner Road	Hilliard Rome Road	Alton & Darby Creek Road	Path	0.5
	Trabue Road	Dublin Road	McKinley Road	Path	0.0
		Riverside Drive	Hilliard Rome Road	Path	2.5
			Scioto River	Path	0.2
50 Total					3.2
51	Bridge Over Scioto River	Scioto Trail	Dublin Road	Path	0.1
	Scioto River	Riversedge	Grandview Avenue	Path	1.3
		Trabue Road	Riversedge	Path	1.0
51 Total					2.4
52	Dublin Road	Frantz Road	Trabue Road	Lane	1.3
				Lane Road Widening	0.6
	Mckinley Road	Harper Road	Souder Avenue	Path	2.0
		Trabue Road	Harper Road	Lane Road Widening	2.4
52 Total					6.2
53	W Broad St	High Street	Madison County line	Lane Road Diet	0.7
53 Total					0.7
54	Kimberly Pkwy	Hamilton Road	Courtright Road	Lane	1.0
54 Total					1.0
55	W Broad St	High Street	Madison County line	Lane Road Diet	2.6
55 Total					2.6
56	Harper Road	McKinley Avenue	Eureka Avenue	Lane	0.2
	Open Space	Existing Scioto Trail	McKinley Avenue	Path	0.2
		Wheatland Avenue	Highland Avenue	Path	0.2
56 Total					0.6
57	Camp Chase Inds Railroad	Grandview Avenue	Madison County	Path	4.6
	Grandview Avenue	North of Camp Chase Railroad	(blank)	Path	0.1
		Scioto River	McKinley Avenue	Path	0.3
57 Total					5.0
58	Norton Road	West Broad Street	Hall Road	Lane Road Widening	0.9
58 Total					0.9
59	Golf Course	Hall Road	London-Groveport Road	Lane Road Widening	0.5
	Norton Road	Hall Road	London-Groveport Road	Lane Road Widening	1.4
				Paved Shoulder	0.0
59 Total					1.9
60	Holt Road	City Limits	Georgesville Road	Path	1.6
60 Total					1.6
61	Camp Chase Inds Railroad	Grandview Avenue	Madison County	Path	1.8
61 Total					1.8
64	Alley	Demorest Road	S. Burgess Avenue	Bike Boulevard	1.1
		S. Richardson Avenue	Catherine Street	Bike Boulevard	1.3
	Central Avenue	McKinley Avenue	Mound Street	Route	1.2
	Georgesville Road	Camp Chase Trail	Sullivant Avenue (southmost)	Path	0.3
	Main St	High St	Starling St	Lane	0.2
				Route	0.3
	Starling St	Main Street	Town Street	Lane	0.1
	Sullivant Avenue	Central Avenue	Georgesville Road	Lane	1.0
				Lane Road Diet	1.9
				Route	1.2
		Georgesville Road	Norton Road	Route	1.6
	Town St	Starling Street	Central Avenue	Lane	0.4
				Lane Road Diet	1.1
	Town Street	Sullivant Avenue	Central Avenue	Route	0.9
64 Total					12.6

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
65	Clime Road	Harrisburg Pike	Georgesville Road	Lane	1.2
65 Total					1.2
66	Clime Road	Scioto River	Harrisburg Pike	Lane	0.4
66 Total					0.4
67	Clime Road	Scioto River	Harrisburg Pike	Path	0.3
	Frank Road	Harmon Avenue	Hardy Parkway	Path	0.2
67 Total					0.5
68	Stimmel Road	City Limits	Berliner Park	Path	0.6
		Stream	Berliner Park	Path	0.0
	Stream	Frank Road	Stimmel Road	Path	0.6
68 Total					1.2
69	Big Run Creek	Scioto River	I 71	Path	4.9
	Open Space	I 71	Georgesville Road	Path	1.0
	Park	High Street	Lower Scioto	Path	0.3
69 Total					6.2
70	Brown Road	Gantz Road	Clime Road/Frank Road	Paved Shoulder	1.4
	Gantz Road	Hardy Parkway Street	Grey Oaks	Path	0.1
70 Total					1.4
71	Dryer Road	Jackson Pike	Gantz Road	Lane Road Widening	0.4
71 Total					0.4
72	Briggs Road	Eureka Avenue	Harrisburg Pike	Paved Shoulder	0.4
	Eureka Avenue	Broad Street	Briggs Road	Paved Shoulder	1.6
		Valleyview Drive	Broad Street	Paved Shoulder	0.6
72 Total					2.6
73	Jackson Pike	Frank Road	Pickaway County Line	Lane Road Widening	1.2
	Sr 104	Frank Road	Pickaway County Line	Lane Road Widening	0.3
73 Total					1.4
74	Driveway	South High Street	Scioto Trail	Path	0.7
	Scioto River	Frank Road	Pickaway County Line	Path	3.3
		Williams Road	Frank Road	Path	2.0
74 Total					6.0
75	High St	104	south of Southgate Drive	Lane	1.2
		Flint Road	I-270 (south cols)	Lane Road Widening	0.5
				Path	0.8
	Us 23	City limits north of rathmell road	City limits north of London-Groveport Road	Path	2.4
		City limits north of Rowe Road	City limits south of Rowe Road	Path	1.0
		Service road just north of Pickaway county line.	Pickaway County Line	Path	0.1
75 Total					5.9
76	High St	Flint Road	I-270 (south cols)	Lane Road Diet	0.1
		Neff Avenue	I-70	Lane Road Diet	1.3
			Railroad tracks	Lane Road Diet	0.8
		RR tracks	104	Lane	0.3
76 Total					2.5
77	Fifth Avenue	Leonard Avenue	Dublin Road	Paved Shoulder	0.5
				Route	2.7
77 Total					3.2
78	2Nd Avenue	St. Clair Avenue	Hamlet Street	Lane	1.1
	2Nd Street	Flint Road	Hamlet Street	Route	0.3
	Third Avenue	Michigan Avenue	Olentangy River Bikeway	Lane	0.2
		Neil Avenue	Michigan Avenue	Lane	0.2
		Olentangy River bikeway	SR 315	Lane	0.1
		SR 315	Cambridge Boulevard	Lane	1.7
	West Starr Avenue	Neil Avenue	Flint Road	Route	0.4
78 Total					3.9
79	Dennison Avenue	1st Street	West Gooddale Street	Bike Boulevard	0.5
	Goodale Boulevard	Olentangy River Road	315/670 ramps	Path	0.2
	Goodale Bridge	Goodale Bridge	Existing Olentangy bikeway	Path	0.0
	Gooddale Street	Neil Avenue	High Street	Route	0.4
	Hunter Avenue	King Avenue	1st Street	Bike Boulevard	0.6
			West Gooddale Street	Bike Boulevard	0.5
79 Total					2.2

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
80	Convention Center Drive	Third Street	Vine St	Path	0.6
	Fourth St	Arcadia Avenue	Second Avenue	Lane Road Diet	2.4
		Second Avenue	Rich Street	Path	0.4
				Route	0.3
	Open Space	Cleveland Avenue	Fourth Street	Path	0.5
80 Total					4.2
81	Cleveland Avenue	I 670	Jack Gibbs Boulevard	Lane Road Diet	0.5
81 Total					0.5
82	Fifth Avenue	Leonard Avenue	Dublin Road	Lane Road Diet	2.6
	Leonard Avenue	Fifth Avenue	Fifth Avenue	Route	0.2
82 Total					2.8
83	Champion Avenue	Leonard Avenue	Livingston Avenue	Lane	0.5
				Route	0.4
	Joyce Avenue	17th Avenue	Leonard Avenue	Lane Road Widening	1.5
83 Total					2.4
84	Fifth Avenue	Hamilton Road	Leonard Avenue	Lane	2.2
			Osborne Road	Lane	2.4
84 Total					4.6
85	Scott St	Rodgers Avenue	Glenwood Avenue	Route	0.3
	W Broad St	High Street	Madison County line	Lane Road Diet	2.4
85 Total					2.6
86	E Broad St	Franklin County Line	High Street	Lane Road Diet	2.7
86 Total					2.7
87	E Broad St	Franklin County Line	High Street	Lane Road Diet	1.4
87 Total					1.4
88	E Broad St	City limits east of Reynoldsburg-New Albany Road	(blank)	Path	0.1
		City limits west of Bannockburn Boulevard	City limits east of Bannockburn Boulevard	Path	0.2
		Franklin County Line	High Street	Lane Road Diet	0.9
		Scenic Road	East of Hallowell Drive	Path	1.5
		West of I-270	Reynoldsburg-New Albany Road	Path	2.4
88 Total					5.0
89	Big Walnut Creek	Claycraft Road	Pickaway County Line	Path	0.0
	Open Space	Pizzuro Park	Railroad tracks	Path	1.0
89 Total					1.0
90	Bryden Road	Grant Avenue	Nelson Road	Bike Boulevard	2.3
	E Town Street	Third Street	S Grant Avenue	Bike Boulevard	0.4
	Franklin Park S	Nelson Road	Third Street	Route	0.1
	Nelson Road	Bryden Road	Franklin Park	Route	0.2
	Oak St	Miller Avenue	Fourth Street	Bike Boulevard	2.2
	Rhodes Avenue	Oak Street	Franklin Park Avenue	Route	0.1
90 Total					5.2
91	Livingston Avenue	Champion Avenue	Lockbourne Road	Lane Road Diet	0.4
		east of Rosehill Drive	High Street	Lane Road Diet	3.0
91 Total					3.4
92	Champion Avenue	Leonard Avenue	Livingston Avenue	Lane	2.1
	North Ohio Road	Mt Vernon Avenue	Frebis Avenue	Lane	2.6
92 Total					4.8
93	Lockbourne Road	Frebis Avenue	Refugee Road	Lane	1.3
		Livingston Avenue	Frebis Avenue	Lane	1.0
93 Total					2.3
94	Lockbourne Road	Refugee Road	Williams Road	Lane	1.7
94 Total					1.7
95	Groveport Road	Lockbourne Road	Williams Road	Lane	1.1
95 Total					1.1
96	Open Space	Williams Road	Scioto River	Path	0.3
	Williams Road	Hamilton Road	End of Williams Road	Lane	3.8
				Route	0.2
96 Total					4.2
97	Williams Road	Hamilton Road	End of Williams Road	Lane	0.6
				Lane Road Widening	0.6
97 Total					1.2

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
98	Big Walnut Creek	Claycraft Road	Pickaway County Line	Path	0.3
98 Total					0.3
99	Big Walnut Creek	Claycraft Road	Pickaway County Line	Path	2.1
99 Total					2.1
100	Alum Creek Drive	Frebis Avenue	Williams Road	Lane	3.3
				Path	3.3
100 Total					6.6
101	Abandoned Railroad	Broad Street	Livingston Avenue	Path	0.6
		North of Livingston	Big Walnut Trail	Path	2.1
	Courtright Road	Deshler Avenue	Old Courtright Road	Lane Road Widening	0.7
		Livingston Avenue	Deshler Avenue	Lane	0.6
		Old Courtright Road	Refugee Road	Lane	0.7
		Refugee Road	Winchester Pike	Lane Road Widening	0.1
	Refugee Road	Courtright Road	Courtright Road	Path	0.2
	Watkins Road	Winchester Pike	Three Creeks Park	Paved Shoulder	0.5
101 Total					5.6
102	Main St	West of Alum Creek bridge	East of Alum Creek bridge	Path	0.0
102 Total					0.0
103	Barnett Road	Etna Road	Fair Avenue	Route	0.3
	Etna St	Beechwood Road	Barnett Road	Path	0.0
	Fair Avenue	Barnett Road	Driveexel Avenue	Bike Boulevard	1.0
		Westland Avenue	Park Drive	Route	0.1
103 Total					1.4
104	Big Walnut Creek	Claycraft Road	Pickaway County Line	Path	2.8
104 Total					2.8
105	Big Walnut Creek	Claycraft Road	Pickaway County Line	Path	2.4
105 Total					2.4
106	Livingston Avenue	Courtright Road	Hamilton Road	Lane Road Diet	1.0
			James Road	Lane Road Diet	1.0
		east of Rosehill Drive	High Street	Lane Road Diet	0.5
				Path	0.5
		Hamilton Road	Brice Road	Lane Road Diet	1.2
				Path	1.2
		James Road	I-70	Lane Road Diet	1.4
106 Total					6.8
107	Livingston Avenue	east of Rosehill Drive	High Street	Lane Road Diet	0.9
				Path	0.8
107 Total					1.7
108	Brice Road	Livingston Avenue	Gender Road	Lane	0.9
	Gender Road	Brice Road	Winchester Boulevard	Lane Road Widening	2.2
108 Total					3.2
109	Blacklick Creek	Franklin County Line	Franklin County Line	Path	2.0
109 Total					2.0
110	Big Walnut Creek	Winchester Pike	US 33	Path	0.5
	Blacklick Creek	Brice Road	Winchester Pike	Paved Shoulder	0.3
	Shannon Road	Gender Road	Winchester Pike	Paved Shoulder	2.0
110 Total					2.7
111	College Avenue	Livingston Avenue	north to City limits	Lane Road Diet	0.0
	Us 33	Livingston Avenue	Conrail Tracks	Path	1.0
			Roads End Place	Lane Road Diet	0.7
	Winchester Pike	Conrail Tracks	Gender Road	Lane Road Widening	0.4
				Path	0.8
				Paved Shoulder	1.3
111 Total					4.1
112	Bowen Road	Bowen Road	Schoolhouse Road	Paved Shoulder	0.2
		Long Road	Fairfield County Line	Paved Shoulder	0.2
	Wright Road	Bowen Road	Gender Road	Paved Shoulder	1.0
112 Total					1.4
113	Scioto River	Frank Road	Pickaway County Line	Path	1.0
113 Total					1.0

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
114	Big Walnut Creek	Claycraft Road	Pickaway County Line	Path	3.1
114 Total					3.1
115	Ackerman Road	Neil Avenue	Kenny Road	Lane	1.3
	Campus Loop Drive	Cannon Drive	Olentangy River Road	Lane	0.2
	Campus Loop Road	Olentangy River Road	Woody Hayes Drive	Lane	0.5
	Campus Sidewalk	Lane Avenue	Woodruff Avenue	Path	0.2
	Cannon Drive	Woody Hayes Drive	Campus Loop Road	Route	0.5
	Carmack Road	Kenny Road	Carmack Road	Route	0.3
	College Road	Woodruff Avenue	Twelfth Avenue	Route	0.6
	Curl Road	Neil Avenue	Woodruff Avenue	Route	0.4
	Dodridge St	High St	Olentangy River	Route	0.2
	Fyffe Road	Woody Hayes Drive	Dodridge Street	Lane	1.0
	High St	W 17th Avenue	I-270 (south cols)	E 17th Ave	0.0
	Kenny Road	Fishinger Road	Ackerman Road	Lane Road Diet	0.4
		Kinnear Road	Dodridge Street	Lane Road Diet	1.5
			Fifth Avenue	Lane Road Diet	0.2
	King Avenue	High Street	North Starr Road	Lane	1.9
				Route	0.8
	Kinnear Road	Lennox Center	North Starr Road	Lane	0.7
	Lane Avenue	High Street	Riverside Drive	Lane Road Diet	0.0
				Path	2.1
	North Oval	College Road	Neil Avenue	Route	0.3
	Olentangy River Road	Bethel Road	Dodridge Street	Path	3.4
		Lennox Shopping Center	Dodridge Street	Path	1.4
	Open Space	Cannon Drive	17th Avenue	Path	0.3
		High Street	N College Road	Path	0.1
	Open Space North Of Twelfth Avenue	Neil Avenue	Cannon Drive	Path	0.4
	Seventeenth Avenue	N College Road	Neil Avenue	Route	0.3
	South Oval	Colege Road	Neil Avenue	Route	0.3
	Stream	Connector segment	(blank)	Path	0.1
		Dodridge Street	Lane Avenue	Path	0.8
	Twelfth Avenue	High Street	Neil Avenue	Route	0.4
	Vernon Tharp Street	Coffey Road	Campus Loop Road	Route	0.2
	W Woodruff Avenue	High Street	Neil Avenue	Route	0.4
	Woody Hayes Dr	SR 315	Kenny Road	Route	0.2
	Woody Hayes Drive	Neil Avenue	SR 315	Route	0.8
115 Total					21.9
116	Lockbourne Road	South of London Groveport Road	Commerce St	Lane Road Diet	0.5
		Williams Road	Commerce St	Lane Road Widening	0.4
116 Total					0.9
117	Flint Road	Delaware County line	High Street	Lane Road Widening	0.3
	S Old State Road	Cheshire Road	CSX rail line	Path	0.9
117 Total					1.2
118	Hayden Run Road	Bethel Road	Madison County line	Path	2.0
118 Total					2.0
119	Central College Road	Gatewater Boulevard	Lee Road	Paved Shoulder	2.0
	Lee Road	Central College Road	Ulry Road	Route	0.1
119 Total					2.0
120	Dublin Granville Road	West of Harlem Road	Evening St	Lane Road Widening	1.2
120 Total					1.2
121	Hamilton Road	Dublin-Granville Road	Morse Road	Lane Road Widening	1.6
	Ulry Road	Dublin-Granville Road	(blank)	Path	0.0
		Lee Road	Dublin-Granville Road	Paved Shoulder	0.6
121 Total					2.2
123	High St	Campus View Boulevard	York Temple Country Club	Path	0.1
	N High St	Delaware County line	Flint Road	Path	0.8
		Flint Road	I-270 (south cols)	Path	1.0
123 Total					1.9
124	Mound St	Mound Street	Briggs Road	Path	0.4
124 Total					0.4

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
125	Fishinger Boulevard	Smiley Road	Park Mill Run Road	Lane	0.7
	Fishinger Road	Kenny Road	Smiley Road	Lane	0.2
125 Total					0.9
126	Fairwood Avenue	Franklin Park S	Livingston Avenue	Route	1.0
		Frebis Avenue	Watkins Road	Paved Shoulder	3.0
126 Total					4.0
127	Cherry Bottom Road	Old Dublin-Granville Road	Morse Road	Lane Road Widening	1.5
	Dublin Granville Road	West of Harlem Road	Evening St	Lane Road Widening	1.1
				Path	0.3
127 Total					2.9
128	Dublin Road	Frantz Road	Trabue Road	Lane Road Widening	0.5
128 Total					0.5
130	Hamilton Road	north of I-270	south of Refugee Road	Path	0.3
		trail at Hilton Corporate Drive	Eastland Mall	Path	1.0
		Walnut Creek Trail	Eastland Square Drive	Path	0.3
		Williams Road	north of SR 33	Path	0.2
		Winchester Pike	north of Wingate Road	Path	0.1
			Williams Road	Path	0.7
130 Total					2.7
131	Sunbury Road	SR 161 ramp	SR 161	Lane Road Widening	0.8
		Yellowhammer Drive	SR 161 ramp	Path	0.1
131 Total					0.9
132	Hamilton Road	City Limits	Mound Street	Path	0.0
		South of I-70	Mound Street	Path	1.2
132 Total					1.2
133	Britton Parkway	Tuttle Crossing Boulevard	Hirth Road	Lane	0.5
	Emerald Pkwy	Heathstead Drive	Tuttle Crossing Boulevard	Lane	0.3
133 Total					0.8
134	Olentangy River Road	Wilson Bridge Road	Robbins Way	Path	0.9
134 Total					0.9
135	Cleveland Avenue	I-670 Bikeway	Mt. Vernon Avenue	Lane Road Diet	0.6
	Fourth St	Nationwide Boulevard	I-71	Lane	1.2
	Mt Vernon Avenue	Cleveland Avenue	Fourth Street	Path	0.2
	Rich St	Civic Center Drive	Grand Avenue	Lane	0.7
	Spring St	Neil Avenue	Cleveland Avenue	Lane	1.0
135 Total					3.7
136	Fodor Road	New Albany Road	Heath Gate Drive	Path	0.2
	New Albany Road	New Albany Road East	New Albany Road	Path	0.1
	New Albany Road East	Smiths Mill Road	New Albany Road	Path	0.1
136 Total					0.5
137	Open Space	W. Campus Road	Rocky Fork Run	Path	0.7
137 Total					0.7
139	York Temple County Road	North High Street	Olentangy River	Path	0.2
139 Total					0.2
140	Cypress Avenue	Scioto Bikeway	Glenwood Avenue	Bike Boulevard	0.3
	Glenwood Avenue	Rich Street/Town Street	Mound Street	Bike Boulevard	0.5
	Greenlawn Avenue	Scioto River	Harmon Avenue	Path	0.7
	Harmon Avenue	Greenlawn Avenue	Frank Road	Lane Road Widening	1.1
			Mound st	Lane Road Widening	0.9
	Mound St	Souder Avenue	Glenwood Avenue	Path	0.4
	Rodgers Avenue	McKinley Avenue	Scotts st	Route	0.2
140 Total					4.0
141	Stelzer Road/James Road	Broad Street	Main Street	Lane	1.1
141 Total					1.1
142	Csx Railroad	I 670	SR 310	Path	3.0
142 Total					3.0
143	Sandalwood Pl	Tamarack Cir W	Redwood Road	Route	0.6
	Vinewood Ct	Vinewood Drive	Woodward Park	Route	0.0
	Vinewood Drive	Redwood Road	Vinewood Ct	Route	0.3
143 Total					1.0

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
144	Grandview Avenue	Fifth Avenue	Third Avenue	Shared Lane Markings	0.3
	North Starr Road	Kinnear Road	Fifth Avenue	Path	0.2
144 Total					0.5
145	Datz Circle	Blaer Parkway	East Ring Road	Lane	0.8
	Open Space	Residential Area south of the mall	Hayden Run Road	Lane	1.1
	Trueman Boulevard	Bourbon Street	Davidson Road	Lane	0.2
		Hayden Run Road	Bourbon Street	Lane	0.4
145 Total					2.5
146	Park	End of Olen Drive	Driveway west of 315	Path	0.1
146 Total					0.1
148	Open Space	North of proposed W. Campus Road	New Albany Road	Path	0.1
148 Total					0.1
149	Rocky Fork Run	Bevelheimer Road	Morse Road	Path	3.1
149 Total					3.1
150	Open Space	W. Campus Road	Rocky Fork Run	Path	0.1
150 Total					0.1
151	Downtown Bikeway Connector	I-670 Bike Path	Nationwide Boulevard	Path	0.4
	Mt Vernon Avenue	Neil Avenue	Sixth Street	Path	1.1
	Neil Avenue	Spring Street	Lower Scioto Bikeway	Bike Boulevard	0.1
151 Total					1.6
152	Spring Sandusky	Water Treatment Plant	Grandview Avenue	Path	0.3
152 Total					0.3
153	11Th Avenue	Railroad Tracks	Cleveland Avenue	Lane Road Diet	0.7
			North High Street	Shared Lane Markings	0.6
	Chittenden Avenue	Grant Avenue	North High Street	Shared Lane Markings	0.6
153 Total					2.0
154	East Weber Road	I-70	North High Street	Route	1.0
	Tibet Road	North High Street	Summit Street	Bike Boulevard	0.8
	Weber Road	I-70	Cleveland Avenue	Lane	1.6
154 Total					3.4
155	Briarwood Avenue	Homecroft Drive	Cleveland Avenue	Bike Boulevard	1.6
	Myrtle Avenue	Delbert Road	Dawnlight Avenue	Bike Boulevard	0.9
	Open Space	Dawnlight Avenue	Alum Creek Trail	Path	0.3
155 Total					2.8
156	Cassady Avenue	Airport Drive	Johnstown Road	Lane Road Diet	0.3
		Alger Road	Cumberland Woods Drive	Lane Road Widening	0.7
		Johnstown Road	Delmar Drive	Lane Road Widening	0.9
		north of Ackley Road	Airport Drive	Lane Road Widening	0.3
	Euclaire Avenue	College Avenue	Livingston Avenue	Lane	0.2
156 Total					2.4
157	Stelzer Road	Agler Road	Johnstown Road	Lane Road Diet	2.1
		International Gateway	7th Avenue	Path	0.9
		Johnston Road	Abandoned RR south of 5th Avenue	Lane	1.6
		Johnstown Road	International Gateway Boulevard	Path	0.4
		Sunbury Road	Agler Road	Lane	1.2
			Johnstown Road	Path	2.6
	Stelzer Road/James Road	Johnstown Road	Broad Street	Lane	0.8
		Main Street	Livingston Avenue	Lane Road Diet	1.4
157 Total					10.9
158	Open Space	Rhoades End Place	Alum Creek Trail	Path	0.2
	Roads End Place	College Avenue	end of street	Route	0.1
	Scottwood Road	Bostwick Road	Elaine Place South	Path	0.1
	Scottwood Road/Roswell Drive	College Avenue	Bostwick Road	Bike Boulevard	2.5
158 Total					2.9
159	Gould Road	Main Street	Allegheny Avenue	Bike Boulevard	1.0
	Kenwick Road	Kenview Road	Main Street	Bike Boulevard	1.8
159 Total					2.8
160	Denton Alley	Parsons Avenue	Rhoades Avenue	Bike Boulevard	1.8
160 Total					1.8

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
161	Kossuth Street	Front Street	Rhoades Avenue	Bike Boulevard	2.7
	Kossuth Street/Front Street	South High Street	Whittier Street	Route	0.2
	Parsons Avenue	Broad Street	Bryden Road	Lane	0.6
				Route	0.3
			Mt Vernon Street	Route	0.5
		Groveport Road	City limits	Paved Shoulder	4.7
		Livingston Avenue	Groveport Road	Lane Road Diet	2.3
	St Clair Avenue	Mt Vernon Avenue	Leonard Avenue	Route	0.4
161 Total					11.6
163	Refugee Expressway	Scioto Trail	Alum Creek Trail	Path	4.3
163 Total					4.3
165	East Gates Street	South High Street	Fairwood Avenue	Bike Boulevard	2.2
	Greenlawn Avenue	South High Street	Scioto Trail	Route	0.1
165 Total					2.3
166	Watkins Road	Groveport Road	Alum Creek Drive	Lane	2.3
166 Total					2.3
167	Whitethorne Avenue	Broad Street	Briggs Avenue	Bike Boulevard	1.6
167 Total					1.6
168	Binns Boulevard/Haladayavenue	Camp Chase Trail	Briggs Road	Bike Boulevard	2.1
168 Total					2.1
169	Eakin Road	BrinkerAvenue	Holly Hill Drive	Lane Road Widening	2.1
		Wayne	City limits	Lane	0.9
169 Total					3.0
170	Dublin Road	Watermark Drive	Urlin Avenue	Path	0.0
	Scioto River	Dublin Road	Grandview Ave/I670 Ramps	Path	0.9
	Urlin Avenue	Dublin Road	Goodale Street	Path	0.1
	Watermark Drive	Dublin Road	Grandview Avenue	Lane	0.5
170 Total					1.6
171	Clover Groff Ditch	South edge of Heritage Golf Course	Roberts Road	Path	1.1
171 Total					1.1
172	Open Space	Proposed Britton Parkway north of Hayden Run Road	Hayden Run Road	Path	1.1
172 Total					1.1
173	Dexter Falls Road	Hayden Run Road	Davidson Road	Lane	1.0
173 Total					1.0
174	Case Road	Riverside Drive	Godown Road	Lane Road Widening	2.5
174 Total					2.5
175	Godown Road	Francisco Road	Bethel Road	Route	0.6
		Linworth Road	West Case Road	Paved Shoulder	0.9
		West Case Road	Francisco Road	Paved Shoulder	0.6
	Kenny Road	Francisco Road	Henderson Road	Lane	0.4
	Tremont Road	Henderson Road	Arlington Avenue	Lane Road Diet	0.3
175 Total					2.7
176	Francisco Road, Weybridge Road, Archer Lane, Knightsbrid	Gettysburg Road	Olangangy River Road	Route	1.9
176 Total					1.9
177	Frantz Road	Dublin Road	Dublin Road	Lane	0.1
	Franz Road	Dublin Road	Tuttle Road	Lane	0.9
	Open Space	Rays Circle	Hirth Road	Path	0.4
			Wilcox Road	Path	0.0
	Wilcox Road	North of Tuttle Crossing	Hayden Run Road	Path	0.5
177 Total					1.9
178	Greenridge Road	Linworth Road	Olentangy River Road	Route	0.7
178 Total					0.7
179	Olen Road	Olen Drive	(blank)	Path	0.0
	Olentangy River Road	Cambridge Court Drive	Bethel Road	Paved Shoulder	0.7
		Katherines Ridge Lane	Olentangy Woods Drive	Paved Shoulder	0.0
179 Total					0.7
180	Sawbury Boulevard	Sawmill Road	Smokey Row Road	Lane	1.3
180 Total					1.3
181	Summit View Road	Sawmill Road	Smoky Row Road	Paved Shoulder	0.8
181 Total					0.8

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
182	Olentangy River	Delaware County line	Worthington Hills Park	Path	0.8
182 Total					0.8
183	Lazelle Road	North High Street	Worthington Galena Road	Lane Road Widening	2.4
183 Total					2.4
184	Road	Flint Road	Worthington-Galena Road	Lane Road Widening	1.6
				Path	1.6
184 Total					3.1
185	Greenway	Worthington Woods Boulevard	Lazelle Road	Path	1.2
185 Total					1.2
186	Ambleside Drive, Sandalwood Boulevard	Schrock Road	Woodward Memorial Park	Route	2.7
	Ilo Drive, Atwater Drive, Urban Drive, Almont Drive, Maize Road	Woodward Memorial Park	Morse Road	Route	1.0
	Maize Road	Morse Road	Norris Road	Lane Road Widening	1.2
		Norris Road	Weber Road	Lane	0.8
				Route	0.7
186 Total					6.3
187	Cranwood Drive, Bella Via Avenue, Blendon Woods Boulevard	Ambleside Drive	Cooper Road	Route	2.7
	Open Space	Cooper Road	Alum Creek Trail	Path	0.2
187 Total					2.9
188	Sunbury Road	Agler Road	Leonard Road	Lane Road Widening	2.0
		Leonard Road	Maryland Avenue	Lane Road Widening	1.0
		SR 161	Agler Road	Lane Road Widening	2.3
188 Total					5.3
190	Harlem Road	Walnut St	just north of Dublin-Granville	Paved Shoulder	0.9
190 Total					0.9
191	Biretta Avenue	Open Space	Swanson Avenue	Path	0.1
	Hamilton Road	Clark State Road	Corbett Road	Path	0.7
191 Total					0.8
192	Taylor Station Road	Havens Corner Road	E. Broad Street	Paved Shoulder	0.7
192 Total					0.7
193	Tussing Road	Brice Road	Pickerington Line	Path	1.6
		Hines Road	City limits to east of Highland Park Drive	Path	0.4
		Not in City limits.	(blank)	Path	0.1
193 Total					2.1
194	Bennel Drive/Harbour Town Drive	Brice Road	Tussing Road	Bike Boulevard	2.5
194 Total					2.5
195	Hines Road	Refugee Road	Tussing Road	Lane Road Widening	1.2
195 Total					1.2
196	Refugee Road	Brice Road	County Line	Path	1.4
		Open Space west of George Creek	Pickerington Corporation Limits	Path	0.2
		Winchester Pike	Tuxworth Lane	Path	2.2
196 Total					3.8
197	Long Road	Refugee Road	Abbie Trails Drive	Route	0.7
197 Total					0.7
198	Open Space	Deshler Avenue	Big Walnut Trail	Path	2.2
198 Total					2.2
199	Lehman Road	Bowen Road	Gender Road	Paved Shoulder	1.0
199 Total					1.0
200	Obetz Road	South High Street	Lockbourne Road	Paved Shoulder	1.1
200 Total					1.1
201	Alum Creek Drive	SR 317	Port Road	Path	0.2
	London Groveport Road	Rohr Road	S High Street/US 23	Path	0.5
				Paved Shoulder	0.7
201 Total					1.4
202	Souder Avenue	Scioto Trail	Mound Avenue	Bike Boulevard	1.0
202 Total					1.0

Project #	Roadway/Corridor	Start	Stop	Type of Bikeway	Miles
203	Capital Street	Downtown Alley	(blank)	Alley	0.8
	Hickory Mckee	Downtown Alley	(blank)	Alley	0.6
	Lafayette Street	Downtown Alley	(blank)	Alley	0.5
	Lazalle Street	Downtown Alley	(blank)	Alley	0.8
	Noble Street	Downtown Alley	(blank)	Alley	1.0
	Pearl Street	Downtown Alley	(blank)	Alley	0.5
	Wall Street	Downtown Alley	(blank)	Alley	0.8
203 Total					5.1
204	North Bank Park Bicycle-Pedestrian Bridge	North Bank Park	Vets Memorial Building	Path	0.1
	Pearl Street	Dodridge Street	7th Avenue	Bike Boulevard	1.9
204 Total					2.0
205	Mt Vernon Street	Cleveland Avenue	Long Street	Route	0.3
	Open Space	North side of Scioto River	South side of Scioto River	Path	0.1
	Washington	Long Street	Engler Street	Bike Boulevard	0.8
205 Total					1.2
206	Neil Avenue	Eleventh Avenue	Buttles Avenue	Route	2.5
206 Total					2.5
207	19Th Avenue, Louis, Bonham, Camden, St. Clair	Cooper Park - Westerville	Nationwide Arena	Route	1.9
	Buttles, Front Street	High Street	Spring Street	Route	0.9
	Open Space	Louis Avenue	Bonham St	Path	0.1
	Westerville Road	South of I-270 (Paris Boulevard)	Cleveland Avenue	Lane Road Widening	2.6
	Westerville-Arena District Bikeway	Cleveland Avenue south of Reynolds Avenue	North 9th Street	Path	0.1
		End of Dupont Avenue at Saint Clair Avenue	Rail to trail	Path	0.1
207 Total					5.7
208	Fisher Road	I-70	McKinley Avenue	Lane Road Widening	0.5
		Wexford Green Boulevard	I-70	Lane Road Diet	3.6
208 Total					4.1
209	North Hague Avenue	Camp Chase Railroad	West Broad Street	Route	0.5
		Trabue Road	Camp Chase Railroad	Lane Road Widening	0.6
209 Total					1.1
211	Demorest Road	Briggs Road	Alkire Road	Path	0.9
		Sullivant Avenue	Briggs Road	Lane Road Widening	0.6
	Wilson Road	Roberts Road	Trabue Road	Lane	3.1
				Lane Road Widening	1.2
211 Total					5.8
212	Briggs Road	Harrisburg Pike	Savahnnah Drive	Route	2.1
	Open Space	Savahnnah Drive	Georgian Drive	Path	0.0
	Salem Drive	Salem Drive	Westview Center Plaza	Path	0.1
212 Total					2.2
213	Milton Avenue	Hollenback Road	West Pacemont Road	Bike Boulevard	0.99
213 Total					0.99
214	Greenway Boulevard	Taylor Avenue	North Nelson Road	Route	0.99
					0.99
9999	Bridge Over Railroad	Weybridge Road	Archdale Lane	Path	0.1
9999 Total					0.1
Grand Total					540.1

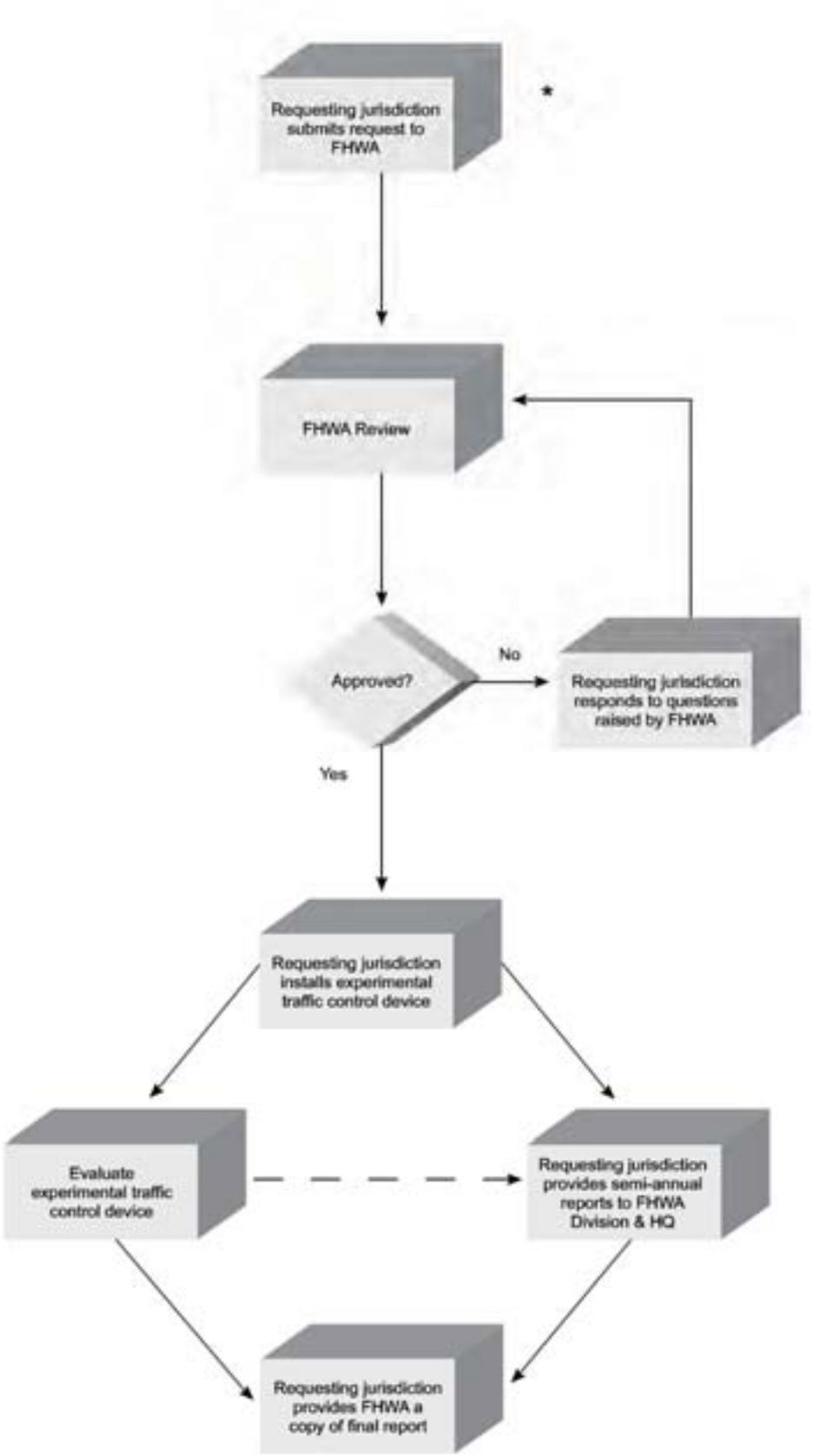
Appendix I: Testing Innovative Signage

The Ohio MUTCD recognizes that advances in technology and unique situations can lead to the need for updates and innovations. Experimental signage is permitted following a formal request process submitted by public agencies.

Requests for permission to experiment should contain the following:

1. A statement indicating the nature of the problem and the need for the experimental signage.
2. A description of the proposed change to or application of the signage, how it was developed, the manner in which it deviates from the standard, and how it is expected to be an improvement over existing standards.
3. Any illustration that would be helpful to understand the sign or use of the sign.
4. Any supporting data explaining how the sign was developed, if it has been tried, in what ways it was found to be adequate or inadequate, and how this choice of device or application was derived.
5. The time period and location(s) of the experiment.
6. A detailed research or evaluation plan that must provide for close monitoring of the experimentation, especially in the early stages of its field implementation.
7. An agreement to restore the site of the experiment to a condition that complies with the provisions of the OMUTCD.

A diagram of the process is provided on the next page.


Requesting jurisdiction submits request to FHWA
*
FHWA Review
Approved?
No
Requesting jurisdiction responds to questions raised by FHWA
Yes
Requesting jurisdiction installs experimental traffic control device
Evaluate experimental traffic control device
Requesting jurisdiction provides semi-annual reports to FHWA Division & HQ
Requesting jurisdiction provides FHWA a copy of final report