

# 5. Recommended Bicycle Network and Infrastructure Programs

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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***

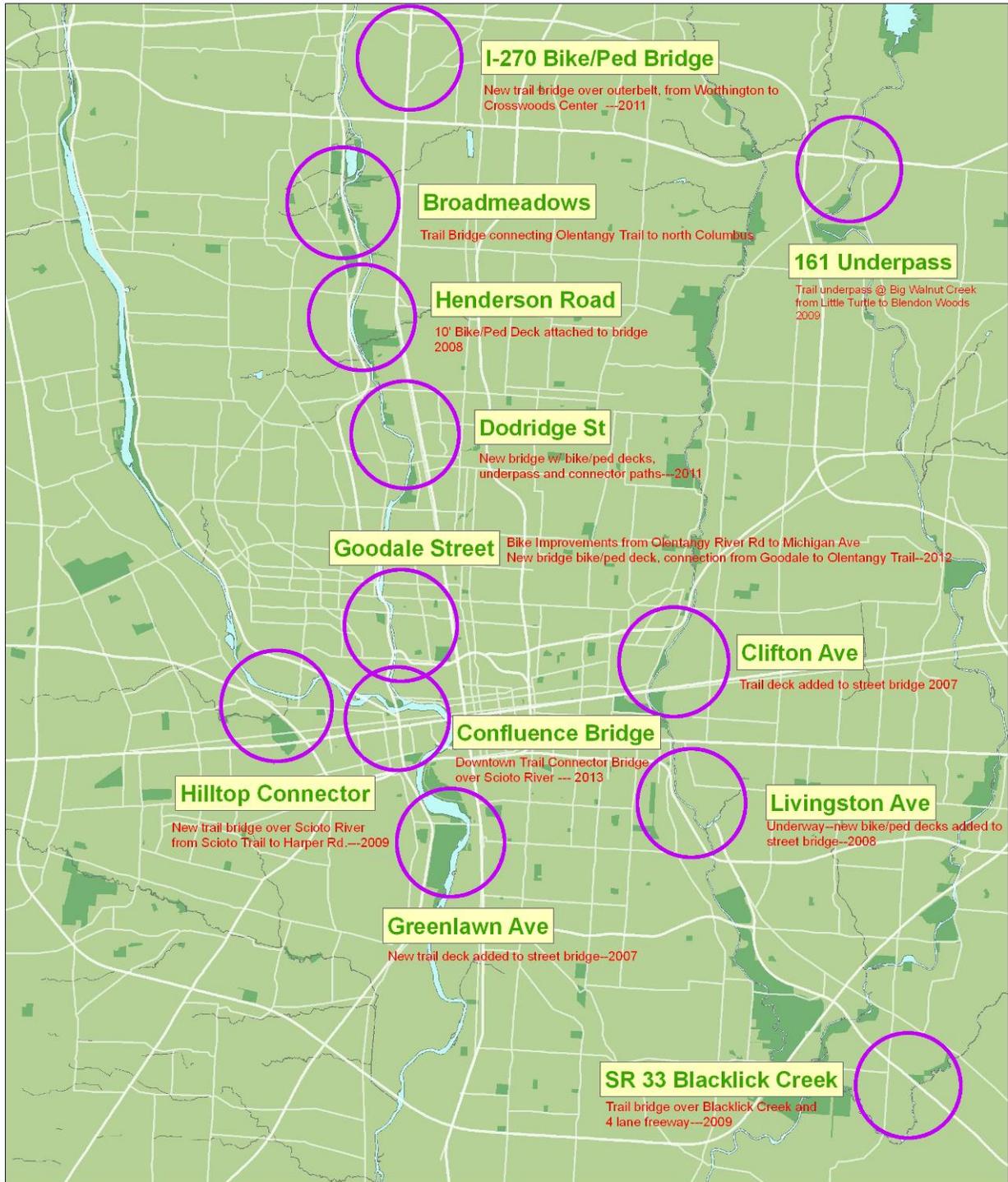
The recommended bicycle network has been developed to connect gaps in the current network, to continue the expansion of the existing trail network, to formalize existing routes used by bicyclists, and to improve access between residential, employment, civic, and commercial destinations and the current 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



**Upcoming Trail Improvements**  
Existing Street Bridges / New Trail 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**

<b>Project</b>	<b>Reasons for Selection</b>
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	Public support, safety, key connector on Olentangy Trail
(Note: Project sheet not included.)	

## 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, 3<sup>rd</sup> Street, 5<sup>th</sup> Street, King, Greenlawn, and Tussing Road.

Figure 5-2: Existing and Proposed Bikeways

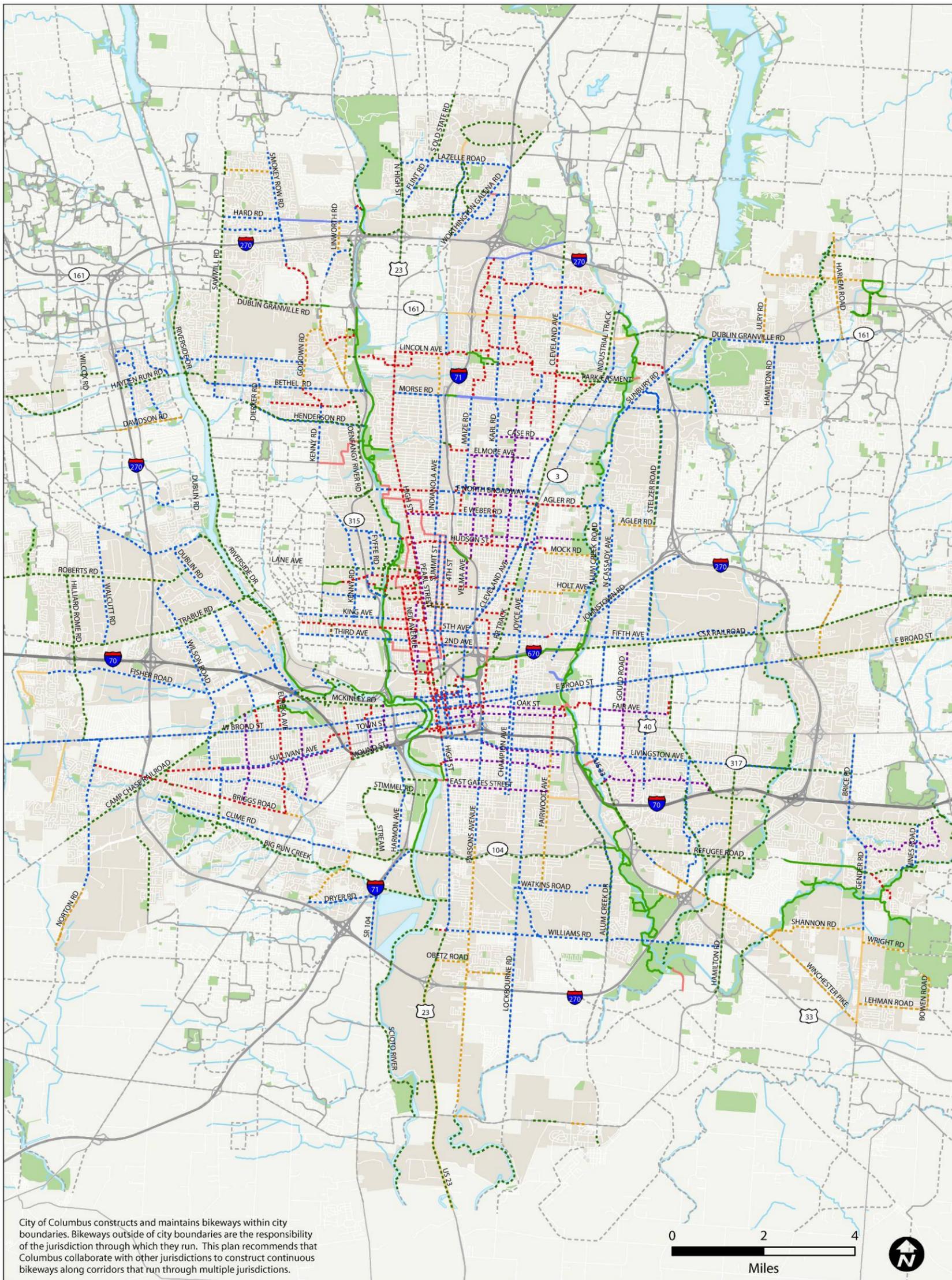


Figure 5-2: Existing and Proposed Bicycle Network

<p><b>Proposed Bikeways</b></p> <ul style="list-style-type: none"> <li> Shared Use Path</li> <li> Bike Lane</li> <li> Bike Boulevard</li> <li> Signed Shared Roadway</li> <li> Paved Shoulder</li> <li> Shared Lane Markings</li> </ul>	<p><b>Existing Bikeways</b></p> <ul style="list-style-type: none"> <li> Shared Use Path</li> <li> Bike Lane</li> <li> Signed Shared Roadway</li> <li> Paved Shoulder, Wide Curb</li> </ul>	<p><b>Bikeways Outside of Columbus</b></p> <ul style="list-style-type: none"> <li> Committed and Proposed</li> <li> Existing</li> </ul>	<ul style="list-style-type: none"> <li> Parks</li> <li> Columbus</li> </ul>
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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

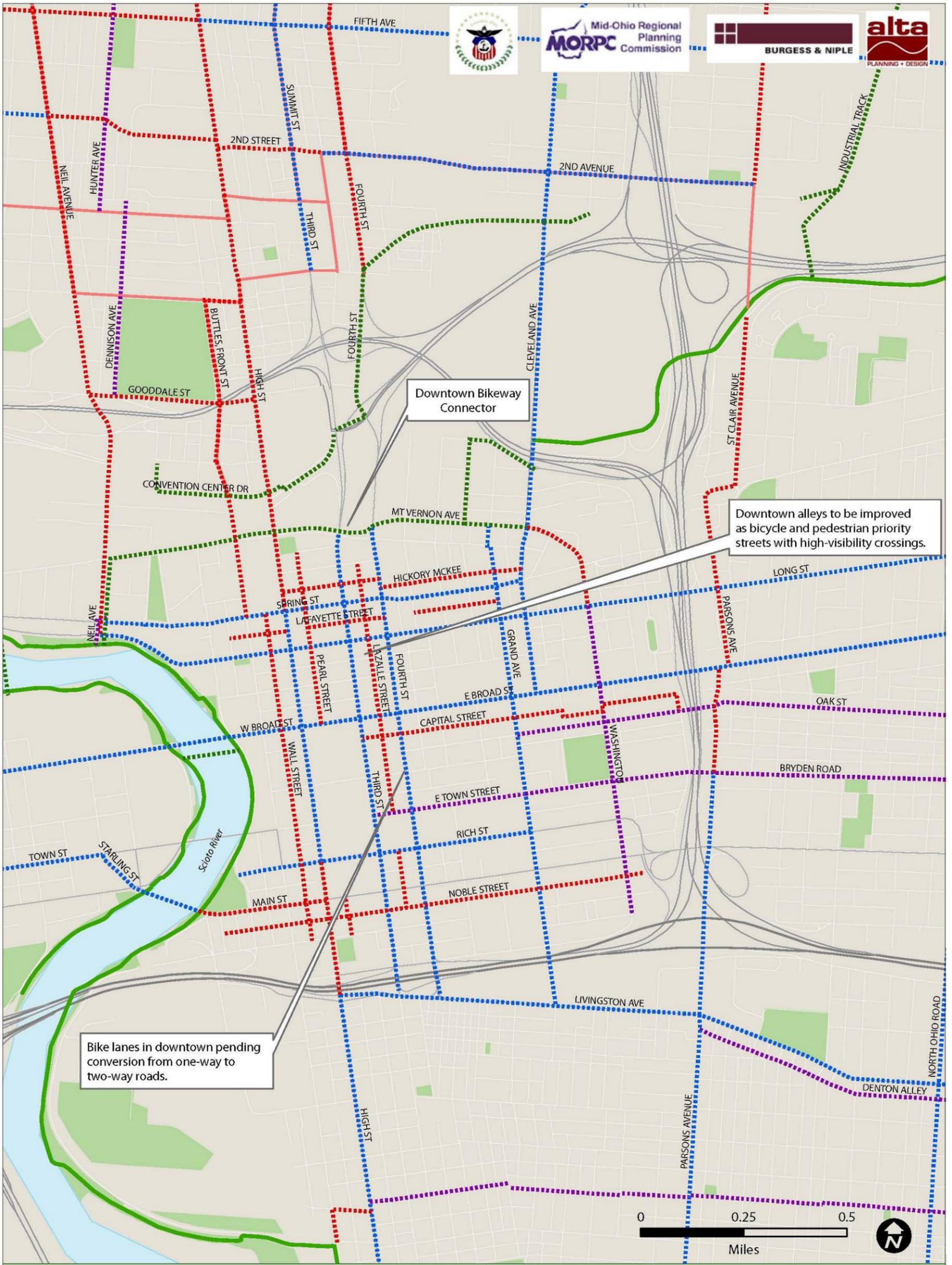


Figure 5-3: Existing and Proposed Bicycle Network: Downtown Columbus

Proposed Bikeways		Existing Bikeways			
	Shared Use Path		Signed Shared Roadway		Parks
	Bike Lane		Paved Shoulder		Columbus
	Bike Boulevard		Shared Lane Markings		
			Signed Shared Roadway		
			Paved Shoulder, Wide Curb		

City of Columbus constructs and maintains bikeways within city boundaries. Bikeways outside of city boundaries are the responsibility of the jurisdiction through which they run. This plan recommends that Columbus collaborate with other jurisdictions to construct continuous bikeways along corridors that run through multiple jurisdictions.

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

### **Provide Access to The Ohio State University**

Access to OSU is recommended along High Street, 17<sup>th</sup> 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.<sup>19</sup> 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.

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<sup>19</sup> 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 losing 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.

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



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

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.

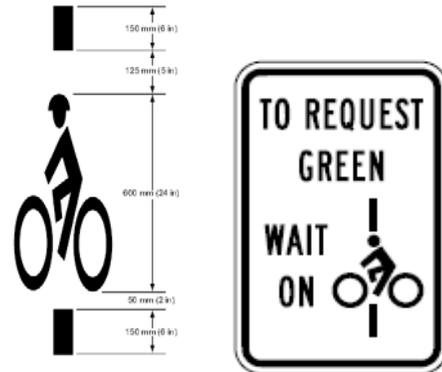
### ***5.4.1. Recommendation: Install Bicycle Detection at Signalized Intersections***

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 5 <sup>th</sup> 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 Bikenways 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
3 <sup>rd</sup> 5 <sup>th</sup> 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

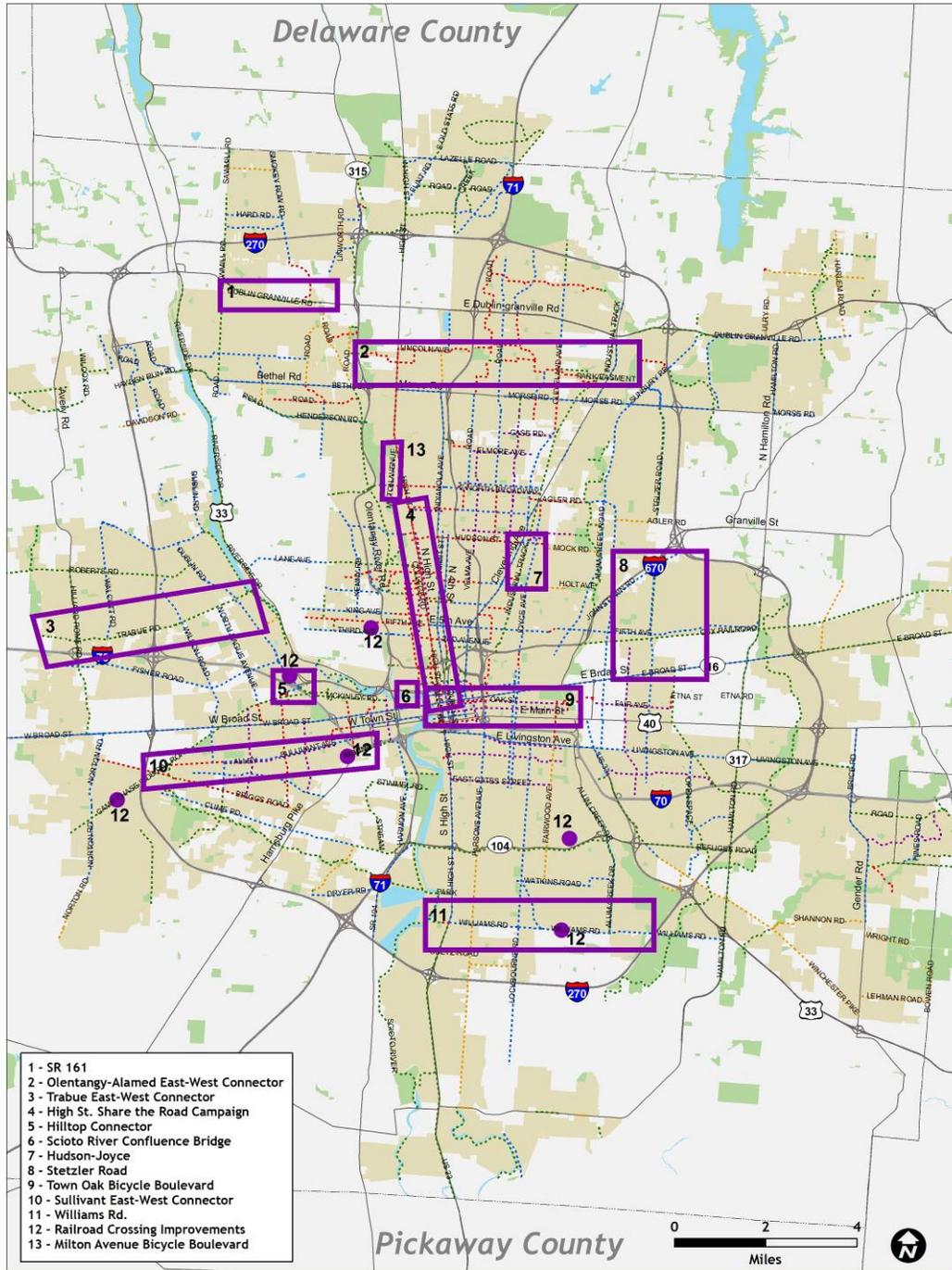


Figure 5-4: City of Columbus Bikeway Master Plan - Demonstration Projects



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

## 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



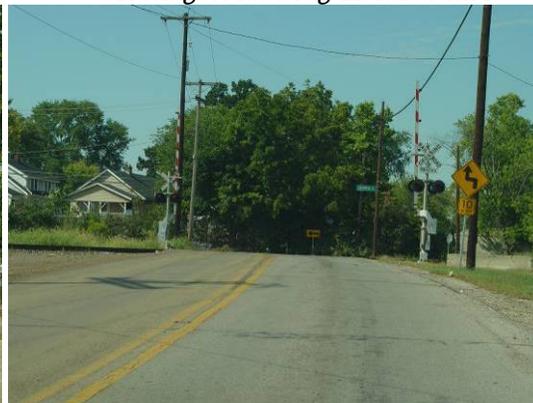
*Harper Road, looking west*



*Looking south along Eureka Avenue*



*Looking west along Valleyview Drive*

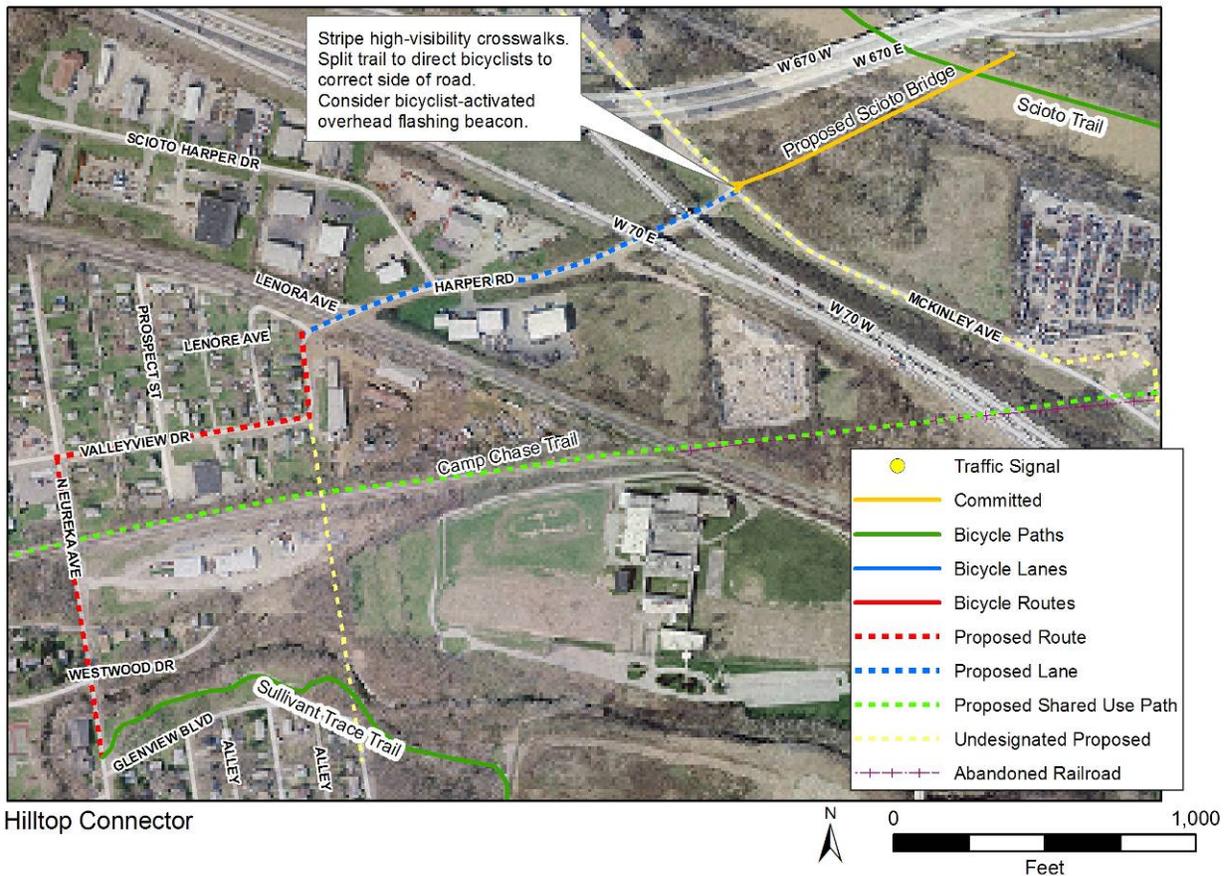


*Looking west at railroad tracks*

#### 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.

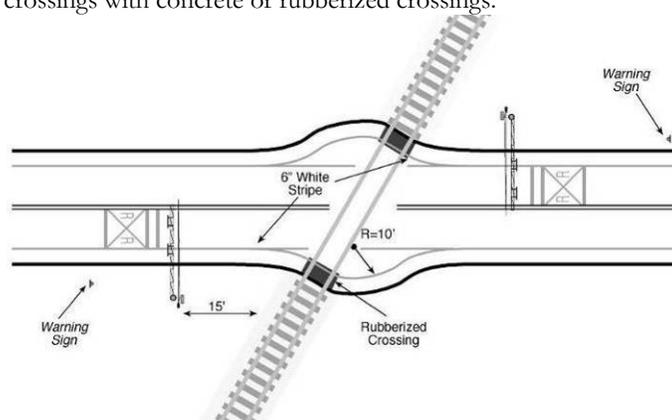
#### Opportunities and Constraints:

- ▲ 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.

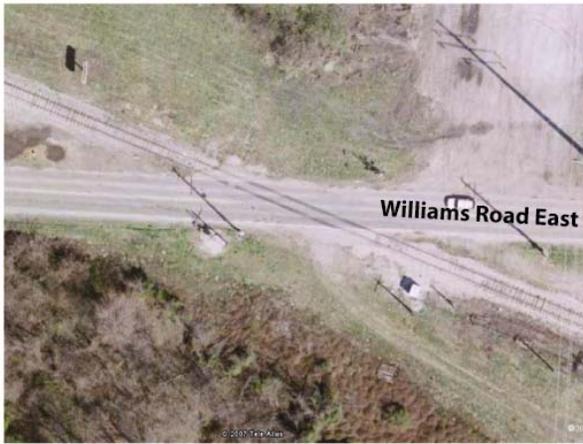
#### Improvement Options and Design Details

##### 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.

#### EXISTING 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.

#### Olentangy to Alum Creek East-West Connector



## 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 crosses I-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*

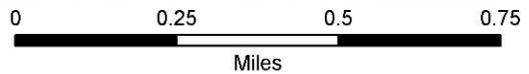
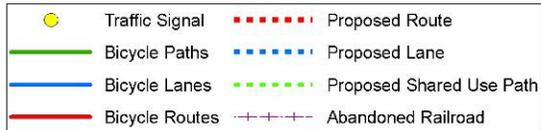
## Improvement Options and Design Details

### 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.

Trabue Road East-West Connector

Opportunities for parallel shared use path are limited due to terrain and land use in this segment. Traffic volumes indicate it may be possible to reduce road from 4 lanes to 3 lanes plus bike lane. 19000 ADT in 2002 and 2004 between Riverside Drive and Lake Shore Drive. 15000 ADT in 2004 between Lake Shore Drive and Dublin Road.



**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 3<sup>rd</sup> 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.**

Town-Bryden Bicycle Boulevard



**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.

**State Route 161 Shared Use Path**



**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.

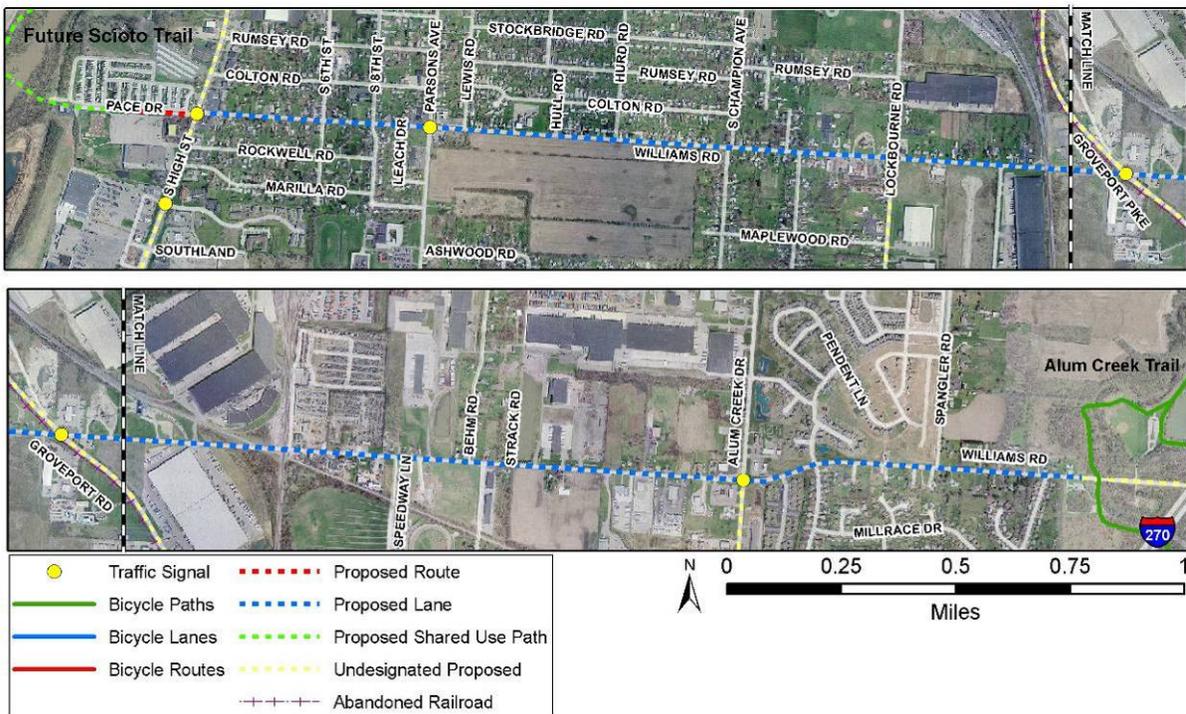
### Existing Conditions

#### 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

Williams Road Scioto Trail to Alum Creek Trail Connector



#### 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.

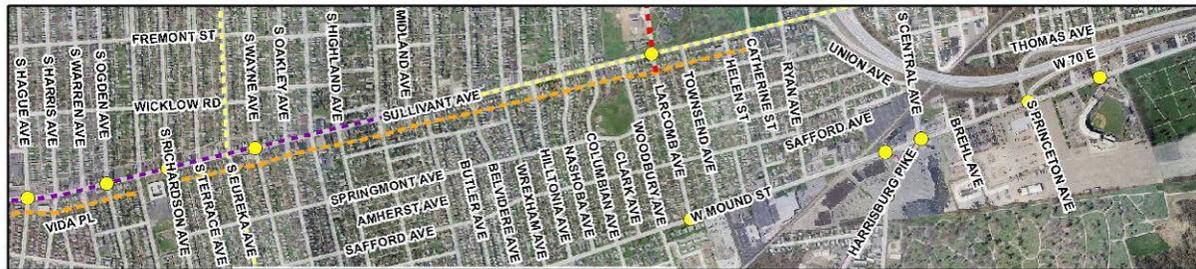
#### Improvement Options and Design Details

##### Improvement Options:

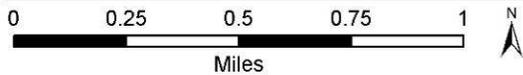
- ▲ Sign Sullivant Avenue as a bicycle route between Camp Chase Railroad and Georgesville Road.
- ▲ Construct shared-use path on west side of Georgesville Road between south and north sections of Sullivant Avenue.
- ▲ On-street option: Sign Sullivant Avenue as a bicycle route between Georgesville Road 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.

Sullivant Avenue East-West Connector



	Traffic Signal		Proposed Undesignated		Proposed Lane
	Bicycle Paths		Proposed Bike Boulevard		Proposed Road Diet with Lanes
	Bicycle Lanes		Proposed Route		Proposed Path
	Bicycle Routes		Abandoned Railroad		



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 17<sup>th</sup> Avenue, 17<sup>th</sup> Avenue from Joyce Avenue to the railroad tracks, and Hudson Avenue from Joyce Avenue to Cleveland Avenue. Hudson Street and part of 17<sup>th</sup> 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 17<sup>th</sup> Avenue, as well as a shared-use path along the abandoned railroad right-of-way.

#### Improvements Summary

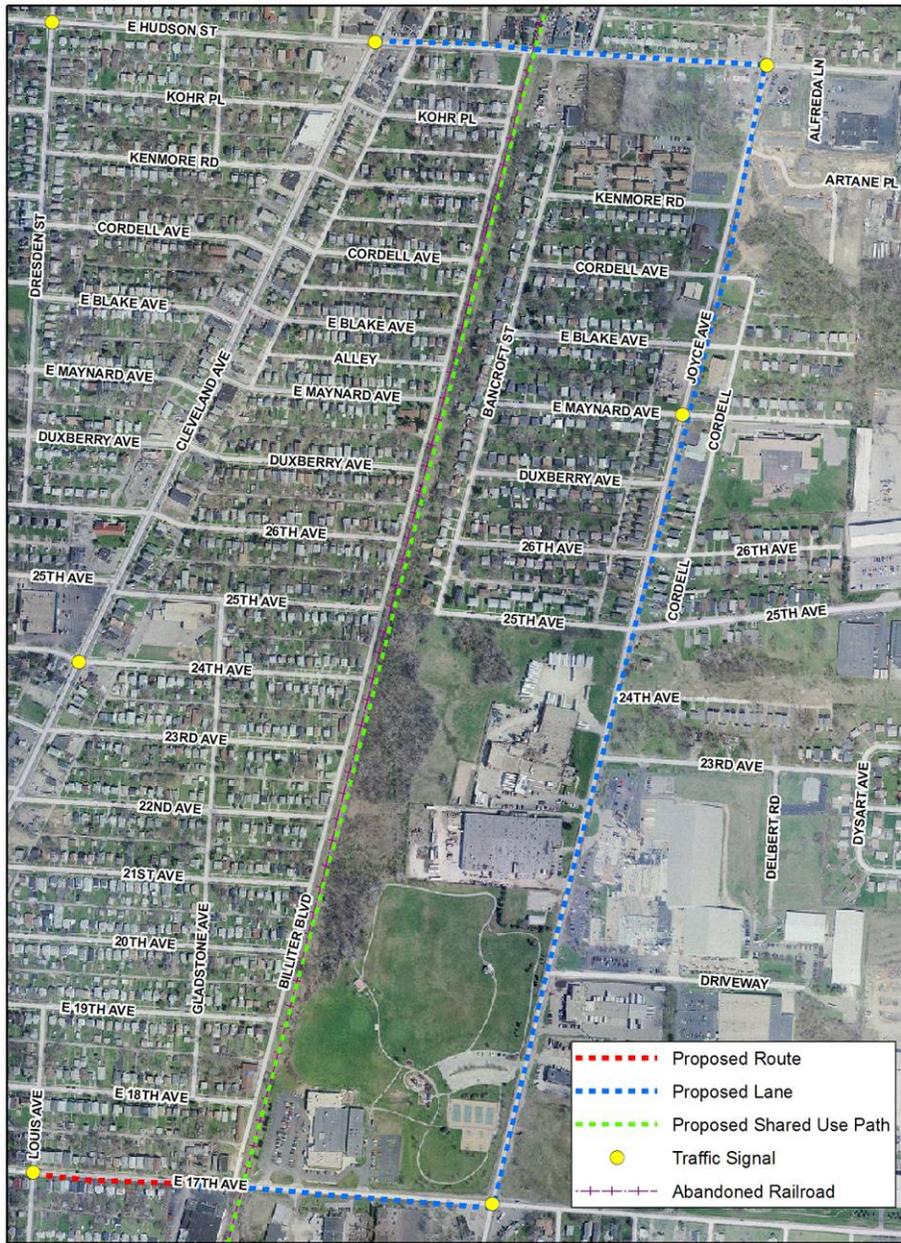
##### Issues:

- ▲ 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 17<sup>th</sup> 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.
- ▲ **17<sup>th</sup> 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.
- ▲ 17<sup>th</sup> 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.
- ▲ 17<sup>th</sup> 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



Hudson Street & Joyce Avenue Bicycle Facility Improvements

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 5<sup>th</sup> 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 7<sup>th</sup> Avenue: construct 10' paved shared-use path along east side of roadway Connect shared-use path to existing sidewalk north of 7<sup>th</sup> Ave.
- ▲ **Stelzer Road** between 7<sup>th</sup> Avenue and James Road/Allegheny Road: Road diet to 5-foot Bike Lane | 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 5<sup>th</sup> Ave/railroad**: Stripe bicycle lanes

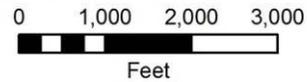
#### Crossing Improvements Associated with Shared Use Path

- ▲ **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



Stezler Road & James Road Shared Use Path



Cost Opinion

Cost opinion: \$2,690,606

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