Metropolitan Bicycle Master Plan

Submitted to:

City of Coralville
City of Iowa City
City of North Liberty
City of Tiffin
City of University Heights
Johnson County
University of Iowa

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November 2009

JCCOG

What is JCCOG?

The Johnson County Council of Governments (JCCOG) is the metropolitan planning organization for the Iowa City Urbanized Area, which, under the guidance of a public policy board, provides leadership, expertise, and services to member communities and agencies in Johnson County, Iowa. Assistance is provided to JCCOG member agencies in three specific program areas: transportation, human services, and assistance to small communities. JCCOG also coordinates forums for discussion of county-wide planning issues.

Acknowledgements

The development of the *Metro Bicycle Master Plan* would not have been possible without the participation of the following individuals.

JCCOG Regional Trails and Bicycling Committee:
Terry Dahms, Friends of the Iowa River Scenic Trail
Louise From, University Heights Mayor
Brian Loring, Bicyclists of Iowa City
Terrence Neuzil, Johnson County Board of Supervisors
Royce Phillips, Tiffin City Council
Sherri Proud, Parks & Recreation Director, Coralville
Michelle Ribble, Commuter Programs, University of Iowa
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Executive Summary

Since 1968, six bicycle and trail plans have been created by the communities in the Iowa City urbanized area: Coralville, Iowa City, North Liberty, Tiffin, University Heights, and Johnson County. Today, most of the recommendations identified in those plans have been implemented.

The JCCOG Metro Bicycle Master Plan outlines strategies to create an accessible, coordinated, and comfortable bike network bolstered by targeted education and encouragement programs, and enforcement and policy recommendations that build upon the existing bicycle network. The scope of the plan includes the urbanized area and important linkages to surrounding areas.

This executive summary highlights existing bikeway facilities, community needs, goals and objectives, and recommendations for the urbanized area.

Community Needs Assessment

Future bicycle facilities need to reflect identified community needs. JCCOG engaged community input in a public involvement process, which included two community workshops and an online survey. The purpose of the workshops was to identify the most well-liked programs. Table ES-1 shows the commonly requested on-street facilities. Residents indicated a need for a number of improvements, including:

Engineering – Install more on-street accommodations

Education – Publish bike rack location map online, including sheltered racks and lockers

Encouragement – Continue to offer free operational space to Iowa Bicycle Coalition and I.C. Bike Library

Enforcement – Enforce headlight/reflector laws during non-daylight hours

Evaluation – Conduct peak hour counts of bicycle commuting on-street

Table ES - 1. Preferred on-street bike facilities at 2008 bike plan public workshops

On-Street Facilities	Count	Percent
Bike Lanes (new streets)	118	32%
Bike Lanes (existing streets)	96	26%
Sharrows	65	17%
Way Finding Signs	38	10%
Bike Boulevards	28	7%
Bike Routes	21	6%
Signed "Share the Road"	8	2%
Total	374	100%

Goals and Objectives

The JCCOG Regional Trails and Bicycling Committee assisted in identifying ten goals to address the findings of this master plan. They provide a framework to plan for the future of the Urbanized Area's bike network. The goals, in non-priority order, are highlighted below.

Goal 1. Implement the *Metro Bicycle Master Plan*

Goal 2. Increase the number of people bicycling for transportation and recreation

Goal 3. Improve bicyclist safety

Goal 4. Reduce greenhouse gas emissions

Goal 5. Improve health and fitness

Goal 6. Education, enforcement, and encouragement

Goal 7. Enhance economic development

Goal 8. Build "Safe Routes to Schools"

Goal 9. Provide bicycle parking

Goal 10. Ensure high quality of service

The plan goals provide objectives that the JCCOG entities should work towards to meet the communities' current and future bicycling needs. Moreover, the goals respond to suggestions and concerns that arose through the plan development process.

System-wide Recommendations

As the bicycle network evolves, prioritizing improvements is a challenge. The master plan recommendations synthesize an inventory

of bicycle facilities, input of 24 local staff and elected officials, and priorities identified through the public input process (645 participants). The following system-wide recommendations can be pursued by all communities in the Urbanized Area to become more bicycle-friendly.

Engineering – Install on-street accommodations, which can include the following options depending on site conditions:

- Shared lanes
- Bike lanes
- Wide curb lanes
- Striped shoulders
- Traffic calming

Education – Facilitate bicycle safety through:

- Public service announcements targeted at young adults;
- Drivers' education classes; and
- Elementary schools' physical education classes.

Encouragement – Implement a coordinated way-finding system on trails and roadways across the Urbanized Area to assist route finding.

Enforcement – Implement and publicize bike light enforcement program during the fall and offer discount bike lights to encourage safety.

Evaluation – Achieve the platinum "Bicycle Friendly Community" designation from the League of American Bicyclists.

Summary

Completion of this plan is the next step toward becoming more bicycle friendly. With careful attention, bicycling will continue to be a viable option both for recreation and commuting.

Chapter One

Introduction

Since 1968, six bicycle and trail plans have been created by the communities in the Iowa City Urbanized Area: Coralville, Iowa City, North Liberty, Tiffin, University Heights, and Johnson County. Today, most of the recommendations identified in those plans have been implemented, and trail planning and "Complete Streets" policies have institutionalized bicycle access for new developments.

The local municipalities and the University of Iowa agreed a new regional bicycle plan will provide an inventory of existing facilities and identify new opportunities to improve bicycle access – many stemming from past enhancements. As the metropolitan planning organization for the area, the Johnson County Council of Governments (JCCOG) was asked to develop this plan.

The *JCCOG Metro Bicycle Master Plan* outlines a strategy to create an accessible, coordinated, safe, and comfortable bike network that is bolstered by targeted education and encouragement programs, as well as enforcement and policy recommendations that expand the bicycle network. The scope of the plan includes the Urbanized Area and important links to surrounding areas.

This chapter outlines the vision of the plan, history of local bicycle planning, the planning process, and an overview of subsequent chapters.

Plan Overview

This plan is organized into the following four chapters and two appendices:

Chapter 1.	Introduction
Chapter 2.	Existing Conditions
Chapter 3.	Goals and Objectives
Chapter 4.	Recommendations and Phasing
Appendix A.	On-Street Facility Criteria
Appendix B.	Sample Bike Parking Ordinance

Vision and Principles

The JCCOG member entities envision a convenient and efficient transportation system where people can bike safely to all destinations. This plan builds upon successful implementation of past bicycle plans and trail development and is intended to guide future on-street bicycle facilities in the JCCOG Urbanized Area to create a diverse and interconnected bicycle system.

The following guiding principles outline the broad perspectives that created the foundation of this plan[i]:

Principle #1—All Bicyclists' Abilities Differ

The Federal Highway Administration identifies three levels of bicyclists—Advanced, Basic, and Children—but in reality, there is a continuum in skill level and needs. Residents ride for many different reasons, including commuting, running errands, recreation, exercise, and competitive sport.

Principle #2—Anticipate Bicycles on Every Street

Cyclists want to go to the same places motorists want to go; therefore, cyclists will ride on every street – except the interstate highways – to some extent. While the bicycle system, once completed, will provide suggested routes for cyclists that cannot possibly serve every destination or satisfy every cyclist's unique needs for directness and comfort.

Principle #3—It's More Than Just Getting There

Trails alone will not make the JCCOG Urbanized Area a good bicycling region. Support facilities such as on-street pavement markings, bike parking, signage, and programs on enforcement and safety education are also critical components.

Principle #4—Coordination is Essential

Each community in the Urbanized Area will identify action steps unique to their community, based on existing conditions and priorities. This *Bicycle Master Plan* outlines a long-term strategy that each community will work toward independently to achieve the vision of the community as a whole.

Previous Bicycle Planning Efforts and Successes

1960s – Bicycling planning efforts in the metro area have a long history. The first plan was developed by Project GREEN in 1968. A

few of the notable recommendations in the *Hawkeye Area Bikeway System* that were implemented include: the trail through City Park, the sidewalk/trail along Rocky Shore Drive, the Coralville Connection Trail along the river, and the rural sidewalk/trail along Dubuque Street north of Butler Bridge.

1970s – In 1974, Iowa City hired Stanley Consultants to prepare a study of the Iowa River. *The Iowa River Corridor Study* included numerous recommendations to enhance the corridor, including a trail from the Coralville Reservoir Dam to Napoleon Park. Approximately 9.5 miles of the proposed 13-mile trail have been constructed to date. The Iowa City Riverfront and Natural Areas Commission prepared an update of the trail recommendations of *The Iowa River Corridor Study* in 1993 and, with a few minor adjustments, reiterated the recommendations and set new priorities for trail construction, which have since been completed.

The cities of Iowa City and Coralville and the University of Iowa added bicycle facilities in the 1970s: 1) Iowa City and Coralville installed bike lanes, 2) Iowa City and the University installed bike racks, and 3) the University built the Finkbine Commuter Bikeway.

1980s – During the 1980s, the Iowa City City Council adopted the *Iowa City Bikeways Report and Plan*, which included detailed recommendations for on- and off-street facilities, cost estimates, and a schedule for implementation. However, shortly after adoption of the plan, federal funding for these programs was eliminated and the plan was not implemented.

No other bicycle planning efforts were undertaken in the region during this period. Project GREEN continued to promote and raise funds for the Iowa River Corridor Trail, and the Bicyclists of Iowa City, Inc. (BIC) – formed in 1976 – promoted cycling for commuting and recreation through various public outreach efforts, including public service announcements and local access television programs.

Figure 1: Mayors' Ride during Bike-to-Work Week, 2008; photo by Donald Baxter.

1990s – Bicycle use increased significantly during 1990s, due in large part to the popularity of mountain bikes. BIC continued to promote on-street facilities, and trained bicyclists to follow the rules of the road while using the facilities. The first Bike-To-Work Day was held in 1990 and, with ongoing financial support from the cities of Iowa City and Coralville, the annual event continued to grow, drawing over 2,000 participants in Spring 2008. The Friends of the Iowa River

Scenic Trail (FIRST) was also formed in 1990 to promote completion of the Iowa River Corridor Trail.

JCCOG created an Assistant Transportation Planner position in 1992 to focus on pedestrian and bicycle planning, and in 1993 the JCCOG Regional Trails and Bicycling Committee was formed to discuss trails and on-street facilities in the metro area.

In 1993, the City of Coralville adopted a trail plan that called for trails in developed and undeveloped areas of the city. During the same year, the University contracted Steve Clark Associates, a bicycle and pedestrian planning firm, to make recommendations regarding bike parking on campus, possible street closures, and traffic signals. In 2007, the University conducted a follow-up study and found the number of bikes on campus increased 5 percent and the number of improperly parked bicycles decreased 92 percent since 1993.

In 1994, JCCOG created the *Urbanized Area Bicycle Plan*. Some of the notable recommendations that have since been implemented include the Iowa City Bike Patrol Program, annual proclamation of May as Bicycle Month, the annual *JCCOG Trails Map*, and the creation of the *Johnson County Trails Plan*.

2000 to present – Trail planning has been remarkably successful since the mid-1990s. Today, over 40 miles of multi-use trails provide recreation access to unique natural areas in the Urbanized Area. In 2000, Johnson County hired Dunbar-Jones consultants to identify regional trail opportunities, and in 2006 JCCOG developed the *Johnson County Shared Use Trails Plan* to prioritize rural trail projects.

Bicycle planning efforts were augmented greatly in 2006 and 2007, when JCCOG and the City of Iowa City, respectively, passed Complete Streets Policies, which mandate that federal and locally funded transportation projects be designed to accommodate use by pedestrians, bicyclists, public transit, and motorists.

In 2007, the City of Iowa City applied to become a Bike-Friendly Community – a designation bestowed by the League of American Bicyclists. The subsequent "Honorable Mention" rekindled long-standing interest in planning a comprehensive, regional bicycle network.

Planning Process

The *JCCOG Metro Bicycle Master Plan* builds upon past achievements in developing a bicycle network for residents and visitors. Staff also depended on the experience and expertise of community members to help develop the plan.

The planning process involved several steps: 1) taking an inventory of bicycle accommodations and determining the level of service; 2) undertaking a community needs assessment, which considered factors such as demographic characteristics, population growth, and cycling participation trends; and 3) combining information from the needs assessment with the inventory and level of service analysis to create the Recommendations and Bicycle Infrastructure Projects (see Chapter 4). Together, these components make up the *Metro Bicycle Master Plan* for communities in the Urbanized Area – giving the communities direction to accommodate the needs of current and future cyclists.

Public Involvement

Two community workshops were held to obtain public input for the plan (see Chapter 3 for summaries). One workshop addressed the assets and opportunities in Coralville, North Liberty, Tiffin, and Johnson County, while the second focused on Iowa City, University Heights, and the University of Iowa. An online survey provided detailed feedback regarding local cycling trends.

Figure 2: Bike planning workshop participants; photo by Darian Nagle-Gamm.

To identify current issues and potential solutions, the JCCOG planning team met with staff from the cities of Coralville, Iowa City, North Liberty, Tiffin, University Heights, the Iowa City Community School District, the University of Iowa, as well as local bicycle advocates.

Upon completion of the draft plan in May 2009, JCCOG hosted a public open house during "Bike-to-Work Week" to obtain feedback and solicit input.

Steering Committee

The JCCOG Regional Trails and Bicycling Committee (RTBC) consider the needs of all cyclists when providing recommendations to the JCCOG Urbanized Area Policy Board. Thus, the RTBC was a logical choice for steering committee of this plan.

Additionally, JCCOG staff met individually with planners, engineers, law enforcement officers, and elected officials from all JCCOG entities to ensure the plan is reasonable given long-term opportunities and constraints.

Project Timeline

The following project timeline was developed for the *Metro Bicycle Master Plan* planning process:

- August 5, 2008 – Kick-off meeting with RTBC
- August to November 2008 – Meet with city, county, and school district representatives
- Late September 2008 – Coralville / North Liberty / Tiffin / Johnson County workshop
- Early October 2008 – Iowa City / University Heights / University of Iowa community workshop
- October 2008 – Online survey
- November 2008 – Meet with Tiffin, University Heights, and school districts' staff
- Late November 2008 – Summary of community workshops and draft chapters reviewed by RTBC
- Early February 2009 – Draft plan released including recommendations submitted to RTBC for review
- Early May 2009 – Public open house during Bike-to-Work Week
- May 2009 – Draft plan submitted to JCCOG Transportation Technical Advisory Committee and Board for consideration
- June 2009 – Public comment period on draft
- Mid-July 2009 – JCCOG member entities adopt the *Metro Bicycle Master Plan*

Chapter Two

Existing Conditions

A critical aspect of planning for the future of the area's bicycle network is an inventory and assessment of the existing bicycle facilities. This chapter provides a summary of the benefits and challenges of cycling to illustrate why bicycle accommodations are necessary. The chapter concludes with an inventory of the existing bicycle programs and enhancements in the Urbanized Area.

Benefits and Concerns of Cycling

People ride bicycles for a multitude of reasons. For many cyclists, it is not surprising that the popularity of cycling has endured since its invention in the 1860s. Many people find that bicycles are a cheap, fast, healthy, and environmentally friendly mode of transportation.

> *"Nothing compares to the simple pleasure of a bike ride."*
> ~ John F. Kennedy

The following briefly summarizes some of the most common assets and benefits of bicycling.

Transportation – Many trips that Iowans make daily are short enough to be accomplished by bicycle. Approximately 40 percent of all trips are less than two miles in length, which equates to a 10-minute bike ride[ii]. Bicycles are an important mode of transportation for commuting to work, school, shopping, and other destinations. As a result, many bicycles are equipped with racks, baskets, and children's seats. Bicycles provide virtually door-to-door service in urban areas, which also reduces congestion and demand for parking. Moreover, people who cannot afford a vehicle, or who are unable to drive, are often able to purchase a bicycle.

Money Facts

- The cost of operating a sedan for one year is approximately $7,800 (AAA, *Your Driving Costs*).
- The cost of operating a bicycle for a year is just $120 (League of American Bicyclists).
- According to 2004 data from AAA estimates and U.S. Census surveys, ownership of one motor vehicle accounts for more than 18 percent of a typical household's income.

Health, fitness, and quality of life – Cycling is popular as a form of recreation, which includes leisurely riding and racing. Yet, the physiological benefits of cycling are the same for recreational cyclists as they are for bike commuters. Riding improves muscle tone, stamina, and as a form of exercise, has been shown to reduce stress[iii].

Energy Savings – The bicycle is very efficient. A cyclist uses 2/3 the amount of energy to reach a destination compared to walking and 1/40 the amount of energy compared to driving the same distance. Thus energy consumption can be reduced when bicycles are used for regular commuting and short trips.

Versatility – Bicycles are accessible to people of all ages. Cyclists can often go where vehicles cannot and parking a bicycle is typically easy. Thus, the bicycle provides increased mobility and freedom in urban settings where distances are short.

Despite the benefits, there are also common problems with cycling, including:

- theft;
- safety;
- conflicts with motorists;
- weather; and
- topography.

To address concerns, communities often implement programs to help moderate the challenges associated with cycling. The existing programs and facilities offered in the Iowa City Urbanized Area are outlined in the following section.

Inventory of Bicycle Programs and Facilities

The Five E's of bicycle planning are based on guidance provided by the League of American Bicyclists (LAB), which recommends assessing bicycle facilities and programs using these five areas: Engineering, Education, Encouragement, Enforcement, and Evaluation. If a community applies for "Bicycle Friendly Community" recognition from the LAB, the following inventory provides a comprehensive snap-shot of existing conditions – a key component of the application.

The Urbanized Area is relatively unique among Iowa communities because the five municipalities and the University of Iowa are immediate neighbors. Thus, many local programs and facilities serve residents of all the communities. Communities that are currently

offering bicycle facilities and services are identified in parentheses, using abbreviations:

- Bicyclists of Iowa City – BIC
- Clear Creek/Amana School District – CCA
- City of Coralville – CV
- Iowa Bicycle Coalition – IBC
- City of Iowa City – IC
- Johnson County, Iowa – JC
- Johnson County Council of Governments – JCCOG
- City of North Liberty – NL
- City of Tiffin – TF
- City of University Heights – UH
- University of Iowa – UI

The scope of this inventory focuses on urban areas but includes popular links between urban and rural areas. The following sections outline the existing facilities for cyclists.

Engineering

Communities in the Urbanized Area currently offer the following on-the-ground cycling facilities in the community:

- Designing transportation infrastructure with guidance from the American Association of State Highway and Transportation Officials (AASHTO) standards (All).
- Offering over 40 miles of trails (All).
- Implementing trails and sidewalk connectors on cul-de-sacs (IC, CV, NL, TF).
- Installing warning signs, mile marker stencils, and limited way-finding signs on trails (CV, IC, NL, TF, UI).
- Designing new roads with consideration given to pedestrians, bicycles, transit, and vehicle access through adoption of a Complete Streets Policy (IC, JCCOG).
- Implementing five-foot-wide paved and striped shoulders on rural road reconstruction projects; recently completed projects include portions of Sand Road, Mehaffey Bridge Road, Prairie Du Chien, and Highway 382 from Solon to Lake McBride (JC).
- Maintaining 0.7 miles of bike lanes in Coralville and 0.4 miles in Iowa City (CV, IC).

- Offering an outdoor "bike elevator" – accessible to cyclists directly from the sidewalk – on Madison Street at the North Campus Parking Ramp (UI).

Education

Education can be a powerful tool for changing behavior and improving safety skills. Bicyclists and motorists alike can benefit from educational tools and messages that teach them the rules, rights, and responsibilities of various modes of travel[iv].

- Promoting safety tips for cycling in 8,000 Metro Trails Maps distributed for free (All).
- Promoting the Johnson County Trails Foundation for bicycle enhancement funding opportunities (All).
- Maintaining trail map signs on portions of the Iowa River Corridor Trail, Willow Creek Trail, Sycamore Greenway, and North Ridge/North Liberty Trail (BIC, IC, CV, NL).
- Offering three local League of American Bicyclists instructors: Gregory Kovaciny, Iowa City; Dick & Vicki Siefers, Coralville; Mark Wyatt, North Liberty (All).
- Teaching secondary school children rules of the road by Community Relations Police Officers (CV, IC, NL, UH).
- Distributing bike parking maps (IC, UI, UH).
- Providing bike trail riding experience and rules-of-the-road lessons to youth summer campers (CV, IC, NL).
- Offering two "Bike Rodeo" courses each year for 20 years through the Optimists Club (CCA, CV, IC, NL, UH).
- Maintaining bicycle registration service (CV, IC, UI).
- Maintaining "Share the Road" signs on select streets (IC).
- Offering two "Effective Cycling" courses for adults and children each year (IBC).
- Proclaiming May as "Bicycle Month" annually (CV, IC).
- Offering touring and mountain biking classes (UI).

Encouragement

This category concentrates on how the communities promote and encourage bicycling:

- Funding annual production and distribution of 8,000 Metro Trails Maps (All).

- Offering helmets, for sale at cost, to residents at Recreation Centers (CV, IC, NL).
- Encouraging provision of bicycle parking at new commercial and multi-family developments (CV, IC, NL, TF, UH).
- Enforcing bike parking ordinance (see Appendix B) requiring bike racks at new commercial and multi-family developments (IC).
- Installing bike racks at new public buildings (CV, IC, UI).
- Offering covered bike parking spaces at key destinations (IC, UI).
- Providing free operational space to the Iowa Bicycle Coalition and the Iowa City Bike Library (CV, IC).
- Implementing ongoing downtown bike parking infill program, which has installed 98 bike racks to date (IC).
- Offering 11 public bike lockers in downtown (Figure 3) (IC).
- Facilitating bike commuting by offering bike carriers on public buses (Figure 4) (CV, IC).

Figure 3: Bike locker at Court Street parking structure; photo by City of Iowa City.

- Funding Bike-to-Work Week activities ($1,500 annually per city), including the Mayor's Ride; Bike-Bus-Car Race; two roadside bicycle breakfasts; and public forums (IC, CV). In 2008, more than 2,000 residents participated in these events.
- Providing Health Risk Assessments and monetary incentive for employees to promote healthy lifestyles, including cycling (UI).

Figure 4: A resident loads bicycles on a city bus; photo by City of Iowa City.

Enforcement

The enforcement category highlights partnerships between the cycling and law enforcement communities:

Figure 5: Bicycle patrol officers at University of Iowa home football game; photo by JCCOG.

- Providing emergency response and security on all public roads and trails (All).
- Enforcing rules of the road by Police and Sheriff Departments (All).
- Encouraging compliance with Iowa state lawv requiring headlights and rear reflectors on bicycles during non-daylight hours (All).
- Offering police escorts and traffic control for organized rides, including RAGBRAI, Mayor's Ride, Bicyclists of Iowa City Old Capitol Criterium, and others (All).
- Maintaining Police Department bike patrol units and trained officers (Figure 5) (IC, CV, NL, UH, UI).
- Ticketing mopeds and motorcycles parked at bike racks (UI).
- Implementing "I Got Caught" campaign, offering coupons to youth "caught" obeying the rules of the road while cycling (IC, UH).

Evaluation

The evaluation category summarizes ways communities are planning for future bicycle facilities, measure the amount of cycling taking place in the community, and ways that the community works to improve these numbers:

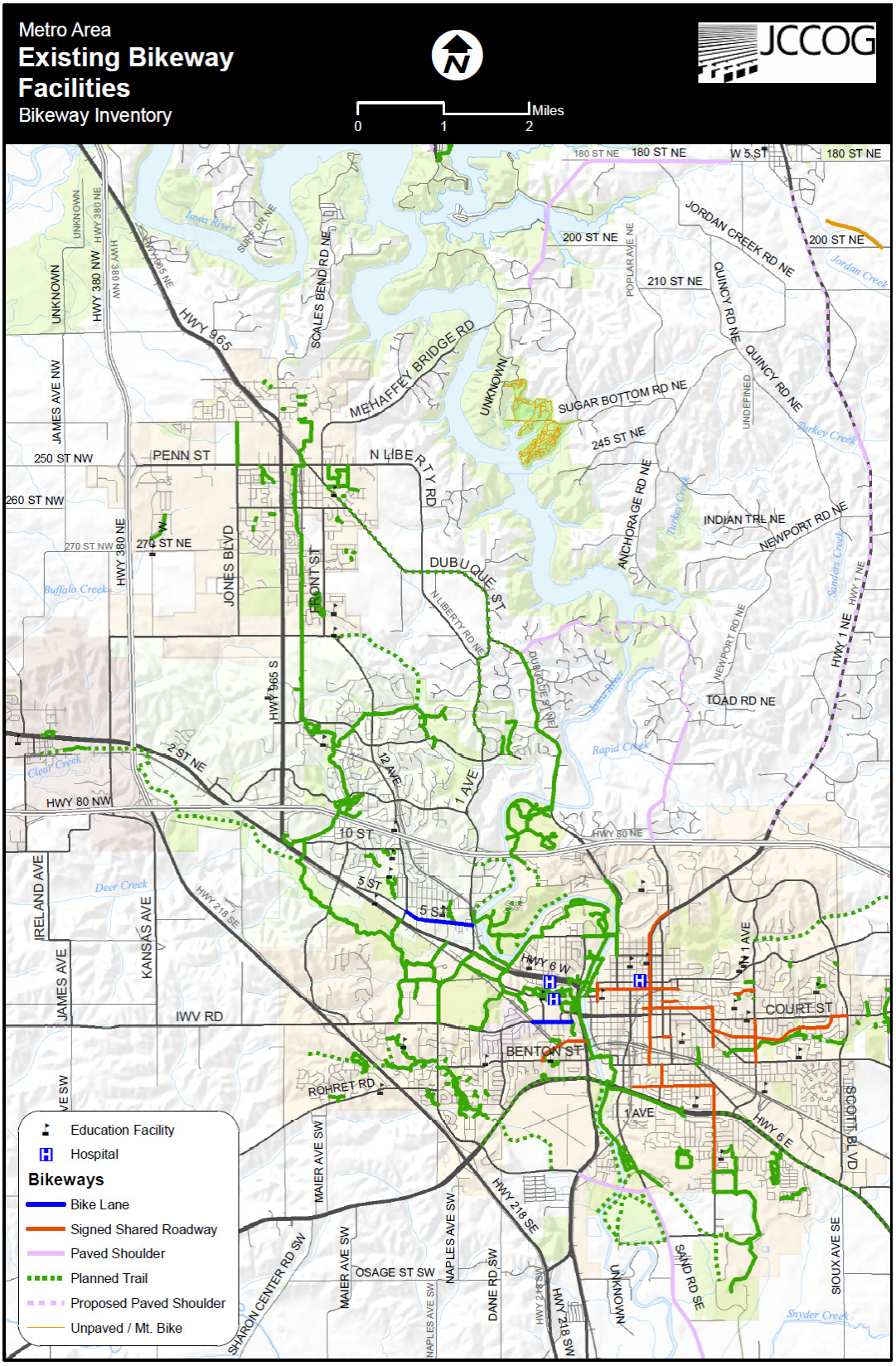
- Seeking feedback and oversight from participating members of the JCCOG Regional Trails and Bicycling Committee (All).
- Planning and maintaining the coordinated metro area 40-mile trail network (All).
- Seeking feedback and oversight from participating members of the Johnson County Trails Committee (BIC, JC, JCCOG).
- Maintaining the position of Bicycle Coordinator for the Urbanized Area (JCCOG).
- Providing a full-time Director of the Office of Sustainability who promotes sustainable practices, including cycling (UI).

- Coordinating and staffing the JCCOG Regional Trails and Bicycling Committee (JCCOG).
- Responding to spot maintenance requests via downloadable report form on www.jccog.org and forwarding to controlling municipality (JCCOG).
- Conducting annual trail counts at select locations to monitor changes in trail usage (JCCOG).
- Conducting peak hour bicycle counts at select locations to monitor bicycle commuting (JCCOG).
- Responding to bicycle-related research and data requests from municipalities (JCCOG).

Inventory of Existing Bikeways

Aside from many of the programs offered by municipalities in the Urbanized Area, the most visible bicycle facilities to cyclists are often those on the ground – trails, bike lanes, bike racks, way-finding signs, and "Share the Road" signs (see map following page). Both JCCOG municipalities and the University of Iowa inventory these facilities to assess future need.

This section details existing bikeway facilities in the Urbanized Area.



Prepared by: Kristopher Ackerson
Prepared: September 25, 2008

Streets – Cyclists want to go to the same places motorists want to go, and can legally ride on every street – except the interstate highways – to some extent. According to local survey respondents, residents prefer riding on local collector streets (44 percent) over major boulevards (20 percent).

The bicycle network, once completed, will provide improved routes for cyclists, but the network cannot satisfy every cyclist's unique needs for directness and comfort. Moderately skilled and beginner cyclists are often uncomfortable riding on busier streets. Providing enhancements that make *more* cyclists comfortable riding on-street is one of the goals of this plan.

Local cyclists interviewed as part of a focus group identified loose sand and gravel on the roadway, especially during spring months, as the most common cause of "wipe outs"[vi]. Street sweeping schedules could be reviewed to reduce these types of accidents.

Highway 1, Highway 6, and Highway 965 traverse the Urbanized Area and are the least bicycle friendly corridors, according to public input. In the past, the Iowa Department of Transportation and cities designed these roadways for vehicles and created sidewalks for bicycles. This approach has been successfully implemented in Coralville, while Iowa City is constrained by right-of-way limitations in the downtown area. Plans are under development for wide sidewalks along Highway 965.

Bike Routes, Lanes, and Paths – How are they different?

Bikeway – A general term for any street or trail which is specifically designated for bicycle travel, regardless of whether such facilities are designed for the exclusive use of bicycles or are to be shared with other transportation modes.
Wide Curb Lane – A roadway travel lane that can accommodate both bicyclists and motorists, while allowing sufficient room for passing.
Bicycle Lane – A bike lane is a portion of a street that has been designated by striping, signage, and pavement markings for preferential or exclusive use of bicycles.
Bicycle Route – A system of roadways signed for the shared use of automobiles and bicyclists without striping or pavement markings.
Trails/Paths – A bikeway that is physically separated from motor vehicle traffic by open space or a barrier and is either within the road right-of-way or within an independent right-of-way. These are also referred to as a shared-use or multi-use paths, or recreation trails.

Some definitions courtesy of the City of Champaign, Illinois

Wide Curb Lanes – To facilitate bike commuting, communities in the Urbanized Area typically construct arterial roads with wide curb lanes (greater than 12 feet wide) to accommodate both cyclists and motorists – allowing sufficient room for passing. A *partial* list of streets with wide curb lanes includes:

Iowa City

- Dodge Street
- First Avenue
- Governor Street
- Highland Avenue
- Jefferson Street
- Keokuk Avenue
- Market Street
- Muscatine Road
- Prairie Du Chien Road
- Rochester Avenue
- Scott Boulevard

Coralville

- 1st Avenue
- 5th Street
- 10th Street
- 12th Avenue
- Holiday Road
- Oakdale Boulevard

North Liberty

- Cherry Street
- Forever Green Road
- Front Street
- Penn Street

University Heights

- Melrose Avenue

Bike Lanes – Most of the eight miles of area bike lanes were removed in the late 1980s in response to advocates that argued bicycles should not be constrained to bike lanes. Today, Iowa City and Coralville have 0.7 and 0.4 miles of bike lanes, respectively. These two segments are found on Melrose Avenue (Figure 6) in Iowa City and 5th Street in Coralville.

Figure 6: Bike lane on Melrose Avenue; by Kris Ackerson.

Signed "Share the Road" – When most bike lanes and bike routes were removed in Iowa City in the late 1980s, many of those streets received "Share the Road" signs. The signs, found in Iowa City, are an effective educational tool but are not regulatory.

Striped Shoulders – This bicycle facility includes a paved portion of the roadway to the right of the edge stripe designed to serve bicyclists. A *partial* list of streets with striped shoulders includes:

- Camp Cardinal Boulevard
- Prairie Du Chien Road
- Rohret Road
- Scott Boulevard
- Sunset Street

Sidewalks and Wide-Sidewalks – Most new and reconstructed roadways in the Urbanized Area offer one wide-sidewalk. In residential areas, sidewalk riding by young children is common. With lower bicycle speeds and lower cross street auto speeds, potential conflicts are lessened, but still exist. Nevertheless, this type of sidewalk bicycle use is accepted.

It is inappropriate to sign these facilities as bicycle routes. The American Association of State Highway and Transportation Officials (AASHTO) cautions:

> It is important to recognize that the development of extremely wide sidewalks does not necessarily add to the safety of sidewalk bicycle travel, since wide sidewalks encourage higher speed bicycle use and increase potential for conflicts with motor vehicles at driveways, as well as with pedestrians and fixed objects…Motorists entering driveways often will not notice bicyclists approaching from their right; they are not expecting contra-flow vehicles. Even bicyclists approaching from the left often go unnoticed, especially when sight distances are limited[vii].

Concerns about safety when riding on sidewalks are based on empirical research. Two oft-cited comparative studies of collision rates found that cyclists on sidewalks are at 1.8 times greater risk of collisions than when riding in the street[viii], while another study found cycling on sidewalks resulted in 2.5 times more collisions than riding in-street[ix]. Both of these studies were based on urban corridors with typical access control for arterial roads.

"…we (Oregon DOT) build wide sidewalks sparingly because of their operational problems…"
~ Michael Ronkin, State Bike/Ped Coordinator, Oregon DOT

Multi-Use Trails – Since the mid-1990s, trail development has flourished in and between the cities in the Urbanized Area. Today, cyclists can ride from Napoleon Park in south Iowa City to North Liberty (via the Iowa River Corridor Trail, Clear Creek Trail and North Ridge/North Liberty Trail) or to West Overlook Road and the Coralville Reservoir (via the Iowa River Corridor Trail), riding almost exclusively on multi-use trails (see map on the following page).

The longest trails in the area, which are generally paved, ADA accessible, and marked with mile markers and warning signs (e.g., stop, curve ahead, etc.), include the following:

- Iowa River Corridor Trail (9.5 miles)
- North Ridge/North Liberty Trail (4.6 miles)
- Clear Creek Trail (3.6 miles)
- Waterworks Prairie Trail (2.3 miles)
- Sycamore Greenway Trail (2.2 miles)
- Willow Creek Trail (1.5 miles)
- Auburn Hills Trail (1.1 mile)
- Court Hill Trail (0.9 mile)
- Finkbine Trail (0.9 mile)
- Mormon Handcart Trail (0.4 mile)

Mountain Bike Trails – The popularity of mountain biking has grown significantly in the past decade, and Sugar Bottom Recreation Area provides renowned off-road, single-track trail riding.

Figure 7: Volunteers at Sugar Bottom Recreation Area; photo by Pat McKay.

The Iowa Coalition of Off-Road Riders (ICORR), a local non-profit, builds and maintains the trails through a unique partnership with the U.S. Army Corps of Engineers, which owns the land. ICORR logs 600 volunteer hours of trail work and 200 volunteer hours of patrol each year to keep the 10.6 miles of Sugar Bottom trails open for bikes (Figure 7).

Shared Lane Arrow – Roadways are often too narrow to be safely shared side-by-side by cyclists and passing motorists. A shared lane marking, also known as a "sharrow" (Figure 8), does not demarcate a separated bicycle lane, but instead directs the bicyclist to travel in the proper lane position.

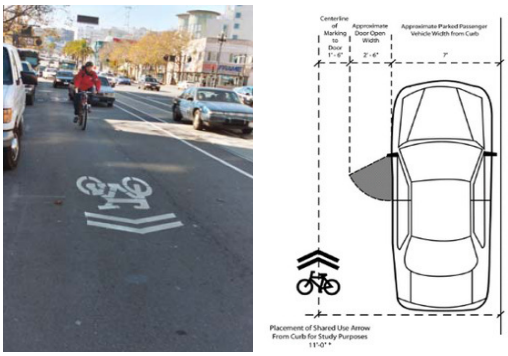


Figure 8: Shared lane arrow in Denver.

Only a couple cities in Iowa currently use sharrows, but they have been found to improve riding conditions for cyclists on downtown streets in communities nationwide. A recent study in San Francisco found that when passing vehicles are present, sharrows cause an increase of over 2 feet in the distance between cyclists and passing

vehicles. In addition, the markings increase the distance between cyclists and parked cars by 3-4 inches.

Other Bikeway Enhancements

Bike Elevator – The University of Iowa constructed the North Campus parking structure with an elevator accessible from the street. The elevator is gaining popularity among cyclists who use it to avoid riding up the steep bluff from Madison Street to Clinton Street.

Public Art – Appealing to people of all ages, some bikeways and trailheads in the area boast public art installations. The sculpture, "Wing in Flight," by Mark LaMair, found on the Sycamore Greenway Trail, is one example (Figure 9).

Figure 9: "Wing in Flight," on Sycamore Greenway; photo by City of Iowa City.

Way-finding Signs – Visual cues are crucial attributes of a bicycle network because they enable people to navigate without stopping to review a map. The trail system has grown dramatically in recent years and today the area boasts 70+ trailheads, yet most of these are not labeled (Figure 10). Serious bike enthusiasts will search out trails, but casual riders are less apt to take advantage of our trail network without improved signage.

Figure 10: Trail sign on Willow Creek Trail; photo by City of Iowa City.

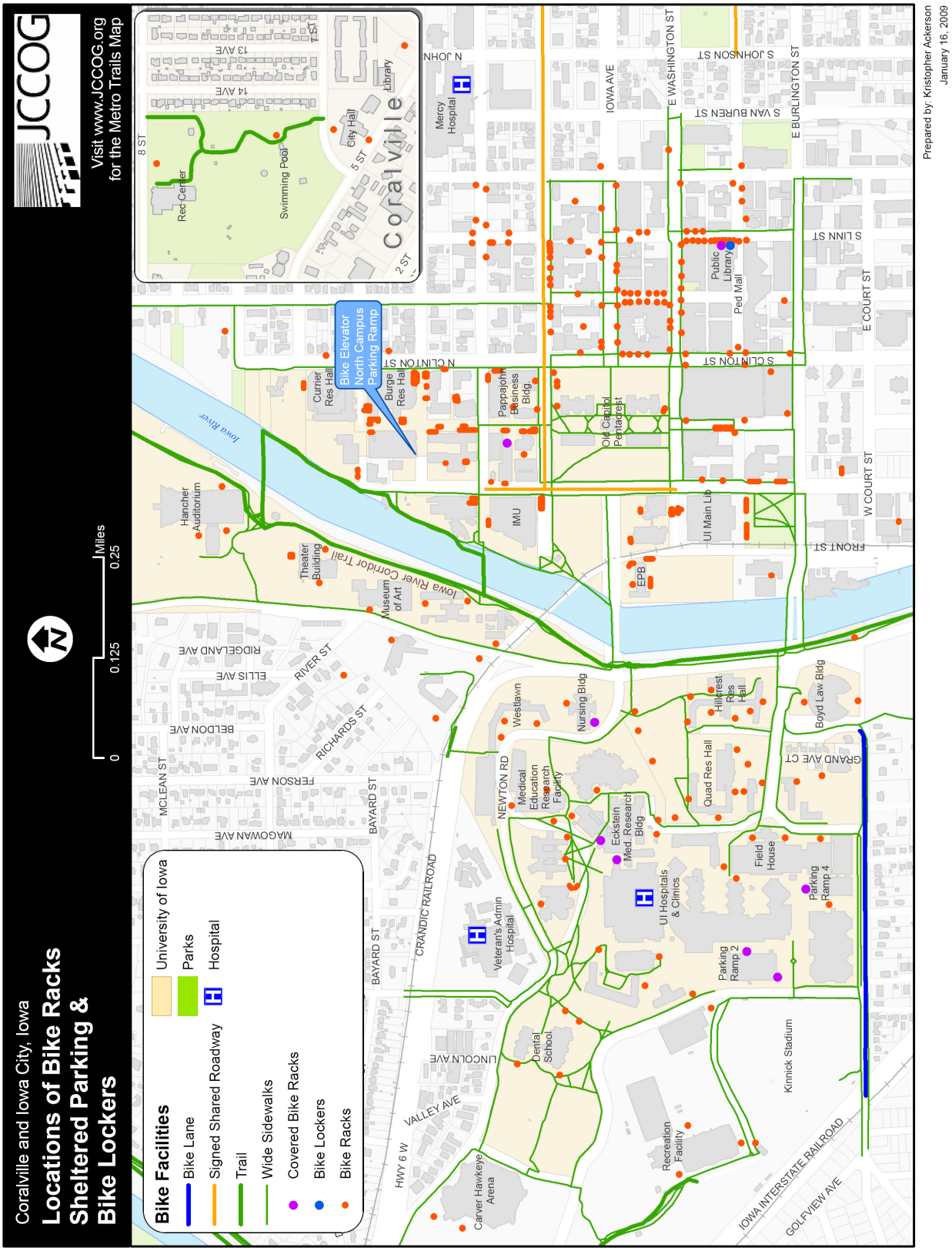
Through a public/non-profit partnership, the Bicyclists of Iowa City helped purchase trail map signs that are posted on segments of trails throughout the community. The signs are not to scale and sometimes lack "You Are Here" indicators.

Bike Parking – City of Iowa City and the University of Iowa staff inventory bike racks and bike rack usage annually to ensure adequate availability for cyclists. A brochure published in 2008 includes a map of over 400 bike racks and sheltered bike parking in the Iowa City, Coralville, and University campus areas (see map on the following page).

Sheltered bike parking is provided at the following locations:

- Old Capitol Mall Parking Ramp (Clinton Street entrance)
- Iowa City Public Library (north of entrance on Linn Street)

- University of Iowa Hospital Parking Ramp 2 (east and southwest entrances) and Ramp 4 (north entrance)
- University of Iowa Memorial Union Parking Ramp (Level 4 - Cleary Walkway entrance)


Coralville and Iowa City, Iowa
Locations of Bike Racks
Sheltered Parking &
Bike Lockers
JCCOG
Visit www.JCCOG.org
for the Metro Trails Map
Bike Facilities
University of Iowa
Bike Lane
Parks
Signed Shared Roadway
Hospital
Trail
Wide Sidewalks
Covered Bike Racks
Bike Lockers
Bike Racks
0
0.125
0.25
Miles
Prepared by: Kristopher Ackerson
January 16, 2009
Bike Elevator
North Campus
Parking Ramp
Iowa River
Iowa River Corridor Trail
Coralville
Rec Center
Swimming Pool
City Hall
Library
Mercy Hospital
Hancher Auditorium
Theater Building
Museum of Art
Currier Res Hall
Burge Res Hall
Pappajohn Business Bldg
Old Capitol Penthouse
IMU
UI Main Lib
Public Library
Ped Mall
EPB
Nursing Bldg
Westlawn
Hillcrest Res Hall
Boyd Law Bldg
Quad Res Hall
Medical Education Research Facility
Eckstein Med. Research Bldg
UI Hospitals & Clinics
Veteran's Admin Hospital
Field House
Parking Ramp 4
Parking Ramp 2
Dental School
Kinnick Stadium
Recreation Facility
Carver Hawkeye Arena
N JOHN
S JOHNSON ST
E WASHINGTON ST
S VAN BUREN ST
E BURLINGTON ST
IOWA AVE
S LINN ST
E COURT ST
W COURT ST
S CLINTON ST
N CLINTON ST
FRONT ST
GRAND AVE CT
NEWTON RD
CRANDIC RAILROAD
BAYARD ST
LINCOLN AVE
VALLEY AVE
HWY 6 W
IOWA INTERSTATE RAILROAD
GOLFVIEW AVE
MAGOWAN AVE
FERSON AVE
BELDON AVE
ELLIS AVE
RIDGELAND AVE
MCLEAN ST
RIVER ST
RICHARDS ST
8 ST
14 AVE
13 AVE
7 ST
5 ST
2 ST

- University of Iowa Eckstein Medical Research Building (south entrance)
- University of Iowa Medical Research Center (north entrance)
- University of Iowa Nursing Building (south entrance)

Bike lockers are rented for a small fee at the following location:

- Court Street Multimodal Transportation Parking Ramp (Court Street and South Dubuque Street)

Bike corrals are provided in the following location:

- University of Iowa Hospital Parking Ramp 2 (east and southwest entrances) and Ramp 4 (north entrance)

Private/Public Partnerships – The City of Coralville provides free operational space to the Iowa Bicycle Coalition, which works statewide to promote cycling as safe and enjoyable recreation and transportation. The 501(c)(3) nonprofit group was launched by bicycling advocates from across Iowa and represents road riders, mountain bikers, recreation riders, and commuters.

Since 2004, approximately 700 people have checked out bicycles at the Iowa City Bike Library, which seeks to increase ridership through education. The City of Iowa City provides free operational space in the John Wilson Building, and Environmental Advocates, a local nonprofit, acts as a fiscal agent for the Bike Library. The Bicyclists of Iowa City (BIC) contributed money for a second fully equipped self-serve bike maintenance workbench.

The Bike Library depends on volunteer labor for all operations, including repairs, salvage, education courses, and rental bench work, for a total of 1,092 volunteer hours in 2008.

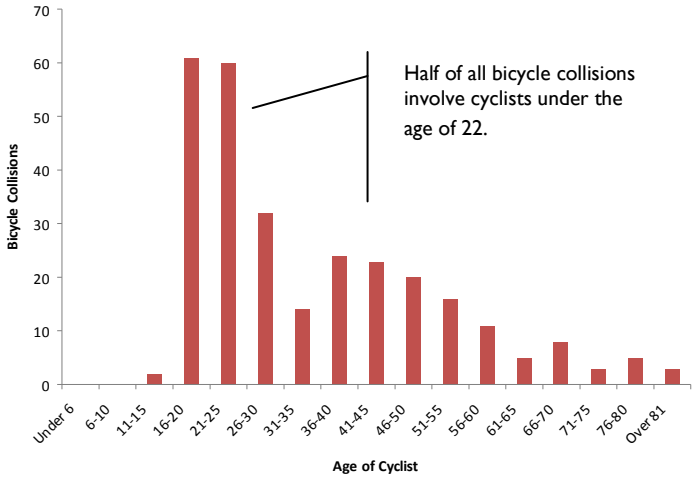
In addition to its core mission, the Iowa City Bike Library also seeks to divert bicycles from the landfill. In 2007, over 7000 pounds of metal were recycled at a local scrap yard and 660 pounds of bike tires and tubes were recycled through the City of Iowa City's tire recycling program.

Bicycle Collisions

Analysis of the 273 documented on-street collisions in Johnson County between 2001 and 2007 revealed several trends. First, more than half of all on-street collisions involved cyclists 22 years old or younger, which suggests that education efforts could be focused on this demographic (Figure 11). Second, of the on-street collisions where safety equipment was checked, only 25 percent of cyclists were

wearing helmets (not required by law) and none had lights on their bicycles (required by state and local code).

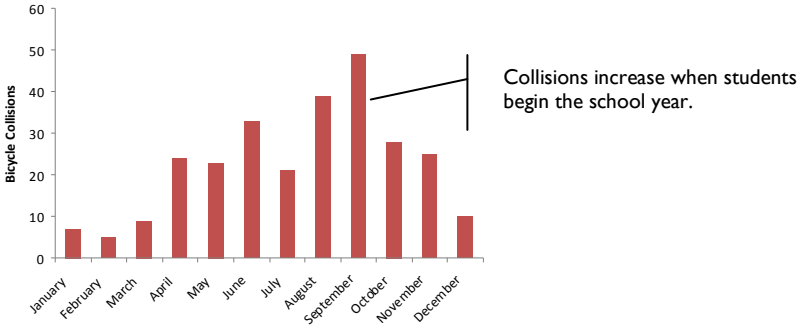
Figure 11: Age of cyclists in collisions in Johnson County, 2001-2007



Source: Iowa Department of Transportation data, 2001-2007; Analysis from "Bicycle Collisions in Johnson County," by P. Knapp, S. Knoploh-Odole, L. Levy, J. Rosenberg, and S. Snyder; University of Iowa Department of Urban & Regional Planning; 2008.

Of the bike collisions that occur on-street, a substantial number of collisions occur in the fall when students return to school (Figure 12). These statistics suggest that educational outreach should be targeted toward young adults and that enhanced education of bike light and reflector laws could reduce collision rates.

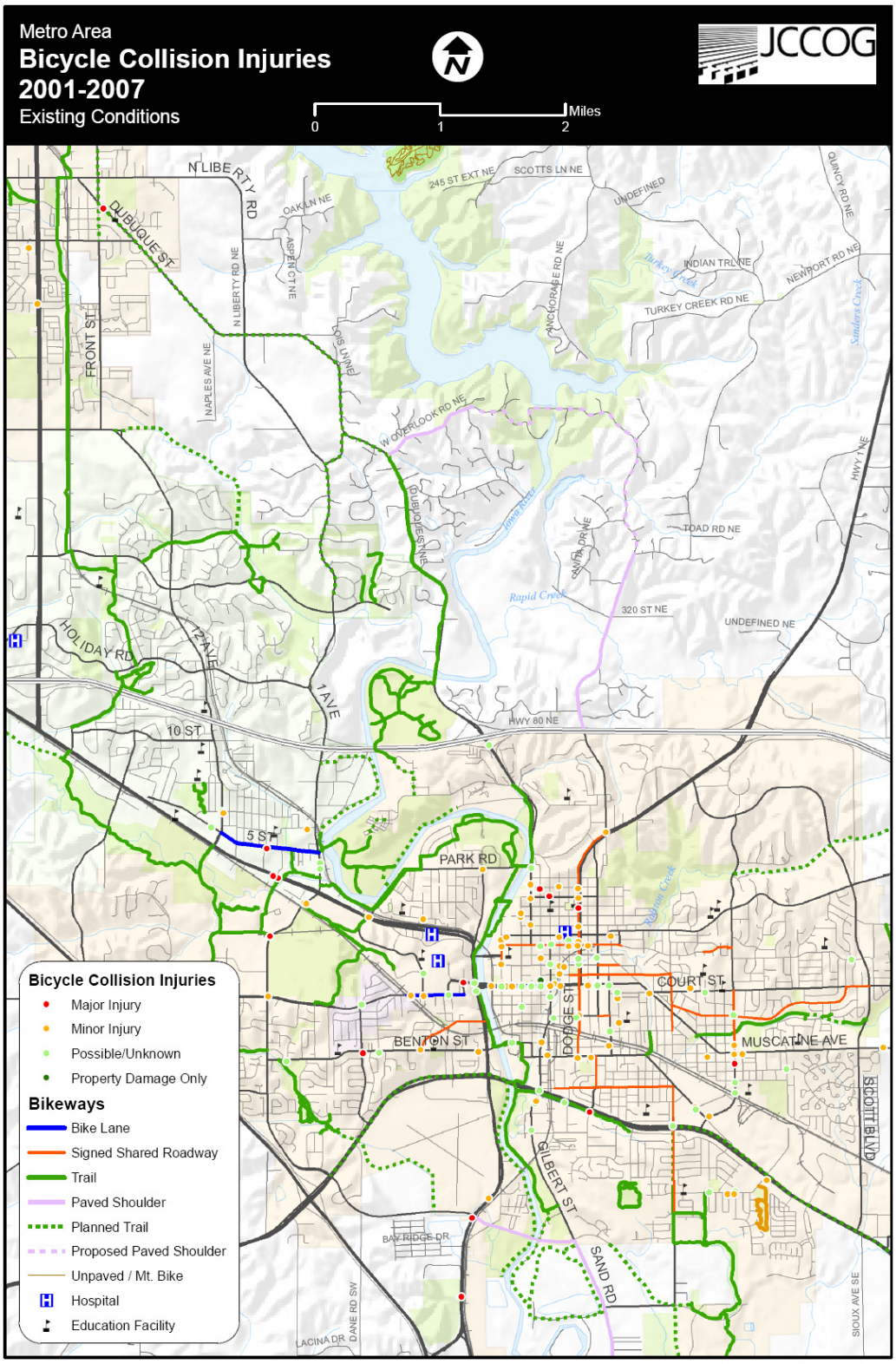
Figure 12: Age of cyclists in collisions in Johnson County, 2001-2007



Source: Iowa Department of Transportation data, 2001-2007; Analysis from "Bicycle Collisions in Johnson County," by P. Knapp, S. Knoploh-Odole, L. Levy, J. Rosenberg, and S. Snyder; University of Iowa Department of Urban & Regional Planning; 2008.

Not surprisingly, streets with high numbers of cyclists traveling with medium to high volumes of vehicles tend to experience higher rates of bike collisions. Burlington Street, Gilbert Street, and Dodge Street are the most common corridors with collisions (Table 1). On-street pavement markings, such as bike lanes and sharrows, are a common

tool on roadways where traffic volumes and speeds lead to conflicts between vehicles and bicycles (see map below).



Prepared by: Kristopher Ackerson
Prepared: September 25, 2008

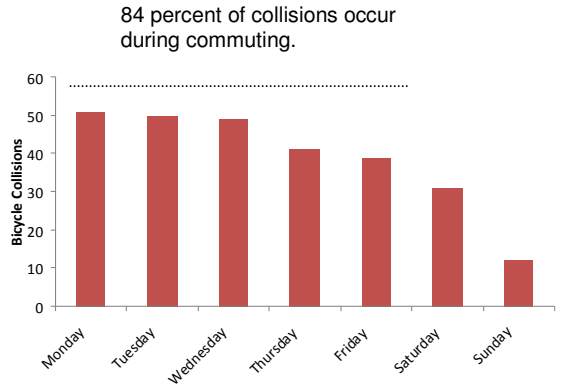
Table 1: Street segments with highest bicycle collisions (includes collisions from 1998 – 2007)

Streets	Termini	Bike Collisions
Burlington St.	Madison St. & Muscatine Ave.	20
Gilbert St.	Ronalds St. & Hwy 6 & beyond	15
Dodge St.	Brown St. & Kirkwood St.	12
First Ave.	Court St. & Hwy 6	9
Dubuque St.	Park Rd. & Washington St.	7
Lakeside Dr.	Whispering Prairie Ave & Regal Lane	5

Source: Iowa Department of Transportation data, 2001-2007; Analysis from "Bicycle Collisions in Johnson County," by P. Knapp, S. Knoploh-Odole, L. Levy, J. Rosenberg, and S. Snyder; University of Iowa Department of Urban & Regional Planning; 2008.

Of collisions that occur on-road, bicycle collisions occur more frequently during the week (84 percent), rather than on weekend days (Figure 13).

Figure 13: Distribution of collisions by day of week in Johnson County, 2001-2007



Source: Iowa Department of Transportation data, 2001-2007; Analysis from "Bicycle Collisions in Johnson County," by P. Knapp, S. Knoploh-Odole, L. Levy, J. Rosenberg, and S. Snyder; University of Iowa Department of Urban & Regional Planning; 2008.

To limit collisions with bicycles, cities must realize that no "silver bullet" solution exists. The skill levels of cyclists vary dramatically, from the experienced cyclists who ride daily and prefer safe, direct routes to inexperienced youth who ride to school, parks, and close-to-home destinations. Depending on their experience, cyclists use various combinations of bikeways to reach their destinations, and therefore no one facility will meet all cyclists' needs.

However, a large segment of the cycling population fall somewhere in-between these two extremes, including many more potential cyclists who do not ride regularly now, but would likely do so if a safer system existed.

Chapter Three

Goals and Objectives

This chapter provides a framework for the development of bicycle-related facilities in the Urbanized Area through 2019 and describes the communities' needs, goals, and objectives for the bicycle network.

The bicycle network needs have been determined based on demographic trends, evaluation of the location and facilities in the communities' network, input from residents during the community workshops, completed online surveys, and from the JCCOG Regional Trails and Bicycling Committee. The League of American Bicyclists (LAB) provided a framework for evaluating bicycle network adequacy. This framework emphasizes locally identified needs when determining network adequacy.

The goals found herein offer a broad vision of what citizens in Coralville, Iowa City, North Liberty, Tiffin, University Heights, Johnson County, and the University of Iowa would like to achieve with the bicycle network. The objectives help focus the overarching goals and priorities identified by residents. By implementing the recommendations in Chapter 4, the communities will achieve the goals and vision set forth in this plan.

Bicycle Participation Trends

Identifying bicycling trends is relevant to bicycle planning because it allows a community to anticipate demand for facilities. Both the National Sporting Goods Association (NSGA) and the Iowa Department of Transportation have compiled bicycling participation data, which show trends at the national, state, and regional level. An analysis of these trends establishes a context for evaluating the Urbanized Area's bicycle network.

National, State, and Regional Trends

The National Sporting Goods Association publishes annual data at the state and national level. Participation trends outlined in this data may be useful in determining the need for certain bicycle facilities in the Urbanized Area. According to the 2007 NSGA survey data, out of 46 sports, bicycling has the sixth highest participation level nationwide:

- Exercise walking: 89.8 million participants

- Exercising with equipment: 52.8 million participants
- Swimming 52.3: million participants
- Camping (vacation/overnight): 47.5 million participants
- Bowling: 43.5 million participants
- **Bicycle riding: 37.4 million participants**[x]
- Forty less popular sports…

In 2000, the Iowa Department of Transportation updated the *Iowa Trails Plan*. A household survey found that the trail activities most often undertaken by respondents was "walking near home for recreation and exercise," followed by "bicycling near home[xi]."

In 2002, a survey of over 500 randomly selected Coralville households found that residents agree that existing recreational facilities improve physical health, improve their quality of life, and reduce stress. The majority of respondents indicated that bike trails are the most important recreation facility to their household, and more than half (53.7 percent) requested the city add more multipurpose trails[xii].

A similar random household survey of over 700 Iowa City residents in 2008 found substantial support for linking bikeways and trails. The Parks and Recreation projects that respondents would be most willing to fund with their tax dollars include: developing new walking and biking trails and connecting existing trails (55 percent), using greenways to develop trails and recreational facilities (50 percent), and purchasing land to preserve open space and green space (44 percent)[xiii].

Figure 14: Waterworks Prairie Trail; photo by City of Iowa City.

Additionally, the American Association of Retired People analyzed U.S. Census data from 2005 and found that Iowa City ranked sixth nationwide in terms of percentage of residents (9.7 percent) who commute by bike or walk[xiv].

Bicycling is popular at the state and national level. Taking local, state, and national trends into consideration, the communities in the Urbanized Area should consider providing additional opportunities for cycling, walking, hiking, and trail development.

Community Needs

The Iowa River Corridor Trail acts as the backbone of the bicycle network in the Urbanized Area. Its central location and high quality amenities (e.g., street under-passes, signage, and trailhead parking) attract many community members. This 40-mile plus trail network will continue to expand as planned.

Figure 15: Pedestrian bridge at Iowa River Power Dam; photo by Scott Larson.

As a result of the growing trail network, there is a need for route-finding aids and links between trailheads and popular destinations. Many trails begin and end in neighborhoods without trailhead signs, directions to nearby destinations (i.e. parks, trails, shopping, schools, etc.), or trailhead parking.

Although trails are popular, land acquisition and trail construction costs limit trails in developed areas. Therefore, families and individuals can be expected to ride on roadways to trailheads, schools, shopping areas, and employment centers.

Since bikeways include streets, education and enforcement will be essential to facilitating in-town cycling. In addition, on-street facilities and maps should be maintained to increase cyclists' comfort level and to aid with route-finding.

With the development of the bicycle network, the communities in the Urbanized Area will be able to improve opportunities for recreation, running errands, and commuting to work via bicycle.

Public Input

Three sources of input were used for this plan:

Staff Meetings

First, the JCCOG planning team met with staff from each JCCOG entity, including planners, engineers, chiefs of police, and elected officials. These staff meetings helped ensure the goals and recommendations are realistic.

Online Survey

The purpose of the online survey and two bike planning workshops was to identify common priorities among residents to improve bicycle safety and efficiency. The large numbers of participants representing different age groups and skill levels suggest that the *Metro Bicycle*

Master Plan will address the needs of current and future residents, not just experienced cyclists.

Approximately 495 residents completed the online survey between September 30th and November 10th, 2008. The following key findings were obtained (visit *www.jccog.org* for complete survey results).

- Respondents rated bicycle facilities in the community as Average (54 percent), Poor (40 percent), or Excellent (4 percent).
- Bike lanes are the most commonly requested bicycle facility (39 percent).
- Approximately 1/3 of respondents ride for recreation or transportation just once a week or less.

Figure 16: Participants prioritize bike facilities at the Coralville bike workshop.

- Forty-five percent of the respondents are over 40 years old.
- According to respondents, more bike racks are needed at grocery stores, shopping centers, and restaurants.
- The top two factors that discourage respondents from bicycling are "Too many cars/cars drive too fast" and "Drivers don't share the road." Seventy-five percent of survey respondents were from Iowa City and Coralville and approximately half of the respondents live on the east side of Iowa City.

Bike Workshop Findings

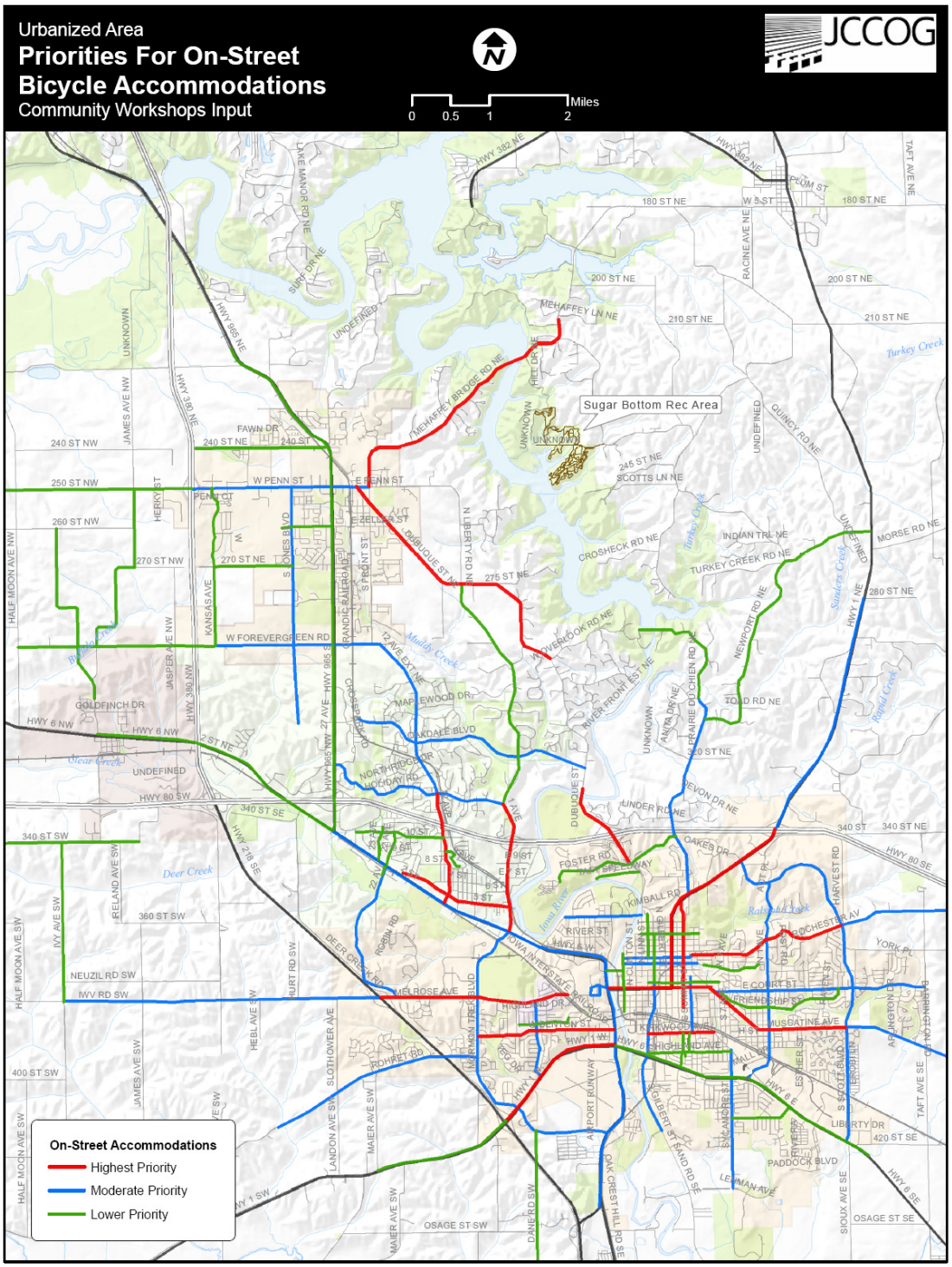
Staff obtained public input at two bike planning workshops held on September 30th and October 8th in Coralville and Iowa City, respectively. The purpose of the workshops was to identify the most popular programs, policies, and facilities within each of the five E's – engineering, education, encouragement, enforcement, and evaluation. The following list highlights the most popular items as identified by 160 participants (visit *www.jccog.org* for complete results):

- Engineering – Install more on-street accommodations

Figure 17: Participants at local bike workshop.

- On-Street Facilities – Bike lanes on new or existing roads (58 percent) or shared-lane-arrows (a.k.a., "sharrows")
- Education – Publish bike rack location map online, including sheltered racks and lockers
- Encouragement – Continue to offer free operational space to Iowa Bicycle Coalition and I.C. Bike Library
- Enforcement – Enforce headlight/reflector laws during non-daylight hours
- Evaluation – Conduct peak hour counts of bicycle commuting on-street

The following map shows the consensus among attendees regarding streets bicycle facilities could be improved. The map shows the number of times each street segment was selected as a street in need of improvement by workshop participants. "High Priority" roadway segments were selected by at least half of all participants; "Medium Priority" roadways were selected by 20 percent to 50 percent of participants; and "Lower Priority" segments were selected by less than 20 percent.



Prepared by: Kristopher Ackerson
Prepared: November 6, 2008

Goals and Objectives

The goals and objectives collectively present a vision that the Urbanized Area will work toward to meet the communities' current and future bicycle network needs. The objectives are broad concepts for projects or activities that each community should implement to fulfill the goals. Both the goals and objectives respond to suggestions and concerns generated by the JCCOG Regional Trails and Bicycling Committee and by the public during two community workshops and an online survey. These goals and actions should be implemented through the recommendations and projects outlined in Chapter 4. The goals are not listed in priority order:

Goal 1: Implement the *Metro Bicycle Master Plan*

Objective 1A. All JCCOG member municipalities adopt the *Bicycle Master Plan* and incorporate the recommendations into other plans.

Objective 1B. Complete the projects and programs identified in the *Metro Bicycle Master Plan*, based on available funding and project costs.

Benchmarks: Miles of bikeways established; number of locations improved; number of bike racks installed; percentage of projects completed

Goal 2: Increase the number of people bicycling for transportation and recreation

Objective 2A. Aid cyclists' route-finding.

Objective 2B. Increase the percentage of trips made by bicycle in the Urbanized Area to 10 percent of all trips.

Objective 2C. Increase the number of trail system users by 10 percent per year as measured through annual count data.

Benchmarks: Conduct pedestrian and bicycle travel counts at key locations on the bikeway system. Integrate bicycle counts in peak-hour vehicle count programs. Monitor U.S. Census data for changes in commuting trends (i.e., car, carpool, bus, bike, or on-foot).

Goal 3: Improve bicyclist safety

Objective 3A. Identify bikeways with high bicycle collision rates and develop a mitigation plan.

Objective 3B. Facilitate communication to ensure timely reporting and repair of bikeways.

Objective 3C. Continue designing all on-street bicycle facilities and trails according to American Association of State Highway and Transportation Officials' (AASHTO) guidelines.

Objective 3D. Reduce the number of reported collisions in the Urbanized Area involving bicycles by 10 percent.

Benchmarks: Annual collision data reports and mitigation of priority collision locations.

Goal 4: Reduce greenhouse gas emissions

Objective 4A. Ensure bicycling is a key focus of all initiatives to reduce greenhouse gas emissions.

Benchmarks: Calculate annual bicycle commuting rates to identify the pollution-reducing benefits of bicycle travel.

Goal 5: Improve health and fitness

Objective 5A. Improve the health and fitness of residents by facilitating bicycle access for recreation and transportation.

Benchmarks: Calculate the annual number of calories burned by cyclists using U.S. Census commuting data and average commute length.

Goal 6: Education, enforcement, and encouragement

Objective 6A. Develop education, encouragement, and enforcement programs to promote safe cycling and driving habits.

Objective 6B. Educate the public regarding the rights and responsibilities of cyclists, motorists, and pedestrians.

Objective 6C. Improve bicycle access between residential areas and parks, schools, and commercial areas.

Objective 6D. Identify and promote links to county roads suitable for cycling.

Benchmarks: Annual survey results and participation in bike-related events and programs, including participation in Bike-to-Work Week, races, club rides, police patrols on bikes, bicycle registrations, or number of cyclists trained in "Effective Cycling".

Goal 7: Enhance economic development

Objective 7A. Capitalize on the economic benefits of cycling in the local economy.

Objective 7B. Promote bicycling in economic development, tourism, and job creation programs. Identify benefits to businesses including employee health and quality of life.

Benchmarks: Bike rentals, events (i.e., Bike-to-Work Week, Iowa City Criterium, RAGBRAI, Jingle Cross Rock, Sugar Bottom Scramble, etc.), job creation, and new development along bikeways.

Goal 8: Build "Safe Routes to Schools"

Objective 8A. Increase participation by local school districts in "Safe Routes to Schools" programs.

Benchmarks: Percentage of schools with active "Safe Routes to Schools" programs and the rate of children bicycling to school.

Goal 9: Provide bicycle parking

Objective 9A. Provide bicycle parking as an integrated element of streetscape and development design.

Objective 9B. Adopt bicycle parking ordinances by all municipalities in the Urbanized Area.

Benchmarks: Number of bike parking spaces installed annually.

Goal 10: Ensure high quality of service

Objective 10A. Ensure all bikeways are well maintained.

Objective 10B. Provide security, routine litter patrol, annual safety reporting, and facilities condition management.

Benchmarks: Prepare an annual report for the JCCOG Regional Trails and Bicycling Committee, including survey results, summary of bikeway improvements, and other information.

Chapter Four

Recommendations

Cities in the Urbanized Area and the University of Iowa have a long history of bicycle planning to improve residents' quality of life. Over the past 35 years, communities in the Urbanized Area have been leaders in bicycle accommodations in the State of Iowa.

As the bicycle network evolves, prioritizing improvements is a challenge. Trail development has been the highest priority in recent years and today residents enjoy over 40 miles of trails. The following recommendations expand the scope of bicycle planning beyond trails to include the five E's: engineering, education, encouragement, enforcement, and evaluation.

This chapter synthesizes an inventory of bicycle facilities, input of 24 local staff and elected officials, and priorities identified through the public input process (645 participants). The following recommendations build upon past bike plans and outline priorities for the Urbanized Area to meet the 10 Goals of this plan – outlined in Chapter 3.

The following system-wide recommendations highlight actions that all JCCOG entities can work to achieve. The community-specific recommendations address unique needs of each JCCOG entity. Except where otherwise noted, communities should maintain existing programs and facilities outlined in Chapter 2.

System-wide Recommendations

The success of the metropolitan trail network demonstrates the potential benefits from coordinated bicycle planning. The following system-wide recommendations are based on the Goals described in Chapter 3. City-specific recommendations begin on page 53.

Engineering

System-wide Recommendation:
Install on-street accommodations.

Goal 2 of this plan is to "increase the number of people bicycling for transportation and recreation." In terms of infrastructure, on-street pavement markings are the "next step" in becoming more bicycle-friendly.

For the past 15 years, the Urbanized Area has successfully focused resources on trails, wide curb lanes, and wide-sidewalk development. **Trails** are a boon for youth and recreational cyclists, as well as walkers and joggers. Yet, among residents that completed the bike survey bike commuting is more common (53 percent) than cycling for recreation (47 percent), and trails are used by commuters less often (JCCOG Bicycle Survey, 2008).

Five types of on-street facilities are used locally to facilitate cycling:

- Shared lanes
- Bike lanes
- Wide curb lanes
- Striped shoulders
- Traffic calming

In part to facilitate on-street cycling, several communities in the Urbanized Area construct arterial roads with **wide curb lanes** (greater than 12 feet) and **striped shoulders** to accommodate both cyclists and motorists – allowing sufficient room for passing. Studies show that wide curb lanes and bike lanes are equally safe for cyclists, thus either type of facility is recommended to improve riding conditions[xv].

Studies have also found cyclists feel safer riding in **bike lanes** and are more apt to ride when bike lanes are available[xvi, xvii, xviii]. Local support for bike lanes (Table 2) parallels these national trends. However, most arterial streets in the area are not wide enough to accommodate bike lanes. Where the road width is adequate, bike lanes should be considered to provide a bicycle network attractive to cyclists of all skill levels.

Table 2. Preferred on-street bike facilities at 2008 bike plan public workshops

On-Street Facilities	Count	Percent
Bike Lanes (new streets)	118	32%
Bike Lanes (existing streets)	96	26%
Sharrows	65	17%
Way Finding Signs	38	10%
Bike Boulevards	28	7%
Bike Routes	21	6%
Signed "Share the Road"	8	2%
Total	374	100%

Since bike lanes facilitate increased ridership, the Federal Highway Administration recommends using bike lanes where adequate width is available[xix] and along routes where non-expert cyclists (B/C level) are common (e.g., school areas, commercial areas, universities, etc.).

Shared lane arrows (or "sharrows") could prove to be a workable alternative to bike lanes where road width is inadequate for bike lanes. The provisional MUTCD provides the following guidance:

If used on a street without on-street parking that has an outside travel lane that is less than 4.3 m (14 ft) wide, the centers of the Shared Lane Markings should be at least 1.2 m (4 ft) from the face of the curb, or from the edge of the pavement where there is no curb. If used, the Shared Lane Marking should be placed immediately after an intersection and spaced at intervals not greater than 75 m (250 ft) thereafter.

The Shared Lane Arrow may be used to:

A. Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist's impacting the open door of a parked vehicle,

B. Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane,

C. Alert road users of the lateral location bicyclists are likely to occupy within the traveled way,

D. Encourage safe passing of bicyclists by motorists, and

E. Reduce the incidence of wrong-way bicycling.

~ Source: Provisional MUTCD, 2009

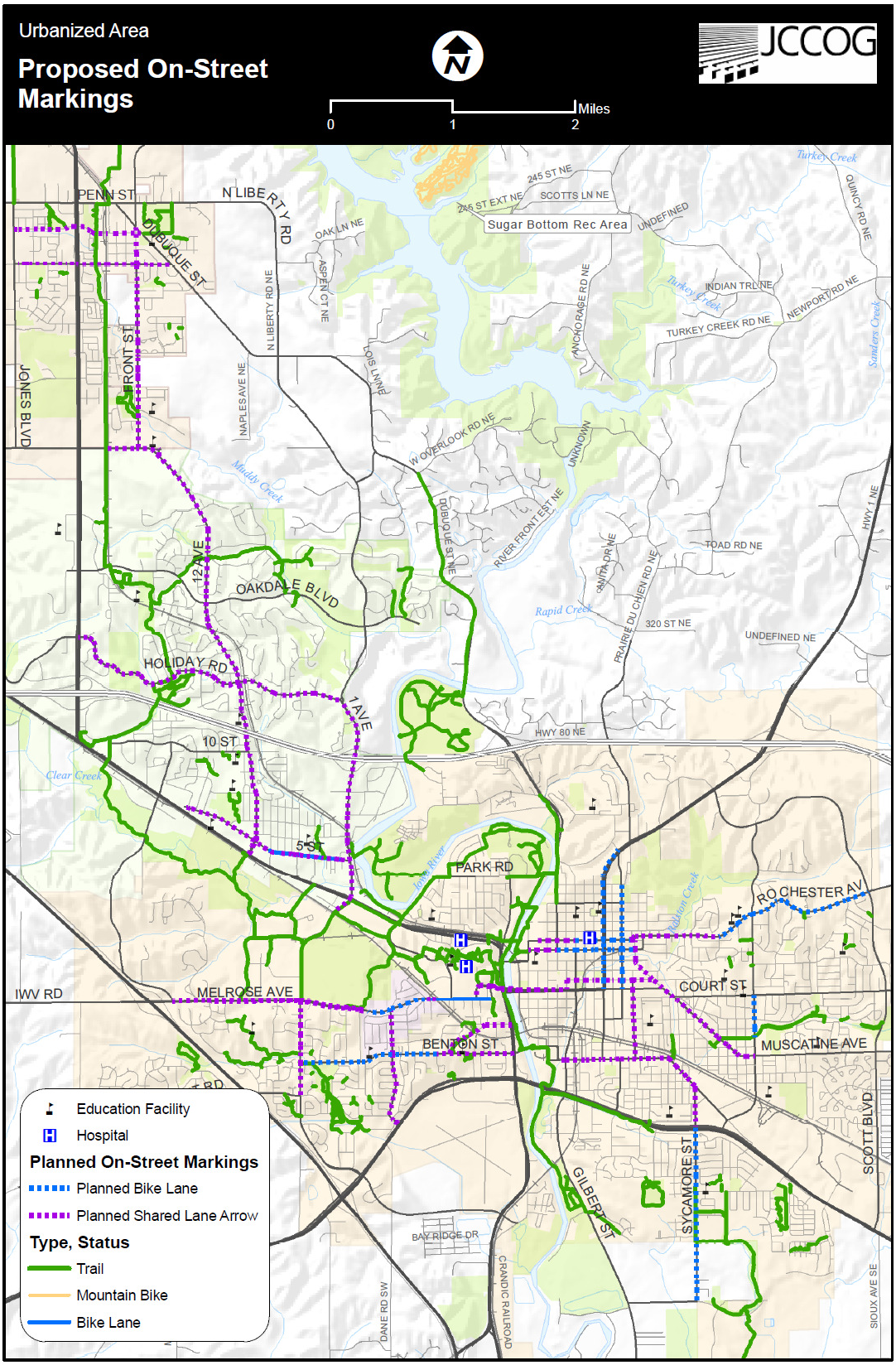
In general, on-street facilities should be installed in the Urbanized Area only where FHWA criteria (outlined in Appendix A) are met. Additionally, consideration should be given to corridors with high volumes of bicycle traffic and corridors where cyclists frequently disobey the rules of the road, such as downtown Iowa City.

Based on roadway width, speed limit, traffic volume, on-street parking, number of non-expert cyclists, and sight distance, the following maps highlight opportunities for bike lanes and shared lane arrows.

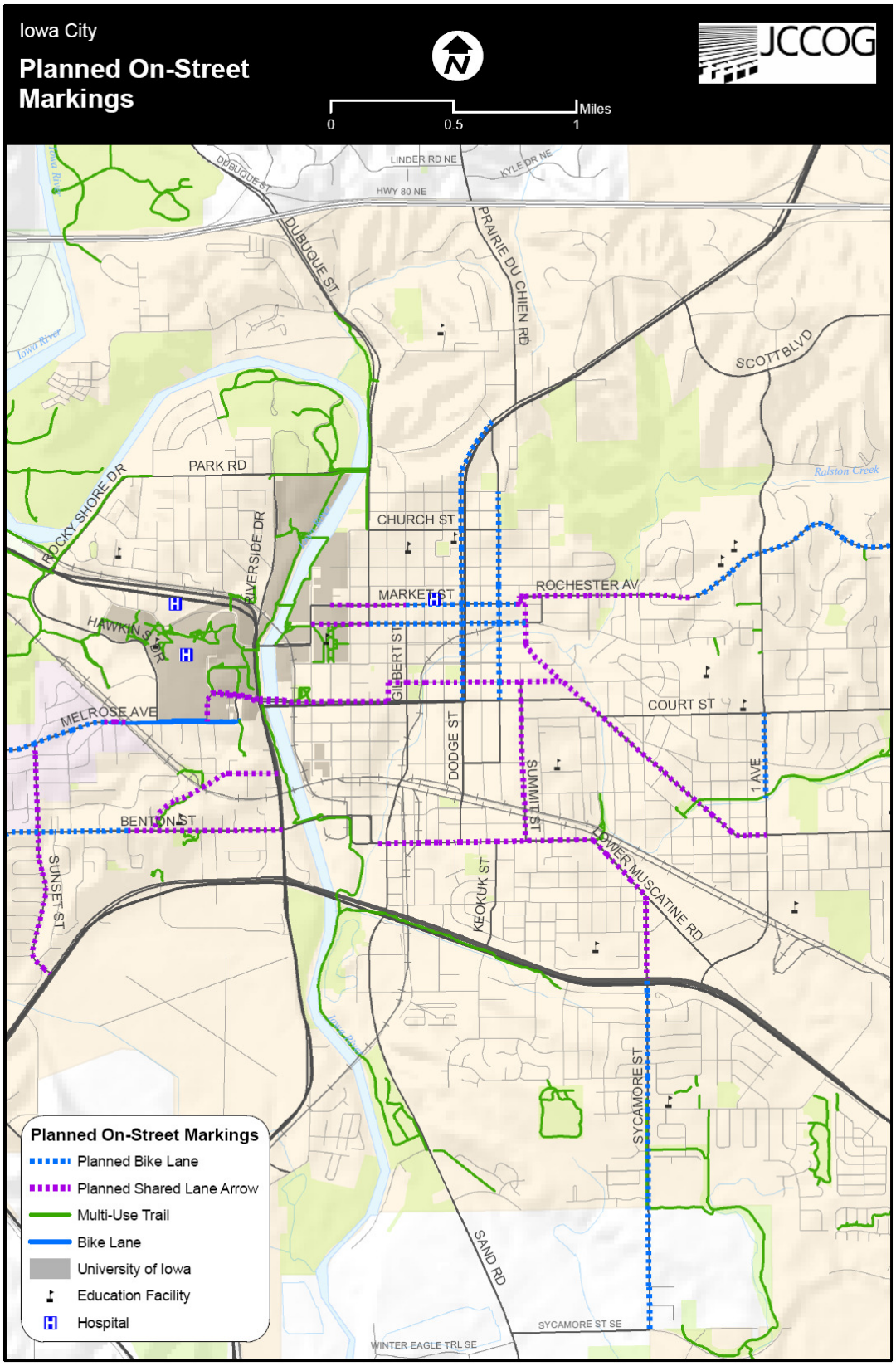
Pavement condition contributes to over 50 percent of bike crashes. Sand, potholes, cracks, and uneven storm drains are roadway hazards for vehicles and bicycles. Generally, pavement condition is a public safety concern for all roadway users; but good pavement quality is critical to cyclists' safety, particularly with the narrow tires used on many bicycles.

In addition, biking on poor pavement is an unpleasant experience, especially for the novice rider. If communities in the Urbanized Area intend to increase ridership and become more bicycle-friendly, then good pavement quality should be a priority.

First, seasonal street-sweeping, especially in early spring along common bike routes, is the most efficient method to improve rider safety. Second, standard pavement maintenance practices should be performed as needed. And third, pavement markings (i.e., sharrows and bike lanes) should be maintained to ensure daytime and nighttime visibility.



Prepared by: Kristopher Ackerson
Prepared: November 17, 2009



Prepared by: Kristopher Ackerson
Prepared: January 6, 2009

Education

System-wide Recommendation:
Facilitate bicycle safety through 1) public service announcements targeted at young adults; 2) drivers' education classes; and 3) elementary schools' physical education classes.

There are major differences in the bicycling abilities, behavioral patterns, and learning capacities of different bicyclists and other road users. For example, children have different physical and psychological abilities than adult bicyclists, young drivers exhibit different behaviors and driving skills than older drivers, and college age bicyclists may be reached through educational outlets that differ from those of other groups. Because of this, educational programs need to be tailored to the specific audiences they intend to address and to the behaviors they seek to modify[xx].

City staff and residents at both bike plan workshops prioritized two user groups where bicycle safety education should be focused:

1. Youth cyclists
2. Young adults (as cyclists and motorists)

Local motorists and cyclists expressed the following common bicycle-related problems should be addressed locally through education:

- Bicyclists ignoring traffic signals and signs.
- Bicyclists riding unpredictably and failing to signal before turning.
- Motorists don't safely pass bicyclists.
- Motorists cutting bicyclists off or driving too closely.

Numerous resources are available for staff. Local entities should take advantage of opportunities to partner with local advocacy groups and education outlets, including the Bicyclists of Iowa City, Downtown Optimists, Iowa Bicycle Coalition, Iowa City Bike Library, Johnson County Trails Foundation, and local League of American Bicyclists certified instructors.

These entities should develop education, encouragement, and enforcement programs that parallel the development of bikeways and promote "sharing the road" to educate motorists and bicyclists of their rights and responsibilities.

The website *bicyclinginfo.org*, a partnership between the Federal Highway Administration and University of North Carolina Highway Safety Research Center, provides curricula and materials for age specific outreach.

Encouragement

System-wide Recommendation:
Implement a coordinated way-finding system on trails and roadways across the Urbanized Area to assist route finding.

Trail Signage

An unexpected outcome of the growing trail network in the Urbanized Area is the challenge of navigating nearby communities. Plotting routes to and from popular destinations, including trails, is frustrating for trail users (JCCOG Bicycle Survey, 2008). Many neighborhood trailheads, for example, offer no street signs or bearing to nearby destinations like shopping areas, parks, schools, or other trailheads.

Figure 18: Way-finding signs direct trail users to popular attractions in the Quad Cities.

Trails in the Urbanized Area traverse multiple jurisdictions. The Iowa River Corridor Trail, for example, passes through Iowa City, Coralville, Johnson County, and the University of Iowa. To aid trail users and advertize amenities, the JCCOG entities could pursue a *coordinated* system of way-finding signs. For example, the Quad Cities are installing a creative network of signs identify the jurisdiction and nearby attractions (Figure 18).

Alternatively, the existing trail way-finding signage could be expanded to cover all trails longer than 0.5 miles (Figure 19).

Local funding could match grant funds provided by state and federal DOT Transportation Enhancements programs.

Figure 3: Trail way-finding sign on Iowa River Corridor Trail; photo by Kent Ralston.

Primary Bike Routes - *Signed*

Signed bicycle routes serve two functions: 1) bike routes help new cyclists find common routes to/from key destinations throughout the Urbanized Area (i.e., schools, hospitals, parks, downtown, etc.); and 2) bike routes funnel cyclists onto popular corridors where motorists anticipate bicycles.

Although bicycles are allowed on all streets, cyclists often use streets parallel to arterial streets, which are unfamiliar to less experienced cyclists. The lower traffic volumes and speeds make these parellel routes popular among cyclists – College Street is a popular alternative to Burlington Street, for example.

As part of the planning process, JCCOG staff received input from local cyclists to identify future bike routes. Based on public input and cycling patterns, all JCCOG entities could sign bike routes outlined in the following map to funnel bicycles onto streets where motorists will anticipate bicycles. All bike routes signs should:

1. Include the destination, distance, and direction to landmarks like "North Liberty Recreation Center, Public Library, Morrison Park, etc." (Figure 20);" and
2. Be installed periodically, at all turns, and at major street intersections to ensure a continuous route.

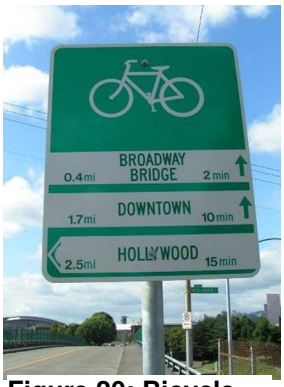


Figure 20: Bicycle boulevard signs in Denver, CO.

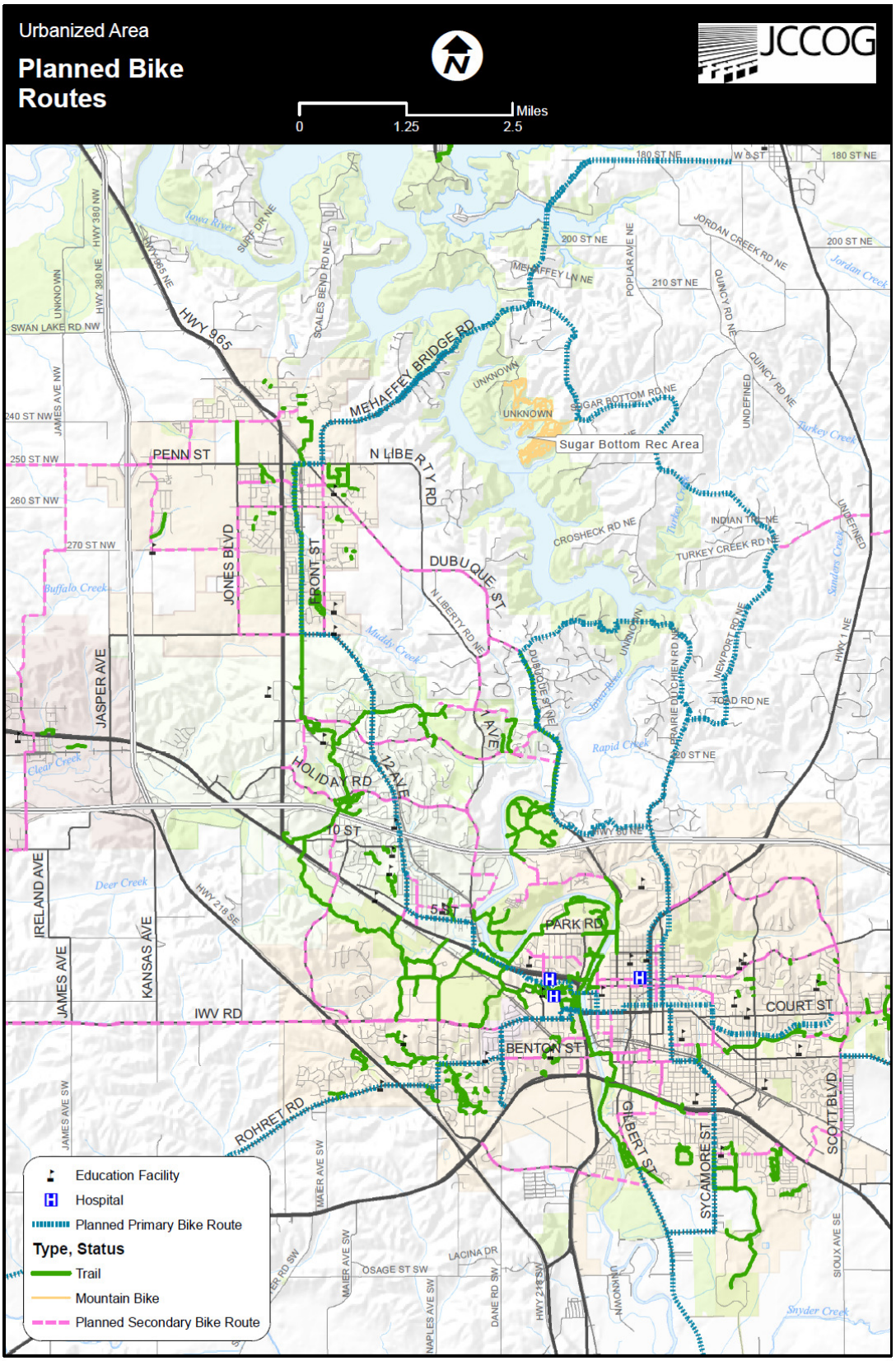
Traffic calming measures could be considered where traffic speeds and volumes along signed bike routes warrant – creating a *bicycle boulevard*. The purpose of a bicycle boulevard is to improve bicycle safety by having or creating one or more of the following conditions:

- Low traffic volumes (or bike lanes where traffic volumes are moderate);
- Traffic calming to discourage cut-through vehicle traffic, such as speed humps, rotated stop signs, curb extensions, and reduced vehicle access;
- Traffic controls to help bicycles cross arterial roads; and
- A distinctive look so cyclists identify the bike boulevard and motorists realize it is a priority route for bicyclists.

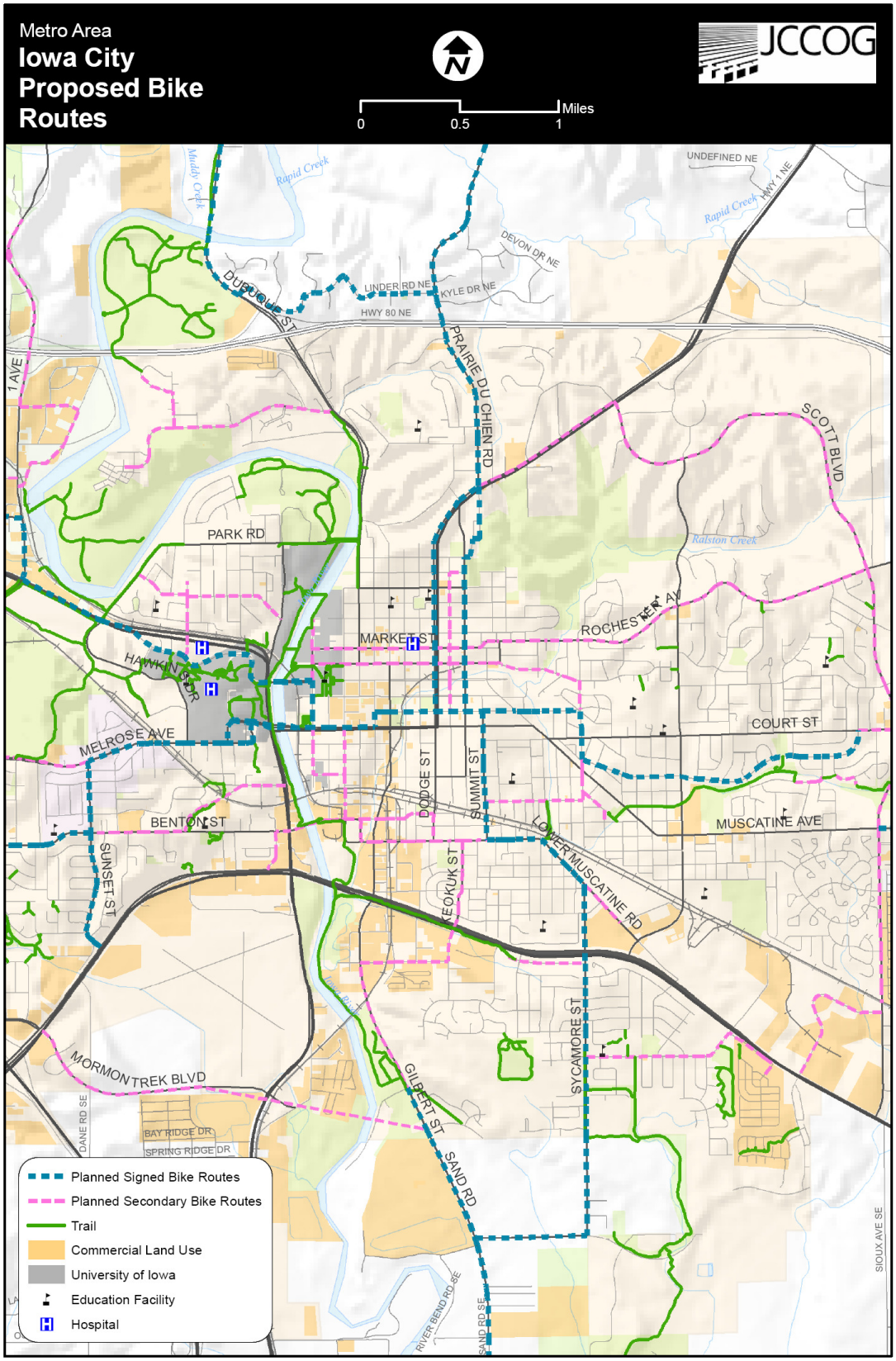
Examples exist in bicycle friendly cities, including Palo Alto, California; Portland, Oregon; Eugene, Oregon; and Vancouver, British Columbia.

Secondary Bike Routes - *Unsigned*

Secondary bike routes are recommended for cycling because of low traffic volumes and connectivity to key destinations. To help new cyclists navigate the trail and road network, the following maps illustrates secondary bike routes, which could be promoted by JCCOG entities through online and printed maps, including the annual Metro Area Trails Map.



Prepared by: Kristopher Ackerson
Prepared: November 17, 2009



Prepared by: Kristopher Ackerson
Prepared: March 26, 2009

Enforcement

System-wide Recommendation:
Implement and publicize bike light enforcement program during the fall and offer discount bike lights to encourage safety.

According to collision reports involving bicycles in Johnson County, of the collisions where safety equipment was reported, only 25 percent of cyclists were wearing helmets – encouraged but not required in Iowa – and none had lights on their bicycles[xxi].

Iowa Code Section 321.397 Lamps on bicycles
Every bicycle shall be equipped with a lamp on the front exhibiting a white light, at the times specified in section 321.384 , visible from a distance of at least three hundred feet to the front and with a lamp on the rear exhibiting a red light visible from a distance of three hundred feet to the rear; except that a red reflector may be used in lieu of a rear light. A peace officer riding a police bicycle is not required to use either front or rear lamps if duty so requires.

While perhaps surprising to some, local input suggests cyclists agree with motorists that enhanced enforcement is needed to make cyclists more visible and predictable on the road. The two highest priorities in terms of enforcement at both bike planning workshops were the following:

1. Enforce headlight/reflector laws during non-daylight hours[xxii].
2. Enforce rules of the road for cyclists and motorists by local police and sheriff's departments.

According to local law enforcement officers, ticketing cyclists for not using headlights and rear reflectors has been limited due to other issues having high priority. Law enforcement departments at all JCCOG entities could implement targeted enforcement during the fall to improve compliance. This could help stem the spike in collisions occurring when students return to school.

At the same time, JCCOG and member entities could explore grant opportunities to offer discounted bike lights to qualifying residents.

Evaluation

System-wide Recommendation:
Achieve the platinum "Bicycle Friendly Community" designation from the League of American Bicyclists.

In order to evaluate local 'bicycle friendliness', it is important that an outside organization review the policies, programs, and infrastructure that are provided to the cycling community. To do this, it is recommended that each of the JCCOG member communities pursue the Bicycle Friendly Community designation by the League of American Bicyclists. The existing JCCOG Regional Trails and Bicycling Committee could serve as the steering committee.

The League of American Bicyclists (LAB) is a nationwide nonprofit organization that strives to protect the rights of cyclists and promotes the use of bicycles for fun, fitness and transportation. The Bicycle Friendly Communities campaign is an awards program that recognizes municipalities that actively support bicycling. To become a bicycle friendly community, the LAB reviews municipal applications for compliance within five categories (Engineering, Education, Encouragement, Enforcement, and Evaluation), and bestows bronze, silver, gold, or platinum designations to qualified applicants.

Since each community provides different policies, programs, and infrastructure to the bicycling community, each municipality would likely submit an individual bike friendly community application; rather than one regional application. To complete the application, JCCOG municipalities should charge a staff member with completing the application. The application could be reviewed by the JCCOG Regional Trails and Bicycling Committee prior to submittal.

All 'bicycle friendly community' applicants receive feedback from the LAB regarding strengths and weaknesses of their application. As such, the application process (regardless of the outcome), is a great way for communities to evaluate any shortcomings in terms bike access.

Since LAB designations expire after four years, communities must exhibit progress to either maintain their designation status or receive a higher award. Since continual progress must be made, the award ultimately acts as a catalyst for improvement.

More information on the Bicycle Friendly Community program can be found at: *www.bikeleague.org*.

Community Recommendations

In addition to the preceding system-wide recommendations, which apply to JCCOG entities, the following individual community recommendations address unique needs of each JCCOG entity. The recommendations are not listed in order of priority. Except where otherwise noted, communities should maintain programs and facilities outlined in Chapter 2.

City of Coralville

Based on public input and the 5 E's of bicycle and pedestrian planning, the City of Coralville could consider implementing the following recommendations to become more bicycle-friendly:

- Consider adopting Complete Streets Policy to ensure newly constructed roads accommodate vehicles, bicycles, pedestrians, and transit.
- Pursue the Recommended Infrastructure Projects (see next section), as well as the trails and wide sidewalks in the approved JCCOG Trails Plan.
- Offer public bike lockers and covered bike parking.
- Adopt a bicycle parking ordinance requiring bike racks when properties change use and at new multi-family residential and commercial developments, (e.g., grocery stores, shopping centers, and restaurants).
- Review street sweeping schedule to ensure high priority bike corridors are cleaned 3+ times per year.
- Consider locating pedestrian/bicyclist push buttons on sidewalks where cyclists can access them without dismounting.

City of Iowa City

Based on public input and the 5 E's of bicycle and pedestrian planning, the City of Iowa City could consider implementing the following recommendations to become more bicycle-friendly:

- Pursue the Recommended Infrastructure Projects (see next section), as well as the trails and wide sidewalks in the approved *JCCOG Long Range Multi-Modal Transportation Plan*.
- Evaluate reverting Washington Street to two-way in the downtown portion.
- Evaluate reducing Madison Street from four lanes to three lanes and installing bike lanes or wide curb lanes.

- Reduce the number of mopeds parking at bicycle racks in the downtown area.
- Consider amending the bike parking ordinance regarding the locations, number, and exceptions for downtown properties - especially grocery stores, shopping centers, and restaurants – as well as multi-family residential developments.
- Consider locating additional sheltered bike racks in visible and accessible sites in Downtown Iowa City.
- Consider implementing bike corrals in the downtown area.
- Review street sweeping schedule to ensure high priority bike corridors are cleaned 3+ times per year.
- Consider locating pedestrian/bicyclist push buttons on sidewalks where cyclists can access them without dismounting.

Cities of North Liberty, Tiffin, and University Heights

Based on public input and the 5 E's of bicycle and pedestrian planning, the Cities of North Liberty, Tiffin, and University Heights could consider implementing the following recommendations to become more bicycle-friendly:

- Consider adopting Complete Streets Policy to ensure newly constructed roads accommodate vehicles, bicycles, pedestrians, and transit.
- Promote Bike-to-Work Month.
- Pursue the Recommended Infrastructure Projects (see next section), as well as the trails and wide sidewalks in the approved *JCCOG Long Range Multi-Modal Transportation Plan*.
- Consider adopting a bicycle parking ordinance requiring bike racks when properties change use and at new multi-family residential and commercial developments, (e.g., grocery stores, shopping centers, and restaurants).
- Consider locating pedestrian/bicyclist push buttons on sidewalks where cyclists can access them without dismounting.

University of Iowa

Based on public input and the 5 E's of bicycle and pedestrian planning, the University of Iowa could consider implementing the following recommendations to become more bicycle-friendly:

- Consider developing and adopting a Complete Streets Policy to ensure newly constructed roads accommodate vehicles, bicycles, pedestrians, and transit.

- Create and disseminate “Share the Road” public service announcements.
- Promote Bike-to-Work Month.
- Explore opportunities to support a bike sharing or bike library program to increase ridership through provision of discounted bicycles.
- Review on-campus bike parking demand to ensure adequate facilities for all university buildings.
- Offer covered bike parking, bike corrals, and bike lockers where feasible.
- Offer a “commuter cycling clinic” that is open to the public through Touch the Earth.
- Publish a bicycle commuter guide illustrating sheltered racks, bike lockers, and available shower facilities.
- Review street sweeping schedule to ensure high priority bike corridors are cleaned 3+ times per year.

Johnson County, Iowa

Based on public input and the 5 E’s of bicycle and pedestrian planning, Johnson County could consider implementing the following recommendations to become more bicycle-friendly:

- Construct paved shoulders for all new road construction or rehabilitation projects and consider adopting a Complete Streets Policy in areas contiguous to urbanized areas to ensure newly constructed roads accommodate anticipated vehicles, bicycles, and pedestrians.
- Pursue the Recommended Infrastructure Projects (see next section), as well as the trails and wide sidewalks in the approved JCCOG Trails Plan.
- Promote Bike-to-Work Month by proclaiming May “Bike Month.”
- Sign and promote rural bike routes using way-finding signs that provide the direction, distance, and destinations for popular routes (e.g., Sugar Bottom Loop, Reservoir Dam Loop, and Hills Loop).
- Install bicycle parking at all public buildings owned by the County in the urbanized area.

Johnson County Council of Governments

Based on public input and the 5 E’s of bicycle and pedestrian planning, the Johnson County Council of Governments could consider

implementing the following recommendations to become more bicycle-friendly:

- Analyze peak hour counts for bicycle commuting on-street.
- Implement spot maintenance request form for bike facilities online.
- Distribute articles in local newspapers and newsletters regarding bicycle related events.
- Provide educational materials on the JCCOG website, including local resources and services.
- Create an online trip maker/map quest service that enables residents to enter their address and destination to identify a safe route to the destination.
- Monitor bike commuting rates at key locations, including but not limited to College Street and Melrose Avenue in Iowa City.
- Promote Bike-to-Work Week events and planning, including "Share the Road" public service announcements.
- Publish a bicycle commuter guide illustrating sheltered racks, bike lockers, and public shower facilities.
- Create "Share the Road" public service announcements for broadcast on local radio and television stations – focusing airing during the fall.
- Offer personal route finding service online to all residents through www.JCCOG.org.
- Review the *Metro Bicycle Master Plan* annually to track progress toward the goals and recommendations outlined in the plan.

Recommended Infrastructure Projects

The following projects were identified by the public during the planning process for the *Metro Bicycle Master Plan* as high priorities. The projects described in this section are infrastructure projects staff believes exhibit merit and should considered in addition to trail projects outlined in the *JCCOG Long Range Multi-modal Transportation Plan*.

Note: JCCOG staff developed cost estimates for planning purposes only – actual project costs require engineering evaluation.

Coralville

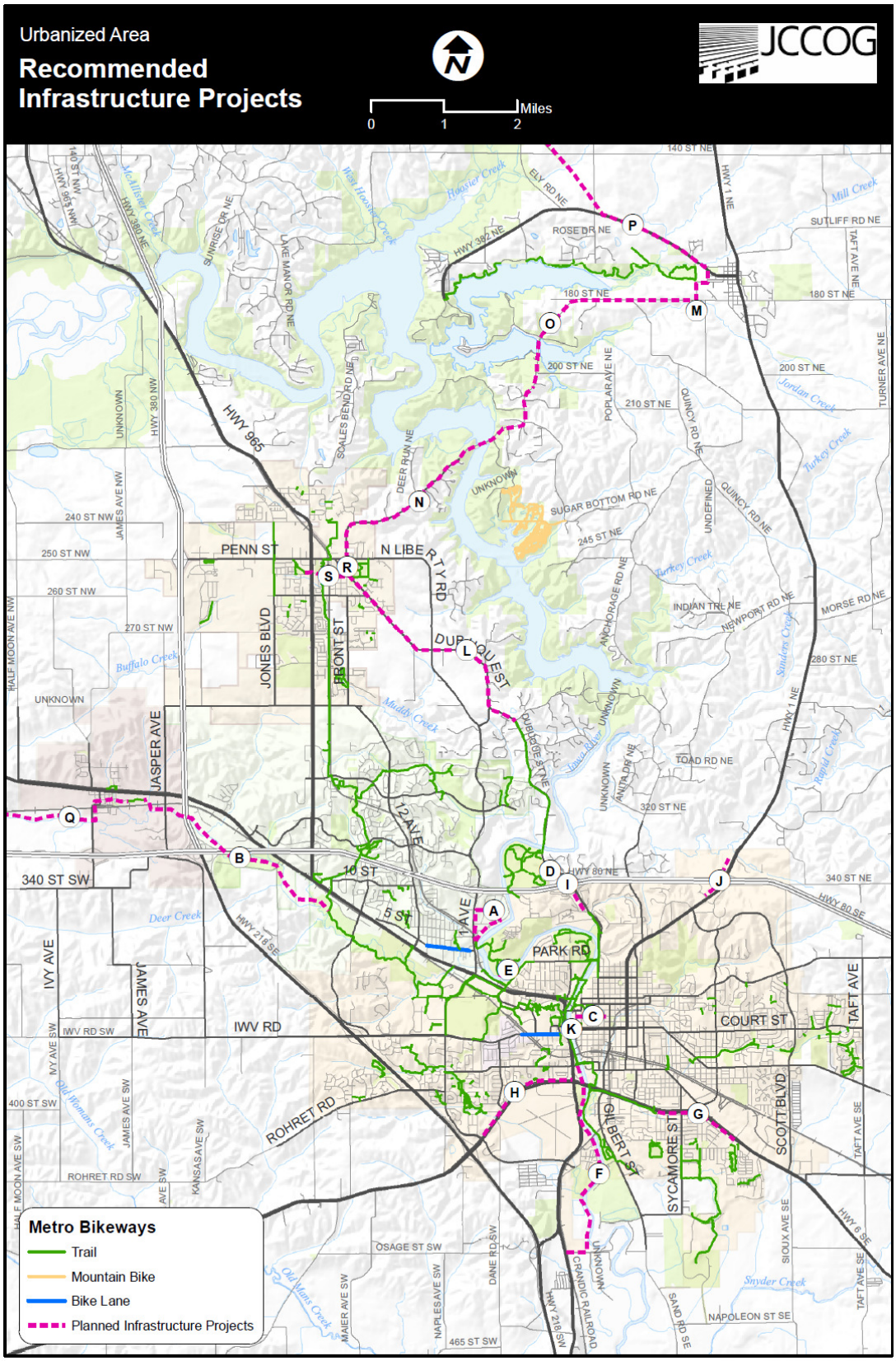
A. 1st Avenue Trail – Construct a trail adjacent to 1st Avenue (cost estimate - $250,000). Project Justification: north/south link between Coralville north and south of the Interstate 80.

B. Clear Creek Trail – Trail connection between Coralville and Tiffin (connection to Kent Park and the Amana Colonies) (cost estimate - $ 2.5 million). Project Justification: connection to Tiffin and Kent Park.

Iowa City

C. Washington Street Lane Change – Evaluate changing Washington Street (between Linn Street and Clinton Street) from the existing one-way (eastbound) to a two-way street (cost estimate - $5,000 to 250,000). Project Justification: improve bicycle access through downtown.

D. Linder Road/Waterworks Park Trail Connection – Construct a direct trail connection from North Dubuque Street (opposite Linder Road) to the Waterworks Prairie Trail system to the west (cost estimate - $40,000). Project Justification: east/west link between Iowa City to Coralville.



Prepared by: Kristopher Ackerson
Prepared: October 9, 2009

E. Peninsula Pedestrian Bridge – Construct pedestrian bridge from Rocky Shore Drive (opposite River Street) to Peninsula Park (cost estimate - $1.3 million). Project Justification: access to the Peninsula Dog Park, Disc Golf Course, and Coralville.

F. Iowa River Corridor Trail Extension – Extend the Iowa River Corridor Trail south to Oak Crest Hill Road (cost estimate - $1.0 million); property acquisition could be an obstacle. Project Justification: link from Iowa City to the municipal airport, Johnson County Fairgrounds, Sand Lake Park, and nearby residences.

G. Highway 6 Wide Sidewalk Extension – Extend the existing Highway 6 wide sidewalk from Taylor Drive east to Lakeside Drive (cost estimate - $1.2 million). Project Justification: link southeast neighborhoods to commercial areas.

H. Highway 1 Wide Sidewalk Extension – Construct a wide sidewalk from the existing Iowa River Corridor Trail (east of S. Riverside Drive) to Mormon Trek Boulevard (cost estimate - $1.5 million). Project Justification: currently no bicycle/pedestrian accommodations exist within the Highway 1 West corridor.

I. North Dubuque Street Pedestrian Bridge – Construction of a separated bridge adjacent to the Dubuque Street Bridge crossing Interstate 80 (cost estimate - $1.8 million). Project Justification: north/south connection between Iowa City and the residences north of the interstate.

J. Dodge Street Pedestrian Bridge – Construction of a separated bridge adjacent to the Dodge Street/Hwy 1 Bridge crossing Interstate 80 (cost estimate - $1.8 million). Project Justification: north/south connection between Iowa City and the commercial district north of the interstate.

K. Iowa River Bicycle / Pedestrian Bridge – Construct either a separated or cantilevered bridge crossing the Iowa River north of the Burlington Street Bridge (cost estimate - $1.3 million). Project Justification: east/west link crossing the Iowa River within downtown Iowa City.

Johnson County

L. North Dubuque Street Trail – Extend the North Dubuque Street Trail from West Overlook Road to North Liberty City limits (cost estimate - $1 million dollars). Project justification: a connection to Iowa City and North Liberty; part of the planned trail from Iowa City to Cedar Rapids.

M. North Liberty to Cedar Rapids – Extend the existing paved shoulder on 180th Street along Mehaffey Bridge Road to the North Liberty city limits (cost estimate - $1 million dollars) and the paved shoulder on Ely Road from Hwy 382 to the Johnson/Linn County line (cost estimate - $1 million dollars). Project Justification: a complete paved shoulder route from North Liberty to Solon to Johnson/Linn County line.

N. Mehaffey Bridge Road Trail – Extend a trail from North Liberty city limits to Sugar Bottom Recreation Area (cost estimate - $2 million dollars; includes separated trail design on new bridge to be built over Coralville Reservoir). Project justification: planned trail from Iowa City to Cedar Rapids.

O. Mehaffey Bridge Road / 180th Street Trail – Extend a trail from Sugar Bottom Recreation Area to Solon city limits (cost estimate - $2 million dollars). Project justification: part of the plan to connect Iowa City to Cedar Rapids.

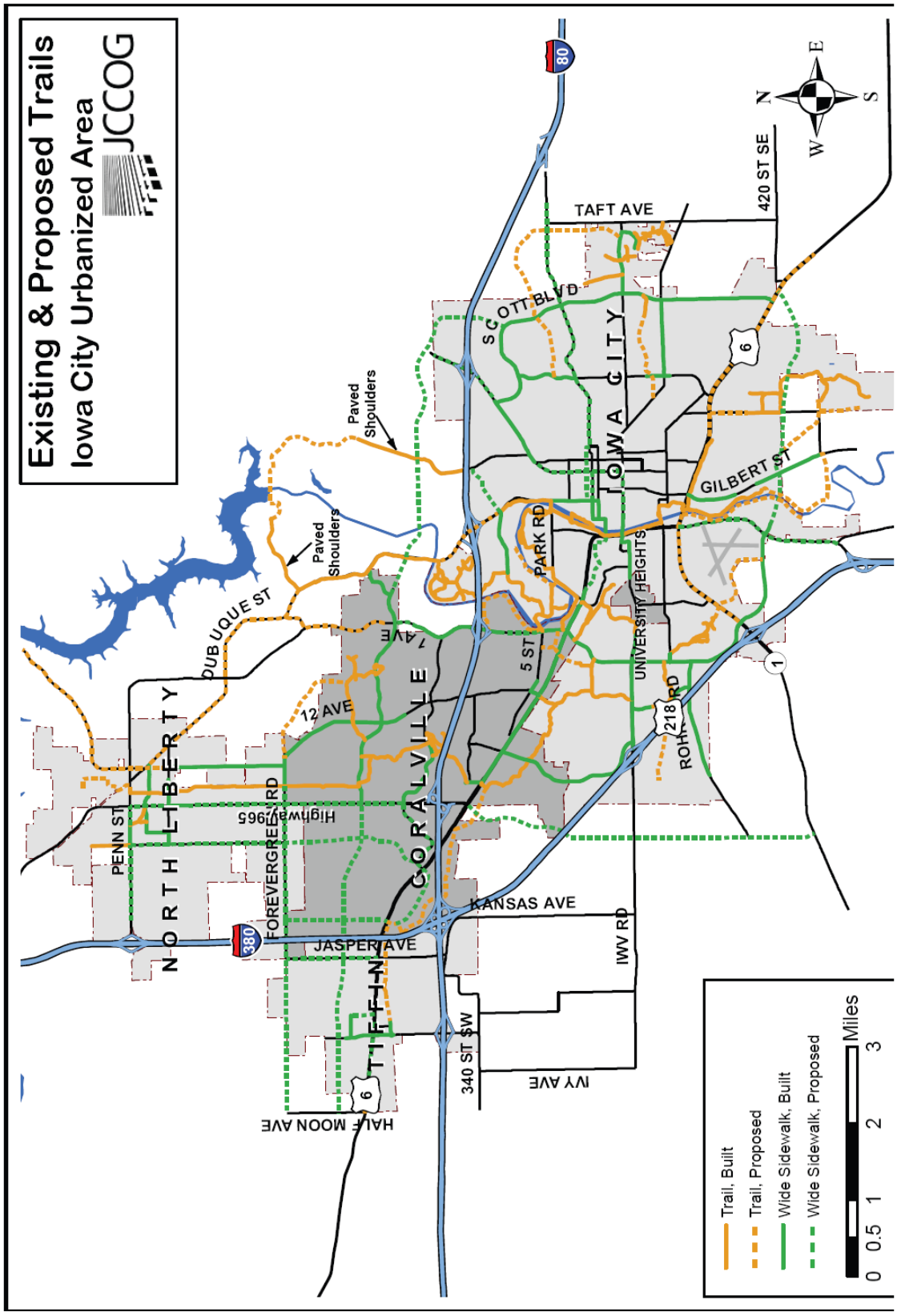
P. Solon to Ely Trail – Extend a trail from Solon city limits to link up with Ely Trail (cost estimate - $2 million dollars). Project justification: part of the plan to connect Iowa City to Cedar Rapids.

Q. Clear Creek Trail – Trail connection between Tiffin and Kent Park (cost estimate - $6 million). Project Justification: a connection to Kent Park from Iowa City and Coralville.

North Liberty

R. North Dubuque Street Trail – Extend the North Dubuque Street Trail within North Liberty city limits (cost estimate - $2 million dollars). Project justification: planned trail connection from Iowa City to Cedar Rapids.

S. Cherry Street Trail – Extend a trail within North Liberty city limits along Cherry Street. Project justification: planned trail connection in adopted North Liberty Trails Plan.



Source: JCCOG Long Range Multi-Modal Transportation Plan 2007-2035, page J-3.

Appendix A

On-Street Facility Criteria

The following recommendations for bicycle facility design are outlined in FHWA Report RD-92-073, which presents a set of tables (Tables A1-A6) that can be used to determine the recommended type of bicycle facility to be provided in particular roadway situations.

This manual takes its lead from the AASHTO Guide, which states:

> To varying extents, bicycles will be ridden on all highways where they are permitted. All new highways, except those where bicyclists will be legally prohibited, should be designed and constructed under the assumption that they will be used as a bicycle street.[1]

Using the concept of two broad types of design bicyclists—group A and group B/C— the recommendations included in tables 1 through 6 are keyed to the most likely type of user. All streets and highways where bicycles are permitted to operate should, at a minimum, incorporate the design treatments recommended in the tables for group A bicyclists.

Where it is determined that use by group B/C bicyclists is likely, the tables recommending design treatments for group B/C should be used. The group B/C design treatments will also accommodate group A bicyclists.

At a minimum, all streets and highways open to bicycle use should have roadways incorporating the design treatments recommended for group A bicyclists. Where a planning process has determined a given route is the best choice to form part of a network of routes to provide access to the community for group B/C bicyclists, the recommended design treatment appropriate to B/C riders should be implemented.

This report, FHWA-RD-92-073, presents a set of tables that can be used to determine the recommended type of bicycle facility to be provided in particular roadway situations. In addition, the report presents a brief discussion of the "design user" for bicycle facilities, and presents a planning process for bicycle facilities.

Five criteria were used to determine recommended bicycle facilities: traffic volume; posted vehicle operating speed; traffic mix of automobiles, trucks, buses, and/or recreational vehicles; on-street parking; and sight distance. Values for these criteria were

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[1] *Guide for the Development of Bicycle Facilities*, American Association of State Highway and Transportation Officials (AASHTO), Washington, DC, 1991.

determined and tables were developed for urban and rural roadway sections for two groups of design users.

Paths are not indicated in any of the tables because of their limited applicability on most roadways. Paths should be used only where there are very few intersections and adequate setback from the roadway. These conditions are usually found only in parks, along shorelines, and near some controlled-access highways. Paths are recommended in the *JCCOG Trails Map*.

Federal Highway Administration recommended roadway design treatments and widths to accommodate bicycles are presented in Tables A1through A6. Tables A1through A3 are for group A cyclists while Tables A4 through A6 are for group B/C bicyclists.

Figure 21: Table cell description

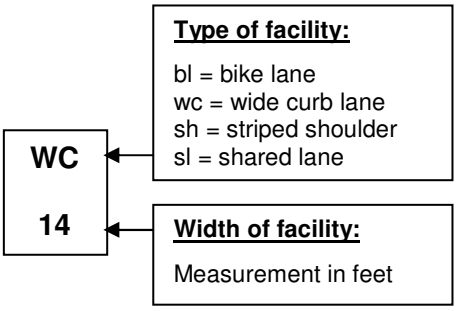

Table A1: Advanced bicyclists, urban area, curb and gutter section, no parking allowed.

posted motor vehicle operating speed	*average annual daily traffic (AADT) volume*											
	less than 2,000				*2,000-10,000*				*over 10,000*			
	adequate sight distance		*inadequate sight distance*		*adequate sight distance*		*inadequate sight distance*		*adequate sight distance*		*inadequate sight distance*	
		truck, bus, rv				truck, bus, rv				truck, bus, rv		
less than 30 mi/h	sl 12	sl 12	wc 14	wc 14	sl 12	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14
30-40 mi/h	wc 14	wc 14	wc 15	wc 15	wc 14	wc 15	wc 15	wc 15	wc 14	wc 15	wc 15	wc 15
41-50 mi/h	wc 15	wc 15	wc 15	wc 15	wc 15	wc 15	sh 6	sh 6	wc 15	wc 15	sh 6	sh 6
over 50 mi/h	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6

Source: FHWA Report RD-92-073

Table A2: Advanced bicyclists, urban area, curb and gutter section, parking allowed.

posted motor vehicle operating speed	*average annual daily traffic (AADT) volume*											
	less than 2,000				*2,000-10,000*				*over 10,000*			
	adequate sight distance		*inadequate sight distance*		*adequate sight distance*		*inadequate sight distance*		*adequate sight distance*		*inadequate sight distance*	
		truck, bus, rv				truck, bus, rv				truck, bus, rv		
less than 30 mi/h	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 15	wc 15	wc 14
30-40 mi/h	wc 14	wc 14	wc 15	wc 15	wc 14	wc 15	wc 15	wc 15	wc 14	wc 15	wc 15	wc 15
41-50 mi/h	wc 15	wc 15	wc 15	wc 15	wc 15	wc 16	wc 16	wc 16	wc 15	wc 15	wc 16	wc 16
over 50 mi/h	na	na	na	na	na	na	na	na	na	na	na	na

Source: FHWA Report RD-92-073

Table A3: Advanced bicyclists, rural area, shoulders or edge stripe.

posted motor vehicle operating speed	*average annual daily traffic (AADT) volume*											
	less than 2,000				*2,000-10,000*				*over 10,000*			
	adequate sight distance		*inadequate sight distance*		*adequate sight distance*		*inadequate sight distance*		*adequate sight distance*		*inadequate sight distance*	
		truck, bus, rv				truck, bus, rv				truck, bus, rv		
less than 30 mi/h	sl 12	sl 12	wc 14	wc 14	sl 12	wc 14	wc 14	wc 14	wc 14	wc 14	sh 4	sh 4
30-40 mi/h	wc 14	wc 14	sh 4	sh 4	wc 14	wc 15	sh 4	sh 4	sh 4	sh 4	sh 4	sh 4
41-50 mi/h	sh 4	sh 4	sh 4	sh 4	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6
over 50 mi/h	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6

Source: FHWA Report RD-92-073

Table A4: Beginning and child bicyclists, urban area, curb and gutter section, no parking allowed.

posted motor vehicle operating speed	*average annual daily traffic (AADT) volume*											
	less than 2,000				*2,000-10,000*				*over 10,000*			
	adequate sight distance		*inadequate sight distance*		*adequate sight distance*		*inadequate sight distance*		*adequate sight distance*		*inadequate sight distance*	
		truck, bus, rv				truck, bus, rv				truck, bus, rv		
less than 30 mi/h	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	bl 5	bl 5	bl 5	bl 5
30-40 mi/h	bl 5	bl 5	bl 5	bl 5	bl 5	bl 6	bl 6	bl 5	bl 5	bl 6	bl 6	bl 5
41-50 mi/h	bl 5	bl 5	bl 5	bl 5	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6
over 50 mi/h	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6

Source: FHWA Report RD-92-073

Table A5: Beginning and child bicyclists, urban area, curb and gutter section, parking allowed.

posted motor vehicle operating speed	*average annual daily traffic (AADT) volume*											
	less than 2,000				*2,000-10,000*				*over 10,000*			
	adequate sight distance		*inadequate sight distance*		*adequate sight distance*		*inadequate sight distance*		*adequate sight distance*		*inadequate sight distance*	
		truck, bus, rv				truck, bus, rv				truck, bus, rv		
less than 30 mi/h	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	wc 14	bl 5	bl 5	bl 5	bl 5
30-40 mi/h	bl 5	bl 5	bl 5	bl 5	bl 5	bl 6	bl 6	bl 5	bl 6	bl 6	bl 6	bl 6
41-50 mi/h	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6	bl 6
over 50 mi/h	na	na	na	na	na	na	na	na	na	na	na	na

Source: FHWA Report RD-92-073

Table A6: Beginning and child bicyclists, rural area, shoulder or edge stripe.

posted motor vehicle operating speed	*average annual daily traffic (AADT) volume*											
	less than 2,000				*2,000-10,000*				*over 10,000*			
	adequate sight distance		*inadequate sight distance*		*adequate sight distance*		*inadequate sight distance*		*adequate sight distance*		*inadequate sight distance*	
		truck, bus, rv				truck, bus, rv				truck, bus, rv		
less than 30 mi/h	sh 4	sh 4	sh 4	sh 4	sh 4	sh 4	sh 4	sh 4	sh 4	sh 4	sh 4	sh 4
30-40 mi/h	sh 4	sh 4	sh 4	sh 4	sh 4	sh 6	sh 6	sh 4	sh 6	sh 6	sh 6	sh 6
41-50 mi/h	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6
over 50 mi/h	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6	sh 6

Source: FHWA Report RD-92-073

Appendix B

Iowa City Bicycle Parking Requirements

The following bicycle parking requirements are found in Title 14: Iowa City Zoning Code, Chapter 5, Article A.

Rules for Computing Bicycle Parking Requirements

In Tables 5A-1 and 5A-2, the minimum bicycle parking requirements are expressed as a certain number of spaces per dwelling unit or as a percentage of the required number of vehicle parking spaces.

In all cases where bicycle parking is required, a minimum of 4 spaces shall be provided.

After the first 50 bicycle parking spaces are provided, additional spaces are required at 50 percent of the number required by this Section.

Where the expected need for bicycle parking for a particular use is uncertain due to unknown or unusual operating characteristics of the use or due to a location that is difficult to access by bicycle, the Building Official may authorize that the construction of up to 50 percent of the required bicycle parking spaces be deferred. The land area required for the deferred bicycle parking spaces must be maintained in reserve. If an enforcement official of the City determines at some point in the future that the additional parking spaces are needed, the property owner will be required to install the parking in the reserved area. The owner of the property on which the bicycle parking area is reserved must properly execute, sign, and record a written agreement that is binding upon their successors and assigns as a covenant running with the land that assures the installation of bicycle parking within the reserved area by the owner if so ordered by an enforcement official of the City.

Design of Bicycle Parking Areas

Bicycle parking areas must be constructed of asphaltic cement concrete, Portland cement concrete or manufactured paving materials, such as brick. However, the City Building Official may permit the use of rock or gravel areas for bicycle parking, provided edging materials are used so that the bicycle parking area is clearly demarcated and the rock material is contained.

Required bicycle parking racks must be designed to support the bicycle by its frame and allow the use of either a cable lock or a U-shaped lock. Bicycle lockers and secure indoor storage facilities are also allowed.

Bicycle parking facilities shall be located in a clearly designated, safe and convenient location and shall be located so as not to impede pedestrian or vehicular traffic. Bicycle parking is allowed in front and

side building setbacks in all zones, provided that such a parking area results in no more than 25 percent of the required setback area being paved.

Table 5A-1: Minimum Parking Requirements in the CB-5

USE CATEGORIES	SUBGROUPS		Parking Requirement	Bicycle Parking
Residential Uses				
Household Living Uses	Multi-family Dwellings	CB-5 Zone	Efficiency,1-bedroom, and 2-bedroom units: 1 space per dwelling unit. 3-bedroom units: 2 spaces per dwelling unit Units with more than 3 bedrooms: 3 spaces per dwelling unit Elder Apartments: 1 space for every 2 dwelling units.	1.0 per d.u.

Table 5A-2: Minimum Parking Requirements for all zones, except the CB-5 and CB-10 Zones

USE CATEGORIES	SUBGROUPS		Parking Requirement	Bicycle Parking
Residential Uses				
Household Living	Single Family Uses		1 space per dwelling. However, for a SF use that contains a household with more than 2 unrelated persons, 1 additional parking space is required for each additional unrelated person in excess of two. For example, if a Single Family Use contains 4 unrelated persons, then 3 parking spaces must be provided.	None required
	Two Family Uses		1 space per dwelling unit. For a Two Family dwelling unit that contains a household with more than 2 unrelated persons, 1 additional parking space is required for each additional unrelated person in excess of two.	None required
	Group Households		3 spaces	None required
	Multi-family Dwellings	All zones, except PRM	Efficiency & 1-bedroom units: 1 space per dwelling unit 2-bedroom units: 2 spaces per dwelling unit 3-bedroom units: 2 spaces per dwelling unit 4-bedroom units: 3 spaces per dwelling unit 5-bedroom units: 4 spaces per dwelling unit	0.5 per d.u. 1.0 per d.u. 1.5 per d.u. 1.5 per d.u. 1.5 per d.u.
		PRM Zone	Efficiency, 1- & 2- bedroom units: 1 space per dwelling unit 3-bedroom units: 2 spaces per dwelling unit Units with more than 3 bedrooms: 3 spaces per dwelling unit	1.0 per d.u.
		Elder Apartments	1 space per dwelling unit for independent living units and 1 space for every 2 dwelling units for assisted living units, except in the PRM and CB-2 Zones. In the PRM and CB-2 Zones, 1 space for every 2 dwelling units.	5%
Group Living	Assisted Group Living		1 space for every 3 beds plus 1 space for each staff member determined by the maximum number of staff present at any one time.	None required
	Independent Group Living		1 space per 300 sq. ft. of floor area or 0.75 spaces per resident, whichever is less.	25%
	Fraternal Group Living		1 space per 300 sq. ft. of floor area or 0.75 spaces per resident, whichever is less.	25%

USE CATEGORIES	SUBGROUPS		Parking Requirement	Bicycle Parking
Commercial Uses				
Adult Business Uses	Retail-type		1 space per 300 sq. ft. of floor area	15%
	Entertainment/night club-type		Parking spaces equal to 1/3 the occupant load of the largest assembly space or seating area in the building.	10%
Animal-related Commercial	General		1 space for each office, examining room, and treatment/grooming room, but not less than 3 spaces.	None required
	Intensive		3 spaces	None required
Commercial Recreational Uses	Outdoor	Spectator-type (major event facilities, such as arenas, stadiums, etc.)	Parking spaces equal to 1/4 the occupant load of the seating area.	10%
		Participatory-type (tennis courts, swimming pools, archery ranges, sports fields, etc.)	Parking spaces equal to 2/3 the maximum number of participants likely at any one time.	10%
	Indoor		Parking spaces equal to 1/3 the occupant load of the area used for the participatory activity.	10%
Commercial Parking			Not applicable	None required
Eating and Drinking Establishments			1 space per 150 sq. ft. of floor area, or parking spaces equal to 1/3 the occupant load of the seating area, whichever is less. Carry-out/delivery restaurants that do not have a seating area must provide at least 4 spaces.	10%
Quick Vehicle Servicing			For gas stations, 1 stacking space is required for every service stall or pump station. For car washes, 4 stacking spaces are required for each wash rack, bay, or tunnel. Parking for convenience retail must be calculated separately. Parking spaces must be provided in lieu of stacking spaces in instances where egress from a facility would require moving a motor vehicle waiting for entry.	None required
Office Uses	General Office		1 space per 300 sq. ft. of floor area. In the MU and CB-2 Zones, no additional parking is required for that floor area exceeding 8,000 square feet.	15%
	Medical/Dental Office		1.5 spaces for each office, examining room and treatment room, provided however, there shall not be less than 5 spaces.	15%

USE CATEGORIES	SUBGROUPS	Parking Requirement	Bicycle Parking
Retail	Shopping centers, where a mix of uses, such as retail, office, restaurants, theaters, commercial recreational uses, etc., share the same parking area. This parking minimum may be used as an optional alternative to calculating the parking for each of the uses separately.	1 space per 250 sq. ft. of floor area. Spaces for residential uses must be calculated separately and must be provided in addition to the parking spaces for the commercial uses.	15%
	Sales-Oriented	1 space per 300 sq. ft. of floor area	15%
	Personal Service-Oriented	1 space per 300 sq. ft. of floor area.	15%
	Repair-Oriented	1 space per 500 sq. ft. of floor area	None required
	Hospitality-Oriented	For hotels and motels, 1 space per guest room. For guest houses, as defined in this Title, 0.75 spaces per guest room. For meeting facilities and similar, spaces equal to 1/4 the occupant load of the meeting area or 1/4 the occupant load of the seating area, whichever is most applicable to the use.	None required
	Outdoor Storage and Display-Oriented	1 space per 500 sq. ft. of floor area	10%
Surface Passenger Services		No minimum requirement	None required
Vehicle Repair		1 space per 300 sq. ft. of floor area.	None required
Industrial Uses			
Industrial Service		1 space per 750 sq. ft. of floor area	None required
Manufacturing and Production	Technical/Light Manufacturing	1 space per 750 sq. ft. of floor area	None required
	General Manufacturing	1 space per 750 sq. ft. of floor area	None required
	Heavy Manufacturing	1 space per 750 sq. ft. of floor area	None required
Salvage Operations		1 space per 750 sq. ft. of floor area	None required
Self-Service Storage		2 spaces per leasing office plus 1 space per 100 leasable storage spaces.	None required
Warehouse and Freight Movement	For warehouses up to 25,000 sq. ft.	1 space per 1,000 sq. ft. of floor area up to a maximum of 5 spaces.	None required
	For warehouses 25,000 sq. ft. or greater	5 spaces plus 1 space for each 5,000 sq. ft. above 25,000 sq. ft.	None required
Waste-Related Uses		1 space per 750 sq. ft. of floor area	None required
Wholesale Sales		1 space per 750 sq. ft. of floor area	None required

USE CATEGORIES	SUBGROUPS	Parking Requirement	Bicycle Parking
Institutional And Civic Uses			
Basic Utilities		No minimum requirement	None required
Colleges and Universities	Public	Based on parking demand analysis	25%
	Private	Per special exception review based on parking demand analysis	25%
Community Service	General Community Service	1 space per 300 sq. ft. of floor area	10%
	Community Service - Shelter	0.1 space per temporary resident based on the maximum number of temporary residents staying at the shelter at any one time plus 1 space per employee based on the maximum number of employees at the site at any one time.	25%
Daycare		1 space per employee based on the maximum number of employees at the site at any one time *plus* one parking space for each 10 children or clients served, based on the maximum number of children present on the site at any one time, *plus* one stacking space for each 20 children or clients served, based on the maximum number of clients or children present on the site at any one time. Additional parking spaces at a ratio of 1/20 clients or children served may be substituted for the stacking spaces, if the City determines that such an arrangement will not cause traffic to stack into adjacent streets or public rights-of-way.	10%
Detention Facilities		No minimum requirement	None required
Educational Facilities	Elementary, middle, junior high schools, and Specialized Educational Facilities	2 spaces per classroom	25%
	High schools	10 spaces per classroom	25%
Hospitals		1.75 spaces per hospital bed	None required
Parks and Open Space		No minimum requirement, except for recreational uses within private open spaces areas as follows: For golf courses, 3 spaces for each green (hole). For other recreational or public assembly-type uses, parking is required at half the minimum amount required for the most similar commercial recreational use.	5%
Religious/Private Group Assembly		Parking spaces equal to 1/6 the occupant load of the main auditorium or the largest room in the building, whichever is greater.	5%
Other Uses			
Agriculture	Plant-related	No minimum requirement	None required
	Animal-related	No minimum requirement	None required
Aviation-related Uses	Airports	No minimum requirement	None required
	Helicopter Landing Facilities	No minimum requirement	None required
Extraction		No minimum requirement	None required
Communication Transmission Facilities		No minimum requirement	None required

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