Rochester Area

Bicycle Master Plan

Bicycle Friendly Community
2010-2014

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March 2012

The Rochester Area Bicycle Master Plan

March 2012

Prepared for

Olmsted County Public Health Services
Rochester-Olmsted Council of Governments

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INTRODUCTION

The Rochester Area Bicycle Master Plan was developed to identify strategies and actions to improve conditions for existing bicycle users and to attract new users to bicycling not just for recreational purposes but to serve routine day to day trips, whether it be for commuting, shopping or other purposes, in the Greater Rochester area.

The strategies identified seek to advance the vision of the plan which is to ***"Support the gradual transformation of the City of Rochester into a community where citizens can easily integrate cycling into their daily lives and all bicyclists enjoy a welcoming environment; riding safely, efficiently, and conveniently within the City of Rochester year-round."***

The Bicycle Master Plan looks to build upon previous policy-oriented plans including the ROCOG 2040 Regional Transportation Plan through targeting resources and efforts towards specific actions that will advance the following principles:

- ***To create a sufficiently dense network of bicycle facilities so that all residents are within reasonably close proximity to the network and all key destinations are served;***
- ***To promote the use of bicycles as a viable and attractive alternative to the automobile;***
- ***To provide for safe and convenient bicycle travel for people over a wide range of ages and abilities.***

PLAN DEVELOPMENT

Work on the Rochester Area Bicycle Master Plan commenced in December of 2010. Early work in the project included a series of focus group meetings and a public input meeting to gather comments about issues and concerns that needed to be considered. Given that a number of cities throughout the United States have well established and successful bicycle programs, an effort was made to identify Best Practices and focus on evaluating the application of those practices to Rochester during the plan development process. An extensive effort also when into evaluating infrastructure needs, particularly in relation to on-street infrastructure that could be developed to improve accessibility to the bikeway network and connectivity throughout the community.

OBJECTIVES

The Bicycle Master Plan was developed on a foundation of five main principles suggested by the Vision Statement reflecting community input as well as related local, state and national policy. Each principle in turn led to development of a goal statement and three to five associated objectives provide the underpinning for all of the Plan recommendations.

The five key Principles of the plan are:

1. **Assure Safe and Secure Bicycle Travel**
2. **Improve Bikeway Network Mobility and Connectivity**
3. **Provide Adequate Accessibility to the Bikeway Network**
4. **Enhance Support Services and Facilities**
5. **Encourage and Promote Bicycling as a Viable Travel Option**

The associated Goals for each of these five Principles are:

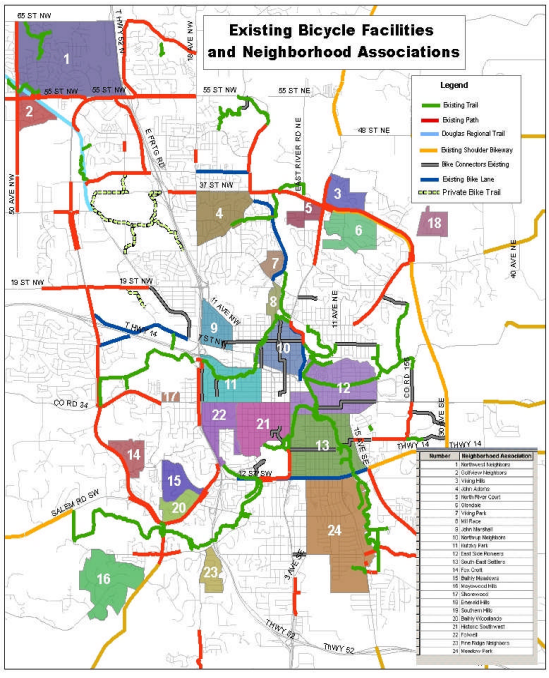
1. **Reduce travel conflict between bicycling and other modes and the number of bicycling injuries**
2. **Develop a network of bicycle travel corridors connecting key centers and destinations with service to all neighborhoods**
3. **Insure that all areas have access to the bikeway network and that the network adequately serves anticipated users.**
4. **Improve supporting facilities and services to make bicycle travel more convenient and improve in-trip and end-of-trip service quality**
5. **Increase the number of bikeway system users and the share of trips made by bicycle**

For each objective listed in the plan, benchmarks and performance targets were identified to provide measures of progress that can be monitored to determine the success of implementation efforts. .

BICYCLING IN ROCHESTER

The existing bikeway network in Rochester is anchored by approximately 100 miles of trails and paths and 6 miles of road marked with bike lanes and 2½ miles signed bike routes.

According to the US Census, the use of bicycles for the trip to work has held steady at just under 1% of all work trips since 1990. The 2010 American Community Survey indicated there were approximately 600 bike commuters in the City of Rochester. Based on counts of bicyclists completed in 2009, it is estimated there are approximately 1200 trips per day made by bicycle in downtown Rochester, and total daily recreational and non-recreational bicycle travel in the Rochester urban area is estimated at 11,000 trips per day during the riding season.



Minnesota Department of Public Safety reports were reviewed for the years 2000-2010. It was found that a total 263 crashes involving bicyclists were reported, an average of 24 per year. The highest concentration of crashes involving bicyclists is found in the downtown area of Rochester.

Cyclists in Rochester currently have access to programs devoted to bicycle safety and skills training. Volunteer groups such as the Kiwanis, the Police Athletic League and the Rochester Active Sports Clubs sponsor safety and encouragement activities, and public agencies including Olmsted County Public Health Services, Active Living Rochester and the Rochester Public Works Department continually seek opportunities to improve bicycling conditions.

COMMUNITY CONSULTATION

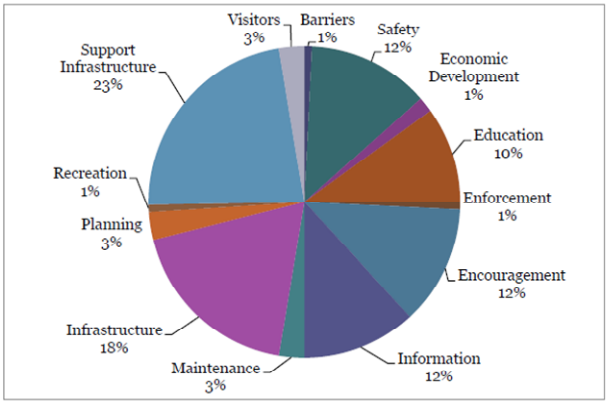
Community input was an important element in the development of the Bicycle Master Plan. Focus Groups and well-attended Public Open Houses were key parts of the process, and throughout the course of the study the ROCOG Bicycle – Pedestrian Advisory Committee (BPAC) provided input and observations on needs and issues. Key areas of public interest and highlights of the public comments received during the community input phase are highlighted in these graphics.

Key Areas of Public Interest by Topic Area

from

Informational Open House, Focus Groups and Web site

Approximately 350 comments received



Highlights of Public Comments

Safety	•More Share the Road signage & messaging •More safety and skills training opportunities + targeted efforts (immigrants, women, etc) •Improvements needed at critical crossings
Education	•Need to educate citizens about new facility types & how they operate (bike lanes @ intersections as an example) •Establish an ongoing education campaign to remind motorists / cyclists about rules of the road
Encouragement	•More events promoting cycling (Summer Streets, Neighborhood rides, etc) •Work with employers and retailers to develop incentive programs for commuters/customers •Market benefits of cycling thru Bike Ambassador / Smart Trips Program
Information	•Need for up-to-date Bike Map available through multiple platforms (paper / online) •Develop On-line Route Planning information tool •More Promotion of the benefits of Cycling & the Bike Network
Infrastructure	•Focus efforts on gaps along the arterial street network lacking paths, shoulders or bike lanes •Need to develop a network in Downtown Rochester
Support Infrastructure	•More accessible & different types of Bike Parking •Wayfinding System •Improved Maintenance

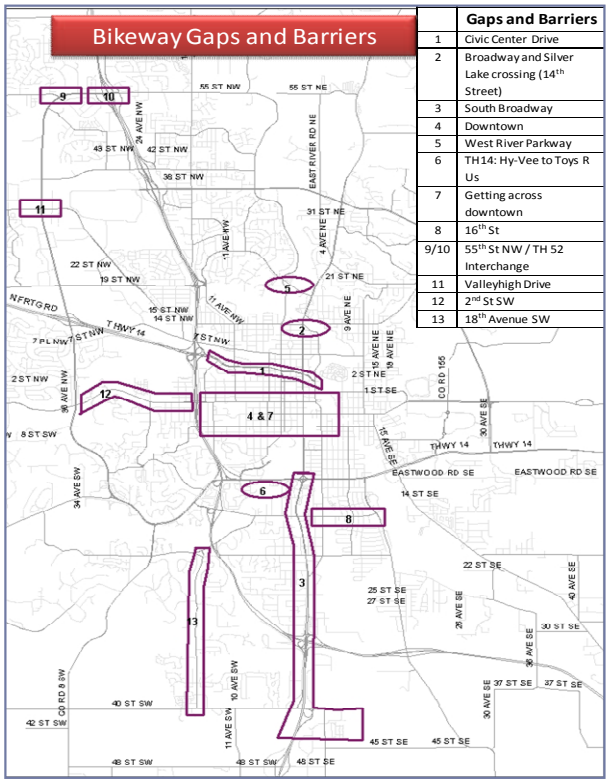
BICYCLE INFRASTRUCTURE ASSESSMENT

An assessment of bicycle infrastructure needs was completed as part of the plan development process. The needs assessment was built on three main factors:

- ❖ Community Input regarding physical gaps and barriers to bicycling existing in the Rochester area
- ❖ Availability of bikeways to serve key attractions / destinations in the Rochester area from all neighborhoods in the urban area.
- ❖ An assessment of collector and arterial roadways in the urban area as to their suitability for bicycling under current design and traffic conditions.

Locations identified as key attractions / destinations included:

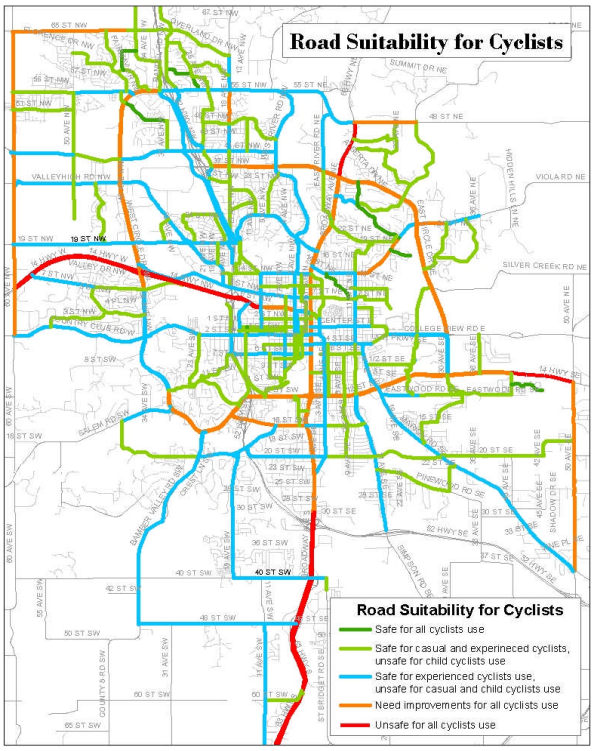
- Rochester Central Business District
- High Schools and Higher Education facilities
- Large Employers
- Major Retail Centers
- Parks & Community Centers



IDENTIFYING A BIKEWAY NETWORK

During the community input phase many comments were received that highlighted important principles to consider in the identification of a Bikeway Network. These included:

- ❖ The existing system of River Trails provides a strong backbone for a network connecting many activity centers and neighborhoods in the community
- ❖ The topography of the area is generally conducive to bicycle travel, though in certain areas there are difficult grades to contend with.
- ❖ Many streets in older areas lack sufficient right of way to permit construction of dedicated bicycle facilities
- ❖ Barriers of concern include existing bridge structures that lack sufficient space or shoulder area for bicycle travelers.

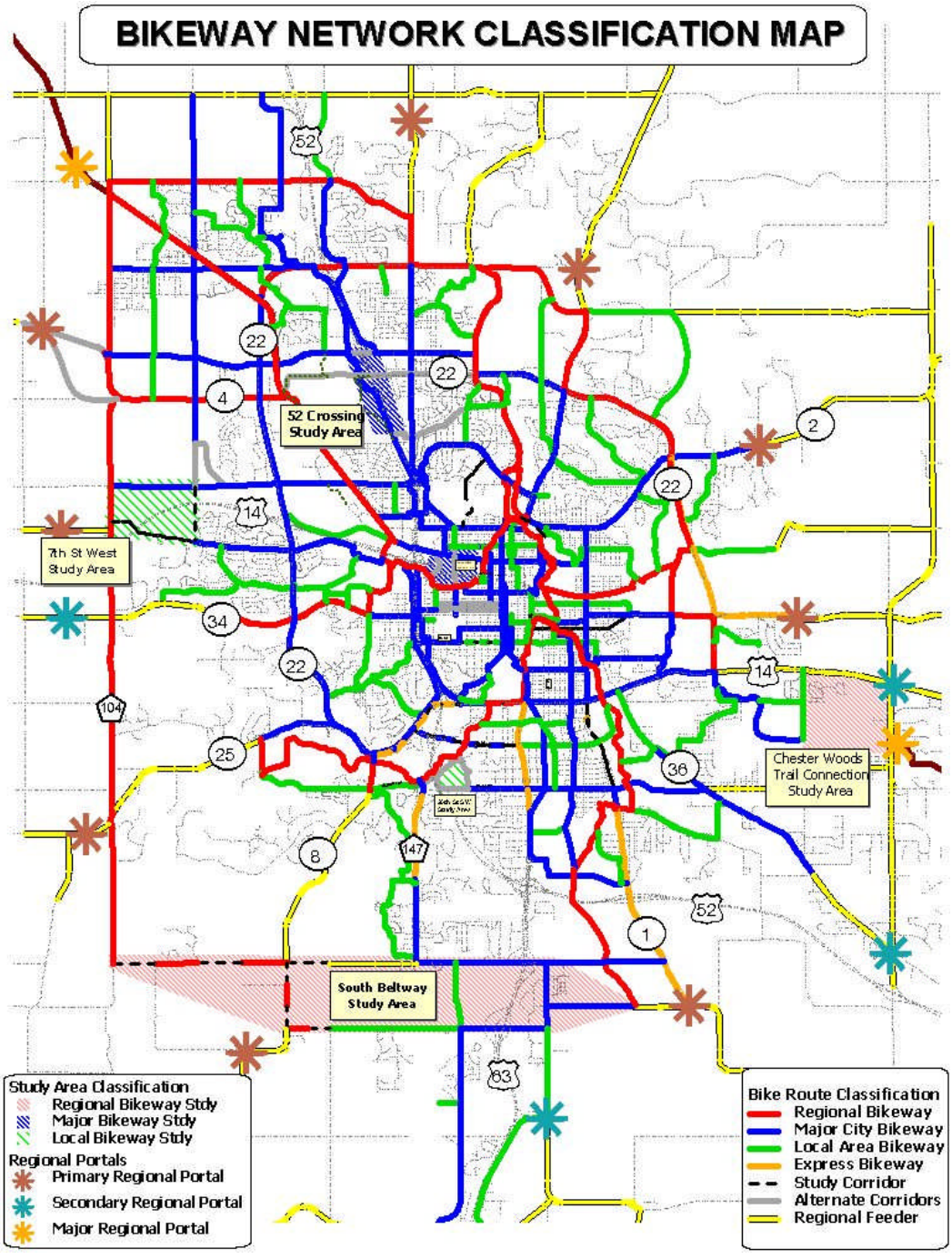


- ❖ Facilities generally following the major street network are needed to take advantage of travelers inherent understanding of how to reach destinations based on the high level of connectivity in the arterial street network.

- Opportunities exist to better utilize roadway space as there are corridors that appear to have more vehicle capacity than needed. Bicycle facilities on these streets could be developed through relatively simple treatments such as signing and roadway re-striping.

- Where feasible, accommodations to serve the different types of cyclists should be developed, such as improvements on collector or arterials for the skilled / advanced cyclist and a quiet, side-street routes or paths for novice or casual cyclists.

Based on consideration of these factors plus traffic and roadway characteristics, a Bikeway Classification Map was developed identifying a hierarchy of corridors needed to meet bicycle travel needs in the area. The network includes Regional Bikeways, Major City Bikeways and Local Area Bikeways, each intended to serve a different primary type of bike travel yet working in concert to create a network that is intuitively understandable to users seeking to travel to major destinations on routes that are relatively direct with no major barriers to travel.



It is important to note that except for highways where bicycle use is specifically prohibited, all streets are legally available for use by bicyclists. In general all streets legally open to cyclists should be maintained and managed to permit safe use for bicycle travel.

BIKEWAY NETWORK DESIGN

The Bikeway Network Classification Map addresses the first part of the equation for bicycle travel by identifying those travel corridors anticipated to serve important bicycle travel movements in the community. A second part of the equation for developing a bicycle network plan is to go beyond this functional classification and consider the type of improvement that can be accommodated in a given corridor to meet anticipated travel needs. The Bicycle Master Plan identifies ***Preliminary Improvement Recommendations*** for most of the corridors identified on the Bikeway Classification Map, providing a starting point for further programming and project development, with the understanding that further detailed engineering analysis will be required to determine a final design once funding for a project is secured. In this phase of the project, factors that were considered included:

- *Mn/DOT Bikeway Guidelines to determine a baseline level of improvement that should be considered given the traffic and speed characteristics of a roadway;*
- *The suitability of the roadway for bicycle use without improvement;*
- *The ability to develop improvements given roadway width, boulevard width, traffic levels, and the number and use of existing lanes; and*
- *The design characteristics of possible bicycle improvement options.*

Based on the results of this assessment, preliminary improvement recommendations for corridors are presented in Chapter 5 in the form of area Improvement Maps, as illustrated for the southeast area of Rochester in the graphic below.

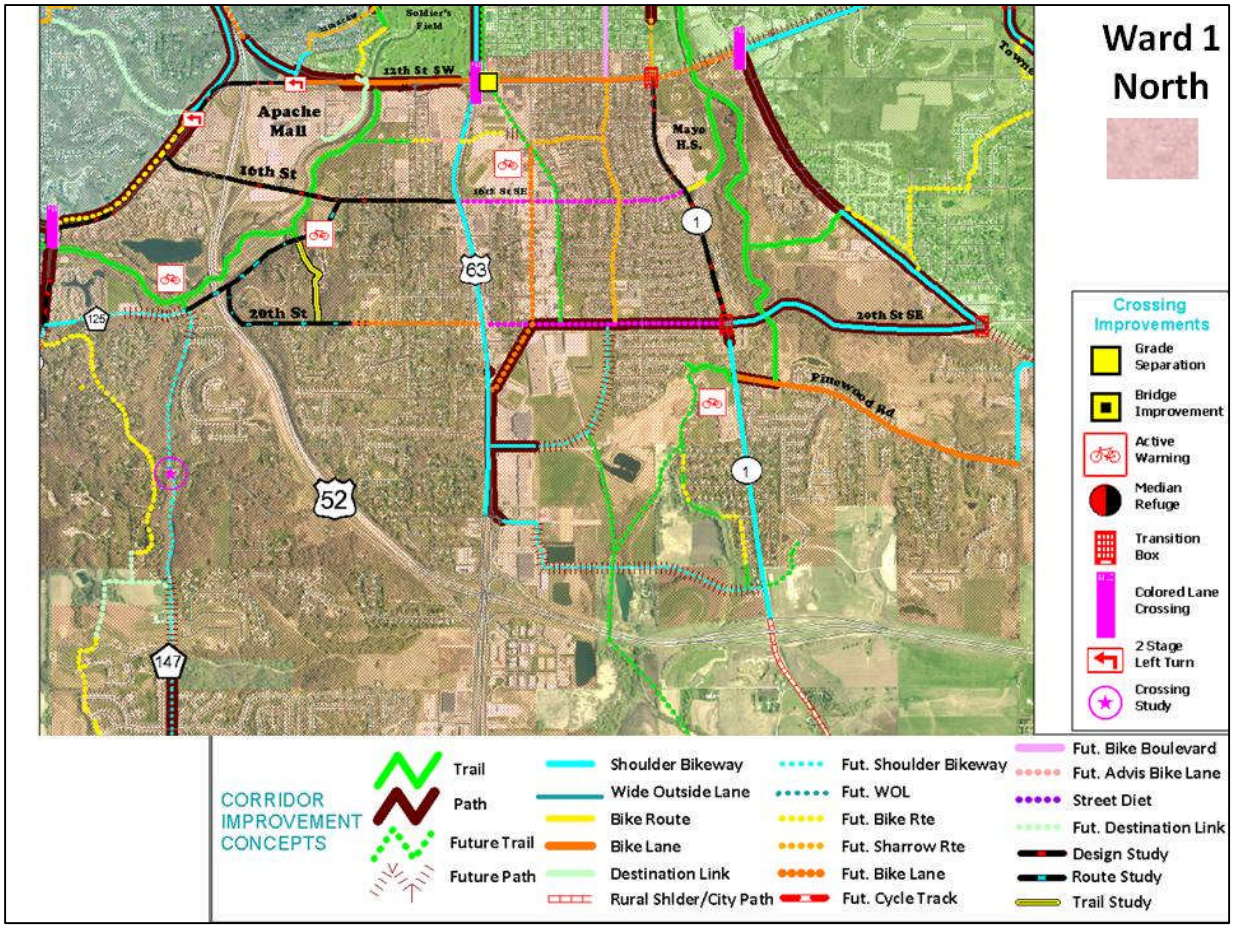


Table ES-1 presents a system level summary of recommended improvements for the study area by facility type, including both corridor improvements and crossing improvements. The various types of corridor and crossing types and locations for proposed for improvement are described in more detail in Chapter 5.

TABLE ES-1: SYSTEM SUMMARY TABLE

Corridors	Miles		Crossings	Locations
Signed Bike Route	29.84		Median Refuges	2
Bike Lanes	22.19		Two Stage Lefts	2
Sharrow Routes	11.02		Shared right Turns	12
Advisory Bike Lane	4.16		Intersection Markings	25
Bike Boulevard	2.97		Bicycle Boxes	2
Cycle Track	0.28		Ramp Markings	7
	-		Advisory Beacons	8
Path	41.79		HAWK	3
Trails	8.46		Grade Separation	2

Table ES-2 presents a system-level preliminary cost opinion (in 2011 dollars) for implementation of infrastructure improvements proposed in the Bicycle Master Plan. Approximately 1/3rd of this funding is already reflected in jurisdictional Capital Improvement Programs, with a significant share of that funding secured from state or federal grant sources and directed towards major off-road improvement projects

		Shared Roadway Improvements (Bike Rts / Sharrows)	Bike Lanes (No Construction - use existing road)	New Road Construction (Primarily Paths & Shoulder Upgrade)	Off Road Construction (Primarily Trails & Grade Separation)
Ward	1	$ 119,000	$ 173,000	$ 3,149,000	$ 4,268,000
Ward	2	$ 360,000	$ 89,000	$ 4,424,000	$ 272,000
Ward	3	$ 169,000	$ 62,000	$ 774,000	$ 7,923,000
Ward	4	$ 273,000	$ 162,000	$ 716,000	$ 1,161,000
Ward	5	$ 124,000	$ 224,000	$ 857,000	$ 1,882,000
Ward	6	$ 114,000	$ 78,000	$ 32,000	$ 396,000
TOTAL		$ 1,159,000	$ 788,000	$ 9,952,000	$ 15,902,000
GRAND TOTAL					$ 27,801,000

TABLE ES-2: PRELIMINARY IMPROVEMENT COSTS

BICYCLE SUPPORT INFRASTRUCTURE

For bicycling to attract and serve not only recreational trips but a greater share of non-recreational travel a system of support facilities and services is essential to complement planned physical improvements to the bikeway network. Useful complementary facilities and services include such items as convenient and sufficient bicycle parking, end-of-trip facilities for commuters such as showers or lockers, wayfinding signage, and online or print materials such as bike maps or route planning services.

A review Best Practices from other communities was completed to identify potential programs or measures to address the following needs identified through the Focus Groups and Public Input meetings:

- *The need for more conveniently located bike parking and different types of bike parking (racks for short term parking, lockers for long term perking, on – street corrals)*
- *The provision of Wayfinding signage along the bikeway network including route identification, destination/directional indicators and distances to key destinations;*
- *Development of a high quality area bike map with information on routes as well as services accessible through various media (paper maps, on-line);*
- *Development of an on-line route planning tool would benefit both residents and visitors;*
- *Bike Rental or Bike Share programs should be considered in high activity areas such as the CBD;*

Figure ES-1 summarizes the key recommendations identified in Chapter 6 of the plan related to providing adequate support infrastructure for bicycle travel.

Figure ES-1

EDUCATION/ ENCOURAGEMENT/ ENFORCEMENT

In addition to providing adequate physical and supporting infrastructure, cities leading the way in growing bicycle travel find that education and encouragement measures also play an important role in attracting more individuals to consider bicycle travel. This is based on the finding that there is a large group of people who lie between the person who will ride in any and all conditions and one who would never consider biking that may be open to cycling as a regular option for travel given better information or appropriate incentives. Multi-faceted outreach measures have been successful in the leading bicycling cities in increasing bicycling mode share while at the same time maintaining a safe travel environment.

Based on review of best practices around the U.S., various promotional, educational and encouragement strategies were identified that have the potential to reach out to those users who may be “on-the-fence” when it comes to the use of a bicycle for non-recreational travel. Measures identified for consideration

would need to be coordinated with and not overlap with existing efforts to promote bicycling by local entities such as the Olmsted County Public Health Services and the Mayo Clinic, and initiatives such as Active Living Rochester. Chapter 7 of the plan summarizes the Best Practice review that was completed and identifies measures that have proven successful in attracting persons to utilize bicycle travel for a greater share of their travel needs. Figure ES-2 highlights the key measures that were identified for further consideration to address the five education / encouragement objectives identified in the plan.

Figure ES-2

In addition to promotion and encouragement efforts, needs were also identified in the area of bicycle safety and security. In response, a series of strategies related to improving bikeway network safety and improving the skills of new or casual youth and adult riders were identified. Figure ES-3 highlights these strategies in relation to the five safety objectives of the Plan. An area of significant public input was in regards to the need to build greater awareness among bicyclists AND motorists about the rights and rules pertaining to bicycle travel on roadways, and the need for better public education when new bicycle facility types are introduced into the community.

Figure ES-3

RECOMMENDATIONS AND IMPLEMENTATION

The Rochester Area Bicycle Master Plan articulates a vision for improving the culture and conditions for bicycling within the Rochester area with the goal of attracting more persons to consider bicycling for day to day travel needs. Based on a review of peer cities in the U.S., promising programs and initiatives were identified that have the potential to improve bicycle safety and attract greater numbers of bicycle travelers, and the infrastructure needed to create a true network of primary bicycle corridors across the urban area was identified.

However, the resources available to implement these initiatives are limited and thus must strategically be deployed. An Action Matrix was developed that presents relative priorities among initiatives, with information on may need to be involved in implementation, the cost implications of various programs, and potential funding sources. Since most education or encouragement programs are generally locally driven rather than dependant on outside funding or project opportunities, the community will have greater ability to shape the scope and timing of such activities. Table ES-3 on the following page highlights the highest priority actions that were identified through discussions of project staff and the project steering committee. The Action Matrix should be reviewed and updated by the annually to ensure continued progress in implementing the Master Plan is sustained.

FUNDING

Securing funding and other resources will be key to implementing the recommendations of the Master Plan. A wide net will need to be cast and efforts made to identify non-traditional sources of funding in order to achieve the outcomes of the plan. Based on review of what other communities have done, a range of traditional and non-traditional funding sources have been identified in Chapter 8 as possible sources of funding for plan recommendations. Local public agencies including the Planning, Public Health and Public Works Departments are in the best position to monitor and investigate possible funding sources and should be tasked with that effort.

Successful implementation of the Bicycle Master Plan would benefit from a committed level of annual program support to advance the strategies in the plan, particularly in the area of maintenance and expansion of the on-street bikeway network through lower cost projects such as bike lanes or sharrow routes. High cost improvements involving major construction costs, such as for path, trails or overpasses, are unlikely to be funded on a programmatic basis and will require project specific efforts to identify and secure funding through grants and other outside sources to bring such projects to fruition.

IMPLEMENTATION

No one agency or department can accomplish the goals of this plan alone. Implementation will require ongoing consultation between departments and agencies representing various disciplines, the BPAC, interested organizations and businesses, and the public. During tight budget times, successful implementation of the plan will depend on a range of stakeholders, ongoing leadership from key champions and support from local bicycle advocacy organizations as well as engagement with other key institutions in the community such as large corporations, small businesses, neighborhood organizations, health professionals, university leaders and others. It will be important to maintain momentum over time for continued implementation, with potentially the most effective strategy being the completion of low cost or low effort improvements on a regular basis.

Table ES-3	1st Priorities among New Activities
	Partnerships for Plan Deployment
	• Establish a **Bicycle Plan Coordinator** or **Coordination Team** to spearhead work related to implementation of the Bicycle Master Plan • Work with the proposed Downtown Rochester **Transportation Management Association (TMA)** to deliver bicycle programs and services for travelers with downtown destinations • Support the establishment of a Non-Profit Bicycle Advocacy Organization to provide a means for individuals motivated to actively work on implementation of the plan a forum to do so.
	Planning & Policy
High Priority Planning Studies	• **Chester Woods Regional Trail Connection Study** • **4th Ave West Corridor Alternatives** • **3rd St NW / West Circle Drive Crossing Alternatives**
Programming	• Utilize **Fact Sheets** & other media to disseminate information about new bikeway network projects to the community, particularly those involving improvements types new to Rochester
Development Policy	• Conduct a review of Land Development Regulations to identify possible changes that would advance implementation of the Bicycle Master Plan
	Programs and Promotion
Safety & Education	• Complete a Rochester **Safe Routes to School Plan**
Information	• Develop a high quality Rochester area **Bike Map** • Develop a comprehensive **"Bike Rochester" web site**
Encouragement Events	• Develop a C**ommuter Support Program** for downtown Rochester in collaboration with a downtown TMA • Develop an A**nnual Bicycle Recognition Program** • Organize an **Annual Bicycle Summit**
Enforcement	• Expand efforts to educate cyclists about the rules regarding **sidewalk riding in Rochester** and the need for more visible **Bicycle Dismount Program**.
	Built Environment / Supporting Infratructure
Bicycle Parking	• Conduct a C**omprehensive Parking Survey** to quantify the location and availability of bicycle parking
Wayfinding	• Complete deployment of the first phase of wayfinding signage along the River Trails System
Bike Share	• Work with the Downtown TMA to investigate market for Bike Share system in Rochester
	Built Environment / Bikeway Network
Bikeway Network Development	• **Make Public consultation** a priority as part of the planning & design process for all bikeway routes • Assess the **balance of investment** between larger trail/path projects and smaller on-street signing or striping projects to determine how best to maximize bicycle network development given constrained resources
Bikeway Maintenance	• Develop and deploy a **Bicycle Network Maintenance Request System**

CHAPTER 1

INTRODUCTION

In 2009 Olmsted County Public Health Services received a Communities Putting Prevention to Work (CPPW) grant from the Minnesota Department of Health funded through the American Recovery & Reinvestment Act (ARRA) of 2009 to develop and deploy obesity prevention strategies in Olmsted County. One strategy selected for funding under the CPPW grant was to support development of a Rochester Area Bicycle Master Plan (BMP), which would build on existing planning efforts of the City of Rochester and the Rochester-Olmsted Council of Governments (ROCOG). The BMP extends the policy-oriented work of previous plans adopted by the City and ROCOG by identifying and prioritizing a set of action strategies emphasizing the development of on-road infrastructure to complement the extensive system of existing and planned off-road trails and paths in the Rochester area, as well identifying specific education and promotion activities aimed at expanding the pool of regular bicycle users.

To realize the benefits of bicycling as a mode of travel not just for recreational purposes but to serve day to day utilitarian trips, there is a recognized need to provide greater connectivity to workplaces, retail areas and educational facilities from neighborhoods throughout the area. Achieving this will require greater attention to the on-road environment for bicyclists as well as supporting infrastructure such as wayfinding signage, bicycle parking and end-of-trip facilities. Greater access to information about route planning, safety and encouragement /promotion opportunities is also important to expand the use of bicycles to meet transportation needs in the community.

The BMP reflects a review of previous bicycle plans as well as input regarding issues and needs gathered from the Rochester community through focus groups and public meetings. The plan proposes an interconnected network of primary and secondary travel corridors to improve access for bicyclists to major destinations in the community. Once a network corridor meeting accessibility and connectivity goals was identified, individual roadways were further evaluated in order to identify bikeway improvement concepts to serve cyclists of all skill levels in all identified on-street bikeway network corridors.

Along with facility improvements, the plan recommends a set of education and encouragement programs and actions that should be implemented and provides a set of performance targets to use in measuring achievements over the horizon of the plan.

A COMMUNITY VISION

The guiding vision for this document is:

"To support the gradual transformation of the City of Rochester into a community where citizens can easily integrate cycling into their daily lives and all bicyclists enjoy a welcoming environment; riding safely, efficiently, and conveniently within the City of Rochester year-round."

Achieving this vision will require a sustained effort from all interested stakeholders in order to raise the role of the bicycle in addressing travel needs in the community. In order to accomplish this vision a multi-faceted and balanced approach is needed. The League of American Bicyclists recommends that a bicycle program address the five elements of education, encouragement, engineering, enforcement, and evaluation. Addressing the varying needs of bicyclists of different skills and recognizing the many types of cost effective projects is important. Bicycling's share of current travel in the region is low in part due to inadequate bicycle infrastructure and the perception that the streets in the city are not comfortable for cyclists, especially the less-skilled rider. In addition to providing adequate infrastructure, improving support infrastructure such as bicycle parking and wayfinding signage, and providing cyclists avenues to gain the working knowledge they need to successfully cycle regularly are important to achieving the vision.

It is also important to build on existing community efforts. In the realm of infrastructure planning, the Rochester Downtown Master Plan completed in 2011, as well as recent neighborhood travel plans developed by the Kutzky Park and Slatterly Park neighborhoods indicate that there is interest in improving conditions for bicycling. The efforts of the local Bicycle-Pedestrian Advisory Committee, various Olmsted County Public Health Services Healthy Communities initiatives, and other local initiatives such as the Get Excited and Ride (GEAR) project all indicate a level of interest in expanding the role of the bicycle in local travel. The Bicycle Master Plan builds on these efforts by providing a framework for future investments.

GOALS OF THE PLAN

The overarching goals of this plan are:

- ***To create a community where bicycling is a viable travel choice, particularly for trips less than five miles in length***
- ***To develop a safe and comprehensive local and regional bikeway network***
- ***To enhance environmental quality, public health and realize recreation and mobility benefits through increased bicycling***

Strategies to enhance the city's non-motorized environment will include eliminating gaps in the local and regional off-road bicycle network, identifying innovative solutions for integrating on –road bicycling into the existing street system, expanding the availability of bicycle – related education offerings and providing greater encouragement to residents to try bicycling as a mode of travel in addition to a means of recreation.

The plan recommendations build upon the existing bicycle infrastructure in the community as well as existing programs with a set of strategies and actions to improve the environment for bicycling in the community and increase the share of travel completed by bicycles. The plan establishes benchmarks and performance targets based on a set of action-oriented objectives that should be utilized to conduct periodic evaluation of bicycle travel trends and patterns in the community.

WHY INVEST IN BICYCLING?

Investing in the bicycling infrastructure and programs to encourage greater bicycle use in Rochester will bring benefits to residents and visitors alike. Among these benefits are:

Bicycling can be a convenient alternative option

A high quality bicycle network will make it easier and convenient for persons in Rochester to choose cycling as a way to meet at least some of their transportation and mobility needs. A network of safe, convenient and easily accessible routes will expand the number of destinations that can be reached within a reasonable travel time for a greater number of individuals.

Bicycling can help streets work better

Research in various urban areas has found that many trips are three to five miles or less in length, a distance that can be easily traveled in less than 20-25 minutes on bike, and about one-quarter of all trips are less than one mile. Motor vehicles are used for the vast majority of these trips even though they could be made on a bicycle or by walking in a reasonable amount of time. Given that many of these trips converge on the downtown or other high traffic areas, reducing the number of trips made by car could help reduce or moderate congestion in key areas.

In Rochester, 20% of all commuting trips by local residents are less than 10 minutes in length and over 50% (53%) are less than 15 minutes in length. These are trips that could potentially be replaced with a 20 minute or shorter bike trip.

The 2011 Rochester Downtown Master Plan set as a goal the reduction in single occupant vehicle travel from the current level of approximately 70-75% of all trips into downtown to 50% of all trips by the year 2030. A major reason for this is that expansion of street corridors and parking structures in downtown Rochester to meet future vehicle demand given current modal splits is not feasible or desirable. Making more efficient use of the existing infrastructure and broadening the travel choices available will be important. Modes such as transit, pedestrian and bicycle travel from the perspective of space utilization are much more efficient than vehicular travel. Thus, shifting more travel to alternatives such as bicycles will be important in order to develop a livable and sustainable downtown environment, given the anticipated growth in medical center uses, higher education and housing anticipated in the downtown area. By shifting those trips that are feasible by modes such as bicycle away from automobilies, the available road capacity can be preserved for those travelers who must use a vehicle.

Bicycling can raise the quality of life

Many cities are attempting to improve the environment for economic development and the livability of the community for residents by addressing issues related to quality of life. Rochester, with its significant base of health care, bio-business and technology employment and the prospect of a greater educational foothold through development of aUniversity of Minnesota-Rochester campus, has committed to developing the type of amenities that can attract high skill workers to local employers. Such amenities have been found to include measures such as arts and cultural offerings, urban housing and recreational opportunities. Another commonality among cities that are anchored by a creative and well educated workforce is the presence of quality transportation options, with high quality bicycle travel infrastructure commonly being among the choices that these workforces appear to desire.

Bicycling can improve the health of residents

The Centers for Disease Control states that “automobile trips that can be replaced safely by walking or bicycling offer the first target for increasing physical activity in communities.” Cycling is a great way to build physical activity into a person’s daily routine and is a prescription for health. In recent years the National Center for Disease Control (CDC) has been making Americans aware of an alarming and dangerous trend in the health of our national population: obesity rates are climbing at record pace and contributing to heart disease, diabetes and a host of other health problems.

Health educators, public health departments and health providers are rallying to address this problem and they are increasingly looking to partner with transportation agencies to help bring back bicycling and walking as safe and significant modes of travel in our cities.There are local efforts represented by initiatives such as Active Living Rochester and Get Excited and Ride (GEAR) that have been working to get out the message about personal lifestyle changes that can decrease local healthcare costs to businesses and individuals. Some common health related facts related to bicycling include:

- The average person can lose 13 pounds in their first year of commuting by bike.
- Three hours a week of cycling can reduce your risk of heart disease and stroke by 50%.

Economic Benefits

The average cost of owning and operating a car is now estimated at more than $7,000 per year when all costs are included, and the typical two car household will spend at or above 35% to 40% of its disposable income on the combined costs of housing and transportation depending on the distance they live from work and shopping areas. With bicycling being one of the most affordable forms of personal transportation, a multi-person household can safe a significant amount of money if they can substitute alternative travel arrangement for at least one single occupant commuter, freeing up money for other things.

PLAN OBJECTIVES

To improve the environment for bicycling, this plan seeks to identify and address the issues and barriers that prevent individuals from considering the bicycle for some of their daily transportation needs. All population groups need to be considered, including those who may be typically underserved such as youth or newcomers to the community and our culture. Key objectives of the plan include:

- **Address Significant Network Gaps:** Identify significant bikeway network gaps and improvement options to address these deficiencies. While Rochester has approximately one hundred miles of existing bikeways, most of these are trails or paths located outside the existing road network and have been developed in areas where open space corridors or wide right of ways were available. In key areas, such as the central business district or the older neighborhoods that ring the downtown, lack of these kinds of spaces results in a lack of existing bikeway accommodations, which can only be addressed by development of on-road facilities.

- **Provide Access to Key Destinations:** In addition to providing continuity throughout the network, "last block" connectivity to major destinations is also an issue that needs to be addressed. Locations such as Apache Mall, certain parts of Downtown Rochester, or the north Highway 52 commercial corridor could benefit from improved connections to the front door of businesses within these areas from the bikeway network.

- **Improve Support Facilities**: Measures such as clear directional signage, convenient and secure bicycle parking at schools, employment centers and transit stops, and easily accessible information resources such as bike maps or online route planning tools could help to build the cadre of cyclists who are confident to rely on the bicycle for their daily travel.

- **Improve Safety**: Ensure that resources including safety education materials and training opportunities are available to all potential cyclists, and address the need to encourage better understanding of the respective rules and responsibilities that govern bicycling and motor vehicle operation in a shared on-road environment.

- **Encourage and Promote the use of Bicycles:** Encouragement and promotion measures can be used strategically to attract individuals to try cycling to meet everyday travel needs. This is an area where the level of investment in Rochester is low, but in many cities with high aspirations it is key to attracting growing numbers of riders. Communities rely on a host of tools that can include marketing and advertising, financial incentives, sponsored events or the provision of high quality information in order to attract users.

- **Ensuring Implementation of the Plan:** The plan recognizes that there are an array of implementation tools that must be utilized to achieve the goals of the plan, including securing outside funding, building and maintaining political and community support and ensuring coordination among many partners while taking advantage of all opportunities to implement minor as well as major improvements on a continuous basis.

CONTENTS OF THE PLAN

The Rochester Area Bicycle Master Plan is organized as follows:

Chapter 1: Introduction provides an overview of this plan and its purpose.

Chapter 2: Bicycling in Rochester Today describes Rochester's existing bicycle and trail network and what we know about the use of bicycling as a means of travel in the community.

Chapter 3: Stakeholder and Community Consulation describes input that was gathered from the community regarding issues and needs related to the bikeway system through focus groups and open houses, and the recommendations related to bicycle travel that have been included in recent planning initiatives such as the 2010 Downtown Master Plan and Neighborhood Association planning efforts completed in the last 3-5 years.

Chapter 4: Master Plan Goals and Objectives describes goals and objectives that were established for the Master Plan project and identifies benchmarks and performance targets for each objective that can be used to measure progress in meeting the goals of the plan in the future.

Chapter 5: Bicycle Infrastructure Assessment evaluates the physical bikeway infrastructure in the community and identifies a recommended Bikeway Network and preliminary improvement recommendations in order develop a connected bikeway network that provides accessibility for every area in the community.

Chapter 6: Bicycle Support Infrastructure discusses potential improvement needs in terms of support facilities and services that will complement the bikeway network. Complementary facilities and services discussed include maintenance, bicycle parking, other end-of-trip facilities, in-trip measures such as wayfinding signage, as well as measures to better connect bicycle travel with transit.

Chapter 7: Education / Encouragement / Enforcement discusses best practices and potential action alternatives that could be implemented to promote walking and bicycling, to increase bicyclist user safety, and to increase the awareness of walking and bicycling as viable travel modes.

Chapter 8: Recommendations and Implementation presents the priority recommendations of the plan, discusses funding considerations, and describes planning or programming strategies that should be implemented to insure that the educational, encouragement, enforcement and engineering measures identified in the plan are successfully enacted.

CHAPTER 2

BICYCLING IN ROCHESTER TODAY

Bicycling conditions in Rochester vary throughout the city and its surrounding environs. The central business district features an extensive street grid and diverse mix of land uses that would be attractive as a destination for bicyclists, and neighborhoods adjacent to the downtown core also feature a traditional street grid with a high level of interconnection, but good access to these areas requires improved on-street accommodations, since accessing these areas typically require cyclists to cross or ride along high volume arterial roadways.

Outside of the urban center, bicycle infrastructure is more common but relies primarily on off-road trails and paths. In many newer neighborhoods contemporary street layouts are featured, with inconsistent street grids and frequent use of cul-de-sacs or curvilinear street patterns that do not provide for street continuity, with connection to the downtown area frequently interrupted by natural or manmade features such as rivers and creeks or major highways. In most parts of the urban area only arterial or primary collector streets provide the through route continuity needed for longer distance trips, but these roads, particularly in the older areas of the city, have seen only limited improvement to accommodate bicyclists, leaving few routes that have either low traffic speeds/volumes or dedicated space for bicyle travel to all for time-saving directness of travel.

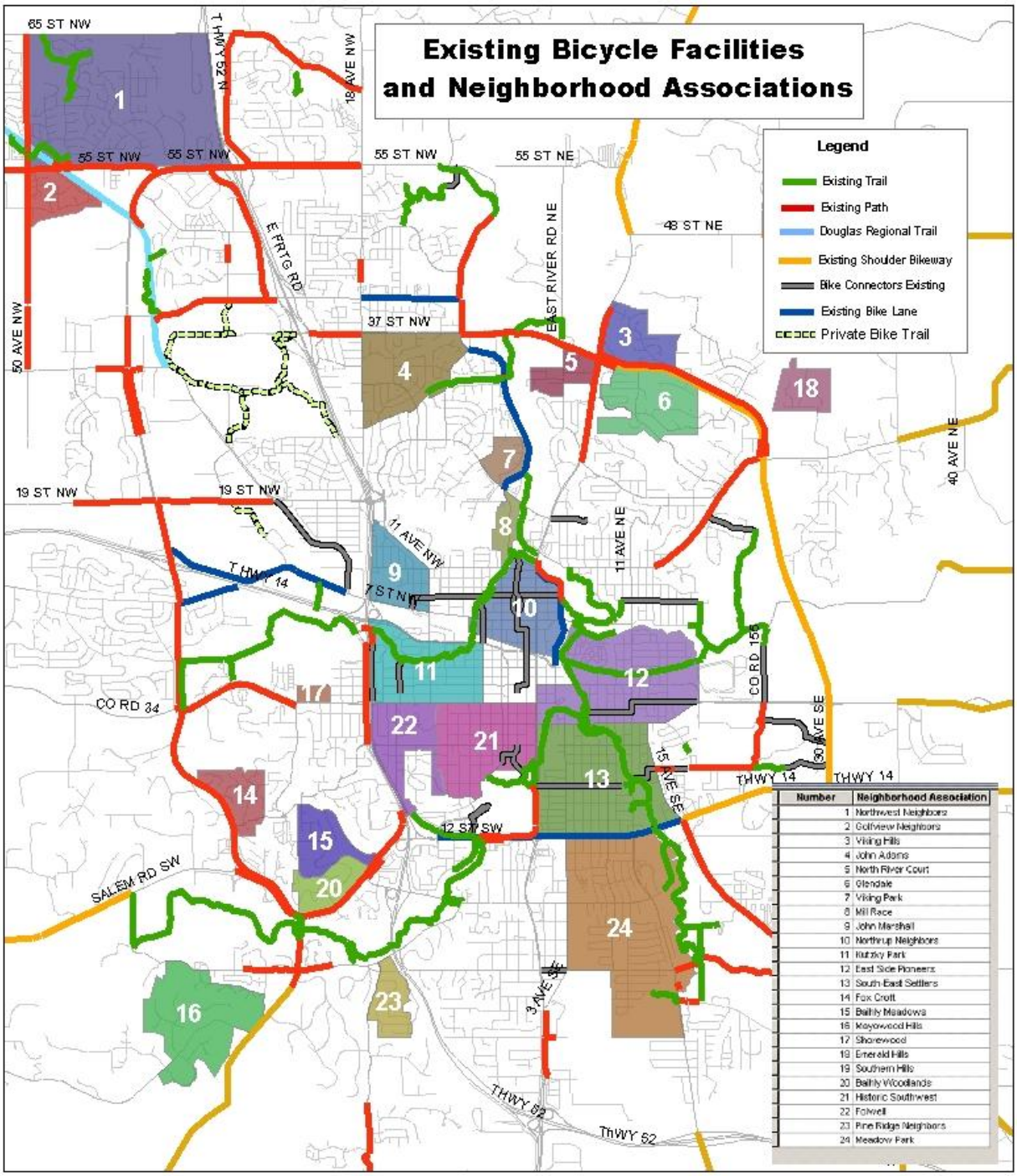
Cities that are successful in attracting more people to bicycle travel typically supplement infrastructure improvements with programs and services to assist those who want to use the bicycle more frequently, with attention to support services such as bike parking, bike/transit travel connections, easily accessible information about bicycling in the community, initiatives to raise safety awareness and promotional events to expose more people to the benefits of bike travel. In the Rochester area, these types of supporting measures have typically been done on an ad-hoc basis by interested groups, without a high level of coordination between initiatives or necessarily a vision for how different efforts can work together to create greater synergy.

EXISTING BICYCLE INFRASTRUCTURE

Figure 2-1 illustrates the location of existing bikeway infrastructure in the Rochester Urban Area. The bikeway network in Rochester is anchored by approximately 100 miles of trails (typically 8'-10' wide paved surfaces found in parks or riparian corridors) and paths (typically 8' wide paved surfaces built alongside arterial or collector streets).

In addition, the city currently has approximately 12 miles of bike lanes and 5 miles of signed bike routes.

FIGURE 2-1: Existing Bikeway Infrastructure in Rochester



There are 29 bridge structures exclusive for bicycle and pedestrian use in the City, which can be found along trail routes crossing existing rivers and streams or in select strategic locations crossing major highways.

Most lower-order streets in Rochester function as “shared roadways.” Shared roadways accommodate vehicles and bicycles in the same travel lane. The most suitable roadways for shared vehicle/bicycle use are those with lower posted speeds (30 MPH or less) and traffic volumes (1,000 daily vehicles or less). A very limited number of shared roadways that connect key locations have been signed as bike routes.

The more experienced or confident riders will also find roadways with paved and striped shoulders of adequate width (four-feet or more) attractive for cycling. These types of accommodations are commonly found on regional County State Aid Highways such as CSAH 22 (East and West Circle Drive) that serve important arterial travel in the area.

BICYCLE TRAVEL IN ROCHESTER

JOURNEY TO WORK TRAVEL

The US Census Bureau collects data on journey to work travel which represents the most current survey data in the Rochester area. This data indicates that the use of bicycles for the trip to work has held steady at just under 1% of all work trips since 1990. However, changes in the methods used by the Census to collect data leave open some questions about the actual level of bike to work travel in the urban area which are not likely to be clarified until release of data from the 2010 Census. While the 2009 American Community Survey (ACS) and the blended results of the 2005-2009 ACS surveys suggests noticeable growth in the combined totals for minor modes to work (543 to 1200 between 2000 and 2009) the 2005-2009 ACS suggests a significant drop in the share of this travel by bicycle. The 2010 Census with its larger sample size will provide a better indication of the trend in bike to work travel.

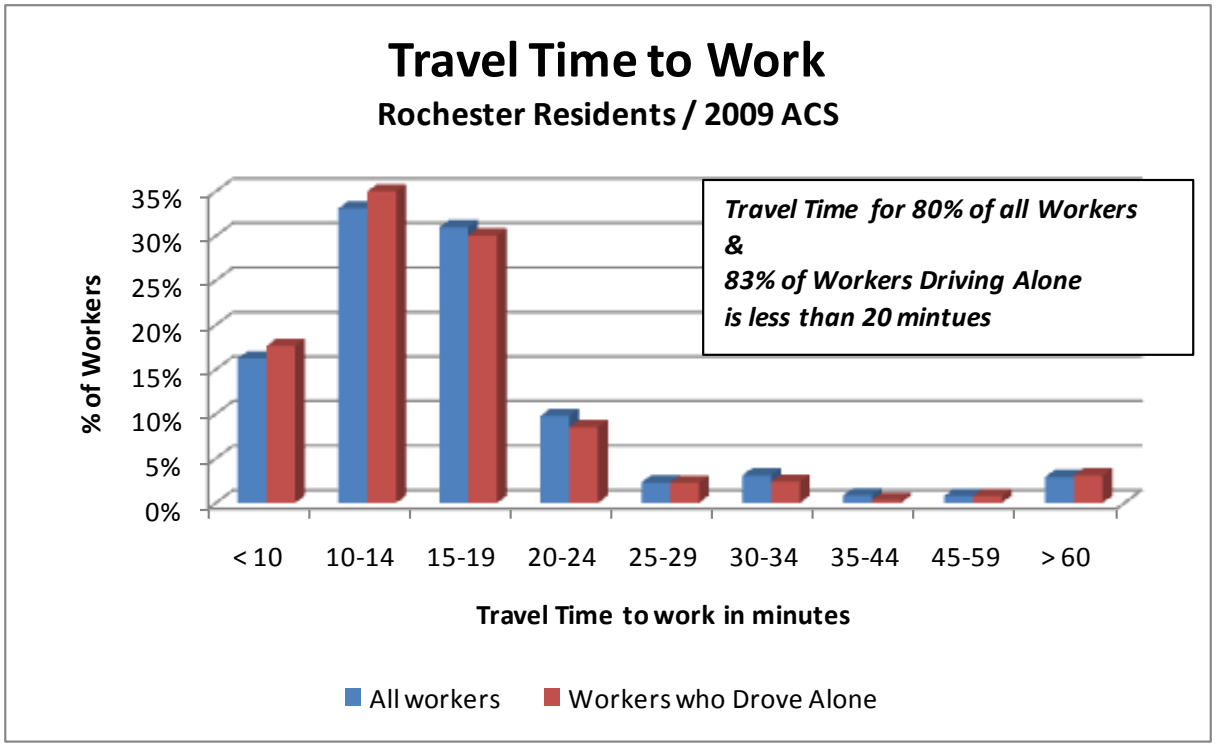
Table 2-1 Journey to Work Travel 1990-2010

Census Data Category	Census 1990	Census 2000	ACS 2005-09	ACS 2009	Census 2010
Bicycle Used for Trip to Work	227	336	374	Not Reported	Available 2012
Bicycle Share / all workers	0.80%	0.75%	0.70%	Not Reported	Available 2012
Minor Category Trip to Work Number *(Bicycle, Motorcycle, TaxiCab, "Other Means")*	379	543	841	1201	Available 2012
Minor Category Trip to Work Share	0.97%	1.22%	1.58%	2.23%	Available 2012
Bicycle Share of Minor Categories	60%	62%	44%	Not Reported	Available 2012

In the 2009 Downtown Rochester Bicycle Study an estimate of daily non-recreational bike travel was reported that suggested approximately 870 adults per day use a bicycle for non-recreational travel into the Rochester CBD. If the bicycle share of travel reported in Table 2-1 above for 2005-2009 (44%) is in fact an anomaly, and the bicycle share has held at approximately 60% as found in Census surveys, the number of bicycle commuters for 2009 would be on the order of 720 individuals, which would align well with the estimate developed for the 2009 Downtown Bicycle Study.

The potential universe of trips that could be served by bicycles in the Rochester area is large. According to the 2009 American Community Survey, 20% of Rochester residents travel less than 10 minutes to get to work and 80% of all residents travel less than 20 minutes on their journey to work. These percentages translate into a total numbers of workers who travel less than 20 minutes of 42,000 persons, including 34,000 who drive to work alone.

Figure 2-2 Travel Time to Work



Until the data from the 2010 Census is released, the best information available to understand the origins and destinations of persons who bike to work comes from the Year 2000 Census. The year Year 2000 data was summarized to get a sense of where people who bicycle to work live and work. Figures 2-3 and 2-4 indicate these results graphically, with Figure 2-3 showing the home locations for workers biking to work, while workplace destinations in Figure 2-4 reflect, as expected, the downtown / St.

Mary's Hospital area and the IBM / TH 52 North Corridor as primary work destinations for people who bike to work.

Figure 2-3 Residence Location

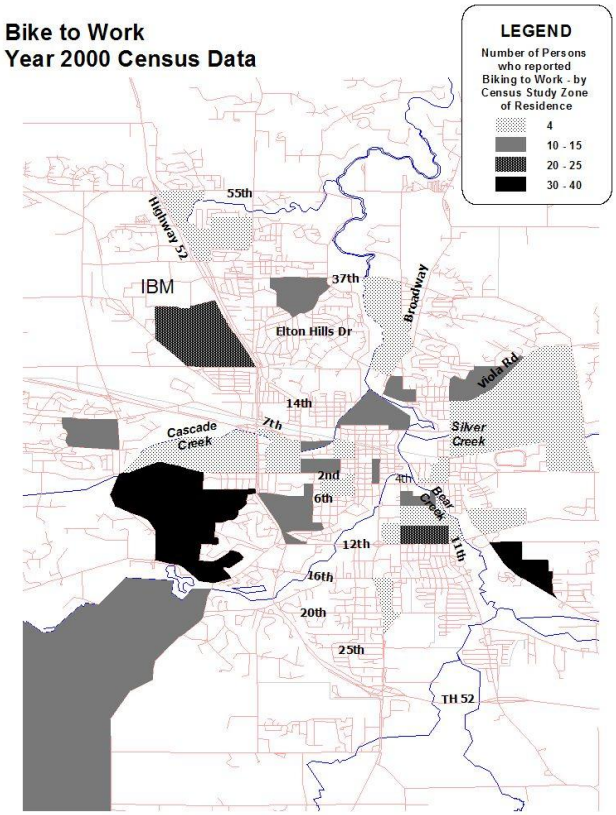
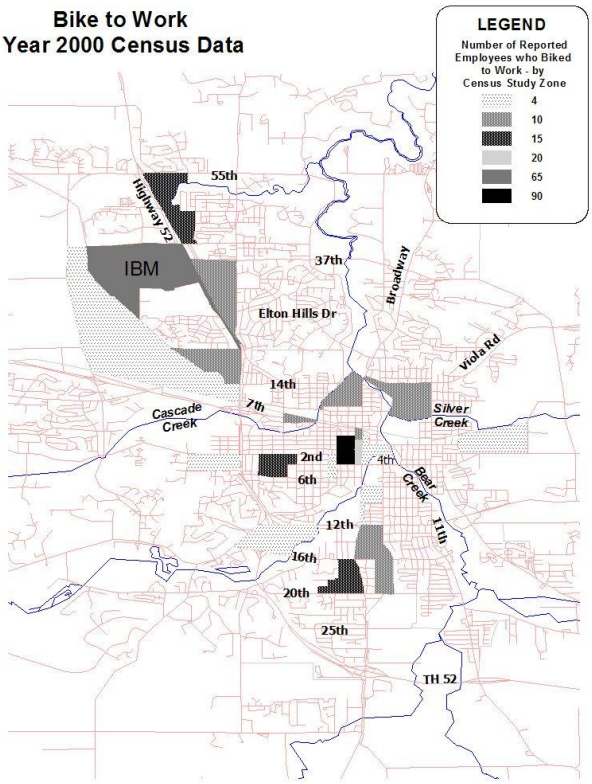


Figure 2-4 Work Location



DOWNTOWN TRAVEL

A survey of peak period bicycling in downtown Rochester was completed in 2008 by the City of Rochester to understand existing volumes and travel patterns of bicyclists and pedestrians. The boundary for the CBD study was;

- 6th Avenue West for the western boundary
- Civic Center Drive as the northern boundary
- TH 63 as the eastern boundary
- 6th St South as the southern boundary

At intersections along this boundary pedestrians and bicyclists were counted for the AM peak period (6 to 8 AM), the mid-day peak period (11 AM to 1 PM), and the PM peak period of 3:30 to 5:30 PM). The volumes that were found to be entering and leaving the CBD during the study periods are shown in Table 2-2

Table 2-2 Peak Hour Bicycle Survey 2008

Time period	Volume In	Volume Out	Total Volume
7:00 to 9:00 AM	128	44	172
11:00 AM to 1:00 PM	94	71	165
3:30 to 5:30 PM	81	159	240
Totals	303	274	577

Assuming bicycle traffic volumes are similar in distribution to vehicle traffic volumes and that the highest hour of volume is approximately 10% of the total volume for that day, one can extrapolate the total bicycle traffic volume currently entering and leaving the central business district as being approximately 1,200 bicycle trips per day.

ESTIMATES OF TOTAL BICYCLE TRAVEL

Various demand models have been developed by researchers to estimate bicycle travel demand. Table 2-3 summarizes one model that incorporates various local and national survey data to estimate the magnitude of expected current bike usage in the Rochester area. This particular model suggests that daily bicycle trip making in Rochester is about 11,120 trips per day.

Table 2-3: Existing Bicycle Demand Model Results

Variable	Value	Source
Study area population	**101,786**	ACS 2007-09 for the City of Rochester
Employed population	**54,857**	ACS 2007-09 Population of workers over 16 years
Bike-to-work share	**1.30%**	ACS 2007-09 transportation to work
Number of bike-to-work commuters	**710**	(employed persons) x (bicycle to work mode share)
Work at home mode share	**3.40%**	ACS 2007-09 Population of workers over 16 years
Number of work at home bike commuters	**90**	Assumes 5% of population working at home makes at least one daily bicycle trips
Transit-to-work mode share	**4.10%**	ACS 2007-09 Means of transportation to work for workers over 16 years
Transit bicycle commuters	**40**	Assumes 2% of transit rider access transit by bicycle
School children, ages 6-14	**14,630**	ACS 2007-09 school enrollment by level of school

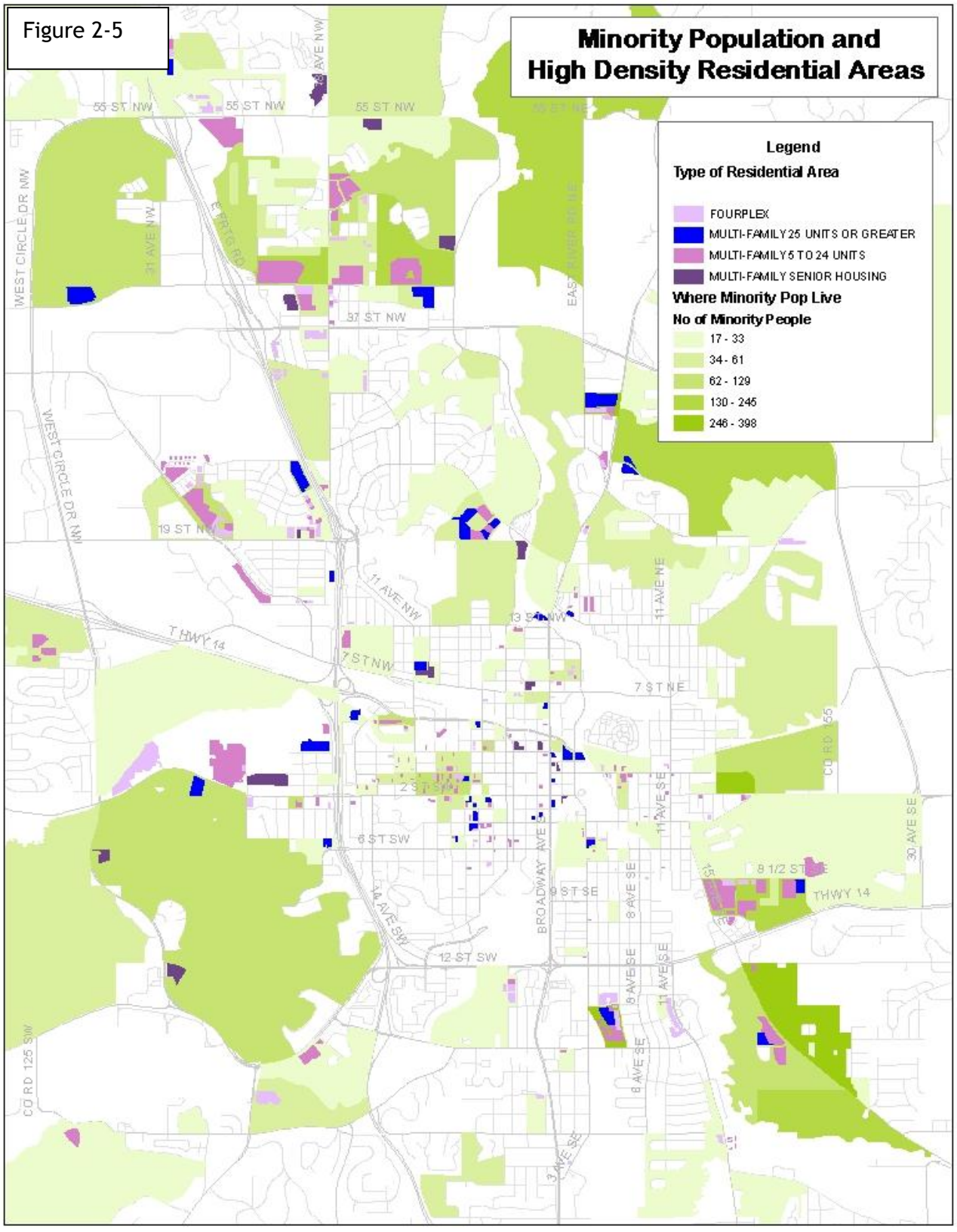
School children bicycling mode share	**2.00%**	National Safe Routes to School Survey 2003
School children bike commuters	**290**	(School children pop) x (bicycle mode share)
Number of college students	**7,193**	ACS 2007-09 school enrollment at post-secondary level
Estimated college bicycling mode share	**5.00%**	National bicycling & walking study, FHWA, Case study # 1,1995
College bicycling commuters	**360**	(College student pop) x (bicycling mode share)
Commuters Subtotal	**1,490**	(Bicycling to work trips+ school and college trips)
Commute trips Subtotal	**2,980**	(Total commute trips) X 2 (for round trip)
Other utilitarian and discretionary trips		
Ratio of "other" trips to commute trips	**2.73**	National Household Transportation Survey 2001
Estimated non-commute trips	8140	
TOTAL ESTIMATED TRIPS	**11,120**	***Estimated Daily Bike Trips – all purposes**

POPULATIONS OF SPECIAL INTEREST

In planning improvements it is important to consider whether there are specific needs or barriers that certain population subgroups may have which should be considered in the planning process. Anecdotal evidence suggests that some groups, such as immigrants or the low income, could benefit from improved bicycle accessibility or connectivity, or from access to training and information to help them better understand travel routes and the rules of the road for bicycle travel. For immigrants in particular, cultural barriers and difficulties posed by their limited understanding of materials not available in their native language may require special efforts in order to overcome challenges they face.

Figure 2-5 identifies areas in the community where there is a likely to be a higher number of these individuals residing who may need to be given special consideration in the implementation of the recommendations of this plan. In particular, areas in southeast Rochester and northwest Rochester have high concentrations of minority residents and lower cost housing that would be typically be attractive to this group of residents.

Figure 2-5


Minority Population and
High Density Residential Areas
Legend
Type of Residential Area
FOURPLEX
MULTI-FAMILY 25 UNITS OR GREATER
MULTI-FAMILY 5 TO 24 UNITS
MULTI-FAMILY SENIOR HOUSING
Where Minority Pop Live
No of Minority People
17 - 33
34 - 61
62 - 129
130 - 245
246 - 398
55 ST NW
37 ST NW
19 ST NW
7 ST NW
7 ST NE
6 ST SW
9 ST SE
12 ST SW
11 AVE NW
11 AVE NE
11 AVE SE
8 AVE SE
6 AVE SE
3 AVE SE
14 AVE SW
31 AVE NW
WEST CIRCLE DR NW
BROADWAY AVE
THWY 14
CO RD 125 SW
CO RD 55
30 AVE SE

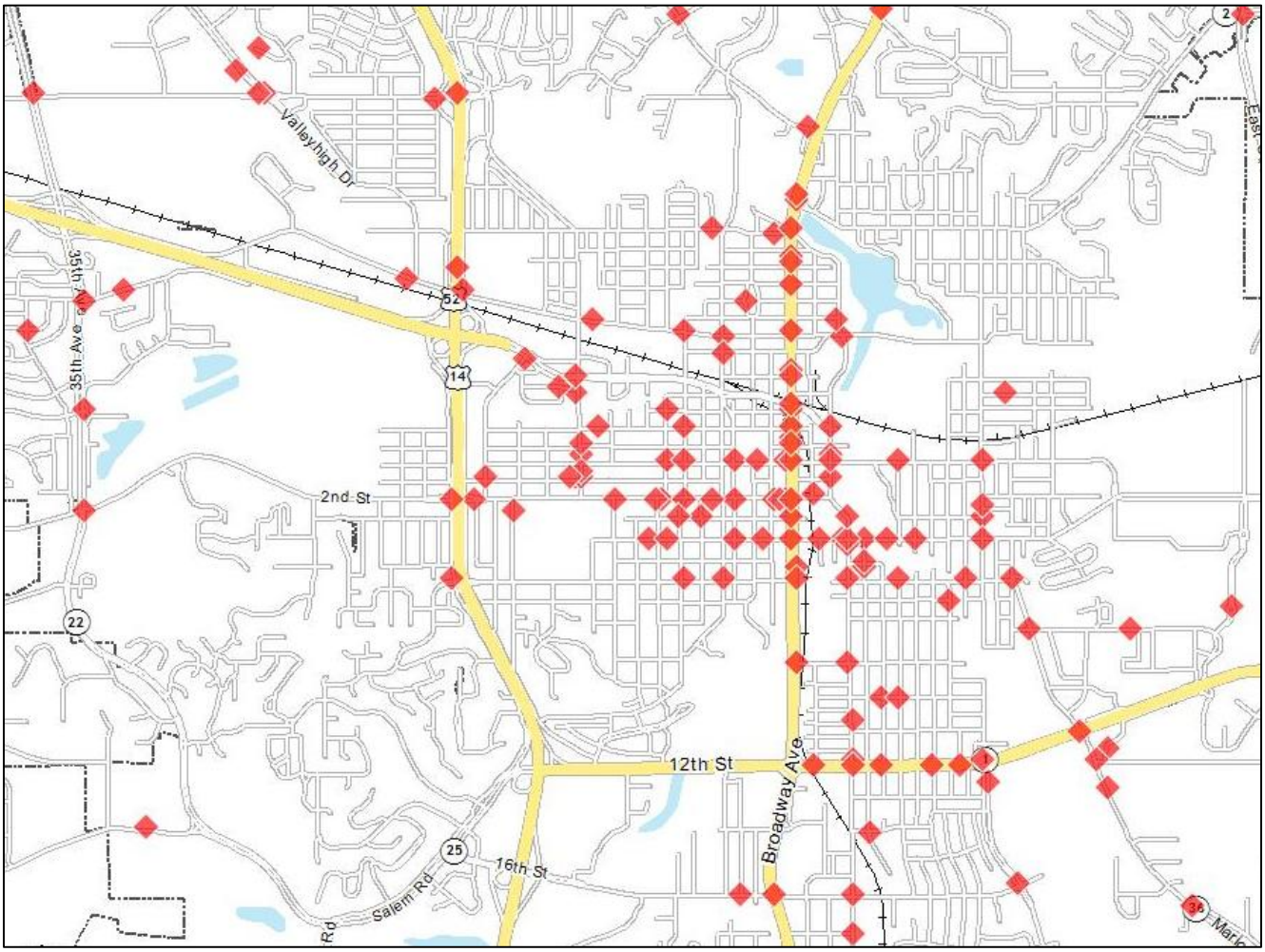
SAFETY

Safety Data

There are two sources of data that can be used to assess risk of injury to bicyclists. The first data set identifies crashes for which an accident report was filed with the Minnesota Department of Public Safety. Reports for the years 2002-2011 were reviewed, which found a total 240 crashes involving a bicyclists reported, or an average of 24 per year.

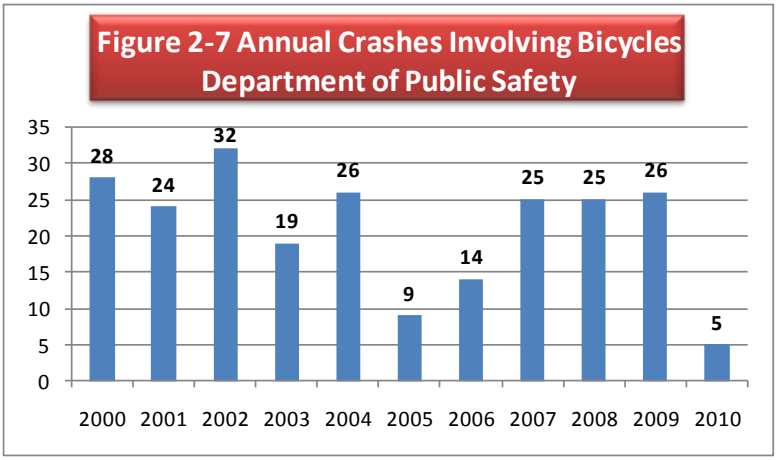
The highest concentration of crashes involving bicyclists is found in the downtown area of Rochester. Figure 2-6 illustrates the location of crashes that have occurred during the ten year time period. Most locations have seen only a single crash, though intersections along Broadway Ave and 2nd St SW have seen multiple incidents over the time period. The highest number of crashes at a single location for the period was six at the intersection of Broadway Ave and 2nd St South.

FIGURE 2-6 Bicycle Crashes 2002-2011



Figures 2-7 through 2-9 illustrate some of the key statistics that can be gleaned from the Department of Public Safety data.

Figure 2-7 indicates that the annual number of crashes tends to be fairly uniform, generally around 20-25 per year.



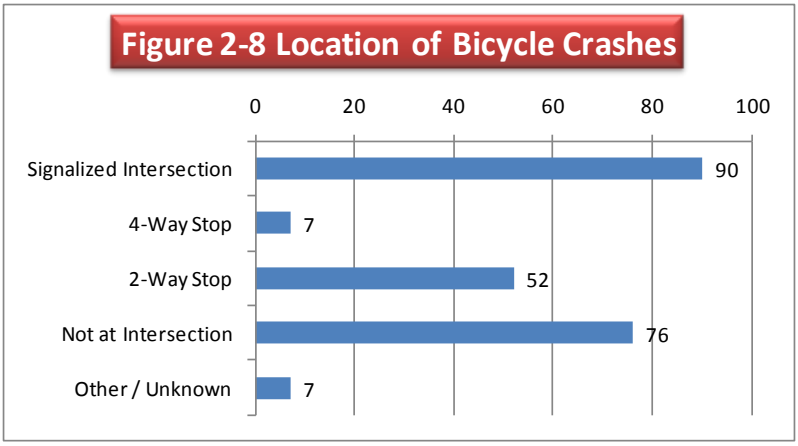
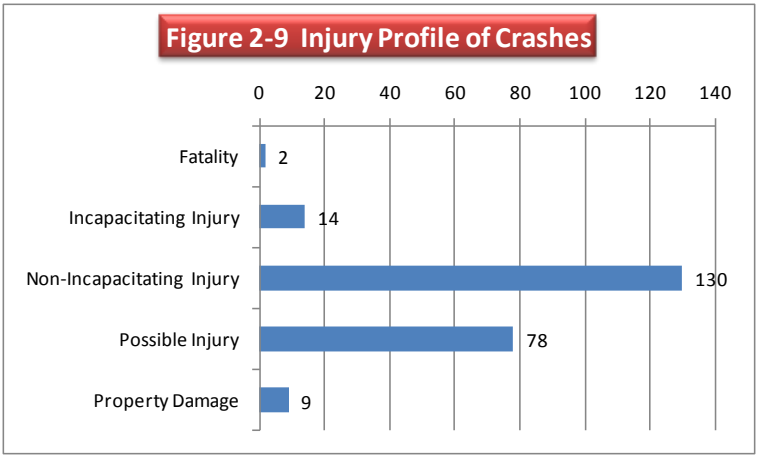


Figure 2-8 indicates that most crashes involving bicyclists happen at intersections, with signalized intersections accounting for the highest share of crash locations.

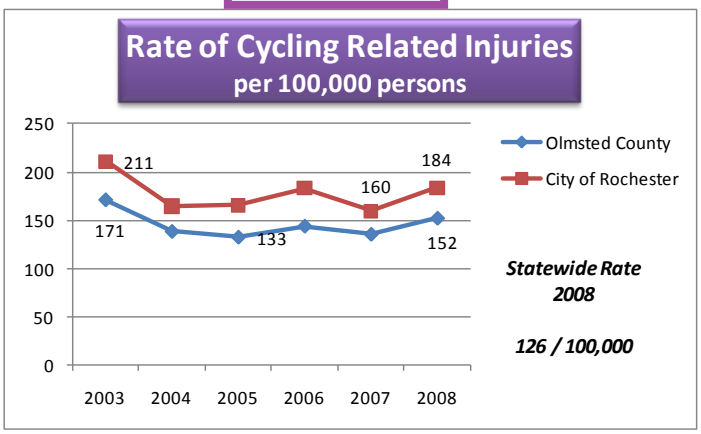
Figure 2-9 indicates that during the 10-year period two bicyclists were fatally injured, and the share of those sustaining some level of injury was high.



The majority (2/3^{rds}) of the crashes that were reported involved a right angle collision, with all other categories, such as sideswipe accidents, left or right turns or other actions each accounting for 5% or less of the overall crash incidents.

Public Health Data

Figure 2-10



A second set of data that provides a broad look at bicycle safety is information provided through the Minnesota Injury Data Access System (MIDAS). It is recognized that a substantial proportion of non-fatal bicycle crashes are not reported to law enforcement agencies. The MIDAS data captures individuals seeking care at local Emergency Room facilities. Figure 2-10 shows that in 2002 through 2008, the rate for Rochester and Olmsted County showed a relatively steady trend with about 125-150 individuals per year being treated for bicycling related injuries at local emergency rooms each year.

EXISTING BICYCLE RELATED INITIATIVES AND PROGRAMS

A variety of education, encouragement, and enforcement programs related to bicycle travel exist in the Rochester and Olmsted County area to serve individuals. Table 2-4 summarizes these currently available offerings:

Table 2-4 Summary of Current Bicycle Services

Category	
Education	• *The Kiwanis DayMakers Club conducts training sessions on bicycle safety on request at local elementary schools.* • *Four local individuals have completed the League of American Bicyclists Certified Trainer program. These individuals are available to work with local organizations to conduct bicycle safety and skills training* • *The Police Athletic League has worked with the local Boys and Girls Club to offer bicycle education and skills training.*
Encouragement	• *The City of Rochester along with Mn/DOT and selected local merchants sponsor an annual Commuter Challenge Week to encourage individuals to try alternative modes of travel for their trip to work. Prizes and other incentives are offered as an enticement to individuals to give biking a try during this event.* • *Healthy Living Rochester is a collaboration of local health professionals and organizations aimed at improving the heart health of people in Olmsted County, providing residents with*

	information and encouragement to incorporate more physical activity in their daily life. • *Active Living Rochester is a local partnership established to create a culture of active living in the community. Active Living Rochester initiatives have included a bicycle and pedestrian safety campaign, spearheading adoption of local Complete Streets ordinances, incorporation of changes into the city Land Development Manual to encourage more pedestrian and bicycle-oriented development, and sponsoring workshops on active living topics.* • *The Rochester Active Sports Club sponsors recreational group rides for both experienced riders as well as those new to group rides regularly throughout the riding season.* • *RNeighbors, the umbrella organization for neighborhood associations in Rochester, sponsors events such as the Think Green Fair which highlights sustainability measures residents can undertake, including the use of alternative modes of travel, and also sponsors RColorful Corners, a street mural project that seeks to transform public spaces into neighborhood assets.* • *PAIIR (Parents are Important in Rochester) sponsor an annual Transportation Fair at which local bicycle enthusiasts provide information on bicycle skills and maintenance.* • *Bike to the Game promotions are conducted with the Rochester Honkers summer collegiate league baseball team.* • *The Olmsted County Public Health Services, under the Statewide Health Improvement Program (SHIP), have been involved with 14 local area schools implementing elements of Safe Routes to Schools programs including curriculum, Technical Biking Skills, Bike Rodeo and Traffic Calming efforts.*
Safety / Enforcement	• *Rochester Police officers receive bicycle enforcement training as part of their Basic Academy Training* • *The Rochester Police maintain a Rochester Bicycle Patrol with a small number of officers and have two officers who are available to teach a Smart Cycling Course.*
Advocacy and Planning	• *The Southeast Minnesota Association of Regional Trails (SMART) is organized by Mn/DOT to advance the development of regional trails and local community connections to these trails* • *Agencies of the City of Rochester have organized an Inter-Agency Bicycle Group that meets annually to monitor system development and identify new infrastructure initiatives for future years* • *The Bicycle – Pedestrian Advisory Committee (BPAC) is organized under the regional planning organization (ROCOG) to provide input and guidance on bicycle planning issues and studies sponsored by ROCOG*

	• *Local Expert Workshops have included a 2007 Bike Friendly Community Workshop sponsored by the League of American Bicyclists, and an National Highway Institute (NHI) Bikeway Planning Workshop hosted by Mn/DOT featuring noted bicycle expert John LaPlante, P.E., in 2008.* • *Working through Olmsted County Public Health Services, various initiates under the Statewide Health Improvement Program (SHIP) have been conducted including development of Safe Routes to Schools plans in Eyota, Byron and Stewartville*
Support	• *Public transit service in the city of Rochester features a Bike-On -Buses program that includes bike racks on all regular route buses with additional space inside the bus in case the exterior mounted racks are full* • *The Rochester Park and Recreation Department maintains a Trail & Path Map for the Rochester area* • *The City of Pine Island has organized a Borrow-a-Bike Program to serve individuals or families who wish to ride the Douglas State Trail but do not own or have access to bicycles* • *The Rochester Kiwanis Club collects and repairs bicycles for donation to Christmas Anonymous. Over 200 bicycles hve been recycled for reuse by local children to date*
Engineering / Infrastructure	• *Bicycle Parking is provided by the City of Rochester in all public Parking Ramps* • *Bike Rentals are available in Rochester at Silver Lake Park* • *Olmsted County Public Health Services has a Wayfinding project in progress which has the goal of developing recommendatios for erecting wayfinding signage on the bikeway network in the Rochester area.*

LEAGUE OF AMERICAN BICYCLISTS "BICYCLE- FRIENDLY COMMUNITY" DESIGNATION

The City of Rochester was originally recognized in 2006 as the second "bicycle-friendly" community in Minnesota due to its extensive network of off-road bicycle facilities, level of cycling and public support for bicycling in the community. Rochester was awarded an Honorable Mention designation twice (2006/2008) before advancing to a Bronze level designation in 2010. The designation process has helped the community identify additional actions and activities needed to develop a comprehensive vision for improving conditions for cycling in the community.

LAWS AND REGULATIONS

The laws regarding bicycle travel on streets and highways in Minnesota are found in state statute M.S. 169.222. The basic parameters for lawful bicycle travel include:

- Ride on the right with traffic; obey all traffic signs & signals; bicyclists have all rights/duties of any other vehicle driver. (subd. 1)
- Legal lights and reflectors are required at night. (subd. 6a)
- Arm signals required during last 100' prior to turning (unless arm is needed for control) and while stopped waiting to turn. (subd. 8)
- Cyclists may ride two abreast on roadways as long as it does not impede normal & reasonable movement of traffic. (subd. 4c)
- When passing a bicycle or pedestrian, motor vehicles shall leave at least 3 feet clearance until safely past the bicycle or pedestrian (169.18 subd. 3)
- Ride as close as practicable to the right hand curb or edge of roadway except a) when overtaking a vehicle; b) when preparing for a left turn; or c) when necessary to avoid conditions that make it unsafe, such as the presence of fixed or moving objects, hazards, or narrow-width lanes. (subd. 4a)
- Yield to pedestrians on sidewalks and in crosswalks; give audible signal when necessary before overtaking. (subd. 4d)
- Riding on sidewalks within business districts is prohibited unless locally permitted. (subd. 4d)
- Only one person on a bike unless it's equipped for more, or a legal baby seat is used. (subd. 2)
- It is illegal to carry anything that prevents keeping one hand on handlebars or proper operation of brakes. (subd. 5)
- Bicycle size must allow safe operation. Handlebars must not be above shoulder level. (subd. 6c & 6d)
- Unless locally restricted, parking on the sidewalk is legal as long as it does not impede normal movement of pedestrians or other traffic. (subd. 9a)
- Legal parking on a roadway, that does not obstruct legally parked motor vehicles, is allowed. (subd. 9b)

Local Rochester ordinances state that the state laws governing bicycle travel shall apply whenever a bicycle is operated upon any street, roadway or public path. Additional regulations that have been adopted specific to Rochester include:

131.02. Riding Restricted. No person shall ride a bicycle on any street, roadway, or public path where signs have been erected prohibiting bicycle riding.

131.03. Emerging Bicycle. The operator of a bicycle emerging from an alley, driveway, or building shall, upon approaching a sidewalk or the sidewalk area extended across any alleyway, yield the right-of-way to all pedestrians approaching on the sidewalk or sidewalk area extended, and upon entering the roadway shall yield the right-of-way to all approaching vehicles.

The City has also adopted a series of rules specific to various travel modes, including bicycles, in Parks and on park trails and parkways.

45B.04. Subdivision 1. No person shall drive, ride, or operate any bicycle….. or other vehicle upon any part of the park or park trail, except upon the streets or drives within a park, or upon such other trails, footwalks, paths or other places specifically designated for such purpose

Subd. 3. No person shall ride or drive a bicycle….or other vehicle within the parks or upon the parkways or park trails at a speed faster than a posted speed limit or faster than is reasonable under the circumstances.

The City of Rochester has also adopted specific regulations regarding the Peace Plaza in downtown Rochester:

45D.03. Rules of conduct. Subdivision 1. It shall be unlawful for any person while in the Peace Plaza to… drive, ride, or operate any bicycle…. or any other vehicle, except for law enforcement, emergency response or City maintenance vehicles, or except as may be allowed by permit issued by the Common Council.

IMPLEMENTATION

The City of Rochester encourages the provision of bicycle facilities in a number of ways. The Rochester Land Development Manual requires accommodation of infrastructure identified in the City's Comprehensive Plan through an Adequate Public Facilities Ordinance and the execution of Pedestrian Facilities Agreements during the final approval phase for proposed development. Through these measures, the city looks to assure accommodation of planned paths and trails, either through dedication of right of way or easements to accommodate paths or trails along with some level of financial contribution, which may include a cash constribution or dontation of in-kind services such as the developer grading a site to accommodate trail/path development

In 2009 the City also adopted a Complete Streets Policies calling for the consideration of accommodations for all travel modes including bicycles during the planning of any new construction, reconstruction or preservation (such as mill & overlay projects or resealing) project on existing roadways. The Complete Streets policy has been successful in leading to the incorporation of bike lanes in three 2010/2011 projects including the renovation of West River Parkway, the overlay of West Silver Lake Drive, and the overlay of 3rd Ave NW.

The City also has made a commitment to maintenance and construction of facilities that is reflected in the City Capital Improvement Program illustrated in Table 2-5 The capital budget typically includes money for both the presevation of existing trails and paths as well as funding the local share of grant projects .

Table 2-5 Rochester 2011-2015 Capital Improvement Program / Bicycle Improvements

Project Description	Total Budget	2011	2012	2013	2014	2015
Development of a trail system to provide adequate facilities for bicycle and pedestrian traffic.	**160,000**		25,000	25,000	25,000	25,000
Annual Bike Path Program - Recondition, Reconstruction existing path in various locations. This project consists of seal coats, patching, crack sealing and overlaying. Reserves to be transferred from J4946.	**190,000**	20,000	20,000	20,000	40,000	40,000
Douglas Trail/Cascade Trail (Phase 2) - Construct Bridge over 7th St NW and Construct Trail from 7th St NW to Douglas Trail head ($175K Legacy Grant). Includes $2 million for ROW costs.	**3,200,000**	3,200,000				
Douglas Trail/Cascade Trail (Phase 3) - Construct Bridge over Valleyhigh Drive and connection to DNR Trail Head. Design in 2011, Bridge Const in 2012. Includes $250,000 from a State Legacy grant.	**1,788,000**		1,788,000			
Villa Road NW - Construct Trail North Park subdivision to Chateau Road. Combined with J6035.	**190,000**	190,000				
Construct Trail along east side of H63 from 9 St SE to just south of 20th St SE. Design in 2012, Const in 2013.	**1,800,000**		150,000	1,650,000		
2nd St SW - Construct Trail from Cascade Lake Park west to West Circle Drive.	**300,000**		300,000			
18th Avenue NW - Construct Trail 18th Ave NW from north end of Crimson Ridge subdivision to Overland Dr NW. Assessed to development areas abutting project.	**60,000**		60,000			
East Circle Drive - Construct Trail from 6th Ave NE east to Northern Valley Drive NE.	**10,000**		10,000			
Cascade Creek - Construct Trail between Cascade Trail at 16th Ave NW and TH52 trail. Design in 2013, Construct in 2014.	**1,650,000**			150,000	1,350,000	
TH 52 East Frontage Road - Construct Sidewalk 460 ft south of 55 St NW to 240 ft north of 23rd Ave NW.	**400,000**			400,000		
East Circle Drive NE - Construct Trail from Viola Rd to TH 14 (UCR). Design in 2014, Construct in 2015.	**1,500,000**				150,000	1,350,000
Bicycle Parking Enhancements. Lockers (24 units at 3rd St Ramp, 4 units each at 2nd St Ramp, 1st St Ramp, & Center St Ramp) including racks and security.	**70,000**	70,000				

A multi-year project beginning in 2011 at Cascade Lake Park will result in completion of a south lake trail connecting to 2nd St SW.

REGIONAL BICYCLE PLANNING

Bicycle planning for the larger regional area of Rochester and Olmsted County is conducted by the Rochester-Olmsted Council of Governments (ROCOG). ROCOG has adopted facility plans for the Greater Olmsted County area that address the greater Olmsted County area. Figures 2-11 and 2-12 illustrate the infrastructure element of the most recent ROCOG Plan adopted n 2010. In the urban area, this plan focused primarily on the off-road network of multi-use trails and pathways which is incorporated into this Bicycle Master Plan.

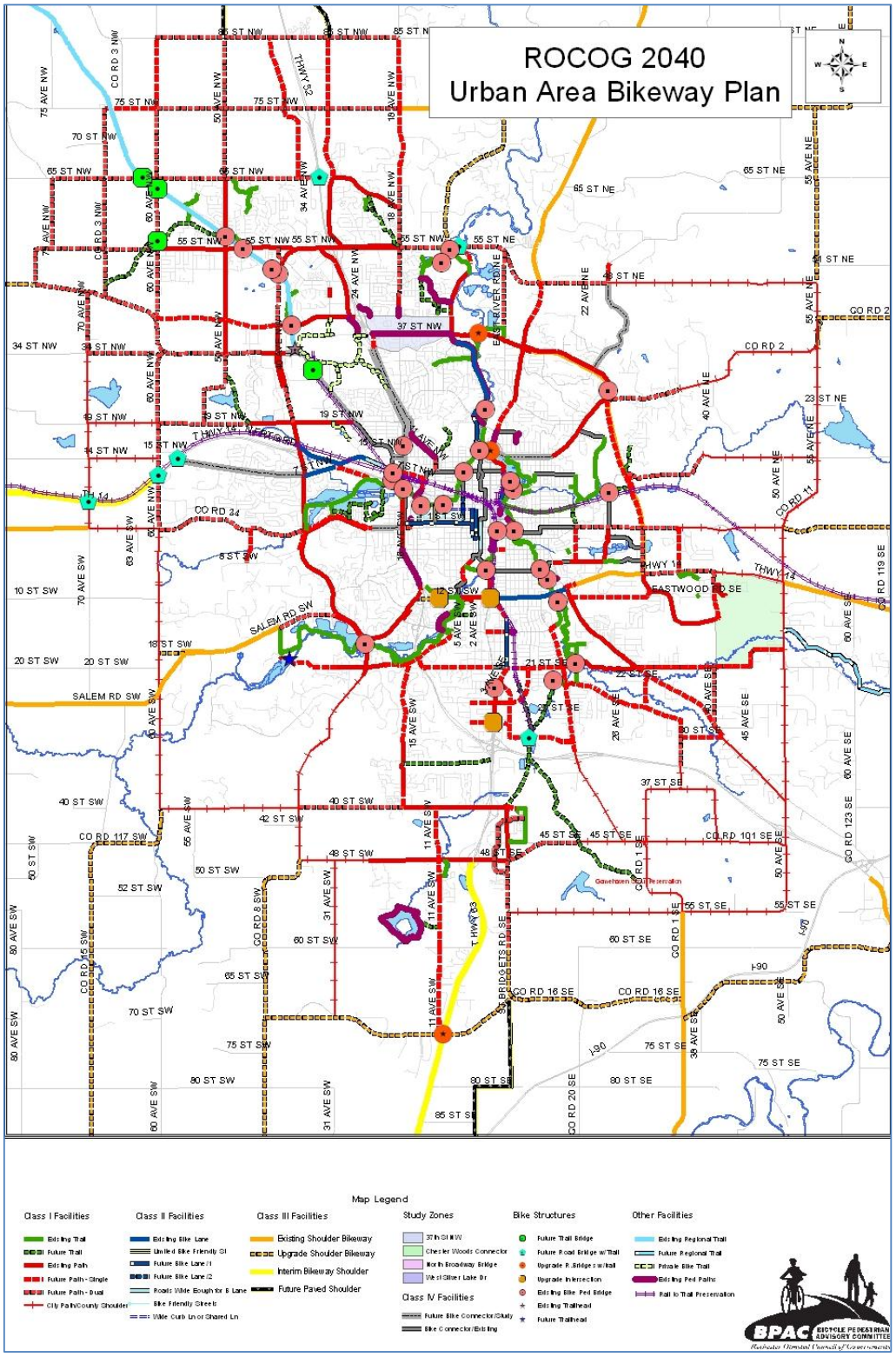
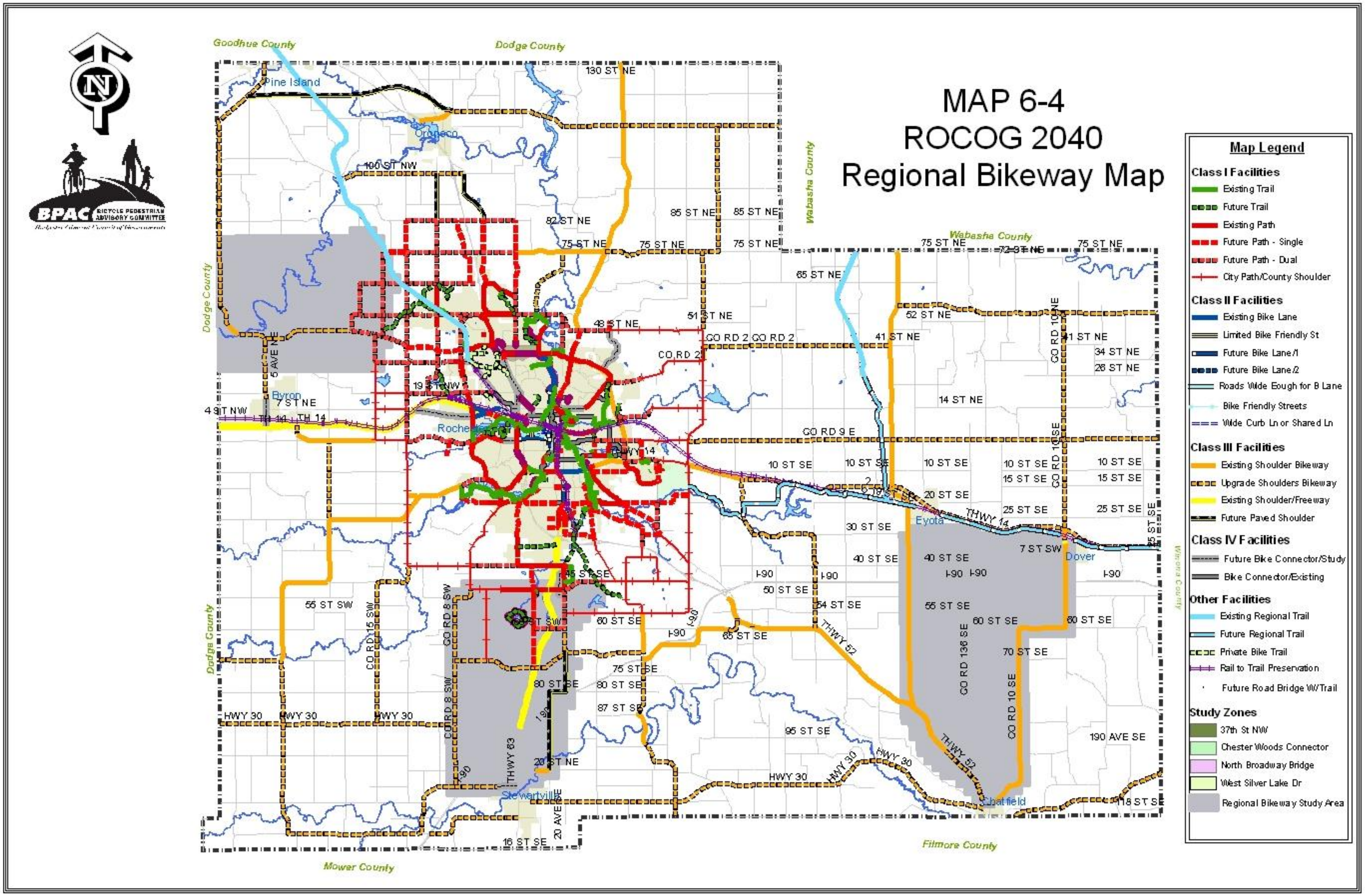


Figure 2-11 Urban Area Bikeway Plan 2040


MAP 6-4
ROCOG 2040
Regional Bikeway Map
BPAC BICYCLE PEDESTRIAN ADVISORY COMMITTEE
Map Legend
Class I Facilities
Existing Trail
Future Trail
Existing Path
Future Path - Single
Future Path - Dual
City Path/County Shoulder
Class II Facilities
Existing Bike Lane
Limited Bike Friendly St
Future Bike Lane/1
Future Bike Lane/2
Roads Wide Eough for B Lane
Bike Friendly Streets
Wide Curb Ln or Shared Ln
Class III Facilities
Existing Shoulder Bikeway
Upgrade Shoulders Bikeway
Existing Shoulder/Freeway
Future Paved Shoulder
Class IV Facilities
Future Bike Connector/Study
Bike Connector/Existing
Other Facilities
Existing Regional Trail
Future Regional Trail
Private Bike Trail
Rail to Trail Preservation
Future Road Bridge W/Trail
Study Zones
37th St NW
Chester Woods Connector
North Broadway Bridge
West Silver Lake Dr
Regional Bikeway Study Area
Goodhue County
Dodge County
Wabasha County
Mower County
Fillmore County
Pine Island
Oronoco
Byron
Eyota
Dover
Stewartville
Chatfield

Neighborhood Overview

The City of Rochester is defined by six City Council wards and 24 Neighborhood Associations. Each ward has mixture of land uses and offer various residential living environments ranging from low to high density and housing styles ranging from single family to high rise condominium living. The majority of non-residential development is located in the Central Business District and along major arterial corridors throughout urban area.

All the wards have some level of bicycle facilities present though not at a level that would meet with the goals and objectives of this master plan. The majority of facilities as previously noted are off-road trails and paths, which have been developed primarily as part of the Rochester Flood Control Project (in the case of trails) or as part of the ongoing upgrading of arterial highways in the area (in the case of paths). On-road bikeway facilities are limited at this point, though that is beginning to change as the recent adoption of a Complete Streets Policy by Rochester in 2009 is being implemented, resulting in development of new on-road bike lane facilities.

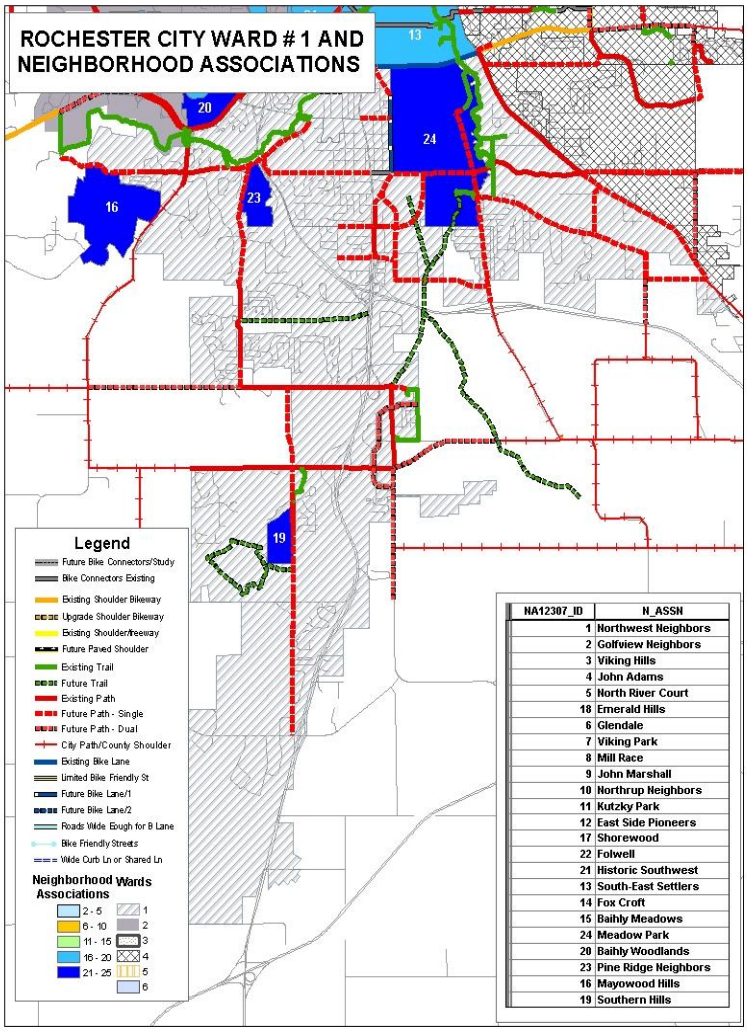
Figures 2-13 through 2-18 on the following pages highlight the six ward areas and neighborhood association boundaries in the Rochester area, with a brief synopsis of land use found in each area and a review of key gaps in the bikeway network that exist in each area. The review of key gaps is presented in the context of “Corridors” or “Neighborhoods” where the lack adequate bike facilities limits access to/from land uses in the ward area or connectivity to nearby elements of the larger bikeway network that provide service to the ward area. It should be noted that when considering identified “corridors”, future improvements may occur on nearby parallel route(s) that provide more favorable conditions for establishing a bikeway in lieu of the specific travel corridor referenced in these summaries.

City Ward # 1

Ward 1 encompasses the southern sector of the Rochester area and is primarily residential in character except for the South Broadway (Trunk Highway 63) commercial corridor and 3rd Ave SE light industrial corridor. The Apache Mall Shopping Center is located in the northwest part of Ward 1.

Trails along the South Zumbro River on the west side of the ward and Bear Creek on the east side are the primary bikeways. The TH 52 freeway corridor coursing across the area from northwest to southeast has been a major barrier to creating bike linkages between development south of TH 52 and bikeways north of TH 52. South of TH 52 many of the roadways are of rural design with limited shoulder area which makes bike travel difficult. There are no on-street facilities in the ward.

The following table lists the corridors identified during focus group and open house meetings, as well as corridors identified in the ROCOG Plan, where the need for improved bicycle accommodations were noted.



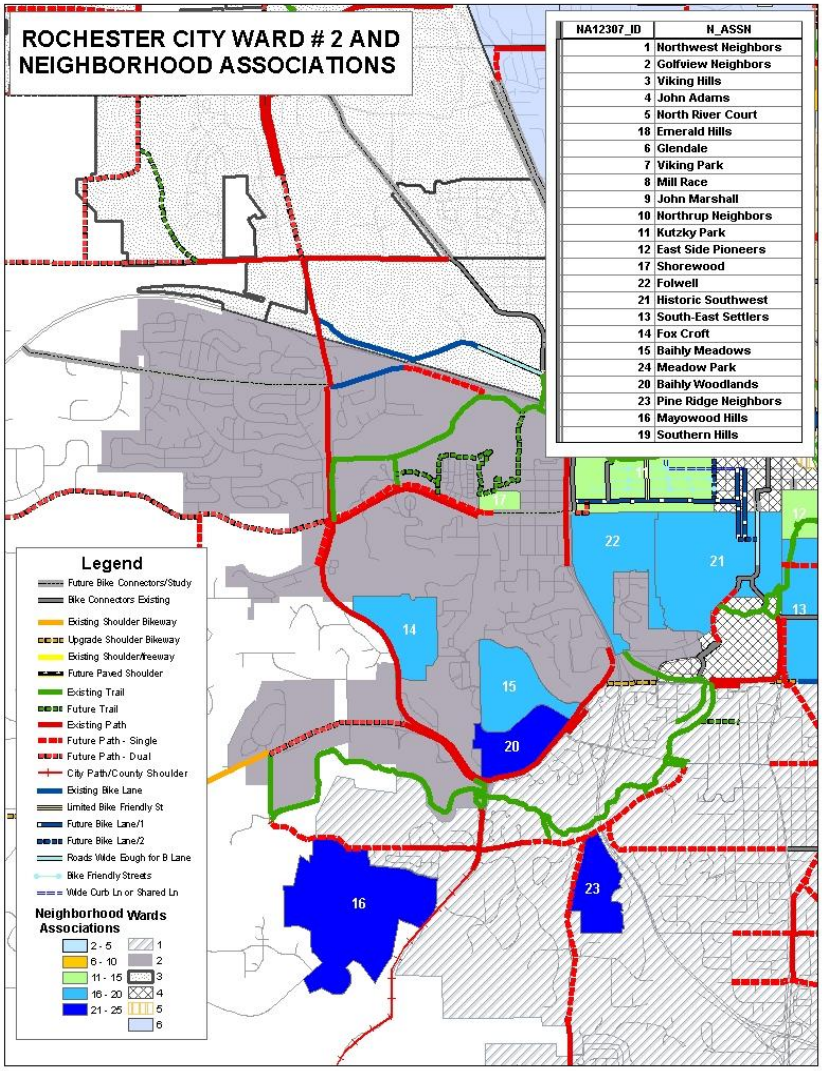
Key Ward 1 Corridor and Neighborhood Needs

East-West Gaps	North-South Gaps
• 16th St South corridor from CSAH 22 to CSAH 1	• Trail system connection across TH 52 to connect Willow Creek area to River Trails
• 20th St SW corridor from TH 63 to Mayowood Rd	• 8th Ave or parallel N/S on-street corridors in Meadow Park area from 12th St to 20th St
• Mayowood Rd corridor from 16th St SW to Zumbro Park South	• 18th Ave SW corridor: Mayowood Rd to 40th St
• 40th St South corridor from 18th Ave SW to CSAH 8	• 3rd Ave SE corridor: TH 63 to 12th St
	• TH 63 corridor: 3rd Ave to 12th St
	• 11th Ave SW corridor: 40th St to CSAH 16

City Ward # 2

Ward 2 is located in southwest Rochester and is predominantly residential in character except for the 2nd St SW business corridor and the area in the vicinity of the TH 14 / CSAH 22 interchange. The area is primarily served by bike paths along West Circle Drive, but lacks good east-west connections into the Mayo Medical Campus and downtown Rochester. The Cascade Lake Recreational Area will be a major future site drawing people into the area. There are many residential collector streets in the area which are likely to serve as the core of any future bikeway network in the ward.

The following table lists the corridors identified during focus group and open house meetings, as well as corridors identified in the ROCOG Plan, where the need for improved bicycle accommodations were noted.



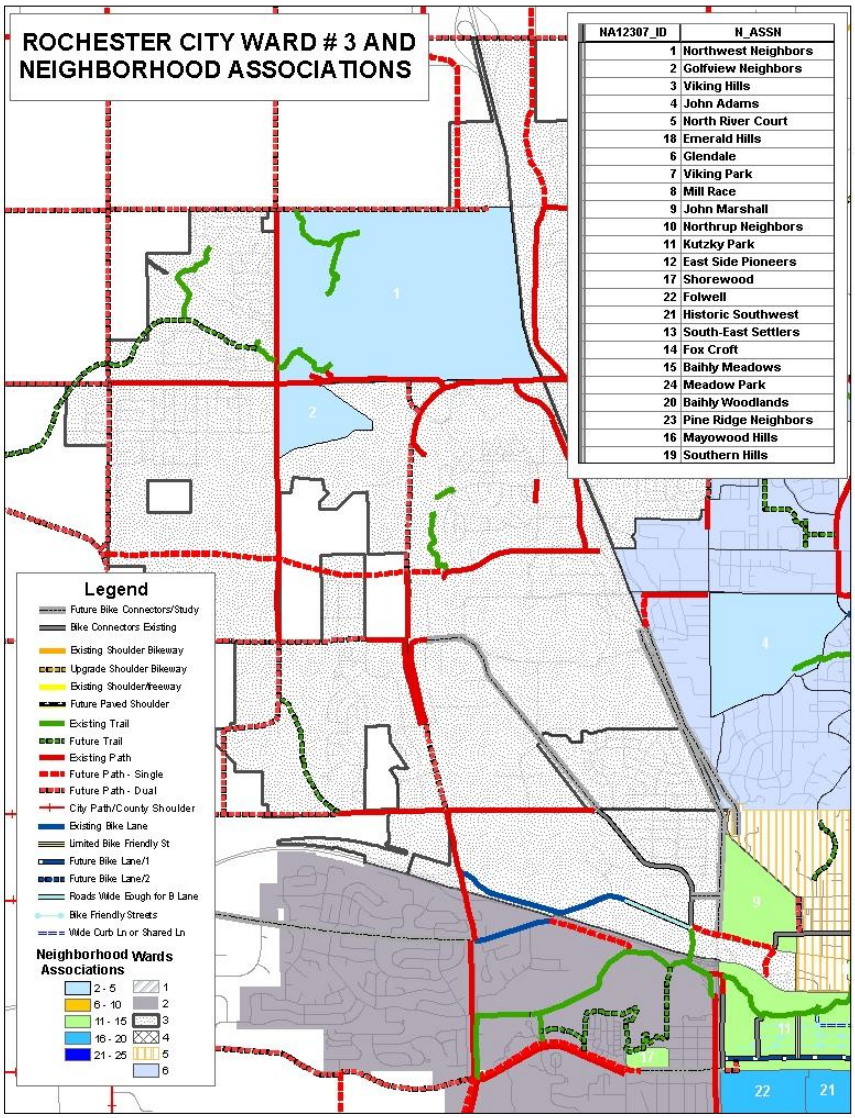
Key Ward 2 Corridor and Neighborhood Needs

East-West Gaps	North-South Gaps
• 2nd St SW corridor from 15th Ave SW to CSAH 22	• Connection from Cascade Creek Trail to St Mary's Hospital Campus
• 7th ST NW corridor from Cascade Lake to TH 14	• 6th Ave SW corridor from 2nd St to Memorial Parkway
• St Mary's Hospital Campus connection to 2nd St west of TH 52	• North-South Corridor from 2nd St SW to Apache Mall on east side of TH 52
• Kutzky Park on-street bikeways	• 23rd Ave SW on-street bikeway from 2nd St SW to Fox V Dr.
• Foxcroft area on-street bikeways	• West Circle Drive corridor from 2nd St to 7th St SW
• 4th St SW corridor from TH 63 to St Mary's Hospital	• 11th Ave West Corridor from Civic Center Drive to 2nd St SW
• 6th St SW corridor from TH 63 to TH 52	
• West Circle Dr corridor from TH52 to CSAH 8	
• Connections to Mayowood Lake Trailhead from east and north	
• Cascade Lake connection to Cascade Creek trail in Kutzy Park	

City Ward # 3

Ward 3 covers northwest Rochester and is home to significant areas of commercial and industrial development along TH 52 and West Circle Drive, and has seen the largest share of local residential development in the last 20 years. TH 52 is a significant barrier to east-west bicycle travel as many of the bridges and arterial corridors leading to them are not well suited for bicycle travel. The area is served primarily by path facilities built alongside West Circle Drive and arterial corridors leading to Circle Drive, and is also served by the Douglas Trail corridor, which will be extended south to the Cascade Lake Recreational Area.

The following table lists the corridors identified during focus group and open house meetings, as well as corridors identified in the ROCOG Plan, where the need for improved bicycle accommodations were noted

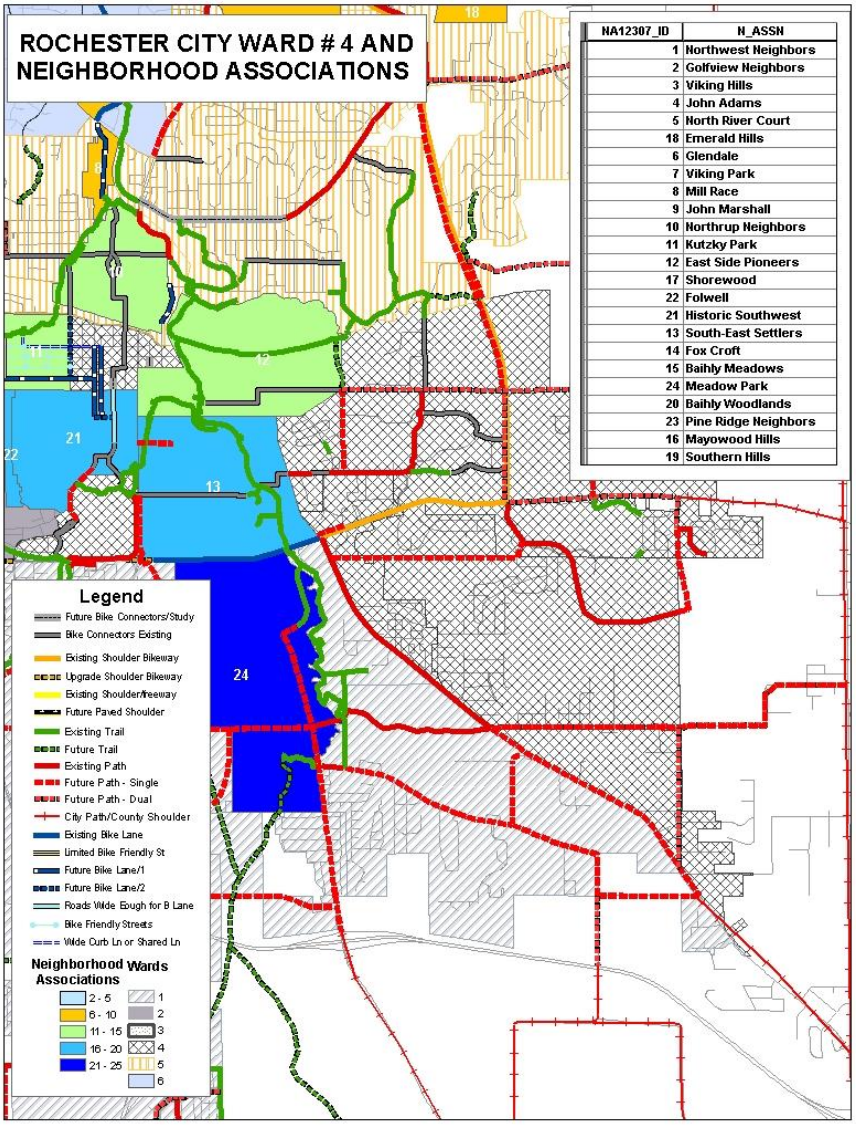


Key Ward 3 Corridor and Neighborhood Needs

East-West Gaps	North-South Gaps
• Connection to John Marshall H.S. area from Cascade Lake / Country Club Manor area	• 11th Ave / 16th Ave NW corridor from Elton Hills Drive to 14th St NW
• Compete improvements along 55th St NW/NE corridor: TH 52 to TH 63	• 18th Ave NW corridor from Overland Drive to 37th St NW
• Complete improvements along 55th St NW corridor: CSAH 22 to CR 104	• Complete improvements along West Frontage corridor from 75th St NW to 55th St NW
• Connections to TH 52 Bike/Ped Bridge at 14th St NW from DM&E Spur line trail and neighborhoods to west and north	• Complete improvements along 50th Ave NW corridor from 55th St NW to 19th St NW
• Complete improvements along 41st St NW corridor from CSAH 22 to CR 104	• Complete improvements along CR 104 corridor from 65th St to TH 14
• Complete improvements along 19th St NW corridor from CSAH 22 to CR 104	• East Frontage Road corridor from 75th st to 41st St NW
• 10th St NW Enhancements: Cascade Creek to 13th Ave	• Cimmarron and Hudson Park neighborhoods on-street bikeways
• CSAH 4 Corridor: 7th St NW to CR 104	• CR 104 from 65th St NW to TH 14
• 14th St NW corridor: TH 63 to TH 52	• Nottingham neighborhood on-street bikeways
• 7th St NW corridor: CSAH 4 to CSAH 22	• North Park neighborhood on- street bikeways

City Ward # 4

Ward 4 encompasses most of downtown Rochester and part of the southeast sector. Outside of the CBD, the prominent non-residential land uses are the combined government / educational campus areas on the east side of the city between TH 14 and Quarry Hill Park, and scattered commercial development along TH 14 and Marion Road. Most of the residential housing in this ward is of older vintage, with a significant share of area having been developed under township guidelines and only recently annexed.



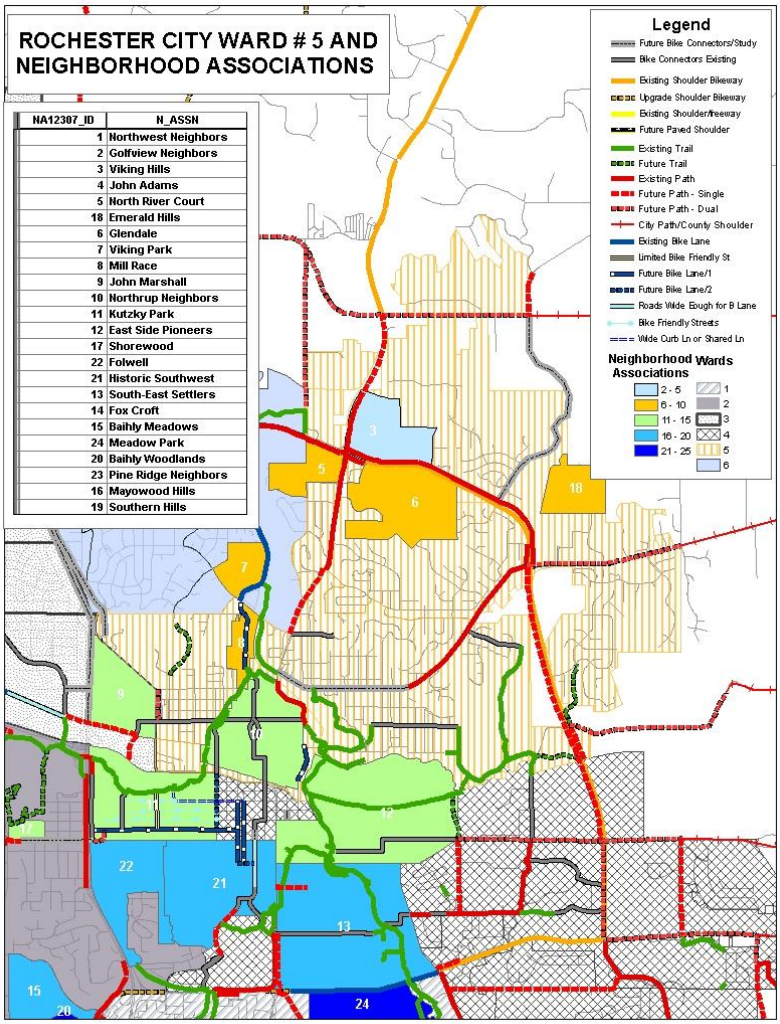
Bikeway development is particularly limited within the Central Business District, although access via the River Trails to the periphery of the district exists. There is a need for improvements in the first ring of neighborhoods outside of the CBD in to serve both the immediate neighborhood areas and bike traffic from outlying areas into the downtown core *The following table lists the corridors identified during focus group and open house meetings, as well as corridors identified in the ROCOG Plan, where the need for improved bicycle accommodations were noted*

Key Ward 4 Corridor and Neighborhood Needs

East-West Gaps	North-South Gaps
• Center St corridor from Civic Center Dr to 6th Ave West	• North-south on-street bikeway network in Hawthorne neighborhood
• 6th St SE corridor from TH 63 to 15th Ave SE	• East Circle Drive corridor: CSAH 2 to TH 14
• 6th St SW corridor from TH 63 to 6th Ave SW	• UCR Drive corridor: 8 ½ St to TH 14
• Center St corridor from CSAH 9 to Civic Center Dr	• 11th Ave East Corridor: Silver Creek to TH 14
• 4th St SE corridor from CSAH 9 to TH 63	• 2nd Ave SW corridor connection to Mayo Campus
• CSAH 9 corridor from 19th Ave to East Circle Drive	• Oak Terrace neighborhood area improvements
• TH 14 East Corridor from 40th Ave SE to Marion Road	• 3rd / 4th Ave west corridors from 6th St SW to Civic Center Drive
• 9th St SE corridor from Bear Creek to TH 63	•
• 2nd St North corridor from Civic Center Dr to 6th Ave NW	• Towne Club neighborhood improvements including Towne Club Prkwy, 40th Ave SE
• Eastwood Road corridor to provide connections to Bear Creek Trail	
• 3rd St South connection into Mayo campus area from Zumbro River	

City Ward # 5

Ward 5 includes northeast Rochester and the neighborhoods immediately north of the Central Business District. Business development is concentrated along the North Broadway (TH 63) and 37th St north corridors. Trails along the Zumbro River and Cascade Creek and paths along a number of arterial corridors including parts of TH 63 and Circle Drive are the primary existing bikeways. A major barrier exists at the North Broadway Bridge where the lack of bike accommodations makes travel across the Zumbro River into the core area of the city difficult from areas to the north. As in other areas of the city, the lack of a well-developed framework of on-street bikeways in older neighborhoods of the ward need to be addressed to improve conditions for bicycling in the area. More so than in other parts of the city, topography presents challenges in this area with the Northern Heights and Century Hills areas accessible only via streets with steep grades.



The following table lists the corridors identified during focus group and open house meetings, as well corridors identified in the ROCOG Plan, where the need for improved bicycle accommodations were noted.

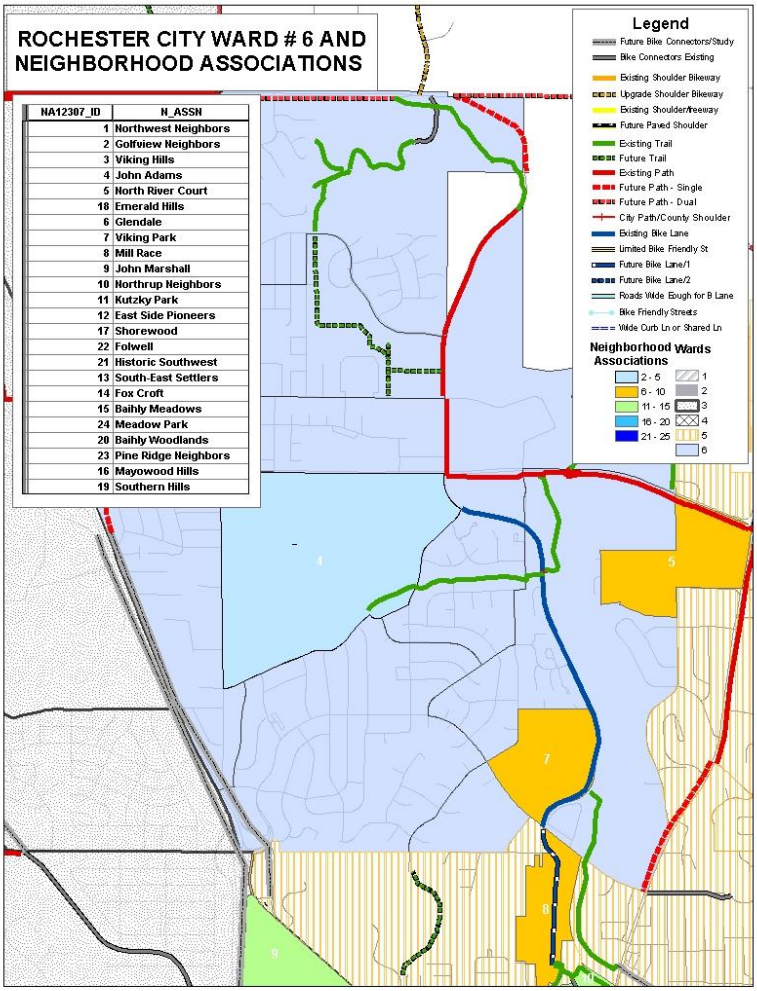
Key Ward 5 Corridor and Neighborhood Needs

East-West Gaps	North-South Gaps
• East Circle Dr Corridor: TH 63 to CSAH 9	• N Broadway from 37th St to 14th St NE
• 14th St North Corridor: 11th Ave NW to 11th Ave NE	• TH 63 from 55th St NE to 37th St NE
• 7th St NE corridor: Quarry Hill park to West Silver Lake Dr	• 11th Ave NE from 14th St NE to Silver Creek
• 17th St Corridor connection to Kellogg Middle Sch.	• 3rd Ave NW corridor: Elton Hills Dr to 14th St NW
• Northern Valley Dr corridor: Viola Rd to CSAH 22	• 4th Ave NW corridor: 14th St NW to Civic C Dr
• Northern Heights Dr corridor: TH 63 to Viola Rd	• 6th Ave NW corridor: Civic Center Dr to Cascade Creek
• Stonehedge neighborhood on-road bikeways	• 11th Ave Nw corridor: 14th St to Civic Center Dr
• Complete improvements along 48th St NE: TH 63 to CR 124 North	• Goose Egg Park neighborhood on-road bikeways
• Riverview Heights neighborhood area on-road bikeways	• East River Rd corridor: 37th St to 55th St
	• Century Hills and Shannon Oaks neighborhood on-road bikeways

City Ward # 6

Ward 6 encompasses the north central part of the urban area and is mostly residential in character except for the 37th St North corridor and scatterd commercial on the periphery of the ward near major intersections on TH 63 and TH 52. The eastern half of the area is well served by trails along the Zumbro River and the new West River Parkway bike lane for north-south travel towards downtown. Assissi Heights does pose a major barrier for travel to downtown, as bicyclists are forced to bypass this area to the west near TH 52 or east on 3rd Ave NW. There is a lack of good east-west corridors in this area, and both Elton Hills Drive and 37th St need to be considered for improvements to rectify this situation. North – south travel on the west side of the area also needs improvements. The IBM campus is a major destination just west of Ward 6 for which improved connections would be a benefit.

The following table lists the corridors identified during focus group and open house meetings, as well corridors identified in the ROCOG Plan, where the need for improved bicycle accommodations were noted.



Key Ward 6 Corridor and Neighborhood Needs

East-West Gaps	North-South Gaps
• Elton Hills corridor: TH 63 to TH 52	• 18th Ave NW corridor from 55th St NW to Elton Hills Dr
• 37th St NW corridor: W River Rd to TH 52	• 11th Ave NW corridor from Elton Hills to 14th St NW
• Elton Hills neighborhood on-road bikeways	• Western neighborhood (13th/ 14th Aves & 48th st corridor) on-road bikeways
• 41st St NW corridor: 18th Ave to TH 52	

CHAPTER 3

STAKEHOLDER AND COMMUNITY CONSULTATION

Community input on issues and needs related to bicycle travel were an important element in the development of the Bicycle Master Plan. Multiple venues were utilized for gathering input, including focus groups conducted in February and March of 2011 and a meeting with the Rochester Convention and Visitor Bureau to focus on needs of visitors to the community. A well attended public Open House was also conducted in May 2011. During development of the BMP Olmsted County Public Health Services was also working on a complementary Wayfinding project for the bikeway network which included additional focus group input. Throughout the course of the study input was also provided by the ROCOG Bicycle – Pedestrian Advisory Committee (BPAC), which served as the project review committee.

Themes Idenfied In Community Input Process

- *The bikeway network has a solid foundation with the river trails network and numerous paths along arterial corridors that have been built, but gaps exist in a number of key locations which interrupt network continuity and access to important destinations.*

- *More attention needs to be given to on-road bikeway facilities in order to develop a highly connected network, particularly in the core area of the city including downtown Rochester.*

- *Key safety issues include both design concerns as well as behavioral concerns. In terms of design and infrastructure, the use of rumble strips on suburban and rural roads elicited significant input about the need to design these safety features to minimize impact to bicyclists. Crossing safety was also noted, often linked to specific locations such as intersections along TH 63 / Broadway Avenue. On the issue of behavioral measures, many commentors noted that more effort needs to be made educating both bicyclists and motorists about the traffic laws related to use of public roadways by bicyclists.*

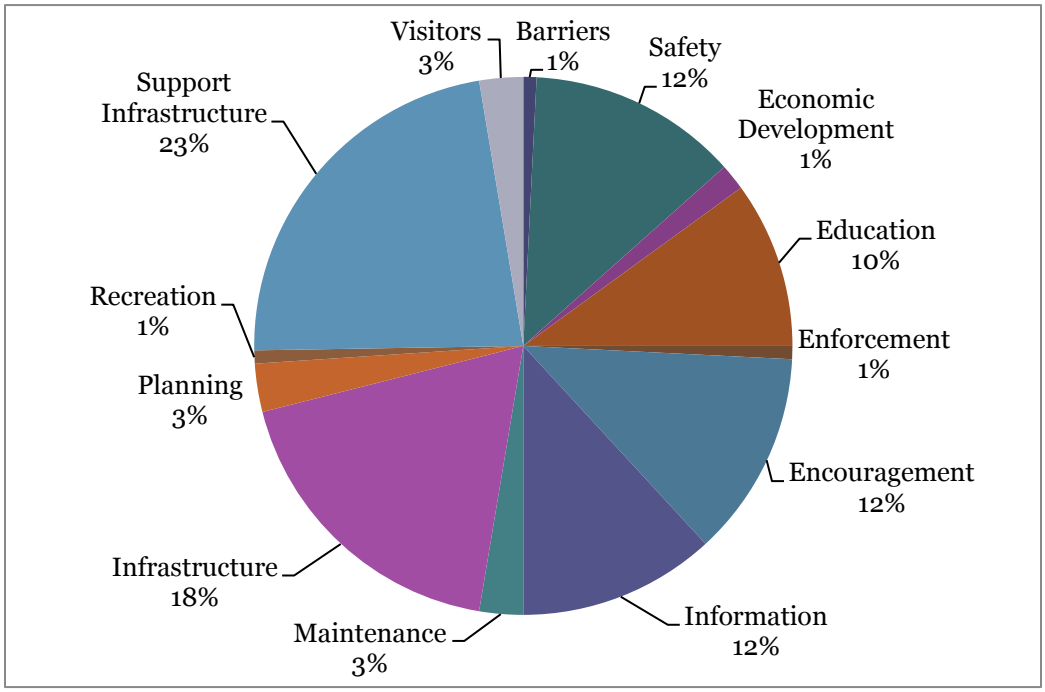
- *In terms of supporting bicycle travel, information needs including the need for wayfinding signage and bikeway network maps that are easily accessible and up to date received many mentions. The need for more and better bike parking was also highlighted by many meeting attendees.*

The results of the public input phase for this project were also compared with input received from recent studies, including the 2009 Downtown Rochester Bicycle Plan and the 2010 Downtown Master Plan. Rochester has also participated in two cycles of the League of American Bicyclists ***Bicycle Friendly Community*** designation process, having been awarded Honorable Mention status in 2006 and Bronze-level designation in 2010. As part of this process, the LAB review panel provided the community with a range of suggestions and recommendations for improving conditions and the culture for bicycling in the Rochester area, which were considered during the plan development process.

SUMMARY OF BICYCLE MASTER PLAN PUBLIC INPUT (2011)

Figure 3-1 provides a graphical indication of the key areas of interest for Focus Group and Open House attendees.

Figure 3-1: KeyAreas of Public Interest



The primary areas of comment included Support Infrastructure, Infrastructure, Encouragement Safety and Education. Key themes in each of the areas are summarized in Table 3-1:

Table 3-1: Primary Areas of Public Comment

Infrastructure Needs	
Maintenance	• Inadequate street cleaning and potholes are the most frequently encountered factors that discourage bicycle use for day to day trips. • There should be a means of reporting maintenance issues such as potholes, cracks in the pavement or glass/sand on trails and paths. • Consider setting up an endowment for trail maintenance and/or make greater use of volunteers to do basic maintenance on facilities
Facilities	• Having paths alternates between opposite sides of the road, such as on 55th ST NW, discourages bike use • Numerous arterial roads throughout the urban area have gap in the path network that need to be rectified. There are a lack of direct routes for cross town travel that realistically can only be address by improving arterial roads • More coordination between the city, state and county on facility improvements • There is need for facilities in downtown Rochester • Bicycle Boulevards should be considered to enhance the existing network • Would like to see more use of traffic signals that can detect cyclists • There were many specific gaps mentioned by attendees which are listed following Table 3-1.
Support	• Provide more bike parking and different types of bike parking (racks, lockers, corrals, valet, etc) • There is a need for Wayfinding signage along the bikeway network including route names, distances and destination/directional indicators • There should be a bike share program in the city • There is a need for better and more accessible bike map information • End of Trip facilities (showers, lockers) are more broadly needed at workplaces
Safety / Training –Information – Improvements	• Would like to see more Share the Road signage and messaging • Concerns with the current deployment of rumble strips • Would like to see lower speed limits as they have in other states (25 mph) • Some trails are quite dark and could benefit from lighting • Need to offer more safety and skills training opportunities for both youth and adult riders. • Slipperiness of drainage grates and lane seams is a concern on roadways. • Critical Crossings include Broadway/12th St South, Cascade Creek Trail at 11th Ave NW; TH 52/63 underpass in south Rochester.
Education	• Need to educate citizens about the operation of new facilities such as bike lanes, particularly related to intersection operation, and how to share usage of right turn lanes • Information should be distributed as broadly as possible using websites, utility bills, tax bills, as part of driver's training, etc.
Informational Needs	• Route Planning information would be useful to have available

	• Up-to-date bike maps accessible through various means (paper maps, on-line) should be readily available • Would like to see the bike network and use of the bicycle for everyday travel promoted more broadly; consider partnerships with the media to publicize a bike route each week as well as new projects or safety messages on a regular basis. • Make better use of billboards as well as the ability to mount messages on buses to share information with the public.
Encouragement	
General Factors	• Would like to see more events promoting bicycling such as a Mayor's Ride, neighborhood bike events, Bike Races, Summer Streets events. • Should pursue development of incentive programs such as coupons from local retailers that can be earned based on riding a certain number of miles; • More should be done to get people to consider the financial, environmental and health benefits of bicycling. • Establish some type of Bike Ambassador program that would provide speakers who could give informational presentations at workplaces, organizations, schools, etc regarding the benefits of riding and what is needed to get started • Set up a Smart Trips program that offers existing or new residents a package of information about alternative travel in Rochester • Develop a Bike Rental or Bike Share program in key areas like around the medical campus.
School and Commuter Travel	• Do more done in regards to school travel to encourage children to ride to school; better bike parking at schools is needed. • Establish bike buddy or bike mentorship program at workplaces to help interested people overcome issues related to biking to work • Encourage businesses to provide workplace accommodations like showers, lockers and changing rooms for people who wish to bike to work.
Enforcement	
	• Support the deployment of bicycle mounted police and would like to see them have higher visibility in the community, particularly at critical traffic crossings.

CORRIDOR GAPS

Streets lacking bicycle accommodations that were identified by attendees at various project meetings as travel corridors that would benefit bicyclists if facilities were provided included:

DOWNTOWN

- Civic Center Drive
- 3rd and 4th Ave SW/NW
- Access to St Mary's Hospital from Cascade Creek Trail
- 14th St North / North Broadway Bridge Area

SOUTHWEST

- TH 14 Bridge at Zumbro River
- 2nd St SW west of TH 52
- 18th Ave SW south of Mayowood Road
- 40th St / CR 104 / CSAH 8 area
- Better access to Apache Mall

NORTHEAST

- North Broadway
- East Circle Drive
- Silver Lake Drive intersection area
- Viola Road
- 7th Street NE

NORTHWEST

- Elton Hills Drive
- 37th St
- 55th St in vicinity of Northwest Plaza
- Valleyhigh Dr east of Circle Drive
- Trail under 16th Ave NW to TH 52 along Cascade Creek
- 7th St NW
- 14th St NW
- 18th Ave NW

SOUTHEAST

- South Broadway
- Lack of access to Willow Creek area including Maine Street Shopping Center
- 4th St SE
- Chester Woods Trail connection

DOWNTOWN MASTER PLAN BICYCLE ACTION PLAN (2010)

In 2009 the City of Rochester initiated a Downtown Master Planning process to establish a long term development vision for the downtown area and to determine the type of supporting infrastructure that would be needed to support the vision. A major element of the support infrastructure was transportation investment. Because of identified concerns over the potential for increasing traffic congestion in the future, the plan proposes significant improvement to alternative modes including bicycle, transit and pedestrian travel, in order to reduce the mode share of single occupant vehicle travel from 70% to 50% over a twenty year period. Bicycle travel is expected to be one of the alternative modes that plays a role in reducing the single occupant vehicle mode share. The following recommendations relative to bicycle travel were included in the Downtown Master Plan, with locations highlighted on Figure 3-2 on page 3-7.

High Priority Action Items / Projects (within 5 years)

Designate bike routes with sharrow pavement markings along strategic low-volume streets

- Install sharrows along Center Street E/W east of 6th Avenue NW and across the Zumbro River
- Install sharrows along George Gibbs Drive SW connecting to recommended bike lane on 6th Avenue SW and bike sharrow route on 7th Street SW.
- Install sharrows along 7th Street SW between recommended bike lanes on Soldiers Field Drive and 6th Avenue SW
- Install sharrows along 1st Street SW from TH 52 connecting to the bike lane on 6th Avenue SW
- Install sharrows along 2nd Street NW from 10th Avenue NW connecting to the bike lane on 6th Avenue NW

- Install sharrows along 1st Avenue NW from Civic Center Drive connecting to the recommended sharrowed bike route along Center Street
- Install sharrows along 4th Avenue SE between 6th Street SE and the recommended bike lane on 4th Street SE
- Install sharrows along 6th Street SE connecting into the future bike lane extension over the Zumbro River

Provide designated space for bicycles by striping bike lanes

- Install bike lanes along 2nd Avenue SW between 2nd Street SW and 7th Street SW
- Provide bike lanes along Soldiers Field Drive to the bike path connection
- Stripe bike lanes along 4th Street SW/SE through downtown (perhaps extending as far west as 10th Avenue SW and as far east as19th Avenue SE)
- Install bike lanes along 6th Avenue NW/SW from 8th Street NW to 11th Street SW

Encourage bicycle travel by providing destination amenities

- Add covered bicycle parking in the Center Street Ramp (located between Broadway and 1st Avenue NW/SW)
- Expand and cover the existing bike parking in front of the Rochester Public Library
- Install covered bike parking at the Rochester Government Center

Develop supportive programs and policies that promote bicycle travel

- Coordinate an annual Bike to Work event in order to promote bicycling as a commute option and increase awareness through “Share the Road” campaigns
- Offer a monthly Bicycle Commuter Fringe Benefit program for City employees that commute to work by bicycle; use a model program with expansion to other employers encouraged by a Transportation Management Association
- Establish a city ordinance that requires minimum bicycle parking standards for residential, commercial, and mixed use developments
- A City bicycle parking ordinance should also be explored. This ordinance would provide the necessary building standards to provide basic parking needs for downtown area cyclists

Longer Term Projects (beyond 5 years)

Increase bicycle safety at the 4th Street SE / 4th Avenue SE intersection

- Construct a bicycle and pedestrian signal at the 4th Avenue SE/4th Street SE intersection
- Provide an exclusive two-stage bicycle left turn facility on the north sidewalk for east- to southbound bicycle left turn movement at the 4th Avenue SE/4th Street SE intersection

FIGURE 3-2 Downtown Master Plan – Bicycle Facility Action Plan

Increase bicycle safety at critical intersections by implementing innovative treatments

- Install a northbound and southbound bike box supplemented by “No right turn on red” turn movement control signs on 4th Street at S Broadway and on Center Street at Broadway
- Redesign the 3rd Street SE and S Broadway intersection with a colored bike lane
- Install a bicycle and pedestrian median refuge at the intersection of 6th Street SE and 3rd Avenue SE disallowing through traffic for automobiles

- Install a bicycle and pedestrian only signal phase for two-way cycle track traffic at 3rd Street and Broadway
- Construct a traffic circles at the intersections of 7th Street SW / 6th Avenue SW, 3rd Street NW / 6th Avenue NW, and 7th Street SW / 4th Avenue SW

Provide designated space for bicycles by striping bike lanes

- Construct a two-way cycle track on 3rd Street SE between Zumbro River and Broadway
- Stripe bike lanes across a future bridge crossing / bike lane connection on 6th Street SE between Broadway and 3rd Avenue SE

Encourage bicycle travel by providing destination amenities

- Construct long-term covered bike parking in the vicinity of the Gonda Building, Peace Plaza, University Plaza and on 1st Avenue SW south of 2nd Street
- Develop a partnership between the Mayo Clinic, UM Rochester and other downtown employers and businesses to create a "Bike Hub"

Additional considerations

- In addition to the recommendations provided in the Rochester Downtown Master Plan, the City of Rochester should consider developing a uniform and branded bicycle wayfinding signage system.

BICYCLE FRIENDLY CITY DESIGNATION PROCESS (2010)

The League of American Bicyclists review team that considered Rochester's application for Bicycle Friendly Community designation in 2010 identified the following significant measures the city should take to improve cycling in the community:

- Increase the amount of secure bicycle parking throughout the community – in addition implement a regulation that requires bike parking.

- Increase the number of arterial streets that have wide shoulders or bike lanes. Continue to expand the bicycle network and increase network connectivity through the use of bike lanes, shared lane arrows and signed routes. On-street improvements coupled with the expansion of the off-street system will continue to increase use and improve safety. These improvements will also increase the effectiveness of encouragement efforts by providing a broader range of facility choices for users of various abilities and comfort levels.

- Continue to increase educational opportunities for motorists, children, and adults. Plans to expand *Smart Cycling Classes* and Bicycle Diversion Program in the Municipal Court system are excellent and should be complimented by more regular offerings for law enforcement personnel, potential bicycle commuters, students, professional drivers, and city staff.

- Expand the bicycling encouragement efforts throughout the year with more community ride(s)/events, mayor's ride(s), and encourage more local businesses to promote cycling to the workplace. The city itself should be the model employer.

- Partner with local employers such as the Mayo Clinic and IBM to promote cycling during Bike Month and throughout the year. Consider forming a business partnership program that will use businesses as a tool to bring cycling to the community

PLANNING BY NEIGHBORHOOD ASSOCIATIONS (2007-2011)

Three downtown neighborhoods have completed or are in the process of developing neighborhood plans that include recommendations for improving bicycle accessiblity within and through their neighborhoods. The Kutzky and Slatterly (South East Settlers on this map) are both served by the River Trails system, but given their historic nature do not have any supplementary paths or trails to provide access. However, both neighborhoods are designed on a traditional grid street pattern and thus have great potential for developing on-street bike networks. Planning in the East Side Pioneers area is in progress and is being facilitated by the Rochester Area Foundation.

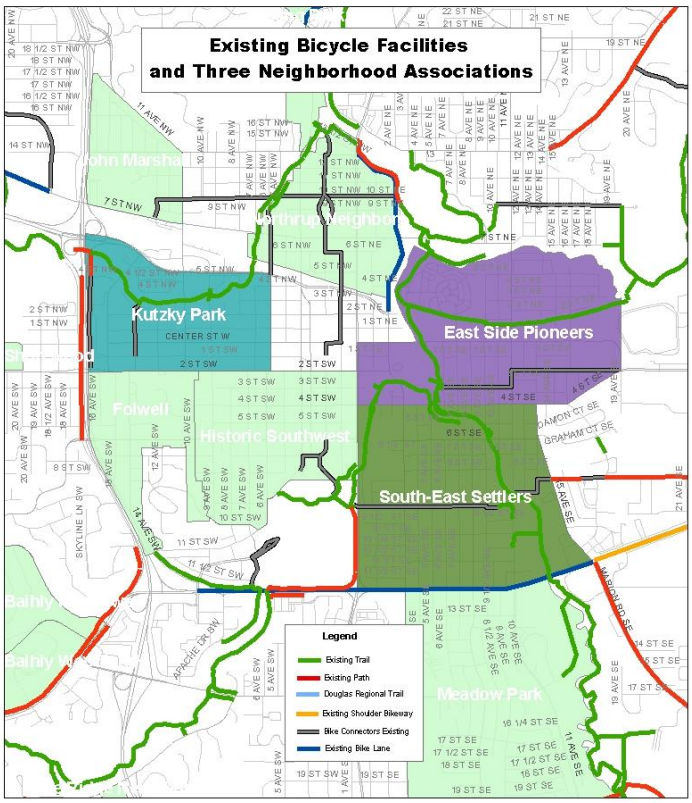
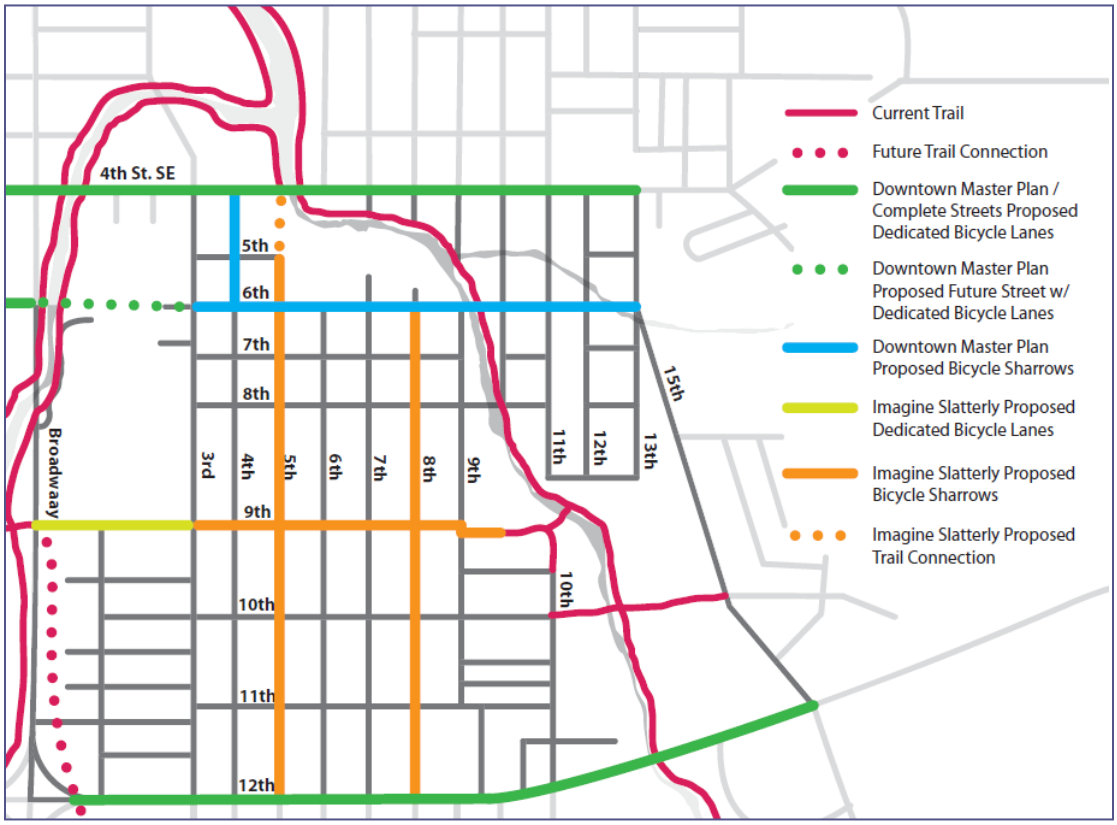


FIGURE 3-3 Downtown Neighborhoods

SLATTERLY PARK NEIGHBORHOOD ASSOCIATION RECOMMENDATIONS (2010)

The Slatterly Park neighborhood plan reflects the recommendations of the Downtown Master Plan and supplements those bikeways in the north half of the neighborhood with an east/west and two north/south signed bike corridors to serve the neighborhood. The 5th and 8th Ave corridors in particular can provide a critical link for the Meadow Park neighborhood to the south as well as for residents of Slatterly Park. The 12th St Bicycle Lanes are currently under construction (2011) as part of a Mn/DOT project to rebuild the TH 14 beltway.

Figure 3-3: Slatterly Park Neighborhood Bike Plan



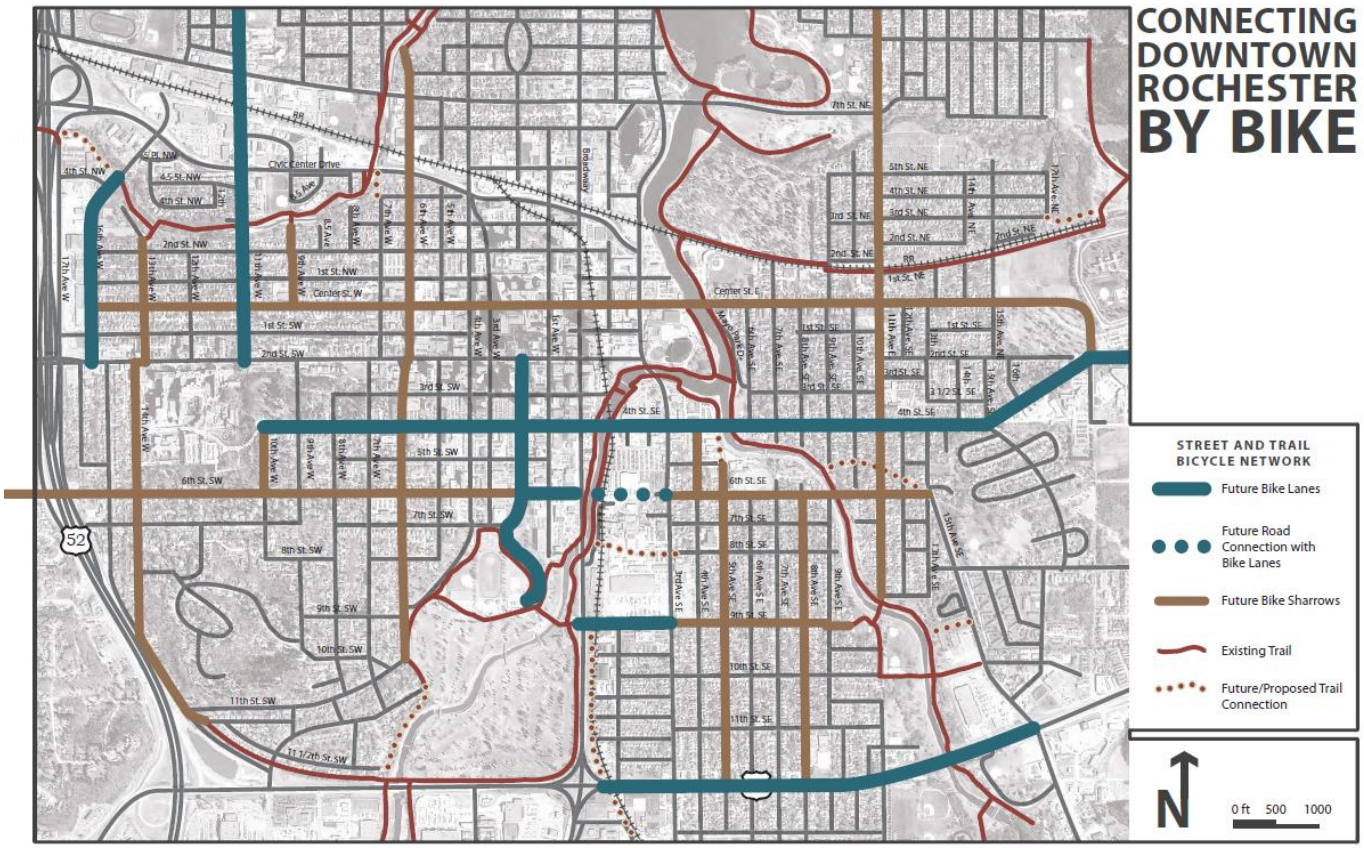
KUTZKY PARK - IMAGINE KUTZKY PLAN(2007)

The Kutzky Park neighborhood worked with the City of Rochester and the Rochester Area Foundation on development of a neighborhood Master Plan. Changes that were occurring in the character of the neighborhood spurred the neighborhood to actively plan for their future. As part of the planning process the neighborhood identified 1st St SW and West Center St along with 11th Ave SW/NW as corridors where the development of bikeways should be targeted.

ROCHESTER AREA FOUNDATION (2011)

The Rochester Area Foundation has been working with downtown neighborhoods on issues related to affordable housing, sustainability and other quality of life issues for a number of years. The staff of the Foundation have prepared a proposed plan for core area neighborhoods identifying a desired bikeway network to serve the Kutzky, Edison, Slatterly and Eastside Pioneers areas. Ilustrated in Figure 3-4 on the following page, the RAF bikeway map reflects the various plans that have been completed by neighborhood groups and the community and reflect a coordinated neighborhood vision for the entire core area.

Figure 3-5: RAF Proposed Plan For Connecting Downtown Rochester By Bike



DOWNTOWN BICYCLE PLAN (2009)

The Downtown Bicycle Plan was a project completed by the Rochester-Olmsted Council of Governments (ROCOG) initiated in 2007 at the recommendation of the ROCOG Bicycle-Pedestrian Advisory Committee to address the lack of good bicycle connections to downtown destinations from the River Trails system as well as the lack of east/west and north/south bikeway continuity through the downtown area. A proposed network of on-street improvements was identified and the plan was adopted by ROCOG and the City of Rochester. The network is illustrated in Figure 3-5 on next page. Most of the recommendations in the plan were subsequently incorporated into the bicycle element of the Downtown Master Plan.

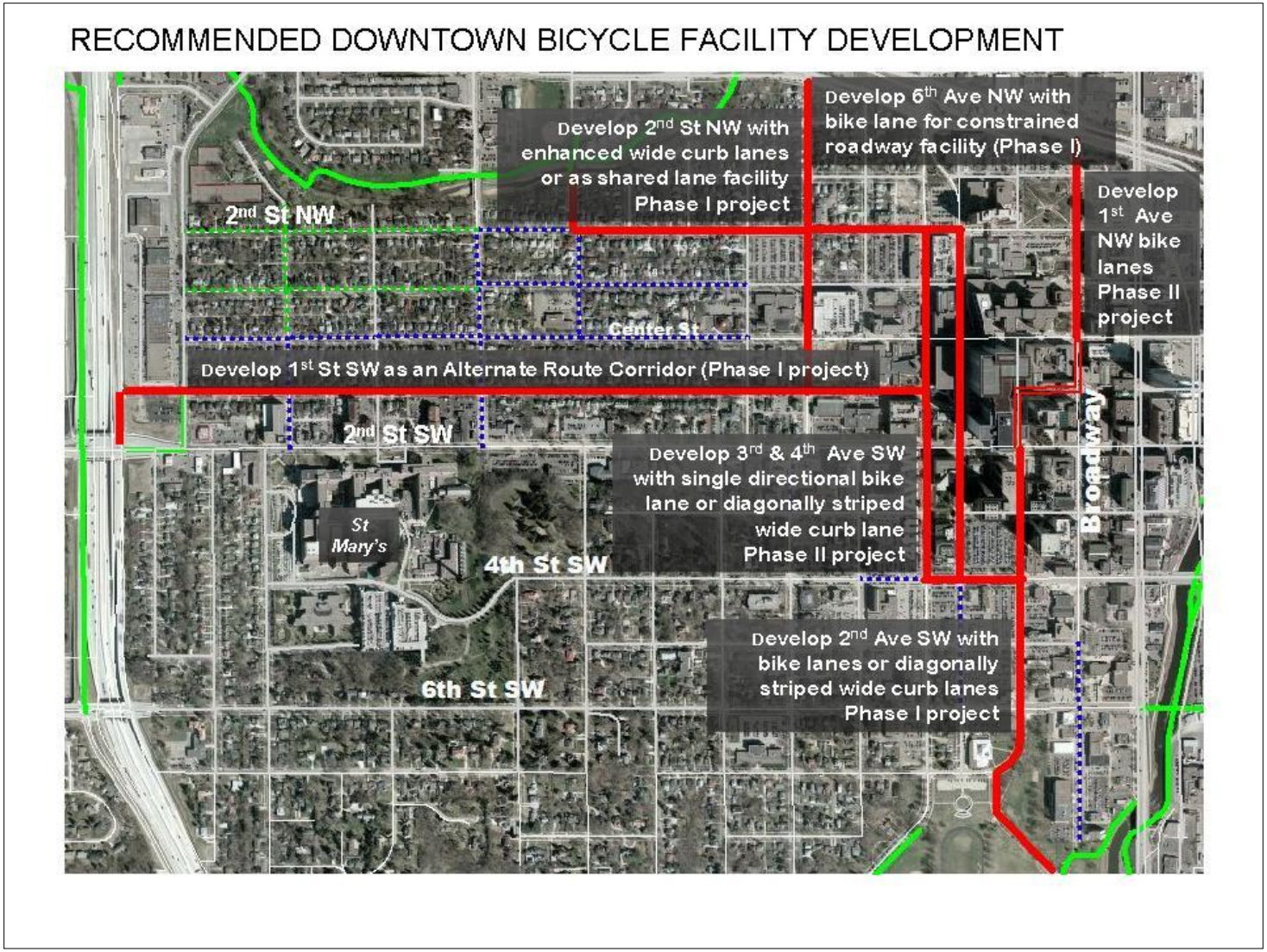


Figure 3-5: Recommendations of Downtown Bicycle Plan 2009

CHAPTER 4

Master Plan Goals and Objectives

INTRODUCTION

To guide the identification and development of proposed recommendations in the Bicycle Master Plan a set of Goals and Objectives were identified based on input received from the community and the Bicycle-Pedestrian Advisory Committee, review and refinement of the broader principles and policies found in the ROCOG 2040 Long Range Transportation Plan, and consideration of the recommendations found in adopted small area plans such as the Rochester Downtown Master Plan. Goals and in particular associated performance measures from peer group communities with successful bicycle programs were also reviewed to assist in defining the recommended performance measures identified later in this chapter.

In Chapters 6 and 7 these policies are linked to identified Best Practices and potential strategies that could be utilized to achieve the goals of the plan, with final recommended actions presented in Chapter 8.

The plan is built on the vision described in the Chapter 1, which states:

> ***The Vision of the Rochester-Olmsted Bicycle Master Plan is to create an environment that fosters bicycle travel as a healthy, environmentally sustainable transportation alternative that will reduce vehicular travel and improve the character of the community through projects, programs and policies that work together to provide safe and efficient opportunities for bicyclists to access public transportation, schools, workplaces, shopping areas, services, recreation and residences*.**

A set of guiding principles evolve from this vision, which include:

- ***To create a sufficiently dense network of bicycle facilities so that all residents are within reasonably close proximity to the network and all key destinations are served;***
- ***To promote the use of bicycles as a viable and attractive alternative to the automobile;***
- ***To provide for safe and convenient bicycle travel for people over a wide range of ages and abilities.***

It will take a strong commitment by all stakeholders to enhance and improve the entire bicycling experience, from trip origin to destination, in order to make bicycling a common travel option. This includes ensuring that a bicyclist can find a route that feels safe and comfortable, where they feel that motorists and law enforcement respect their right to use the road, and they have a safe and convenient place to store their bike at their destinations.

In this chapter Goals and Objectives are presented along with recommended benchmarks and performance targets, which will serve as the yardsticks for measuring future progress. By way of background, definitions of these items are presented here:

> ***Goals*** *– Goals are the desired end result that is sought, are general in nature, and are the product of a specific objective or objectives. A goal is achieved when the desired end result has been accomplished, and goals are not considered successful unless the terms in all of the defined objectives have been satisfied or attempted in the timeframe prescribed.*

Goals provide the context for the specific policies and recommendations discussed in the Bicycle Master Plan. The goals are broad statements of purpose that do not provide details, but show the plan's direction and give overall guidance

> ***Objectives*** *- Objectives describe the path that will be followed to reach the goals of the plan. While there are usually different ways to achieve a goal, the objectives of the plan will specify those projects and initiatives chosen as most important or feasible to achievement of the plan goals.*

Objectives in the Bicycle Master Plan are supported by the identification of specific infrastructure recommendations and non-infrastructure action items related to education, encouragement, promotion or enforcement activities.

> ***Benchmarks*** *– Benchmarks identify the checkpoints that will be used to measure progress in achieving the goals of the plan. Benchmarks generally should be measurable to reduce subjectivity and allow for ease of application. Typical measuring tools could include counts, inventories, database metrics, survey results, literature distributed or facilities constructed.*

> ***Performance Targets*** *- Performace Targets typically attach specific numerical performance goals to Benchmarks to provide a means of measuring the pace of success, with targets typically set in increments to coincide with a plan update cycle or other important milestones or checkpoints such as budget or program cycles.*

BICYCLE MASTER PLAN GOALS AND OBJECTIVES

The first step toward advancing the vision for bicycling in the Rochester area is to articulate a set of goals and objectives through which progress in achieving the vision of the plan can be assessed. The goals and objectives guide not only the development of the Plan but also its implementation. In the following table a goal is articulated to address each of five main principles suggested by the Vision Statement. These goals and objectives were developed based on input from the Bicycle and Pedestrian Advisory Committee, local agency staff, suggestions from user groups, and policies found in related local, state or national plans. These goals and objectives essentially encompass all activities proposed to improve conditions for bicycling and provide the underpinning for all of the Plan recommendations

TABLE 4-1: Master Plan Goals and Objectives

Key Principles	Assure Safe and Secure Bicycle Travel	Improve Bikeway Network Mobility & Connectivity	Provide Accessibility to the Bikeway Network	Enhance Support Services and Facilities	Encourage and Promote Bicycling as a viable travel option
Goal	Reduce travel conflict between bicycling and other modes and the number of bicycle-related injuries	Develop a network of bicycle travel corridors connecting key centers and destinations with service to all neighborhoods	Insure that all areas have access to the bikeway network and that the network adequately serves anticipated users.	Improve supporting facilities and services to make bicycle travel more convenient and improve in-trip and end-of-trip service quality	Increase the number of bikeway system users and the share of trips made by bicycle
Objectives	Ensure that the bikeway network, intersections and barrier crossings such as bridges are safe and functional for all users	Identify and implement feasible improvements to eliminate gaps in the bikeway network	Provide a sufficiently dense network of primary and secondary bikeways so that bikeways are available to all users within a reasonable distance	Maintain roadways and bikeways to a reasonable level of rideability with consideration of surface and clearance conditions in all seasons.	Develop programs that will encourage people to shift to biking for short trips
	Ensure age-appropriate safety and skills training opportunities are available for new or inexperienced riders	Develop bikeway facilities in newly urbanizing areas to serve future users.	Identify user groups to be served within bikeway corridors and develop appropriate features for each user group.	Insure that secure and convenient bicycle parking is available at all cycling destinations	Establish new partnerships with the business community to develop encouragement programs that target employees and customers

Key Principles	Assure Safe and Secure Bicycle Travel	Improve Bikeway Network Mobility & Connectivity	Provide Accessibility to the Bikeway Network	Enhance Support Services and Facilities	Encourage and Promote Bicycling as a viable travel option
	Continue efforts to educate and raise awareness among motorists and cyclists on the rights of bicyclists and safe bicycle and vehicle operation in urban traffic	Identify needed street and barrier crossing improvements and implement feasible improvement measures	Continue to develop local connections to the regional trail network	Provide user-friendly information about the bicycle network and cycling practice that is easily accessible to users.	Encourage and work with education institutions to facilitate and encourage student and staff bicycle travel to and from school
	Provide for effective enforcement of and compliance with laws that affect bicycle travel and safety	Improve bicycle accessibility within and bicycle mobility across the Central Business District of Rochester	Insure connections to the bikeway network are provided from all neighborhoods or activity centers through local streets or neighborhood bikeway connectors.	Provide enhancements that would facilitate bike & ride trip-making on the local bus system and at Park and Ride locations.	Increase the comfort level of inexperienced bicyclists in using the bikeway network through training, information and mentoring.
	Conduct periodic assessments to identify safety or security issues and identify countermeasures to address problem areas or behavior	Bikeway projects should be designed whenever possible to meet federal, state or local design standards.	Integrate the consideration of bicyclist needs into community and neighborhood planning and site design processes	Provide visitors to Rochester with access to bicycles and targeted information about biking opportunities in the Rochester area	Encourage and promote the many benefits of bicycling to a wide audience via effective use of media and public outreach as well as through private and public events
		Pilot innovative design options reflecting sound engineering practice to improve corridors where space for standard bikeway improvements is not available.	Insure that bicyclist needs are considered in local and state agency roadway development processes.	In high demand areas where it can be justified, provide self-serve or staffed minor repair and information services for bicycle users.	

BICYCLE MASTER PLAN BENCHMARKS AND PERFORMANCE TARGETS

For each goal and its associated objectives listed in the previous section benchmarks and performance targets have been identified to provide quantifiable measures of progress that can be monitored to determine the success of implementation efforts. Monitoring of performance measures will occur periodically. Some will be measured on a yearly basis while others will be measured over longer intervals depending on the availability of source data.

Reference is made in the following tables to a Bike Master Plan Benchmark Report as the mechanism for reporting to the community the progress being made toward achieving the goals in the Master Plan. It is recommended that preparation of an annual report should be institutionalized within the Bicycle – Pedestrian Advisory Committee and shared with local officials and the community annually.

Table 4-2: Benchmarks & Targets for Goal 1-Assure Safe and Secure Bicycle Travel

Objectives	Ensure that the bikeway network, intersections and barrier crossings such as bridges are safe and functional for all users	Ensure age-appropriate safety and skills training opportunities are available for new or inexperienced riders	Continue efforts to educate and raise awareness among motorists and cyclists on the rights of bicyclists and safe bicycle and vehicle operation in urban traffic	Provide for effective enforcement of and compliance with laws that affect bicyclists travel and safety	Conduct periodic assessments to identify safety or security issues and identify countermeasures to address problem areas or behavior
Benchmark(s)	Number of persons treated for bicycle-related injuires at area emergency rooms Number of bicycle crashes for which crash reports are filed	Number of children receiving bicycle safety and skills training Number of adults receiving safety or skills training	Number of avenues actively utilized to educate motorists and cyclists on how to operate safely in shared roadway space	*Work with law enforcement after adoption of plan to identify Benchmarks and Baseline data and any Performance Targets..*	Number of safety audits or other formal evaluations conducted on the need for bikeway safety improvements
Baseline	2009 level of injuries as reported in MIDAS 5 Year Annual Average	Identify baseline numbers for 2011/2012 and report in initial Benchmark Report	Identify the locations in which “Share the Road” or similar messages were made available in		No performance baseline but an initial list of priority locations for study should be identified

	number of Crashes reported in MNCATS		2011 and report in initial Benchmark Report	within 1 year.
Performance Target	"Bend the Curve" to achieve a downward trend in the number of persons seeking treatment at emergency rooms per 100,000 population over a five year period.	100% of all children receive training in grades 1 to 6. Increase the number of participants in adult bicycle safety education and operation by 50% by 2016	Strive to add one additional location or venue per year in which to deliver "Share the Road" or similar message	Conduct four location evaluations or audits every two years.

Table 4-3: Benchmarks and Targets for Goal 2 - Improve Bikeway Network Mobility & Connectivity

Objectives	**Identify and implement feasible improvements to eliminate gaps in the bikeway network**	**Develop bikeway facilities in newly urbanizing areas to serve future users.**	**Identify needed street and barrier crossing improvements and implement feasible improvement measures**	**Improve bicycle accessibility within and bicycle mobility across the Central Business District of Rochester**	**Bikeway projects should be designed whenever possible to meet federal, state or local design standards.**	**Pilot innovative design options reflecting sound engineering practice to improve corridors where space for standard bikeway improvements is not available.**
Benchmark(s)	Percentage of Bikeway Network corridors improved in developed urban area neighborhoods or activity centers Percentage of rural area roadways designated as bikeway corridors	Percentage of new or upgraded arterial & collector roads in urbanizing areas built with bicycle facilities to accommodate users	# of substandard intersection crossings on the bikeway network # of substandard bridges/ underpasses on designated bikeway network Major barriers such as rivers or freeways	Percentage of planned on-street bikeway facilities completed within the 2010 Downtown Master Plan area	Refer to existing design standards including Mn/DOT State Aid Street Design Standards, MnMUTCD, MnDOT Road Design Manual, and MnDOT Bikeway Design Manual	For corridors where standard bikeway facilities cannot be provided assess feasibility of potential innovative design measures

	with improvements serving bicyclists		with bikeway crossings at greater than ½ mile spacing			
Baseline	Not established; Identify % of urban area bikeway network corridors improved in initial Benchmark Report Not established; Identify % of rural area bikeway corridors imporved in initial Benchmark Report	Baseline measure is the miles of new or upgraded arterial or collector roadway facility constructed in an urbanizing area.	Not Established; identify number of substandard locations in initial Benchmark Report	Miles of planned bikeway facilities within the boundary of the Downtown Master Plan	No Baseline; provide in Benchmark Report list of upcoming / just completed CIP projects on bikeway network corridors and improvements consistent with design standards included	Identify in annual benchmark report upcoming projects involving bikeway network where standard bikeway improvement is not likely to be feasible and innovative design should be considered
Performance Target	Construct 1 mile of bikeway facility or rideable shoulders annually in a location identified as a gap.	100% of all new or upgraded roads provide bicycle facilities when constructed or upgraded.	Improve an average of one substandard bikeway intersection crossing annually every 5 years Include bike accommodations in 100% of all bridge reconstruction projects on designated bikeway routes One major linear barrier eliminated every five years	Complete on average 5% of the proposed downtown bikeway network annually every five years (20 year completion horizon)	Any project involving a corridor on Bikeway Network should provide an appropriate minimum level of bikeway improvement even where desired facility or design cannot be provided.	Attempt to implement one innovative design every two years in a location where standard design guidelines cannot be met

Table 4-4: Benchmarks and Targets for Goal 3: Provide Accessibility to the Bikeway Network

Objectives	Provide a sufficiently dense network of primary and secondary bikeways so that bikeways are available to all users within a reasonable distance	Identify user groups to be served within bikeway corridors and develop appropriate features for each user group.	Continue to develop local connections to link to the regional bike trail network	Insure connections to bikeway network are provided from all neighborhoods or activity centers through local streets or neighborhood connectors.	Integrate the consideration of bicyclist needs into community and neighborhood planning and site design processes	Insure that bicyclist needs are considered in local and state agency roadway development processes.
Benchmark(s)	All residents should have access to the Bikeway Network within a 5 minute ride on local access roads or bikeway connectors	Provide accommodations for all anticipated users in every Primary Bikeway Corridors	Connections to DNR regional trails should be available from all neighborhoods through the urban area Bikeway Network	See Objective #1 for neighborhoods All major activity centers should have access to the Bikeway Network on local access roads or a bikeway connector	All future neighborhood, subarea or corridor planning studies consider the needs of bicyclists	Need for bicycling facilities considered in all projects involving arterial & collector roads or other roads on the bikeway network;
Baseline	Establish baseline % of coverage in initial Benchmark Report.	Establish existing gaps by user group on Primary Bikeway Network in initial Benchmark Report	Connections made to: • Douglas Trail south trailhead • Chester Woods Trail • Great River Ridge Trail	Refer to Objective #1 for neighborhoods; establish % of coverage for Activity Centers	No baseline required	No baseline required
Performance Target	Address one neighborhood accessibility deficiency annually	Resolve one service gap per year.	Resolve one regional trail connection every four years	Address one activity center deficiency every two years	All studies should be referred to BPAC for input on bicycling considerations	All studies should be referred to BPAC for input on bicycling considerations

Table 4-5: Benchmarks and Targets for Goal 4 - Enhance Support Services and Facilities

Objectives	Maintain roadways and bikeways to a reasonable level of rideability with consideration of surface and clearance conditions in all seasons.	Insure that secure and convenient bicycle parking is available at all key cycling destinations	Provide user-friendly information about the bicycle network and cycling practice that is easily accessible to users.	Provide enhancements that would facilitate bike & ride trip-making on the local bus system and at Park and Ride locations.	Provide visitors to Rochester with access to bicycles and targeted information about biking opportunities in the Rochester area	In high demand areas where it can be justified, provide self-serve or staffed minor repair and information services for bicycle users.
Benchmark(s)	Funds available for maintenance funding grow commensurate with growth in bikeway network Established off-season bikeway maintenance priorities are met	Short and long term bicycle parking is provided at all key destinations Bicycle parking is provided in all new development or redevelopment projects consistent with bike parking guidelines (to be developed).	A Bicycle Map reflecting all network and supporting improvements is available Wayfinding signage is established on the bikeway network	Number of bicycles carried on Rochester fixed route transit Number of buses equipped with bicycle racks Number of transit hubs and park and ride sites with bike parking available Number of transit hubs and park and ride sites accessible by bike	Bicycle Tourism Information Package available for interested visitors Number of locations where bikes can be rented	No Benchmark established; monitor input from bicycle community on need for bicycle service center in key locations
Baseline	Establish funding baseline based on 2011 budget year Assess feasibility & establish off season maintenance priorities annually	Inventory available bicycle parking at all key destinations and report in initial Benchmark Report.	Improved Bike Map is completed by 2013 % of Wayfinding Plan implemented (following adoption of Plan)	Establish baseline figure for four benchmarks in initial Benchmark Report	Establish number of bike rental locations in area in initial Benchmark Report	No Baseline

Performance Target	Baseline level of funding on a per mile basis is maintained through 2020 Level of funding is increased to meet life cycle needs by 2020	100% of schools, parks, public buildings and other key destinations have adequate bicycle parking by 2016.	Bike Map is updated every two years at a minimum 50% of targeted bikeway network to have wayfinding signage by 2016; 100% by 2020.	Double the number of bicycle riders on the bus system by 2016 100% of all buses have bike racks 100% of all transit hubs and Park & Ride Lots have bicycle available 100% of transit hubs and Park and Ride Lots are connected to bikeway network by 2020	Complete Visitor / Tourist Biking Brochure by 2013	Periodic assessment of need and interest in Bicycle Service Centers is completed.

Table 4-6: Benchmarks and Targets for Goal 5 - Encourage and Promote Bicycling as a viable travel option

Objectives	**Develop programs that will encourage people to shift to biking for short trips**	**Establish new partnerships with the business community to develop encouragement programs that target employees and customers**	**Encourage and work with education institutions to facilitate and encourage student and staff bicycle travel to and from school**	**Increase the comfort level of inexperienced bicyclists in using the bikeway network through training, information and mentoring.**	**Encourage and promote the many benefits of bicycling to a wide audience via effective use of media and public outreach as well as through private and public events**
Benchmark(s)	Number of observed riders at count locations in Rochester Information resources and channels accessed regularly	Number of bicycle commuters in urban area and among downtown employees in particular	Number of students reported riding to school in good weather months Number of school sites	An up-to- date, easily accessible bicycle handbook is available to all residents and workers	Information on the benefits of bicycling distributed regularly to residents and businesses.

	and new materials produced in a timely manner Number of Promotion and Encouragement programs that are offered	Bicycle Commuter Mode Split Number of employers providing end of trip accommodations or incentives to employees to commute by bicycle	with active Safe Routes to School programs	Training events are conducted for inexperienced bicyclists Mentors are available to consult with persons interested in expanding their use of bicycles	Active ambassador program that can fulfill requests on demand Promotion events are conducted monthly during the riding season to attract new users
Baseline	2010 Bicycle Count data established baseline values Establish baseline resources and event frequency based on 2011 activities.	2006-2010 ACS Journey to Work Data Establish baseline regarding # of participating employers by 2013 Benchmark Report	Establish number of riders and number of SRTS programs by 2012-2013 school year	Establish benchmark levels of mentors and training efforts for reporting in annual Benchmark Report	Report on existing events levels and information dissemination avenues in initial Benchmark Report
Performance Target	5% increase in the number of cyclists per year at observation locations Number of promotion / encouragement events is increased by one every two years	Increase the number of bicycle commuters by 25% by 2015 Establish a program to assist employers in establishing bicycle commuter program by 2015	For students not qualified for busing, 10% of students cycle to school by 2015	Establish a mentor program that is available community-wide by 2013 Monthly training events during riding season area available by 2015	Residents annually receive at least one message on benefits fo bicycling by 2014 Active Ambassador program is established and maintained by 2013 Monthly promotion events are held by 2015

Chapter 5

Bicycle Infrastructure Assessment

Chapter 5 provides for an evaluation of the bikeway network in the Rochester area and identifies opportunities to improve it. The bikeway network in the Rochester urban area currently includes approximately 100 miles of off-road trails[1] and paths[2] and 12 miles of on-road bike lanes. The ROCOG 2040 Long Range Transportation Plan identified additional off-road facility development including approximately 14 miles of trails and 124 miles of paths, with most of proposed path construction planned in future growth areas where facilities would be installed concurrently with land development or as part of road improvement projects.

Development of on-road bikeway facilities such as bike lanes or shared streets has historically been limited in the Rochester area. With adoption of a Complete Streets Policy in 2009, the city of Rochester made a commitment to consider the needs of all travel modes during the development of roadway projects, and since adoption of this policy bike lane development on 41st St NW, West River Road and West Silver Lake Parkway has been completed. The 2011 Downtown Master Plan and recent small area neighborhood plans for the Kutzky Park, Slatterly Park and East Side Pioneer neighborhoods have also identified future on-road bikeway development needs. The Bicycle Master Plan builds upon these recent efforts to identify an interconnected network of on-street and off-street facilities to serve all major activity centers and neighborhoods in the community.

Chapter 5 includes the following information related to bikeway network infrastructure:

- *A review of the proposed goals and objectives related to bikeway infrastructure and potential actions that would support achievement of those polices;*
- *A discussion of the types of users and trip types to be served;*
- *An assessment of bicycle network connectivity needs;*
- *Identification of a functional Bikeway Network identifying a hierarchical network of on & off-street Bikeway corridors;*
- *A review of standard and experimental bikeway improvement types;*
- *Recommended bikeway improvement concepts for designated bikeway corridors.*

In this assessment greater attention is given to on-road facility needs to complement the existing plans for future trail and path improvements identified in ROCOG 2040 Plan. Corridors served with existing on-road or off-road facilities are considered only in the context of whether additional improvements may be needed to serve specific user groups not well-served by the existing improvements.

[1] Trails refer to travel facilities for non-motorized use typically located in parks or along open space corridors and not adjacent to a street or highway

[2] Paths refer to travel facilities for non-motorized use constructed adjacent to but physically separated from a street or highway.

Network Development Policy Review

In Chapter 4 two key policy principles were identified related to bikeway network infrastructure. One principle highlights the concept of bikeway network connectivity, while the 2nd focused on the concept of bikeway network accessibility as it relates to providing service to neighborhoods and major activity centers and usability for different types of cyclists. Tables 5-1 and 5-2 highlight these policies and provide examples of Best Practices in terms of actions or strategies that were identified for implementing these policies. Final recommended actions for the Rochester area are identified in **Chapter 8, Plan Recommendations and Implementation**.

Table 5-1: Improving Bikeway Network Mobility & Connectivity

Goal: Develop a network of bicycle travel corridors connecting key centers and destinations with service to all neighborhoods

Objectives:

Objective #1	**Identify improvements to close gaps in the existing bikeway network and seek to implement feasible measures.**
Objective #2	**Continue to develop new bikeway facilities in urbanizing areas to serve new development areas**
Objective #3	**Identify needed street crossing and barrier crossing improvements and seek to implement feasible improvement measures**
Objective #4	**Improve bicycle mobility within and bicycle travel across the Central Business District of Rochester**
Objective #5	**Design bikeway network improvements when possible to meet federal, state or local design standards**
Objective #6	**Identify and pilot innovative design options reflecting sound engineering practice to improve corridors where space for standard bikeway improvements is not available.**
Examples of Best Practices related to Network Develop - ment	**URBAN ARTERIAL POLICY** GILBERT, ARIZ 100% ARTERIALS WITH BIKE LANES: The city of Gilbert has adopted as policy that all arterial streets – major and minor – shall have standard 5 foot bike lanes. This policy is written into the city's Public Works and Engineering Standards and Details. **BICYCLE FRIENDLY STREET DESIGN** Various states and municipalities are developing Street Design Guidelines that reflect the latest concepts in multi-modal design, providing accommodations for bicyclists as well as other users in a safe and user-friendly way. The Institute of Transportation Engineers (ITE) first published *Context Sensitive Solutions in Designing Major Urban Thoroughfares for Walkable Communities* as a Proposed Recommended Practice in 2006, which has become one of the leading references on multi-modal design for urban arterials. Cities such as Charlotte, Louisville and San Francisco have applied these concepts in development of urban street design manuals.

Charlotte Urban Street Design Guidelines
http://www.charmeck.org/city/charlotte/Transportation/PlansProjects/Pages/Urban%20Street%20Design%20Guidelines.aspx
Louisville Metro Complete Streets Manual
http://www.louisvilleky.gov/BikeLouisville/Complete+Streets/
San Francisco Better Streets Plan
http://www.sf-planning.org/ftp/BetterStreets/index.htm

COMPLETE STREETS

The Complete Streets movement has been growing throughout the country the last five years. In 2009 the City of Rochester adopted a Complete Streets policy that has led to review of all collector and arterial street projects for inclusion of improvements to better serve the needs of bicyclists and other users such as pedestrians and transit riders. Some communities have further developed their Complete Streets programs by developing materials such Complete Streets Design handbooks and Complete Streets Review checklists to more fully integrate consideration of Complete Streets principles in their everyday work.
See example of Boston Complete Streets Guidelines at
http://bostoncompletestreets.org/.
See example of MTC (San Francisco) Complete Streets Checklist at
http://www.mtc.ca.gov/planning/bicyclespedestrians/routine_accommodations.htm

BIKEWAY DESIGN MANUALS

Many metropolitan areas, along with state agencies and industry groups have made efforts to advance bikeway system development by developing design manuals and municipal and state design guides. Examples of these include:

- The National Association of City Transportation Officials (NACTO) published in 2011 an Urban Bikeway Design Guide which provides a handy desk reference for planners, engineers and advocates on standard and innovative design features such as bike lanes and cycle tracks; it also provides guidance on signal operations, signing and marking and intersections treatments. This guide could be adopted by jurisdictions as either a stand-alone guide or as a supplement to other guidance documents. See http://nacto.org/print-guide/

- Cities such as Chicago, Minneapolis, Milwaukee and others have adopted either stand-alone Bicycle Network Design Guides or included a significant level of design guidance in their Bicycle Master Plans. These locally developed guides adapt standard guidance material such as the AASHTO Guide for the Development of Bicycle Facilities or state level road design or bikeway design manuals to local conditions and identify locally accepted modifications to standard design profiles.

- Many cities have recognized the concept of Bicycle Boulevards, which involves the use of low volume streets that have been enhanced to create a bicycle friendly riding environment as an alternative to high traffic streets or to provide needed connections to key destinations. See more on how to do it at
http://www.ibpi.usp.pdx.edu/guidebook.php

	PRIORITIZATION Prioritization criteria can play a part in focusing funding and development efforts on critical gaps or barriers that are major impediments to bicycle travel in the community. See Chapter 7 of the Des Moines Bicycle and Trail Master Plan for its process to prioritize projects. http://www.dmgov.org/Departments/Parks/PDF/**Bicycle**and**trail**s**masterplan**.pdf **INNOVATION** Unfamiliarity with new concepts can hinder acceptance of bicycle network improvements. The City of Seattle provides residents with information about the purpose of new bicycle facility treatments (e.g., bicycle boulevards, shared lane markings, etc.) and safe behaviors for using these facilities. The following strategies are utilized to convey information: • Develop web pages to disseminate information about different designs. • Install temporary orange warning flags, flashing lights, or cones at locations where new facilities are installed, where appropriate. • Increase police patrols for a period of time as roadway users adjust their behavior after a new facility is installed The Cities of Minneapolis and Milwaukee have adopted policies indicating a commitment to ongoing work testing innovate bikeway designs.
Potential Action Steps	Annually assess the list of existing bicycle network gaps, with conceptual design treatments and cost estimates needed to complete them. Establish priorities for bikeway network improvements and update them annually, with a focus on improvements that serve regional and town centers, main streets, employment centers, commercial districts, transit centers and stations, institutions, schools, parks and recreational destinations Make incremental improvements by installing interim facilities (such as creating shared signed routes or shared marked roadways) or improving parallel routes where projects are not easily implemented in their ultimate configuration; Identify local streets that provide mobility alternatives to major arterial roadways that can be used to create or improve through bicycle routes. Consider applying the Bicycle Boulevard concept in neighborhood areas where connector routes are feasible to attract new cyclists in the neighborhood. Continue to implement and institutionalize the Complete Streets Policy through measures such as adoption of Recommended Street Design Guidelines and use of project checklists Identify targeted corridors where uncertainty or disagreement exists as to appropriate design treatment or align. Work with agency partners, neighborhood and business associations to refine alignments and recommended design treatments for identified corridors Identify and work to eliminate barriers to bicycle travel on otherwise improved bicycle

	network corridors, such as bridges or underpasses with no bicycle accommodations, critical street intersections with a history of bike safety issues, or unsafe railroad crossings. Develop a partnership with Mn/DOT to test innovative or experimental facility types that are applicable to Rochester that may improve operating conditions and safety for bicyclists

Table 5-2: Improve the Bikeway Network to Enhance User Accessibility

Goal: Insure that all areas have access to the bikeway network and that the network adequately serves anticipated users

Objective #1	**Provide a sufficiently dense network of primary and secondary bikeways so that facilities are available within a reasonable distance of homes or key destinations**
Objective #2	**Identify user groups to be served within bikeway corridors and develop appropriate facilities for each user group.**
Objective #3	**Provide local connections to the regional bike trail network**
Objective #4	**Insure connections to the bikeway network are provided from all neighborhoods or activity centers through local streets or neighborhood bikeway connectors.**
Objective #5	**Integrate the consideration of bicyclist needs into community and neighborhood planning and site design processes**
Objective #6	**Insure that bicycle needs are considered in local and state agency roadway development processes.**
Examples of Best Practices	On arterial and collector roads consider providing alternative facilities for different types of cyclists. For the more skilled cyclists who can handle riding with traffic, consider wide outside lanes or striped lanes while less experienced cyclists are provided shared use paths or other facilities physically separated from traffic. The city of Milwaukee adopted as a goal the provision of bicycle facilities within 1 / 4 mile of the homes of all city residents. The City of Minneapolis established a goal to develop a network of bicycle facilities such that all residents are within 1 mile of an off-street trail, within ½ mile of an on-street bike lane and within 1/8th mile of a signed bike route. On minor streets in residential areas with higher than appropriate traffic volumes or speeds consider use of traffic calming programs to improve the environment for cycling. Consider the use of Bicycle Boulevard concepts on neighborhood bikeway routes. See Madison Pilot Bikeway Boulevard Program **http://www.channel3000.com/news/24739358/detail.html**
Potential Action Steps	Identify major activity centers (such as parks, schools, CBD, major employers, retail centers) or land use subareas (such as neighborhoods) that do not have adequate bicycle network access and prioritize improvements to provide access

	to those areas. Conduct periodic assessments of residential neighborhood and activity centers accessibility to the area bicycle network. Adopt bicycle/pedestrian facility requirements in land development ordinances to ensure connections are available to the bikeway network. Examples of the types of provisions that could be considered include: • *Require paved paths for use by bicyclists (and pedestrians) connecting any cul-de-sacs or interior development streets to streets on the bikeway network, unless topography or other considerations make it infeasible;* • *Require that a certain percentage of street segments interconnect;* • *Require the dedication of an easement for or the construction of bicycle/pedestrian paths to parks, schools, stores, etc. where necessary to provide convenient connections from planned residential areas; and* • *Encourage shorter block lengths and set a maximum length for blocks.* • *Limit the number of cul-de-sacs in a given development area;*

Typical Bicycle Network Users and Trip Types

The needs and preferences of bicyclists vary depending on the cyclist's skill level and the type of trip a rider wishes to take. For example, bicyclists who ride for recreational purposes may prefer scenic, winding, off-street trails, while the bicyclist who rides to work or for errands may prefer a more direct on-street route to their destination. Child bicyclists, seniors, and adults new to bicycling will typically prefer facilities separated from traffic, while adult bicyclists with more experience may prefer wide outside travel lanes, bicycle lanes or paved shoulders. A bicycle plan will need to consider these differences when planning a system that serves all user types.

Various typologies exist for classifying bicyclists. The FHWA in the 1990's proposed a classification consisting of three different classes of cyclists, referred to as Type A, B and C.

Type A cyclists are experienced riders who generally use their bicycle as they would a motor vehicle. Research has shown that while these cyclists are not necessarily more comfortable in traffic since they have a heightened awareness of potential dangers, they are more willing to ride on roadways that have no bicycle accommodations, since they prefer convenience and want direct access to destinations with a minimum of detour or delay. It is estimated that five percent of all bicyclists fall into the Type A category.

Type B cyclists are generally considered basic adult riders. These riders may be less confident but may still want to use their bicycles for transportation purposes; however, they have an aversion to interaction with traffic. These bicyclists exhibit a wide variation in skill and strength and will differ greatly in personal assessment of their skill level. These riders are more comfortable riding on neighborhood streets and multi-use paths, but can still be expected to use

major arterials in order to reach destinations. These users, however, will prefer dedicated facilities such as bike lanes when on busier streets.

Type C users refer to children whose riding for the most part is initially monitored by their parents. They will not travel as far as their adult counterparts, primarily to destinations within their neighborhoods such as schools, convenience stores, and recreational facilities. After age ten, however, the characteristics of this group will increasingly resemble those of Type B cyclists, especially among boys. By age twelve, children have acquired most of their adult-level physical skills, but continue to show a lower level of judgmental abilities in such tasks as gap acceptance and risk acceptance. Residential streets with low vehicle speeds, linked to multi-use paths, and busier streets with well-defined separation between bicycles and motor vehicles are needed if accommodation for older children is to be provided.

Chapter 5 will focus on the needs of those who would be considered Type A or Type B cyclists since these are the users expected to utilize the Bikeway Network. Table 5-3 summarizes the general characteristics of these two groups. Type C cyclists are usually confined to streets, parks or trails in their neighborhood, often with some level of adult supervision. They are best served by improvements outside the scope of the Master Plan such as neighborhood traffic calming, improved access to neighborhood destinations, and recreational trails conducive to family outings.

TABLE 5-3: User Characteristics of Type A and Type B Cyclists

EXPERIENCED (Type A) BICYCLIST	CASUAL (Type B) BICYCLIST
More likely to ride for purposeful travel	*More likely to be riding for recreational travel although may commute by bike if conditions are perceived as safe*
Will prefer more direct routes to destinations	*May use less direct route to avoid heavy traffic*
Will prefer on-street or bicycle-only facility as opposed to shared use path or indirect route on low volume road	*Prefer off-street shared use path or bike lanes along low volume, low speed streets*
Generally comfortable riding with vehicles on the streets; will negotiate streets like a motor vehicle, including "taking the lane" and using left turn pockets	*May have difficulty gauging traffic and may be less familiar with rules of the road; more likely to ride on sidewalks, ride the wrong way on streets and may walk bicycles across intersections.*
Will ride with the flow of traffic on streets, up to speeds of 20 mph on flat ground and up to 30 mph on steep descents	*May ride at speeds slightly faster than walking but clearly slower than the experienced bicyclist*
Will ride for longer distances	*Comfortable primarily with shorter distance travel , particularly when riding in traffic*

Rochester Area Network Strengths, Weaknesses, Opportunities

During the community input phase many comments were received that reflect the still evolving nature of the bicycle network in the Rochester area. Comments reflecting the perceived strengths and weaknesses of the existing bicycle infrastructure in the Rochester area are summarized here

Perceived Strengths

- *The existing River Trails system provides a significant backbone for a network connecting many activity centers and neighborhoods in the community*
- *The topography of the area is generally conducive to bicycle travel, though in certain areas (such as the Northern Heights neighborhood) there are difficult grades to contend with.*

Perceived Weaknesses

- *There are numerous major gaps in the cycling network that need to be closed*
- *Many streets in older areas lack sufficient right of way to permit construction of dedicated bicycle facilities*
- *One of the main types of barriers in the community are bridge structures that lack dedicated space or shoulder area for bicycle travelers.*
- *The climate provides seasonal challenges that would need to be overcome to make cycling a year round option for travel.*

Suggested Opportunities

- *Facilities generally following the major street network are needed to take advantage of travelers inherent understanding of how to reach destinations based on the high level of connectivity in the street network*
- *Efforts should be made to expand the network and attract more users through the use of bicycle boulevards. This is a great way to reach new cyclists in their neighborhoods.*
- *Opportunities exist to better utilize roadway space as there are several roadways in the area that appear to have more motor vehicle capacity than necessary. Bicycle facilities on these streets could be developed through relatively simple treatments such as signing and roadway re-striping.*
- *Where needed and feasible, provide different accommodations to serve the different types of cyclists in a travel corridor, such as an improved arterial for the skilled / advanced cyclist and a quiet, side-street route for novice and slower speed cyclists who may be traveling shorter distances*

Classification of Bikeway Network

An important 1st step in planning transportation networks is the classification of travel corridors according to the function they are intended or anticipated to serve. Not all corridors serve the same travel purposes in a network; for example, some corridors will be important to regional travel while others will serve primarily local travel. Certain corridors will provide more of a collector function, gathering trips from an area and funneling them towards key destinations, while others are important primarily as connectors between neighborhoods or activity centers. Identifying those corridors serving higher order functions will identify where require greater

attention to design and safety and greater investment may be needed in order to handle more cyclists and provide for safe yet convenient travel. It is important to note that except for highways where bicycle use is specifically prohibited, all streets are legally available for use by bicyclists, and all streets legally open to cyclists should be managed in such a way that they can be used safely for bicycle travel. Designation of corridors on the bikeway network identifies routes where non-neighborhood travel is anticipated or encouraged with enhancements provided to safely accommodate increased bicycle traffic.

Corridors were selected for Bikeway Network designation based on consideration of the following factors:

- The corridor would provide service to one or more key destinations identified in Table 5-1 (see page 5-10)
- The corridor could address a perceived gap or barrier identified by the community as illustrated in Figure 5-2 on page 5-12
- The corridor has been identified through a neighborhood planning process as a candidate bikeway network element (*see Chapter 3 beginning on page 3-5*)
- The corridor is in a location where at least one factor from each of following categories is present:

Functional Factors

- *The corridor provides service to an identified key bicycle trip generator(s)*
- *The corridor contributes to the creation of a longer-distance bike route that traverses a significant distance across the city, preferably integrated as part of or parallel to existing arterial streets to take advantage of travelers inherent familiarity with the connectivity provided by the arterial street network.*
- *The corridor is needed to complete a gap in the off-road trail network in order to provide a seamless bicycle travel corridor;*
- *The corridor offers advantages in circumventing barriers such as waterways, major highways, inaccessible bridges, railroads, or large institutional campus areas;*
- *The corridor provides connectivity to a highly isolated neighborhood;*
- *The corridor provides connectivity to regional trails outside the city;*

Structural / Operational Factors

- *The relative ease with which a bicycle improvement (bicycle lane, shared lane street improvements or cycle track) could be implemented on an existing roadway, or the presence of sufficient width in the right of way to plan for improvements such as a path;*
- *A corridor with relatively low traffic volumes and speeds that provides directness and connectivity and is generally comfortable for bicycling without major improvements.*

Additional Considerations

- *Presence of topography such as steep terrain that limits the functionality of a route;*
- *For on-street routes, a significant level of truck traffic;*

- *The presence of difficult-to-navigate / difficult-to-modify intersections along a route;*
- *The lack viable alternative routes that could serve the same destination(s).*

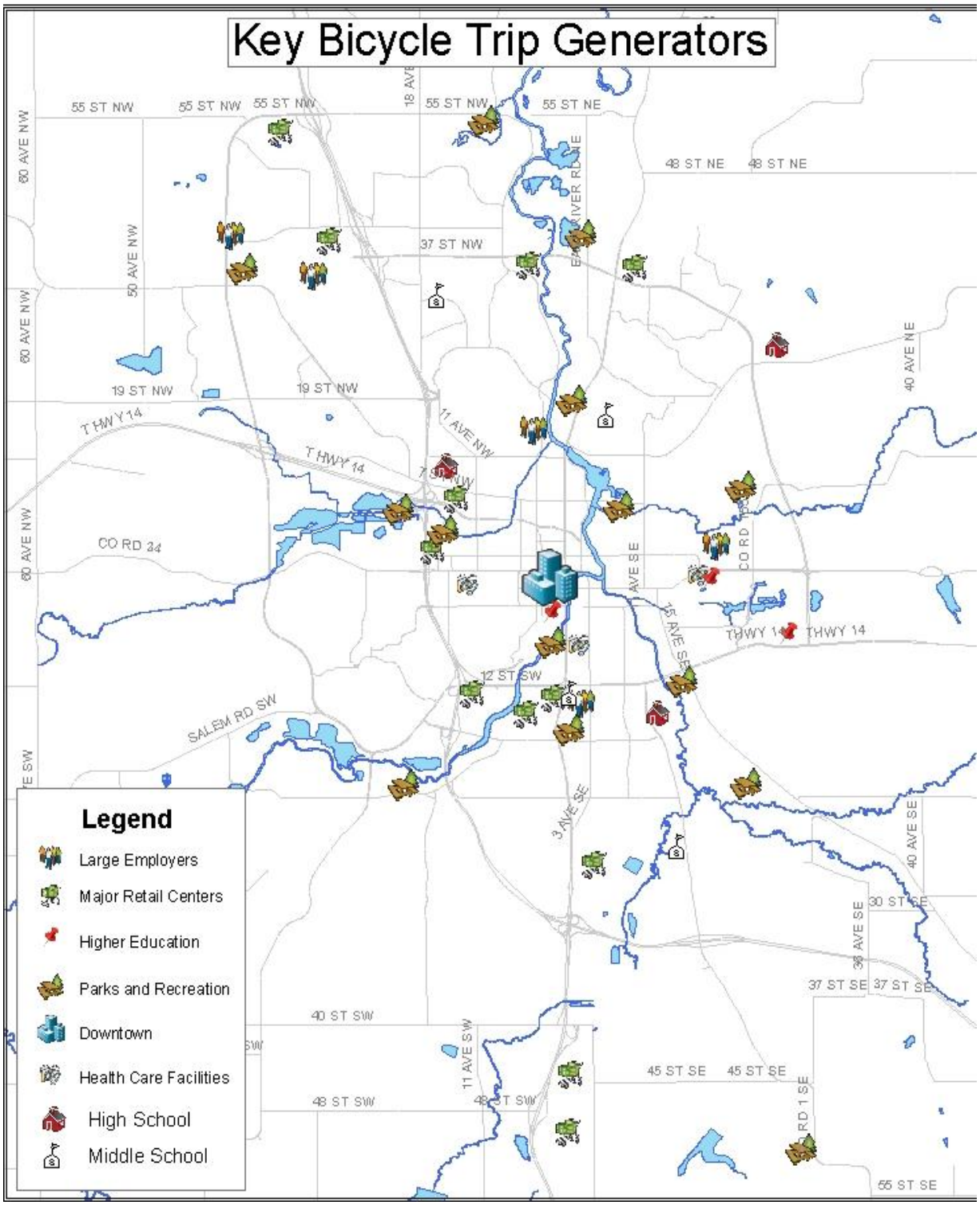
Major Destinations for Bike Planning

Destinations identified as important bicycling destinations are identified in Table 5-4 and highlighted on the following page in Figure 5-1

TABLE 5-4: Key Bike Trip Generators

MAJOR DESTINATIONS		PRIMARY USER GROUPS to be Served
Downtown Central Business District of Rochester		Employees / visitors / shoppers/customers
Large employers • Mayo Medical Center • St. Mary's Hospital • IBM • Government Center • County Campus Area	• Olmsted Medical Center • Crenlo • Seneca • Mayo Support Center	Employees / clients
Major Retail Centers • Barlow Plaza • Apache Mall • Maine Street area • Northwest Plaza area	• Rochester Marketplace area • Crossroads area • Shopko North area • HyVee south & north area • Broadway Commons area	Employees / shoppers
Educational facilities • High Schools / Middle schools • Rochester Community and Technical College	• Rochester University Center • Current / future University of Minnesota sites	Employees, students and visitors
Cultural Centers • Rochester Public Library	• Mayo Civic Center	Employees / patrons
Parks / Recreation / Open Space Sites • Quarry Hill • Cascade Lake • Essex Park • Cascade Meadows • Silver Lake • Soldier's Field • Mayo Field • Rochester Recreation Center	• MacQuillan Fields • Zumbro Park South • Fairgrounds / Graham Arena • Trailhead / Douglas Trail • Bear Creek Park • East Park • West River Park	Park and recreation employees / patrons

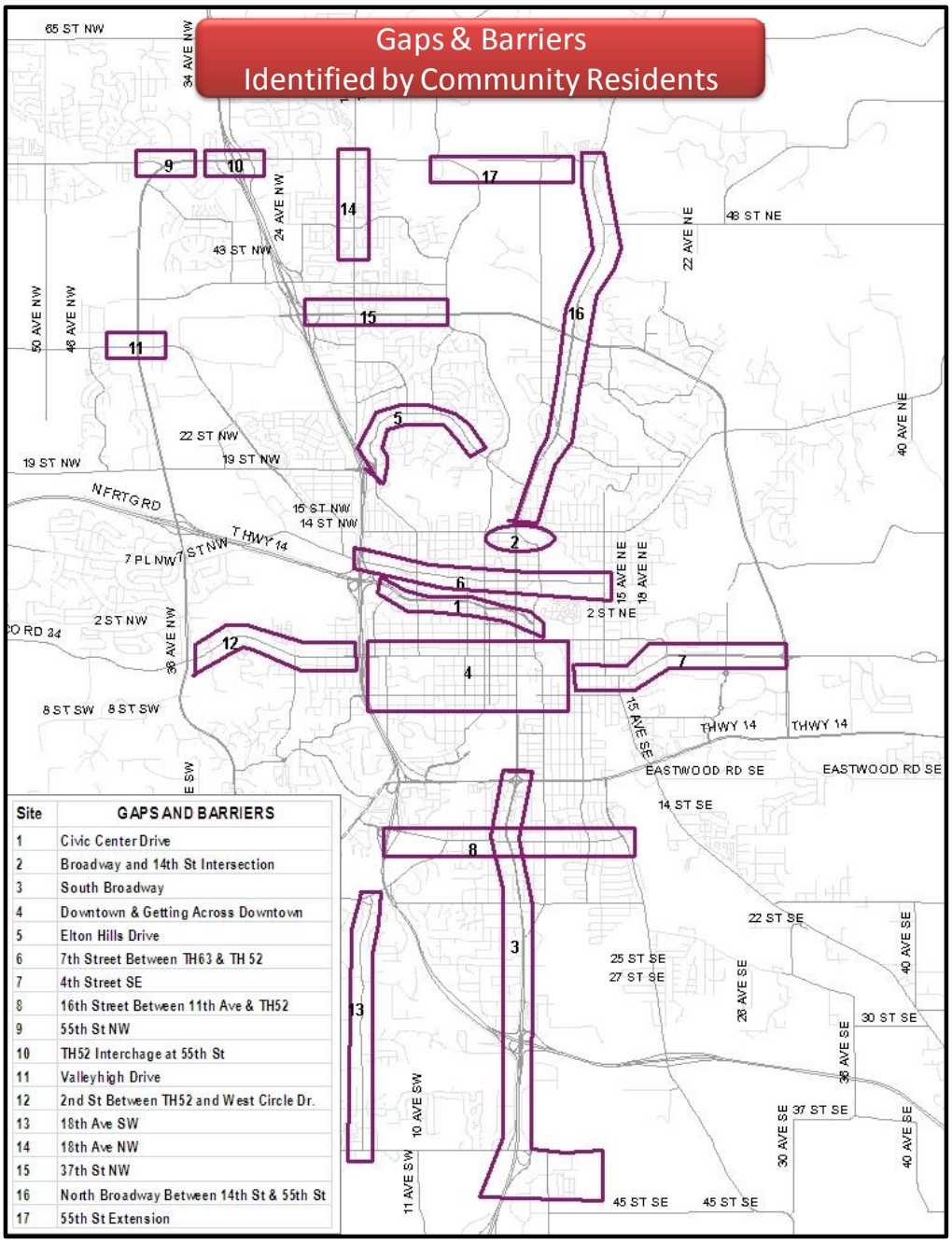
FIGURE 5-1


Key Bicycle Trip Generators
55 ST NW
55 ST NW
55 ST NW
55 ST NW
55 ST NE
48 ST NE
48 ST NE
37 ST NW
19 ST NW
19 ST NW
THWY 14
THWY 14
11 AVE NW
CO RD 34
60 AVE NW
50 AVE NW
40 AVE NE
12 ST SW
SALEM RD SW
3 AVE SE
40 AVE SE
30 ST SE
36 AVE SE
37 ST SE
37 ST SE
40 ST SW
11 AVE SW
45 ST SE
45 ST SE
55 ST SE
THWY 14
THWY 14
Legend
Large Employers
Major Retail Centers
Higher Education
Parks and Recreation
Downtown
Health Care Facilities
High School
Middle School

Community Identification of Gaps and Barriers

In addition to considering macro level needs in terms of connectivity of major attractions and destinations, attendees at public meetings and focus groups were asked to identify corridors critical to development of the bikeway network where the lack of improvements resulted in gaps or hazards that would discourage bicycle travel. Figure 5–2 highlights the locations identified by the public.

FIGURE 5-2: Gaps and Barriers in Bikeway Network



Bikeway Network Classification Map

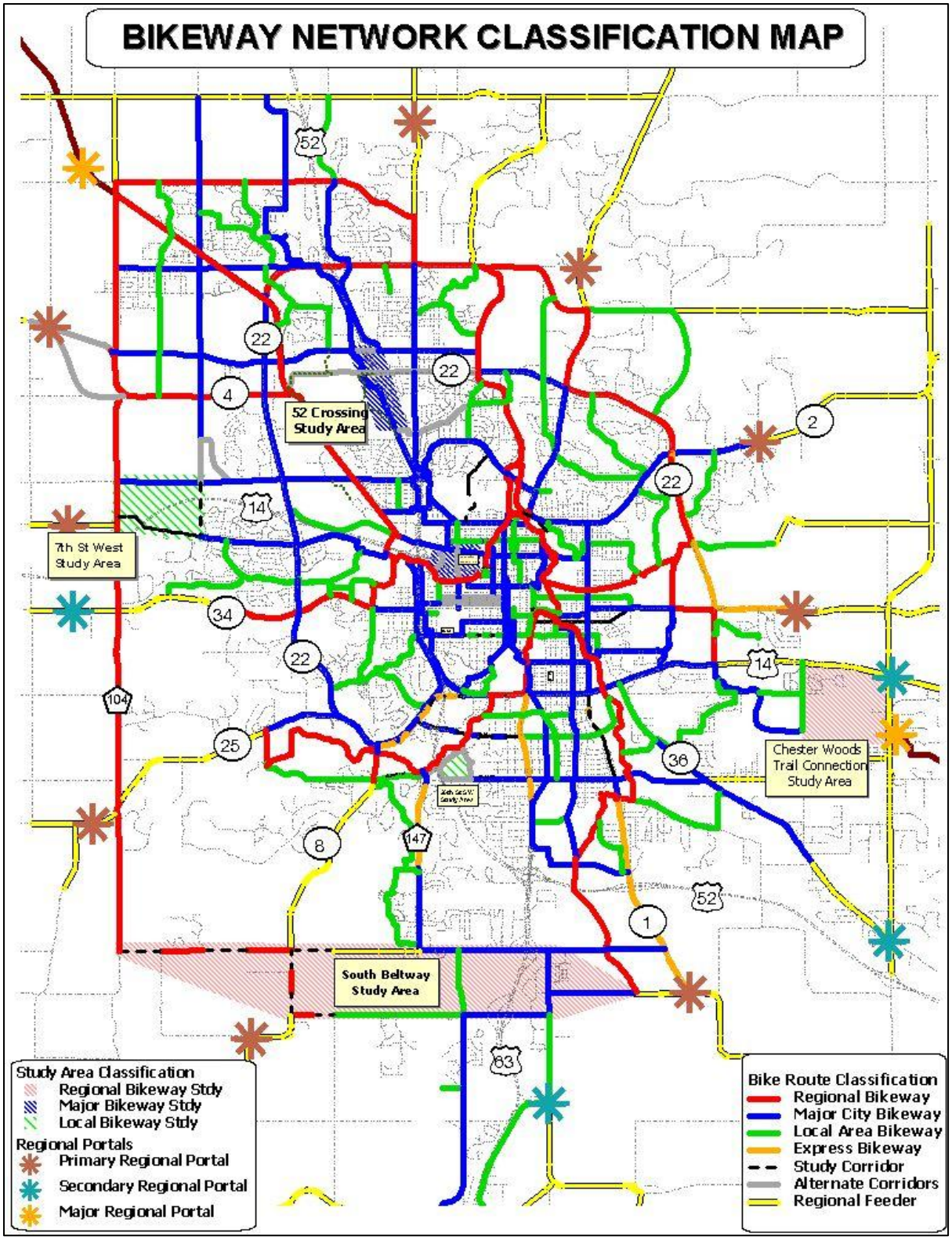
Figures 5-3 and 5-4 on pages 5-13 and 5-14 illustrate the Bikeway Network Classification Map which was developed based on consideration of the factors described in the previous section. This map identifies those travel corridors deemed important to bicycle travel where enhanced infrastructure should be provided. The map highlights the following four types of corridors:

1. Regional Bikeway: Corridors important to serve through travel across the Rochester area as well as access to the major destinations within the Rochester area including the CBD and major regional parks, including corridors which serve as the major conduits of intra -city travel for all types of bicycle users
2. Major City Bikeway: Corridors that serve important cross-city travel movements, providing for continuous travel across multiple neighborhoods or non-residential districts, or which provide a direct connection of the local bikeway network to a regional trail or route serving regional assets outside the urban area. The Primary Route Network should be intuitively understandable for users seeking to travel to key destinations in the community due to directness of travel and limited route interruption.
3. Local Area Bikeway: Corridors that work in concert with Major City Bikeways to establish a finer-grained network of facilities, which are most useful as a means for travel between adjacent neighborhoods or districts or to reach Major City Bikeway routes a short distance away. In many cases, Local Area Bikeways will travel through residential neighborhoods and extend the reach of the Bikeway Network to ensure maximum system usability and access.
4. Express Routes: Corridors that parallel nearby regional or major city bikeway corridors providing a more direct on-street alternate route for Type A or higher-skilled Type B bicyclists through an identified travel corridor area.
5. Study Corridors / Study Areas / Alternate Corridors: Study Corridors identify corridors that could serve important bicycle travel desires but where the challenge of providing improvements for bicycle travel is great and will require further detailed evaluation before a determination can be made to include these corridors as part of the Bikeway Network. Study Areas and Alternate Corridors highlight areas where multiple route options for serving a travel function exist but further evaluation is needed before a final route designation is selected. All Study Corridors, Study Areas and Alternate Corridor options are described in the last section of this chapter beginning on page 5-42.

The Network Classification map also illustrates key portals for regional bicycle travel into the Rochester area, reflecting the Regional Bike Network Plan[3] adopted as part of the ROCOG 2040 Long Range Transportation Plan. These are highlighted on the map as “Regional Feeder” routes, and reflect primarily state and county state aid highways with wide paved shoulders that provide safe bicycling service.

[3] The ROCOG Regional Bikeway Map can be accessed at http://www.co.olmsted.mn.us/planning/rocog/lrtp/Pages/lrtpmaps.aspx

Figure 5-3: Rochester area Bikeway Network Classification Map



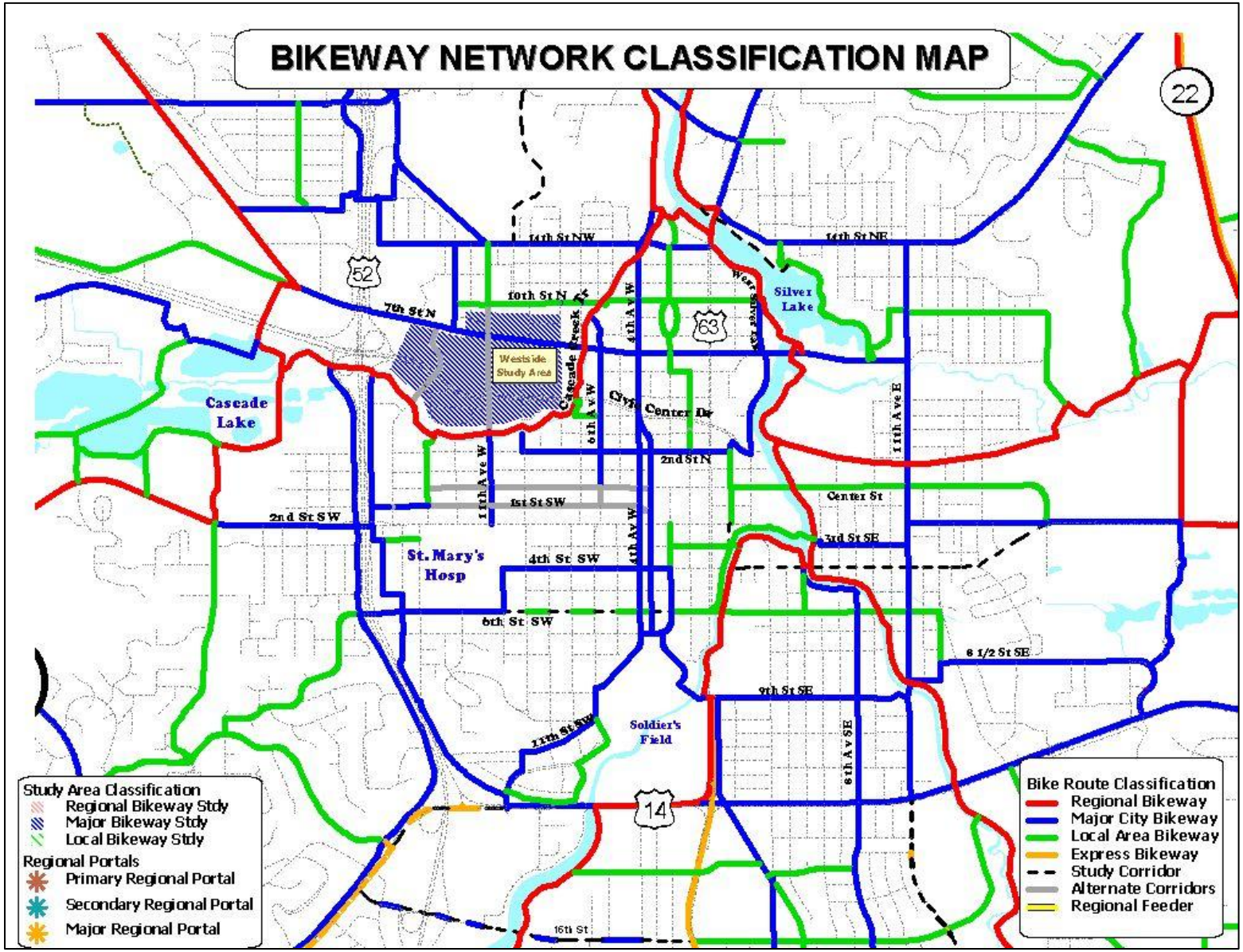


Figure 5-4: Central Rochester Bikeway Network Classification Map

Bikeway Network Design Assessment

The Bikeway Network Classification Maps identify the key travel corridors deemed important to providing bikeway connectivity and accessibility throughout the Rochester area. In this section corridors designated are further evaluated to identify potential improvements that could be accommodated to provide a basis for future programming of funds and project development.

This planning level design assessment seeks to identify options that can provide an acceptable level of cyclist comfort and safety and yet are feasible from a planning standpoint. Suggested facilities should be considered **Preliminary Improvement Recommendations,** with further engineering assessment of the design conducted and refinement conducted when funding for a project is identified. The facility recommendations in this plan should be seen as a starting point; in cases where higher grade facilities are feasible at little or no extra cost they should be considered for implementation; conversely, where the recommended facility ultimately proves infeasible, lower level facilities should be considered as a matter of course as well.

In determining the **Preliminary Facility Recommendations** a number of factors were reviewed. These included:

- A review of state and federal guidelines for recommended bicycle facilities given the traffic and speed characteristics of a street;
- For arterial and collector streets, an assessment of the suitability for bike travel in the corridor without improvements;
- The physical features of the corridor, including roadway width, boulevard width, number of lanes and use of lanes; and
- The minimum design characteristics of various types of bicycle improvement options.

These considerations are reviewed briefly on the following pages, and the chapter closes with a summary of proposed improvement recommendations for the various bikeway network corridors. Recommendations are presented using City Council Ward areas as geographic boundaries to group the recommendations into manageable packages.

State and Federal Facility Guidelines

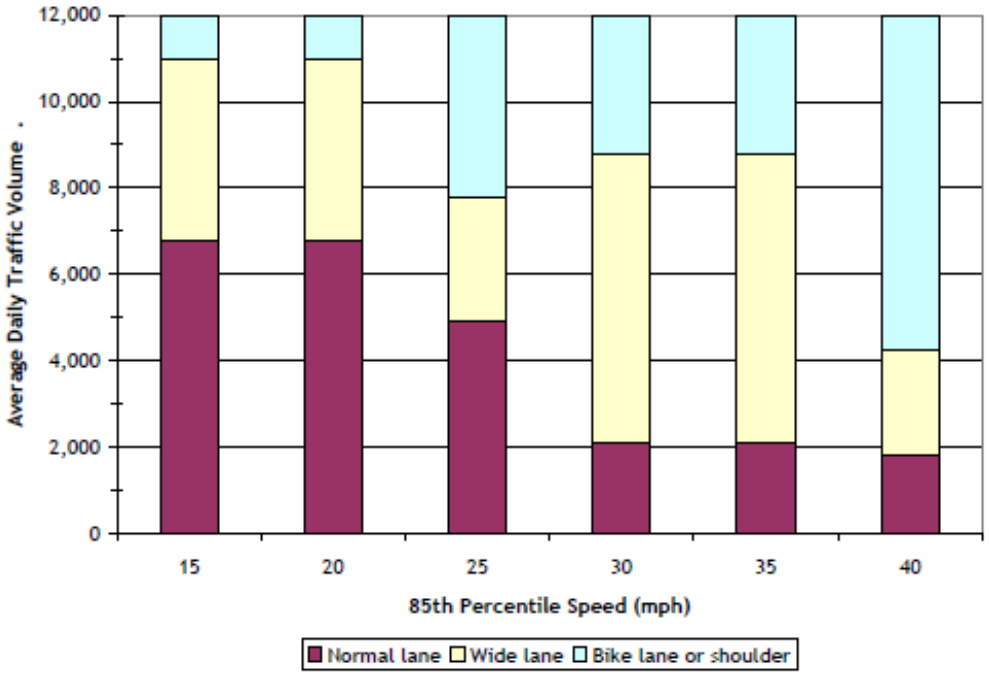
Different transportation organizations and agencies have developed guidelines to serve as a starting point for determining the type of on-street bicycle facilities that should be provided on roadways. The Federal Highway Administration and the Minnesota Department of Transportation, among others, have developed recommendations for minimum facility improvements that should be provided under different traffic and roadway design conditions. However, there is still considerable debate over the appropriate choice of bicycle facility type in any given circumstance. Questions such as when is a striped bike lane the appropriate design rather than a

simple shared lane or a multiuse path, or at what traffic speed or volume does a shared lane cease to provide an adequate level of comfort, are the subject of ongoing research.

A study conducted by Michael King [4] for the FHWA's Pedestrian – Bicycle Information Center found many differences, particularly between guidelines in the United States versus those in Europe. The review did not find universal agreement among the U.S. guidelines, but the study findings do point to some general ranges which can be used to guide facility selection decisions. The results of the King study are illustrated in Figure 5-5. This study concluded that engineering judgment and planning experience will continue to be vital elements in selecting appropriate bicycle facility types.

Guidelines developed by the Minnesota Department of Transportation are illustrated in Figure 5-6 on the following page. These represent a composite of the recommendations found in the 2007 Mn/DOT Bikeway Design Manual and the 2008 Mn/DOT Bicycle Modal Plan. Cells highlighted in red indicate the preferred design solution for various combinations of traffic (AADT) and speed (MPH) as found in the Bikeway Design Manual, while the cells shaded in dark or light gray indicate design strategies suggested as reasonable alternatives in the Bicycle Modal Plan if the preferred option is not feasible. This chart was used as the starting point in the analysis conducted for this plan to identify preferred improvement options on the various Bikeway Network corridors.

Figure 5-5 FHWA Study of Typical Bikeway Improvements



[4] King, M., Bicycle Facility Selection: A Comparison of Approaches, PBIC, University of North Carolina, Chapel Hill, NC, August 2002, available online at http://www.bicyclinginfo.org/de/bike_selection.htm, accessed May 5, 2004.

Figure 5-6: MN/DOT Bikeway Improvement Guidelines

Mn/DOT Recommended Bikeway Guidelines

2 Lane AADT	*< 500 AADT*				*500-1000 ADT*				*1000-5000 ADT*				*5,000-10,000 ADT*				*> 10,000 ADT*		
4 lane AADT	*N.A.*				*N.A.*				*2,000-10,000 ADT*				*10,000-20,000 ADT*				*> 20,000 ADT*		
Speed (MPH)	*25*	*30*	*35-40*	*> 40*	*25*	*30*	*35-40*	*> 40*	*25*	*30*	*35-40*	*> 40*	*25*	*30*	*35-40*	*> 40*	*30*	*35-40*	*> 40*
Shared Roads																			
Share the Road Signs																			
Signed Bicycle Route																			
Signed Route / Pavement Marked																			
Wide Pavement																			
Wide Outside Lanes																			
Signed Shoulder / < 10% Truck	≥4'	≥4'	≥4'	≥4'	≥4'	≥4'	≥4'	≥4'	≥4'	≥4'	≥4'	≥8'	≥4'	≥4'	≥4'	≥8'	≥4'	≥8'	≥8'
Signed Shoulder / > 10% Truck	≥5'	≥5'	≥5'	≥5'	≥5'	≥5'	≥5'	≥5'	≥5'	≥5'	≥5'	≥8'	≥5'	≥5'	≥5'	≥8'	≥5'	≥8'	≥8'
Bike Lanes																			
Standard Bike Lane																			
Constrained Bike Lane											T	T			T				
Diagonally Striped Lane													T	T					
Colored Bicycle Lane																			
Protected Facilities																			
Cycle Tracks																			
Shared Use Path																			
Alternate Bike Route																			

Recommended Design

Recommended Option

Secondary Option

T **Recommended only where Truck Traffic is < 10% of ADT**

Bike Suitability

Since many of the corridors designated as part of the Bikeway Network utilize existing higher volume arterial or non-residential collector streets, another factor that was considered in selecting a preliminary design for bikeway corridors was the suitability of these major corridors for bicycling under existing traffic conditions without space for bicyclists such as bike lanes or path facilities. A simplified Bike Suitability analysis[5,6] was conducted that considered the five following data points:

- Pavement width
- Number of lanes
- Posted speed limit
- Number of hindrances (street intersections and non-residential driveways)
- Peak Hour Traffic Volume

To complete this evaluation data was gathered for major streets for the five factors listed above. The rating system assigned scores from 1 (best) to 5 (worst) for each of the five factors, with a composite score developed for each corridor based on the results. Based on the composite score, corridors are assigned a rating of 1 to 5 as shown in Table 5-5. Corridor scores are illustrated in Figure 5-7 on the next page.

TABLE 5-6: Bike Suitability Score Indicator

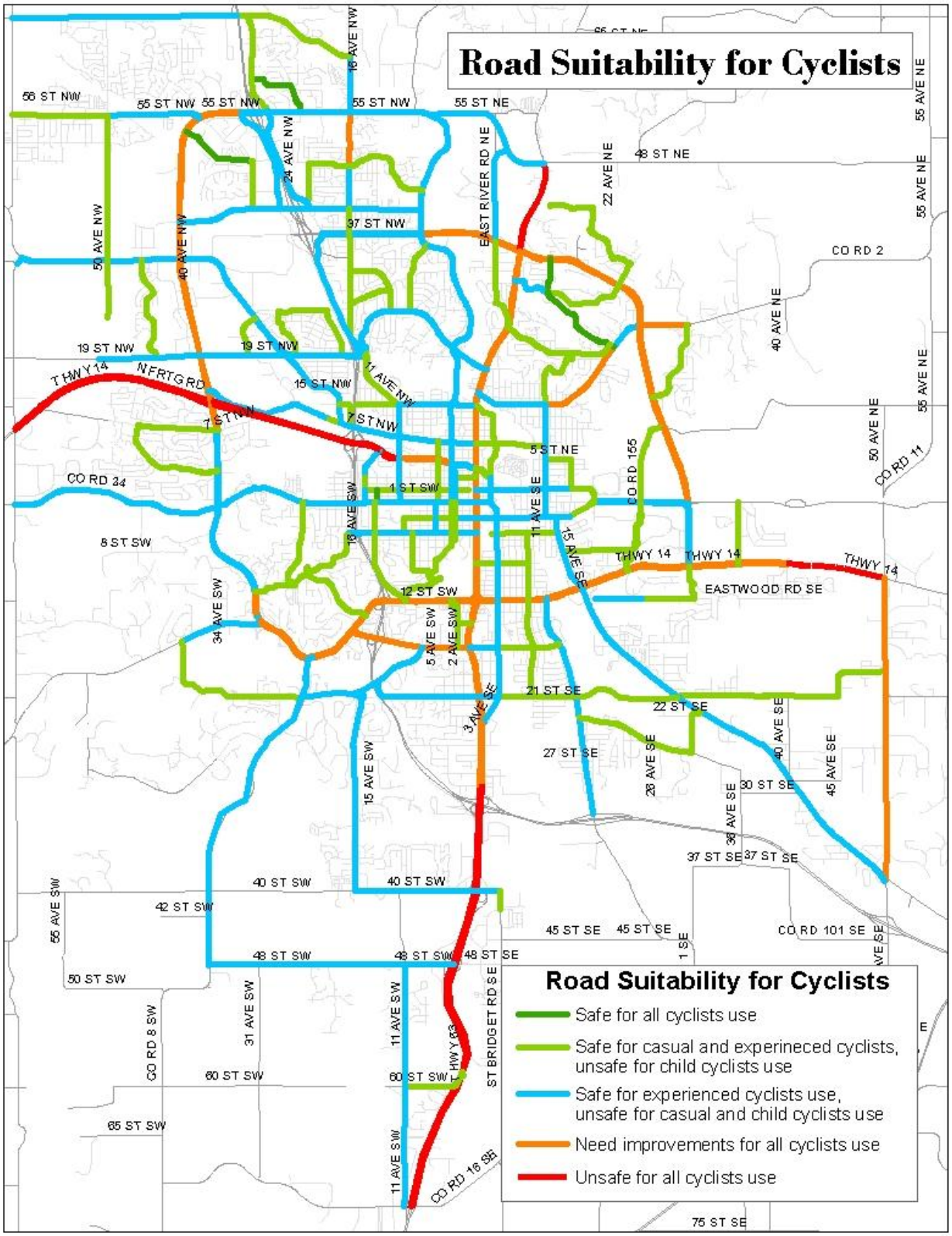
Road Suitability Score	Road Suitability for Cycling
1	Road is reasonably safe for all types of cyclists.
2	Road accommodates casual and experienced cyclists, but would need improvement to accommodate child cyclist.
3	Road accommodates experienced cyclists, but would need improvement to accommodate casual and child cyclists.
4	Needs improvements to accommodate experienced cyclists, not recommended for casual and child cyclists.
5	May be unsuitable for all cycling.

Street Corridors with low scores (being most appropriate for most cyclists) may benefit from a simple low cost strategy such as signing as a bike route or inclusion of bike route pavement markings, which could permit quicker implementation of certain elements of the plan, while reserving greater investment for projects on those corridors with high scores (*indicating the least suitability for bicyclists under existing conditions*).

[5] See David L. Harkey, Donald W. Reinfurt, J. Richard Stewart, Matthew Knuiman and Alex Sorton, *The Bicycle Compatibility Index: A Level of Service Concept*, Federal Highway Administration, FHWA-RD-98-072 (www.hsrc.unc.edu/oldhsrc/research/pedbike/bci/bcitech.pdf), 1998

[6] See Pedestrian and Bicycle Planning, A Guide to Best Practices, Victoria Transportation Policy Institute, 2002, p 74

Figure 5-7: Bikeway Corridor Suitability Score Results



Types of Bikeway Facilities

This section provides an overview of the types of on-street and off-street facilities considered in developing the **Preliminary Facility Improvement** recommendations. Table 5-6 highlights common facility types in use or under study in other cities to provide space for bicycle travel. Basic information about each is provided, including typical costs and roadway types where each is most appropriate to use, with further discussion of each on the pages that follow. Given that signage or pavement markings are key elements of many of these facility types, the table identifies which have been determined to be consistent with the Manual of Uniform Traffic Control Devices (MUTCD), which controls the installation of signs and pavement markings.

More detailed information regarding specific designs can be found in publications issued by organizations such as AASHTO[7] and NACTO[8], as well as in Mn/DOT Bicycle Publications[9] and various detailed bicycle design handbooks and plans prepared by municipal transportation agencies[10]

Table 5-7: Bikeway Facility Types

Bikeway Facility Types			Roadway Types				
Category	Type	FHWA / MUTCD	Local Streets	Low Vol Collector	High Vol collector	Arterial	Typical Cost
Shared Street Lanes							
	Signed Bike Route	Permitted	X	X			$5000-$7500/mi
	Sharrow[11] Route	Permitted	X	X			$10-$15,000/mi
	Advisory Bike Lane	Experimental	X	X			$25,000/mi
	Bicycle Boulevard (*base level)*		X	X			$30-$40,000/mi
On-Road Bicycle Space							
	Wide Outside Lane	Permitted		X	X	X	Typically not a separate project
	Signed Paved Shoulders	Permitted			X	X	$380K/mi to build
Separated On-Road Bike Facilities							
	Bicycle Lanes						
	Standard Bike Lane	Permitted			X	X	$48,000/mi
	Constrained Bike Lane	Permitted	X	X			$48,000/mi
	Left Side Bicycle Lane	Permitted		X	X		$26,5000/mi
	Colored Bike Lane	Permitted			X	X	$315,000/mi
	Climbing Lane	Permitted		X	X		$26,500 / mi

[7] **Guide for the Development of Bicycle Facilities, 2009,** American Association of State Highway Transportation Officials

[8] **NACTO Urban Bikeway Design Guide, 2011**, National Association of City Transportation Officials

[9] **Mn/DOT Bicycle Design Manual, 2007** and the **Mn/DOT Bicycle Modal Plan, 2005**

[10] Recommended Plans to reference include the Minneapolis Bicycle Master Plan and Bicycle Design Manual; the Milwaukee Bicycle Master Plan, the Chicago Bike Lane Design Manual, the Des Moines Bicycle Master Plan, and the Portland (OR) Bikeway Facility Design - Survey of Best Practices.

[11] "Sharrow" is a term for "shared lane pavement markings" featuring stencils composed of a bicycle symbol and chevron markings installed on the pavement to indicate that motorists and cyclists are to share a travel lane.

Bikeway Facility Types		Roadway Types					
Category	Type	FHWA / MUTCD	Local Streets	Low Vol Collector	High Vol collector	Arterial	Typical Cost
Protected Facilities							
	Cycle Tracks	*Not Regulated*			*X*	*X*	*On-street: $125,000/mi Boulevard $450,000 mi*
	Raised Bike Lane	*Not Regulated*					$250,000/mi
Car Free Facility							
	Shared Use Trail	Permitted					$400,000/mi
	Shared Use Path	Permitted			X	X	$265,000/mi
	Car Free Zones	*Not Regulated*					Varies
Special Bikeway Facilities							
	Sidewalk Connector	Not Regulated					$105,000/mi
	Alternate Bike Route	Not Regulated			X	X	Varies

Shared Street Space

Signed Bike Route (SBR)

Low speed streets with volumes less than 500 vehicles per day which have been identified as part of the bikeway network may be appropriate for treatment as a signed bike route. A SBR should be marked with bike route identification signs along with adequate wayfinding signs to assist bicyclists with navigation along the route. The designation of a corridor as a SBR will assist cyclists in identifying a travel corridor they may not otherwise identify as a connected route through an area, or a SBR may be used to bridge a gap between two higher level bikeway facilities. Where a higher volume street is to be improved as a SBR, traffic calming should be considered.

Sharrow Route

Treatment of a bikeway network route with shared lane pavement markings (“Sharrows”) will typically be found on lower speed roads (≤ 35 mph) with volumes higher than appropriate for a signed bike route, though typically not exceeding 4000-5000 ADT. Since these routes will have higher vehicle traffic, the combined

effect of the sharrows and signage is intended to create a higher level of awareness that the street is a shared lane environment where bicycles can be expected, reinforcing the legitimacy of bicycle traffic on a street.

Another benefit of pavement markings is to provide guidance to bicyclists and motorists as to proper bicyclist positioning. Sharrows are located outside the door zone of cars if parking is allowed on the street. In some cities the markings will be placed within a colored green shield to draw added attention. The *sharrow* marking also assists with wayfinding and can be used in conjunction with signs to help delineate specific bicycle routes.

Advisory or Priority Shared Bike Lane

Advisory Bike Lanes (ABL) may be an option for local streets where the automobile zone is not wide enough for two cars to pass in both directions, creating a queuing situation. ABL are marked with a solid white line to the right and a dotted line to the left. Vehicles are allowed to enter the bike lane when passing one another. Advisory Bike Lanes should be considered on lower volume, narrow local streets where parking cannot be removed.

To safely meet oncoming vehicles, motorists may need to merge into the bike lane - but, first yield to bicyclists in the bike lane.

Bicycle Boulevard

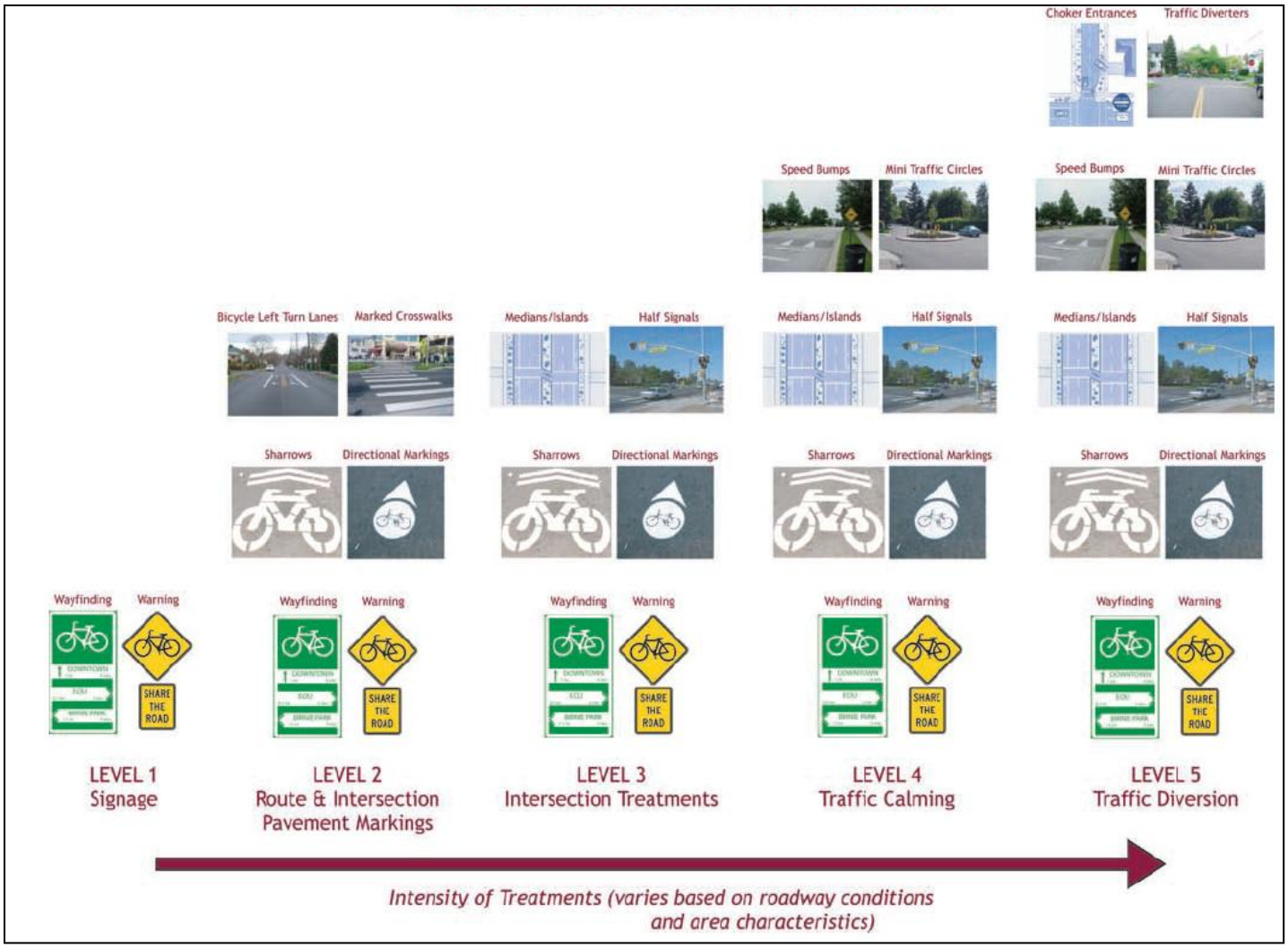
Bicycle boulevards are shared streets typically established on quiet residential streets that are designed to give priority to bicycle use and discourage non-local vehicle traffic. Typical applications can include neighborhood streets that parallel an arterial or collector corridor for some distance where the major street cannot be adequately improved for bicycle use, or where the most direct network route to a major destination traverses through a residential area. Ideally the bicycle boulevard should not carry more than 1,000 vehicles per day to be compatible with bicycling. The use of traffic diverters or other traffic management devices to discourage through vehicular traffic is appropriate.

Above: Berkeley, CA Bicycle Boulevard Signage

Option: Traffic Calming Devices such as speed humps or diverters can deter motorists from using a route.

Best practices that were identified in regards to Bicycle Boulevards is exemplified in recent Bicycle Master Plans adopted by Milwaukee, Des Moines and Los Angeles, where the approach has been to treat the development of bicycle boulevards on a continuum of design options depending on the prevailing traffic characteristics of the targeted corridor. In these plans five levels of boulevard treatment are identified, ranging from simple signage (level 1) to intensive traffic calming for traffic diversion (level 5). Figure 5-8, from the Milwaukee Bicycle Master Plan, highlights the concept. Note that corridors targeted for higher level treatment would also receive relevant lower level treatments.

FIGURE 5-8 BICYCLE BOULEVARD APPLICATIONS[12]



[12] Figure 5-7 is reproduced from *Milwaukee by Bike*, the City of Milwaukee 2010 Bicycle Master Plan

Bicycle Awareness Signage

In shared road corridors, bicycle awareness signage should be considered on routes where frequent bicycle use is anticipated. The typical base level of signage utilized in Minnesota for these situations is "Share the Road" signage, which is intended to warn drivers to watch for bicyclists traveling along a street or roadway.

In corridors where autos and bicycles share the actual use of travel lane due to the narrowness of a road, such as on a signed Bike Route or marked Sharrow route, it may be prudent to consider alternative signage to increase awareness that bicyclists may use the full travel lane and to alert motorists to the proper response. In this situation signage alerting motorists to bicyclist's right to use the lane and to execute passing maneuvers by changing lanes may be advisable. The MUTCD makes provision for "Bicycles may use Full Lane" signs under appropriate conditions. Care should be taken, however, to limit the installation of this type of signage in order to maximize its effectiveness and prevent confusion.

San Carlos, CA innovative sign

On-Road Bicycle Space

Wide Outside Lane

A wide outside lane allows for motor vehicles to safely pass a bicyclist and can be next to the curb or adjacent to parking. A wide lane usually allows an average size motor vehicle to pass a bicyclist without crossing over into the adjacent lane. They are distinguished from bike lanes by the absence of signs or pavement markings which specifically designate them for bicycle use.


(Source: Pedestrian and Bicycling Information Clearinghouse)

Fourteen feet (14') is the minimum width preferred for wide outside travel lanes. A fourteen foot width is appropriate where vehicle speeds are 35 mph or less and traffic volumes are less than 10,000 ADT. Fifteen to sixteen feet (15'-16') should be considered where vehicle speeds are 40 mph or greater, if heavy truck or bus traffic is present, or on roadways with greater than 10,000 ADT. Bicycle lanes should be considered on roadways if lanes are wider than 15-16 feet.

Wide outside lanes greater than 16 feet are not recommended, because drivers may try to form two travel lanes, where striping a bike lane may provide better channelization of vehicles and bicycles.

Striped Shoulder

A striped shoulder can be a useful way to accommodate bicyclists where there is insufficient space for a bicycle lane. In urban areas, they may have application primarily in areas where a rural cross section design is utilized. In urban areas on standard curb and gutter streets the same effect may be achieved by through use of an edgeline where parking space cannot be lost but parking demand is sparse. In select cases, a striped shoulder may be preferred to a bicycle lane because bicycle use is expected to be low or intermittent and there is a need for a multi-functional, rather than preferential space, on the side of the street.

Shoulder bikeway

A striped shoulder of 4-6 feet in urban areas provides a usable space for a cyclist, while on higher speed roadways or where the percentage of trucks or buses is high 8 or 10 feet is desirable. As compared to a wide outside lane, striping a ten or eleven foot travel lane and a shoulder will be better for keeping vehicle speeds in check and offers a better accommodation for the cyclist.

Separated In-Roadway Facilities

Bike Lane

Bike lanes designate an exclusive space for bicyclists through the use of pavement markings and signage. The bike lane is located adjacent to a motor vehicle travel lanes and flows in the same direction as motor vehicle traffic. Conventional bike lanes are typically on the right side of the street, between the adjacent travel lane and curb, road edge, or parking lane.

A number of variations on the traditional bike lane have been implemented in various communities and are recognized in this plan for consideration. These include buffered bike lanes, left side bike lanes on one way streets or a colored bike lane. Contra-flow lanes are another option but are not recommended for use in this plan.

Left Side Bike Lane

Left side bike lanes are placed on the left side of one-way streets or two-way median divided streets. Left-side bike lanes can offer advantages along streets with heavy delivery or transit use in the right lane, heavy volumes of right turning traffic, frequent parking turnover on the right side, or other potential conflicts that could be associated with right-side bicycle lanes. One

advantage of left side bike lanes is that cyclists are seen in the motorist's driver's side mirror, which has a smaller blind spot than the passenger side mirror, though there are disadvantages as well associated with unfamiliarity on the part of bicyclists (leading to wrong way riding), car passengers not used to looking for bicyclists to their right, and the need for both motorists and bicyclists to monitor conditions in an opposite manner from what is typical for right side lanes.

Bike Lanes on Constrained Roadways

Creating a bicycle lane on a constrained-width roadway with or without parking can be accomplished by narrowing parking and travel lanes, and re-designating a portion of the roadway for bicycle use by striping, signing, and using pavement markings. This application will have use where development of bike lane is preferred for network development reasons. The AASHTO "Policy on Geometric Design of Highways and Streets" makes accommodation of parking lanes as narrow as 7 to 8 feet in width and travel lanes as narrow as 10 feet on low speed facilities.

Figure 5-9, taken from the City of Chicago Bike Lane

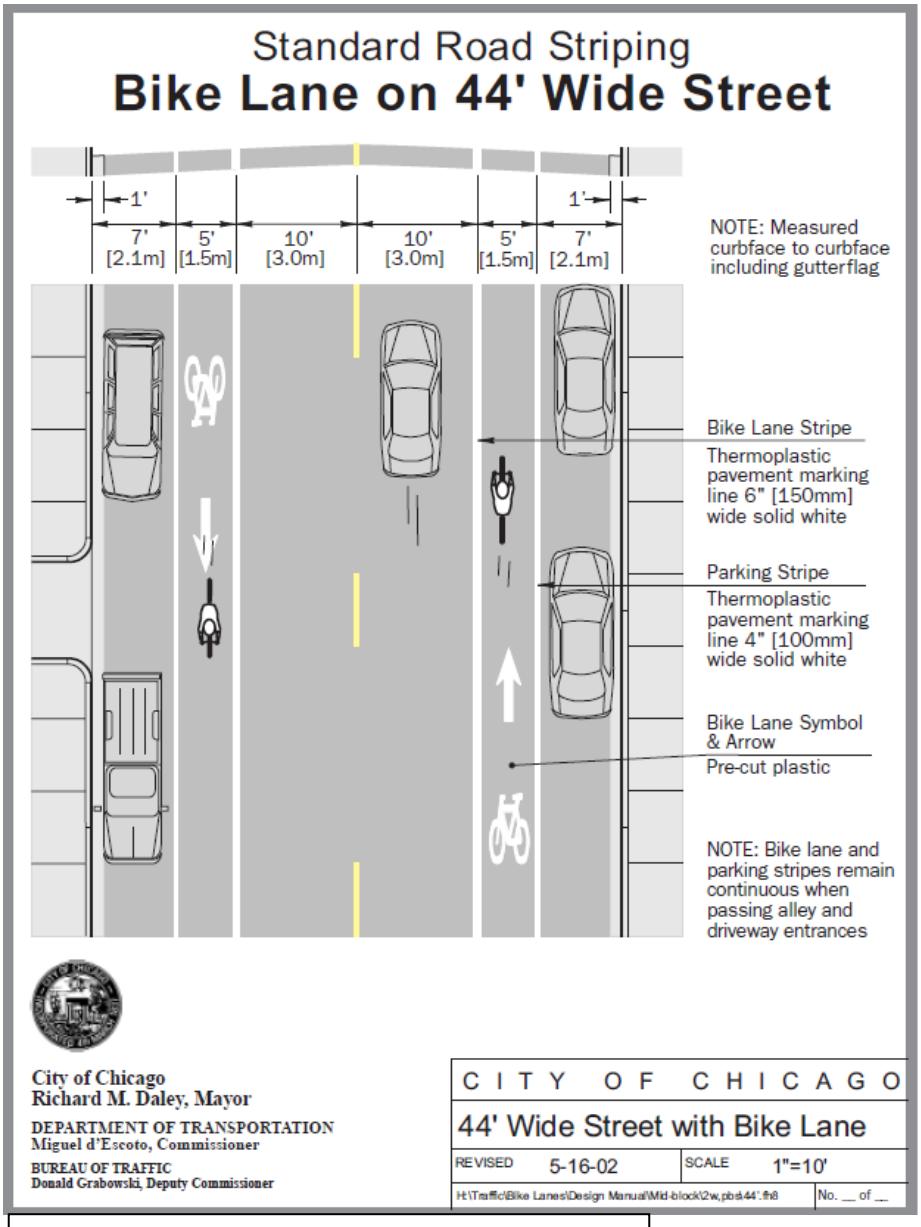
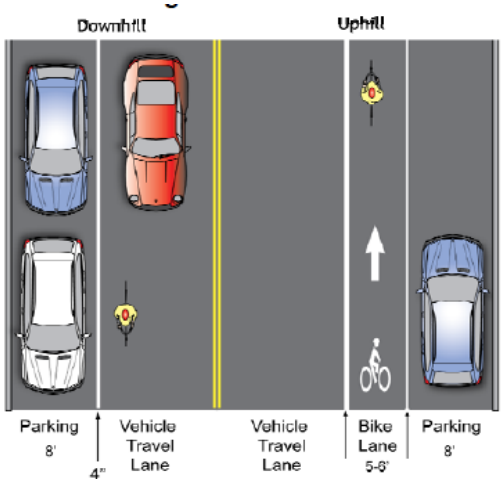


Figure 5-9: Constrained Roadway Bike Lane

Design Guide, illustrates the minimum roadway dimensions on which a full width bike lane can be accommodated. This design mirrors the recommended design for constrained roadways found in the 2007 Minnesota Bikeway Design Manual.

Climbing Lane



Climbing Lanes are bicycle lanes placed in the uphill direction on a roadway with steep or sustained grades. Bicyclists traveling uphill move at significantly slower speeds and tend sway more, and therefore benefit from the presence of a bike lane. Typically climbing lanes will be paired with sharrows in the downhill direction. Bicycle climbing lanes should be considered when roadway slopes exceed 5%. It is also common to divert a bike route away from a steep hill to a more moderately sloped route within a reasonable distance.

Cycle Track

Cycle tracks provide an exclusive bikeway separated from motor vehicle and pedestrian traffic by a median, buffer strip and/or a parking lane. The cycle track may be designed at street level, sidewalk level or a height in-between the two to accentuate the separation. Cycle tracks are typically installed on streets with higher traffic volumes and/or speeds with long blocks and few intersections. They can be either one-directional or two-directional, and can be provided on one or both sides of the street. By separating cyclists from motor traffic, cycle tracks can offer a higher level of security than

bike lanes and are attractive to a wider spectrum of the public Intersection design for cycle tracks is complex and requires careful attention to conflicts with turning vehicles. A cycle track that ramps down to the roadway in advance of the intersection will make bicyclists more visible and reduce conflicts with right turning motorists. The minimum width of a cycle track is 7 feet. When adjacent to on-street parking, a minimum 3 foot buffer should be provided between parking and the cycle track. Snow clearance will need to be carefully considered with this option.

Car Free Facilities

Shared-Use Pathway (Bike Paths and Trails)

Shared-use pathways provide are facilities designed to be utilized by a range of non-motorized users in an environment that is separated from vehicle traffic. For bicycle transportation purposes, shared-use paths should be a minimum of ten-feet wide and paved. For short distances, their width may be reduced to eight feet if there are physical or right-of-way constraints. These types of paths can be constructed within a roadway corridor, in their own corridor (such as a greenway trail or rail-trail), or be a combination of both. On high speed boulevards, the development of shared-use paths should be considered in addition to on-street accommodations such as bike lanes or paved shoulders in order to expand accessibility in the corridor by providing a higher grade facility for less-experienced cyclists who are not comfortable riding on the street in a high traffic travel corridor.

Special Bikeway Corridors

Connector Paths

Connector paths are short connections of sidewalk or path necessary for improving the safety and convenience of the bikeway network. They are developed typically for one or more of the following reasons:

a) they provide continuity for a bicycle route;
b) they provide links to/from isolated neighborhoods;
c) they connect the bikeway network to key destinations such as a neighborhood park, or
d) they allow passage over, under or around major barriers.

Generally, connector paths will provide 100 to 300 feet of linear travel way shared by bicycle and pedestrian traffic. Under normal circumstances connectors require 20 to 30 feet of right-of-way or dedicated open space between properties. Connectors should always be built concurrent with roadway and sewer construction phases of development. Delaying construction can raise concerns with adjacent property owners who may prefer to not have a trail constructed or used near their dwellings.

Sidewalks

Sidewalks are widely considered inappropriate for use as part of a designated bicycle transportation network. Although bicycles are allowed to ride on sidewalks (except in business districts and other areas posted for no cycling), using sidewalks for bicycle travel is not recommended, even where sidewalks are wider, for the following reasons:

- Motorists do not expect to see bicyclists traveling on sidewalks and may pull out of intersections or driveways and collide with a bicycle unexpectedly.
- The potential for conflicts between bicyclists and pedestrians greatly increases with shared use.
- Pedestrian movements are often unpredictable for an approaching bicyclist from behind, and pedestrians cannot always predict the direction an oncoming bicyclist will take.
- Sidewalks are usually two-way facilities and bicyclists are encouraged to travel one way, with the flow of traffic.
- Sight distances are more limited at driveway crossings.
- There may be limited sight distance and clearances due to signs, utilities, landscaping, fencing, or other obstacles beside or protruding into the sidewalk

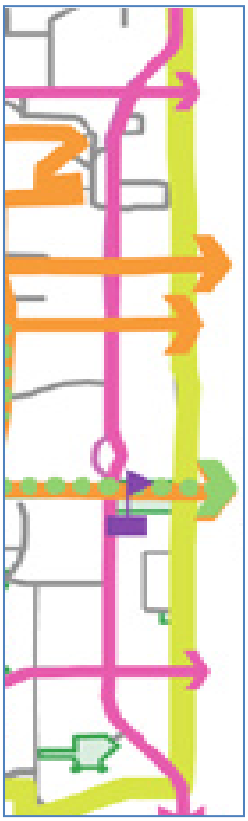
Efforts should be made to minimize the need for casual bicyclists to utilize standard sidewalk facilities, while recognizing that the youngest cohort of riders will need to be on the sidewalks (with some supervision) for a period of time until their skill level and decision making is developed enough to permit them to use local, low volume streets. For others, however, conditions should be improved to minimize their need to use sidewalks except in special circumstance, such as when a sidewalk may provide the safest short distanced connection between two facilities or into a destination. Situations where use of sidewalks may need to be considered include:

- Where right-of-way or traffic safety (high speeds, high auto or truck volumes) issues where a sidewalk may be the only option or even the preferred option for most cyclists.

- Where long steep hills are unavoidable, street widths are minimal, and cyclists (most of which will be very slow moving) will face less danger to be on the sidewalk. Due to slow

uphill speeds, bicyclists will not be a danger to the few pedestrians typically found on these sidewalks.

Alternative Bike Routes on Parallel Roadways



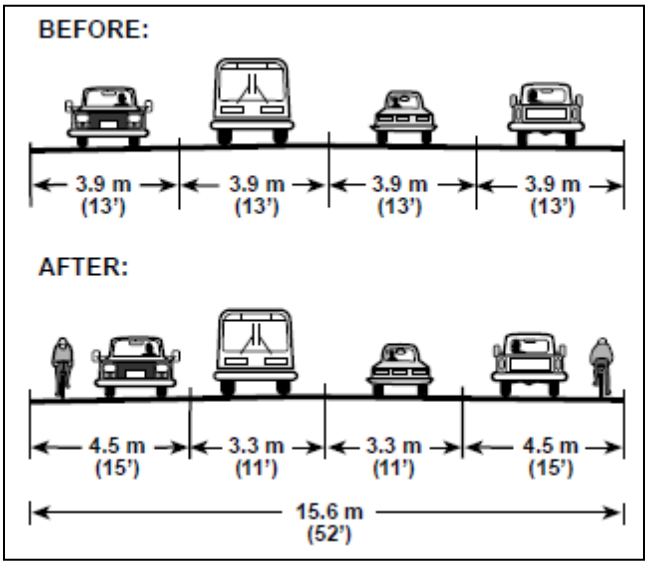
A lower volume roadway that parallels a high volume arterial can be used to provide improved safety and mobility for bicyclists with minimal indirection of travel. The success of this treatment depends on it having a high degree of convenience and being well marked so as to create a strong mental image in the minds of the bicyclists expected to use it. This treatment will not fully remove the need to improve the safety of the primary route, particularly if there are destinations such as commercial uses or public facilities along the main arterial. The parallel roadway should be within ¼ mile of the main arterial with lower volumes and low vehicular speeds.

Adapting Existing Streets for Bikeways

One of the critical issues in efforts to develop a connected bikeway system throughout an urban area is adapting existing roadways, particularly higher volume collector and arterial streets, to accommodate in-roadway facilities such as bike lanes. Although some opportunities may exist to widen existing roadways for bike lanes, most major streets will have constraints that will require retrofit measures within existing curb to curb widths. The following paragraphs describe several strategies for retrofitting existing streets with bike lanes or other in-roadway facilities.

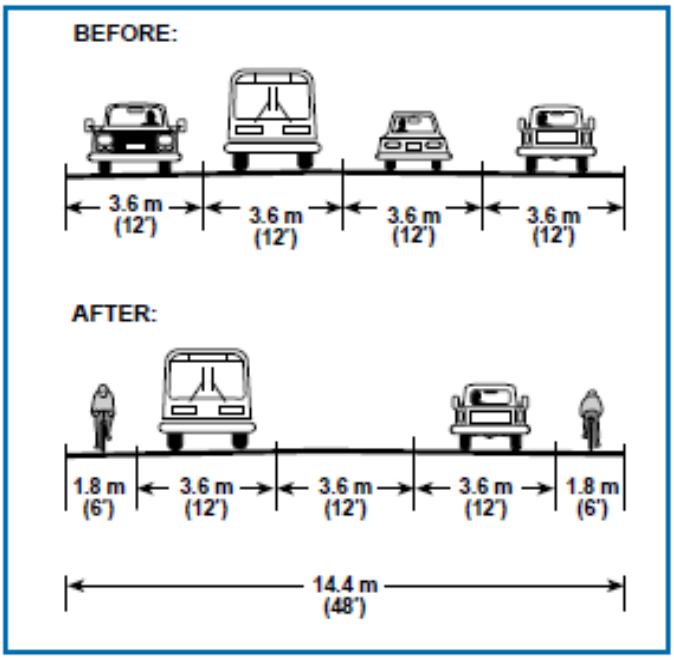
Lane Diets

Reducing travel lane widths to 10 or 11 feet, especially on streets with four or more lanes, can create room for bike lanes. Even if enough space for a regulation bike lane can't be made available, simply having a wider curb lane can significantly improve the cycling environment. Many U.S. cities (including Boulder, Portland, and Chicago) have reduced lane widths on urban arterials to 10 feet in order to add space for bicyclists



Road Diets

Bicyclist needs can in certain instances be et by reducing the number of travel lanes (often called a “road diet”) without widening a street. A typical road diet application involves existing four-lane streets that are converted to three lanes with one through lane in each direction and a two-way center left turn lane. When use appropriately, this will have negligible impact on the level of service for motorists and may actually improve motorist safety by removing left turning vehicles from the through travel lanes.

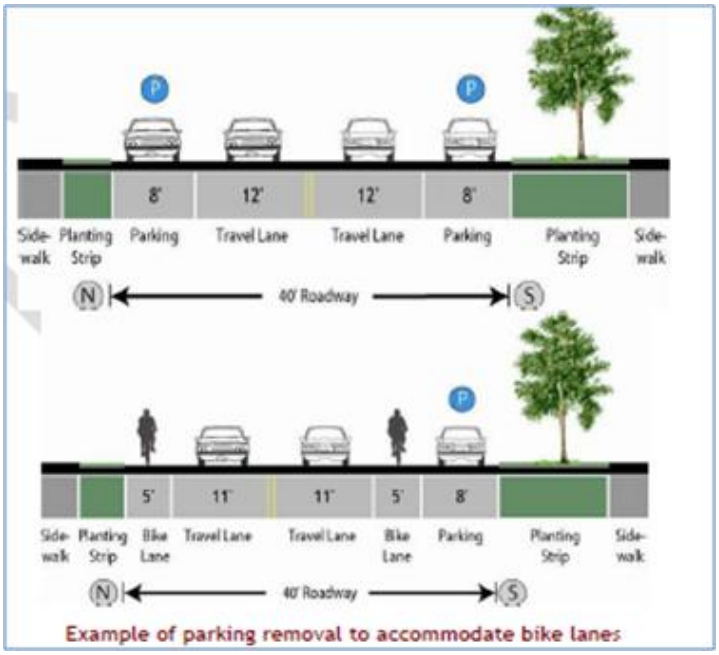


Travel lanes reduced from 4 to 2, with center turn lane

These conversions typically free up enough space for bike lanes to be added on both sides of the street and to improve conditions for pedestrians. While four to three lane conversions have been successfully used on arterial roads with up to 25,000 ADT, typically a road diet is considered where corridor volumes are 8,000-15,000 ADT.

Parking Reduction

On-street bicycle accommodations can be created in some instances through the narrowing or removal of on-street parking lanes. Parking lanes can be narrowed to 7 feet, particularly in areas with low parking turnover and low levels of truck parking. In other instances, bicycle lanes could replace an on-street parking lane where there is negligible demand for on-street parking and/or the importance of bicycle lanes outweighs parking needs.



Example of parking removal to accommodate bike lanes

Prior to removing parking, a parking study should be completed to gauge demand and

identify concerns from local residents or businesses. Options such as prohibiting employee parking on – street can have the two pronged effect of increasing the available number of spaces for customers while reducing the demand for parking spaces, making reduction in parking feasible. Eliminating or reducing on-street parking can also improve sight distance for bicyclists in bicycle lanes and for motorists on approaching side streets and driveways.

INTERSECTION IMPROVEMENTS

Intersections present a particular challenge for bicyclists and safety improvements at intersections should be considered as part of any bikeway network plan. During identification of preliminary bikeway improvements a number of complex intersections or crossings were identified as locations where improvements may be warranted, as these locations cannot be avoided or would require creation of a detour that would present a significant inconvenience that bicyclists would be unlikely to use.

Table 5-7 and the paragraphs that follow it describe a number of design solutions for various types of intersection issues, including the queuing of bicycles at signalized intersections, protections for cyclists approaching or crossing an intersection or street, navigating free flow intersections such as roundabouts or ramps, or consideration of grade separated crossings. Intersections where possible issues were identified related to intersection crossing safety are highlighted in Ward-level maps that are included discussion in the last section of this chapter.

TABLE 5-8: INTERSECTION IMPROVEMENT TYPES

Category	Type of Improvement	FHWA / MUTCD Status	Typical Cost
Intersection Bicycle Queue Storage			
	Advanced Stop Bar	Experimental	$500
	Bike Boxes	Experimental	$5,000
	Two Stage Left Turn	Permitted	$7,500
Intersection Crossing Protection			
	Raised Median Storage	Not Regulated under MUTCD	$6,000 - $12,500
	Protected Left Turn Pockets		$5,000
	Bike Lanes thru Intersections	Permitted	$2,000 *(per direction)*
	Left Side to Right Side Transition	Experimental	$7,500
Intersection Approach Areas			
	Integrated Bike/ Right Turn lanes	Depends on Design	$500 per lane
	High Conflict Approach Areas	Experimental	Typical cost $12/sqft
Active Priority or Warning			
	HAWK Signals	Permitted	$60,000
	Advisory Warning Beacons	Permitted	$15,000

Continuous Flow Intersections		
Roundabouts	Permitted	$80,000- $100,000
Grade Separated Crossings	Not Regulated under MUTCD	$1,500,000

Intersection Bicycle Queue Storage

Advanced Stop Bar

An Advance Stop Bar is a second stop bar for bicyclists placed closer to the centerline of the cross -street than the first stop bar. It provides the bicyclist with better visibility of cross street traffic and the bicyclists is more visible to adjacent motorists. Typically used at lower volume, stop controlled intersections, preferably with curb extensions, at locations with twenty-five or more cyclists in the peak hour.

Source: City of Portland (PBOT)

Bike Boxes

Bike Boxes are another form of advanced stop that allow cyclists to wait in front of motorists at traffic signals on red indication and enter the intersection first after the signal changes. Generally, they are well-marked by paint. They are often accompanied by an exclusive bicycle signal that turns green a few seconds before the signal for motorists. They work best in locations where well-used bike lanes exist; where the street to be crossed is busier than the street with the advance boxes; or where a high percentage of the cyclists using the advance boxes will be turning left.

Above: A green bike box in Portland, OR

The benefits of Bike Boxes are to increase the visibility of the bicyclists, facilitate bicyclist left turning position at intersections during red signal indication, reduce “right hook” conflict with turning vehicles at the start of the green indication, and, with advance green indication, can clear an intersection quickly, minimizing impediments to other traffic.

Two Stage Delayed Left Turns

Two-stage turn queue boxes offer bicyclists a safe way make left turns at multi-lane signalized intersections from a right side cycle track or bike lane. Bicyclists proceed straight across the intersection to the far side and then queue in front of the cross – street traffic. The

advantage of this design is to reduce complexity associated with using a vehicular left turn lane, but in doing so the bicyclist is potentially subject to queue delay associated with each movement.

As shown in the lower figure to the right, queuing boxes can be located in various positions, depending on how bicyclists and pedestrian are accommodated on the through street. In the more common situation shown on the right, queuing boxes will be located such that the parking lane on the through street or crosswalk will provide protection from the through traffic lane.

Intersection Crossing Protection

Raised Median Refuge Island

Median refuge islands are protected spaces placed in the center of a street to facilitate bicycle crossing. With a safe haven in the middle of the street, bicyclists can focus on one direction of traffic, safely waiting to take advantage of gaps in a single direction at a time. The design reduces individual crossing length and decreases the amount of delay that a bicyclists will experience to cross a street. This treatment can be provided at intersections or in mid-block locations. When implemented on a high volume or multi-lane streets, it can be enhanced by inclusion of active warning beacons or bicycle-only signals.

Bike Lanes through Intersections

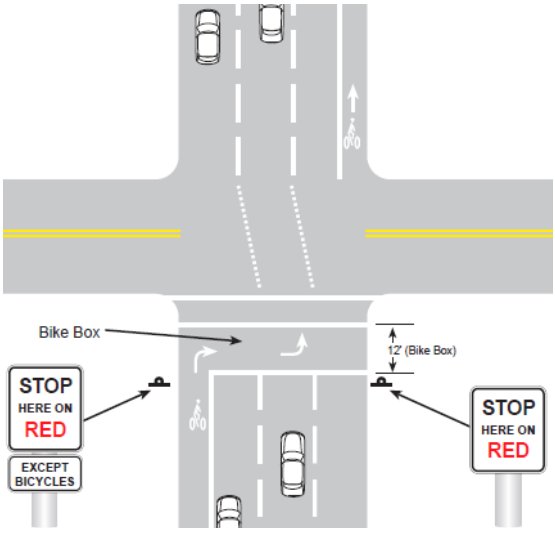
Bicycle Pavement Markings through intersections indicate the intended path of bicyclists through an intersection. They guide bicyclists on a safe and direct path through the intersection, and provide a clear boundary between the paths of through bicyclists and either through or crossing motor vehicles in the adjacent lane.

Various treatments are utilized as illustrated in the graphics at the right. A repeating pattern of sharrows may be used and would be appropriate in particular if the approaching bikeway is a sharrow route. For greater visibility, colored pavement,

typically green or red, can be used, and may be most appropriate in high crash or high volume locations.

Left to Right or Right to Left Side Transitions

Due to design constraints certain corridors will feature dedicated bikeways that transition from one side of a roadway to the alternate side of the roadway. Desirably accommodations should be provided to facilitate this crossing movement, in the form of a high visibility crossing treatment such as a modified bike box or colored bike lanes that crosses the entire roadway accompanied with appropriate signage. While there is no recognized standard treatment for handling this transition, it would be beneficial to adopt a standard approach to handling these transition zones.



Intersection Approach Areas

Bike Lanes and Right Turn Lanes

For bicyclists traveling in a Bike Lane the approach to an intersection with vehicular turn lanes can present a significant challenge. While Minnesota law requires the bicyclist to keep as close as practicable to the right edge of the roadway, this is not a desirable position if the bicyclist is intending to go straight through the intersection. On roadways with right turn lanes, providing a through bicycle lane to the left of the right-turn lane at the intersection can minimize conflicts. For this reason it is vital that bicyclists are provided with an opportunity to correctly position themselves to avoid conflicts with turning vehicles. Moving the bicycle lane to the left of the right-turn lane, however, allows designers to create a merging area ahead of the intersection. This gives bicyclists and right-turning motorists the opportunity to negotiate to the proper position before reaching the intersection. At the point where a right-turn only lane starts, the bike lane left stripe should continue across with a dotted line. The length of the dotted line will be determined by the

length of the right-turn storage area and the taper. A second dotted line may be used to delineate the right side of the bicycle lane.

Shared Bike Lane - RTL

An experimental approach to the bike lane / right turn lane dilemma that is being used in some cities is a Shared Bike Lane/Right Turn Lane. This combined bicycle lane / turn lane places a suggested bike lane within the inside portion of a dedicated motor vehicle turn lane. A dashed line can either delineate the space for bicyclists and motorists within the shared lane or indicate the intended path for through bicyclists. This treatment includes signage advising motorists and bicyclists of proper positioning within the lane

High Conflict Approach Areas

Some cities in the United States are using colored bicycle lanes to guide bicyclists through major vehicle/bicycle conflict points. Bicyclists are especially vulnerable at locations where the volume of conflicting vehicle traffic is high, and where the vehicle/bicycle conflict area is long. Examples of such locations are freeway on- and off-ramps, free flow right turn lanes, as well as intersections with high right turn volumes. Color is applied to the bike lanes to distinguish the bike lane, alert roadway users at high conflict areas and to clearly assign right-of-way to cyclists. Motorists are expected to yield to cyclists in these areas.

Examples of colored bike lanes in U.S. cities

In the United States cities such as Portland, Philadelphia, Chicago and Seattle have experimented with colored bike lanes and supportive signage with favorable results. However, this treatment is not currently present in any State or Federal design standards.

Active Warning Systems

HAWK Signals

In situations where there are few crossable gaps and conventional signal warrants are not met or where a conventional traffic signal is not desired due to the potential to increase traffic volumes on minor street approaches, a HAWK (High-intensity Activated CrossWalk) signal could be installed to improve the crossing environment. HAWK signals include activation buttons and may also include bicycle loop detectors. These installations have been used successfully overseas, and their use in the U.S. has increased over the last decade.

The HAWK system consists of a signal-head with two red lenses over a single yellow lens on the major street, with only pedestrian and/or bicycle signal heads for the minor street. A HAWK system is more flexible for bicyclists than a full signal as bicyclists do not have to actuate it if they find ample crossing opportunities during off-peak conditions. Typical applications related to bicycle travel would be at locations where a bike route or bike trail intersects a major street without an existing signalized crossing, or at midblock crossings of major roadways with high bicycle volumes.

Advisory Beacons

Active warning beacons are user-actuated amber flashing lights that supplement warning signs at unsignalized intersections or mid-block crosswalks. Beacons can be actuated either manually by a push-button or passively through detection. Rectangular Rapid Flash Beacons (RRFBs), a type of active warning beacon, use an irregular flash pattern similar to emergency flashers on police vehicles and can be installed on either two lane or multi-lane roadways. Active warning beacons may be considered to alert drivers to yield where bicyclists have the right-of-way crossing a road.

Continuous Flow Intersection

Roundabouts

Bicyclists have two choices at roundabouts. Since motorist speeds are reduced, many bicyclists prefer to take a lane and circulate as normal traffic. Bike lanes are terminated from 75 to 200 feet before roundabouts, and are picked up 50-200 feet later. Under no circumstances should bike lanes go through the roundabout center island.

Roundabouts can also be designed with wider sidewalks and bike ramps to provide the bicyclist a choice. Those too timid to ride through the roundabout will have an alternative path to circulate around the roundabout on the pathways. Entry and exit ramps for bicyclists can be handled with tapers that slow them to appropriate speeds for sidewalk circulation. If sidewalks are widened to serve as true multi-use trails, the entry angle can be enhanced to allow bicyclists to maintain their speed. In these instances entry angles of 45 degrees are generally used.

Grade Separated Crossings

Bicycle/pedestrian overpasses and underpasses provide critical bicycle path links by separating the path from conflicts with motor vehicles. An overpass or underpass may be appropriate where bicycle demand exists to cross a freeway in a specific location, or where a river or stream separates a neighborhood from a nearby bicyclist destination.

High speed roadways and heavy traffic volumes may warrant a grade separated crossing in a non-freeway situation, due to the lack of gaps in the traffic stream or conflicts between motorists and bicyclists at intersections that cannot be mitigated in another manner.

Preliminary Improvement Recommendations

Bikeway network improvement recommendations are presented as part of the Bicycle Master Plan to facilitate further discussion regarding the level of improvement or treatment that should be made on the corridors included in the Bikeway Network. As with any system planning effort, these recommendations are aspirational and have not been subjected to a complete engineering analysis and thus are presented as **PRELIMINARY** recommendations. **Final designs for any specific roadway must be worked out at the project level to the satisfaction of stakeholders and taking into account the level of resources that can be marshaled for a project.**

The physical travel infrastructure for the bikeway network is made up of four major categories:

1. Off-Road Bikeway Corridors
2. On-road Bikeway Corridors
3. Bridges or other grade-separated barrier crossings
4. At-grade Intersection crossings

Figures 5-10 through 5-21 and Tables 5-10 through 5-15 beginning page 5-42 highlight existing bikeway infrastructure and preliminary improvement recommendations for bikeway corridors identified in the plan by geographic subarea within the Rochester urban area. Figures 5-10 through 5-21 illustrate on aerial photography of each subarea both existing bikeway improvements and recommendations for future improvements. Tables 5-10 through 5-15 provide brief descriptions of the future improvements identified on the maps. .

The following tables summarize at the network level the level of improvement work being recommended in the plan and the order of magnitude of investment that would be needed to realize the network proposed. **Table 5-8** summarizes miles of corridor improvement proposed by facility type, as well as the number of crossing improvement locations proposed by recommended intersection or crossing improvement type.

TABLE 5-9: Network Level Improvements

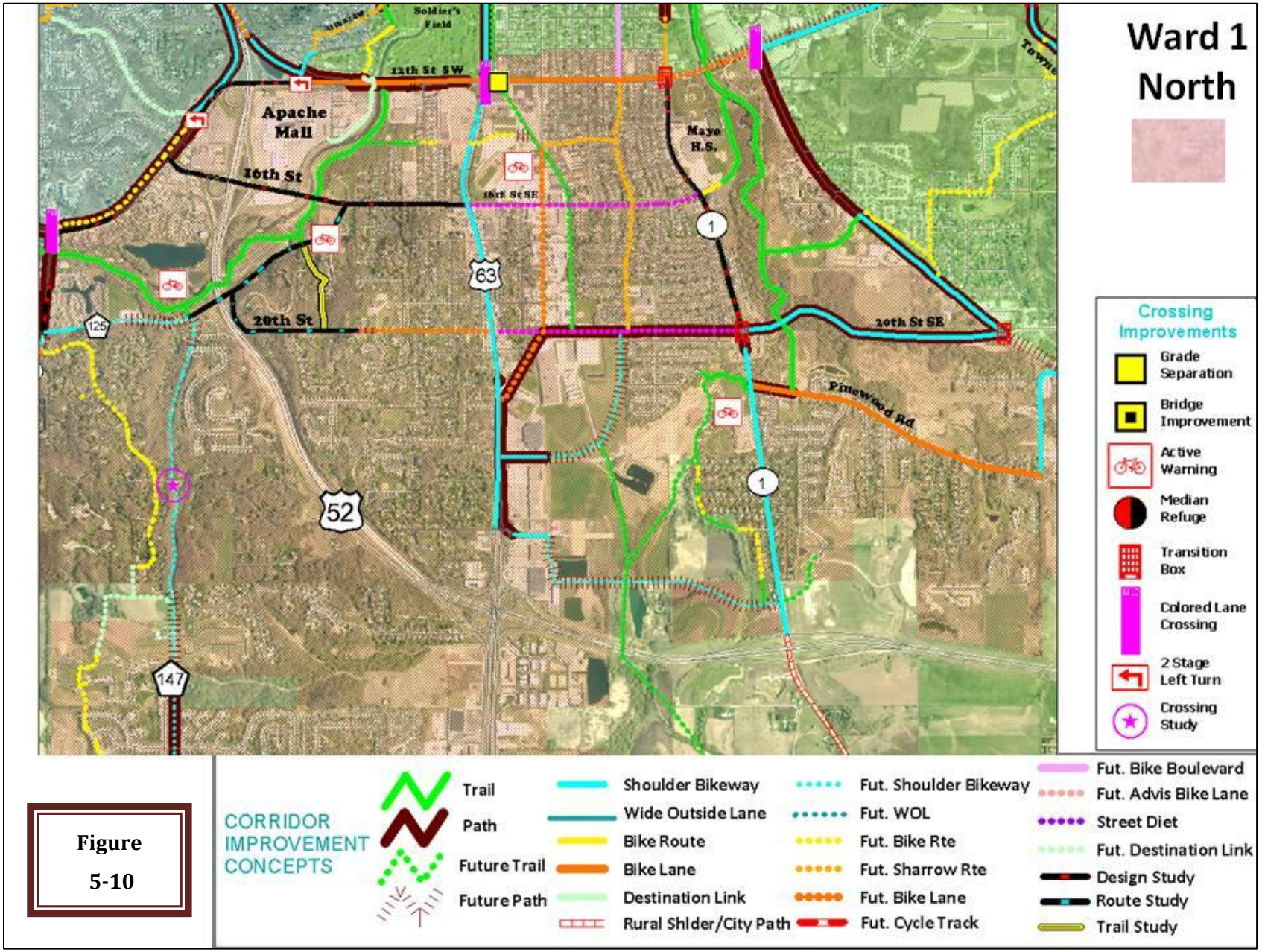
Corridors	Miles		Crossings	Locations
Signed Bike Route	29.84		Median Refuges	2
Bike Lanes	22.19		Two Stage Lefts	2
Sharrow Routes	11.02		Shared right Turns	12
Advisory Bike Lane	4.16		Intersection Markings	25
Bike Boulevard	2.97		Bicycle Boxes	2
Cycle Track	0.28		Ramp Markings	7
	-		Advisory Beacons	8
Path	41.79		HAWK	3
Trails	8.46		Grade Separation	4

Table 5-9 presents a cost opinion for implementation of the improvements. Over 90% of the costs are associated with trail, path and grade separation projects, which historically have been funded with a mix of funds typically including a large component of state or federal grant funding. Conversely, the Shared Roadway and Bike Lane improvements typically will be funded almost exclusively with local dollars, or with other non-traditional grant sources that would have to be secured.

TABLE 5-10: Implementation Costs

		Shared Roadway Improvements (Bike Rts / Sharrows)	Bike Lanes (No Construction - use existing road)	New Road Construction (Primarily Paths & Shoulder Upgrade)	Off Road Construction (Primarily Trails & Grade Separation)
Ward	**1**	$ 119,000	$ 173,000	$ 3,149,000	$ 4,268,000
Ward	**2**	$ 360,000	$ 89,000	$ 4,424,000	$ 272,000
Ward	**3**	$ 169,000	$ 62,000	$ 774,000	$ 10,923,000
Ward	**4**	$ 273,000	$ 162,000	$ 716,000	$ 1,161,000
Ward	**5**	$ 124,000	$ 224,000	$ 857,000	$ 1,882,000
Ward	**6**	$ 114,000	$ 78,000	$ 32,000	$ 396,000
TOTAL		$ 1,159,000	$ 788,000	$ 9,952,000	$ 18,902,000
			GRAND TOTAL		**$ 30,801,000**

Further discussion of implementation of the bikeway network is included in Chapter 8 of the report, including a review of historical funding levels and the types of funding sources that could be considered as infrastructure improvements proceed through various project development stages.


Ward 1
North
Soldier's Field
12th St SW
Apache Mall
16th St
16th St SE
Mayo H.S.
20th St
20th St SE
Pinewood Rd
63
52
125
147
1
Crossing Improvements
Grade Separation
Bridge Improvement
Active Warning
Median Refuge
Transition Box
Colored Lane Crossing
2 Stage Left Turn
Crossing Study
CORRIDOR IMPROVEMENT CONCEPTS
Trail
Path
Future Trail
Future Path
Shoulder Bikeway
Wide Outside Lane
Bike Route
Bike Lane
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Rural Shlder/City Path
Fut. Shoulder Bikeway
Fut. WOL
Fut. Bike Rte
Fut. Sharrow Rte
Fut. Bike Lane
Fut. Cycle Track
Fut. Bike Boulevard
Fut. Advis Bike Lane
Street Diet
Fut. Destination Link
Design Study
Route Study
Trail Study

Figure 5-10

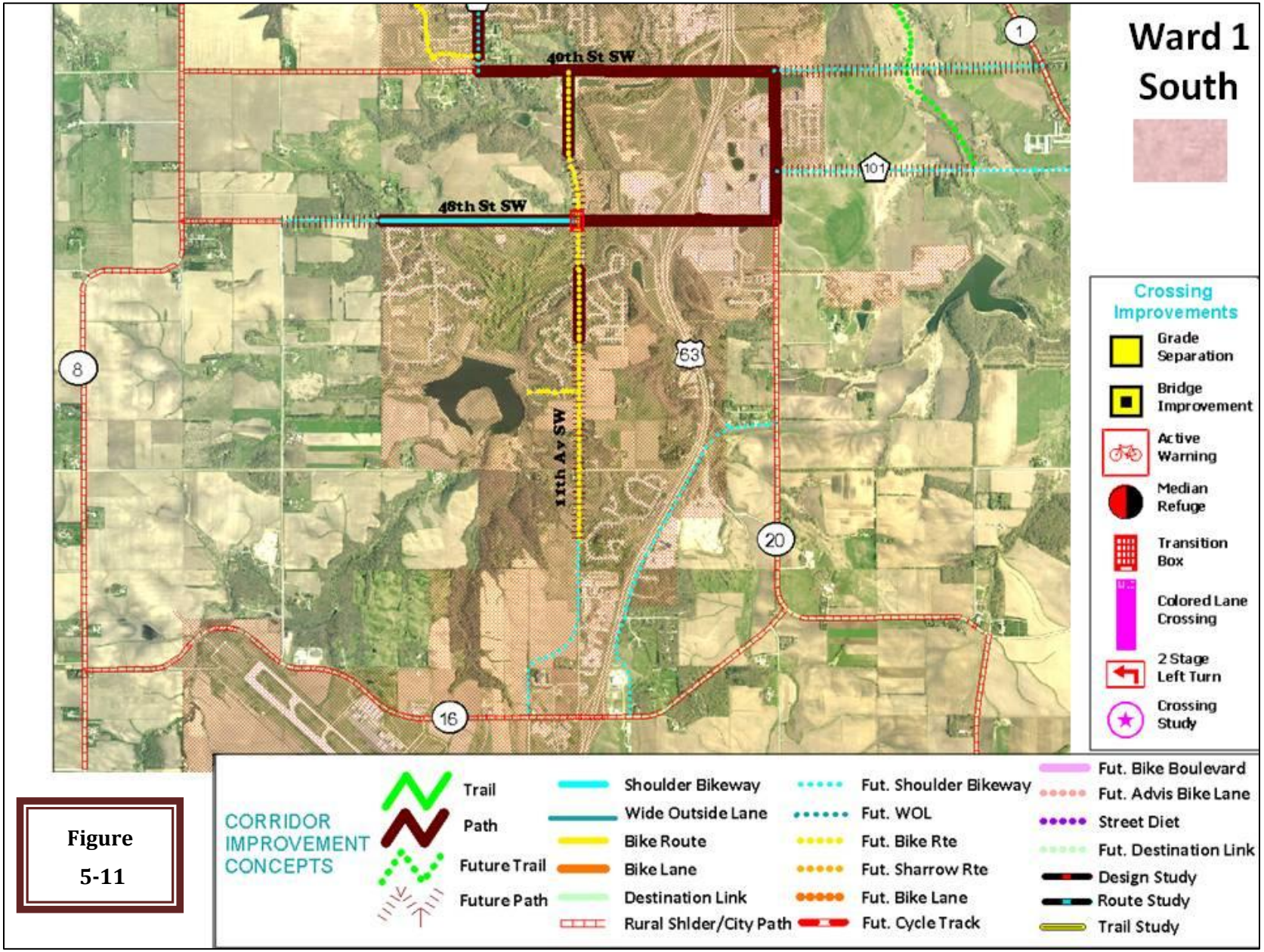

Ward 1
South
40th St SW
46th St SW
11th Av SW
1
101
63
8
20
16
Crossing Improvements
Grade Separation
Bridge Improvement
Active Warning
Median Refuge
Transition Box
Colored Lane Crossing
2 Stage Left Turn
Crossing Study
CORRIDOR IMPROVEMENT CONCEPTS
Trail
Path
Future Trail
Future Path
Shoulder Bikeway
Wide Outside Lane
Bike Route
Bike Lane
Destination Link
Rural Shlder/City Path
Fut. Shoulder Bikeway
Fut. WOL
Fut. Bike Rte
Fut. Sharrow Rte
Fut. Bike Lane
Fut. Cycle Track
Fut. Bike Boulevard
Fut. Advis Bike Lane
Street Diet
Fut. Destination Link
Design Study
Route Study
Trail Study

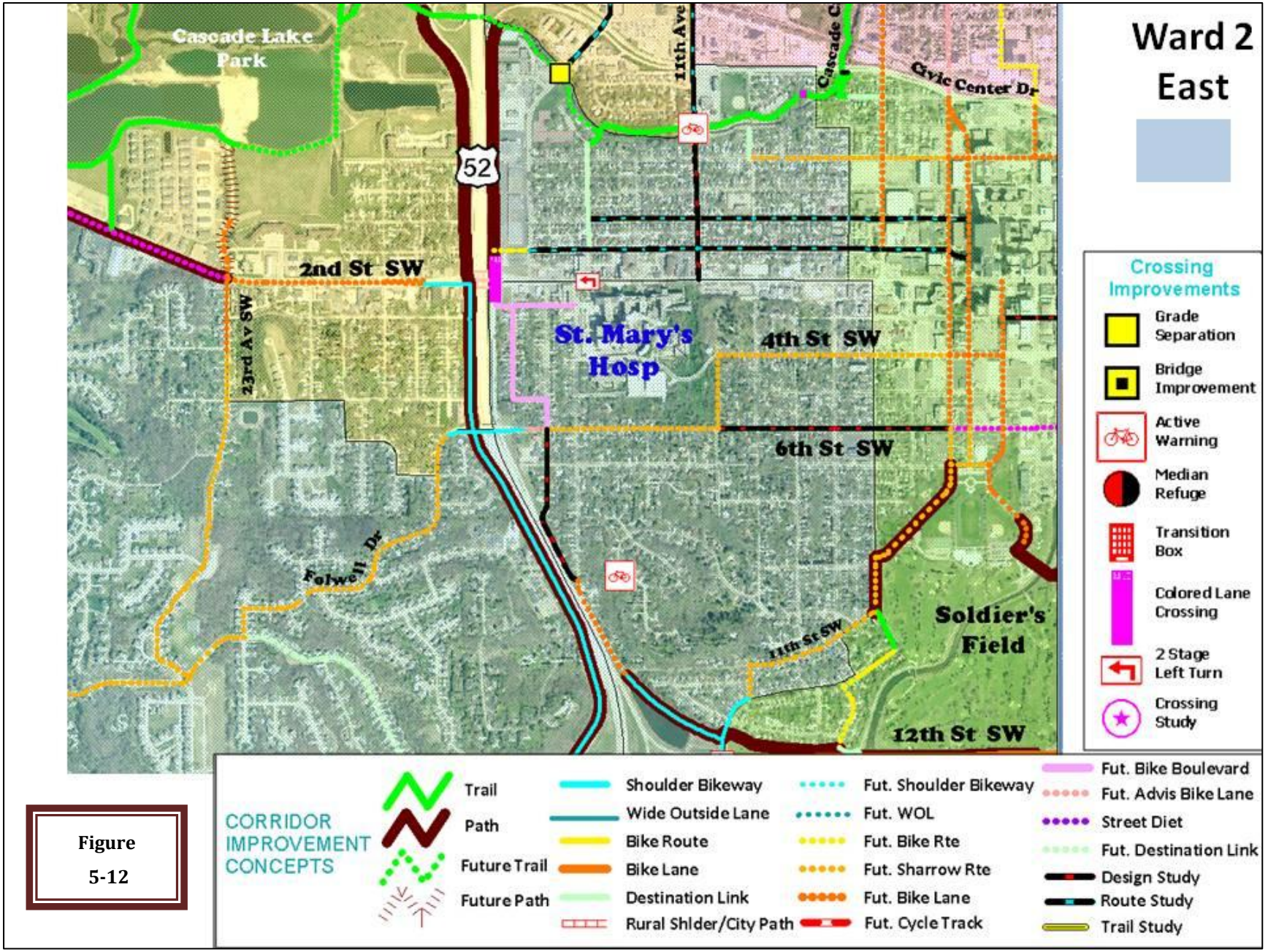
Figure 5-11

TABLE 5-11: WARD 1 IMPROVEMENT TABLE

Route	Termini	Length (mi)	Improvement	Cost
WARD 1	**South Rochester / Willow Creek - Area from 12th St South to Rochester International Airport lying between Marion Rd and West Circle Dr**			
	REGIONAL BIKEWAYS			
Willow Creek Trail	11th Ave SE to TH 52	2.71	Construct Trail from Willow Creek MS to TH 52	$1,625,000
Gamehaven Trail	TH 52 to CR 101	1.44	Construct Trail from TH 52 to CR 101	$576,000
	MAJOR CITY BIKEWAYS			
16th St SE	3rd Av to 11th Av	0.63	Implement Road Diet (4 lane to 3 lane)	$36,700
	TH 63 to 3rd Av	0.30	Implement Road Diet (4 lane to 3 lane)	$17,100
20th St SE	CSAH 1 to 3rd Av	0.79	Implement Road Diet (4 lane to 3 lane)	$46,000
	3rd Ave to TH 63	0.20	Implement Parking Diet (one side) to create bike lanes	$9,500
Marion Rd	20th St to 30th Av SE	0.27	Construct bike path from 20th St SE to 30th Av SE on south/west side of Marion Rd	$70,300
20th St SW	Th 63 to Beacon Dr	0.46	Construct Bike Lane with future reconstructon of road	$176,400
45th St South	St Bridget's Rd to CSAH 1	1.93	Include Paved Shoulder with future reconstruction of 45th St and construct path from St Bridget's Rd to Gamehaven Trail	$507,600
30th St SE (Future)	(W) TH 63 at 28th St	1.29	Construct path along future 30th St SE and incorporate WOL in street cross section	$341,300
8th Ave SE	12t St SE to 20th St SE	1.00	Implement Sharrow Route	$10,100
25th St SE (Future)	Wal Mart Entrance to 20th St SE	0.19	Construct path along future extension of 25th St SE and incorporate WOL into street cross section	$50,200
3rd Ave SE	14th St SE to TH 63	1.33	Implement Bike Lane	$63,700
11th Ave SW	40th St SW to Autumn Woods Circle SW	1.53	Complete construction of path along corridor and provide path crossover treatment at 48th St intersection	$432,900
Meadow Park Rail Spur Trail	9th St SE to 3rd Ave SE	0.68	Construct trail along corridor with grade separation at crossing of 12th St east of TH 63	$1,772,000
	LOCAL AREA BIKEWAY			
Meadow Park Rail Spur Trail	3rd Ave SE to 20th St SE	0.76	Construct trail along railroad spur line from 3rd Av to 20th St SE	$29,300
Mayowood Rd	16th St SW to 18th Ave SW	0.10	Construct path connection to Zumbro River trail from CR 125 across from 18th Av SW	$41,700

Route	Termini	Length (mi)	Improvement	Cost
Mayowood Rd	18th Av to CSAH 8	0.51	construct bike path from 18th Ave to Zumbro Park South (Type B/C) and widen/paved shoulders (Type A) to CSAH 8	$308,000
Mayowood Rd	Stonegate Ct to Mayowood Dam	0.70	Construct Path along Mayowood Rd from 30th Ave SW to Mayowood Rd Bridge	$191,809
14th St SE	8th Av to 3rd Av SE	0.30	Implement Sharrow Route	$3,000
14th St SE	Fairgrounds	0.23	Construct Path connection from RR Trail to Fairgrounds Av and add Bike Route Signage	$23,100
14th St SW	TH 63 to 1st Av W	0.09	Implement Advisory Bike Lane	$29,300
14th St SW	1st Av W to 4th Av W	0.09	Implement Signed Bike Route	$500
14th St SW	4th Av W to Trail	0.14	Construct Trail connection	$56,900
40th St South	18th Ave SW to CSAH 8	1.51	Construct path with urban development	$399,100
TH 63 East Frontage Rd	CSAH 16 to Quarve Rd	1.86	Include wide paved shoulders in construction / upgrading of East Frontage Rd to connect CSAH 16 and Quarve Rd SE	$705,400
Southport Subdivision	Pinewood Rd to future 31st St SE	0.74	Develop signed bike route for Type B/C users in neighborhood area west of CSAH 1 including construction of connecting paths in gaps on Sheridan Ave connecting to future Willow Creek Trail	$71,400
18th Ave SW	Mayowood Rd to 40th St SE	2.46	Develop Signed Bike Route through Merrihills west of 18th Av SW to serve Type B/C cyclists	$12,400
		0.54	Complete necessary path to provide connections to Merrihills from Bamberwood at 28th St and Graystone/Fieldstone area at 32nd St SW	$143,600
	EXPRESS BIKEWAYS			
18th Ave SW	Mayowood Rd to 40th St SE	1.30	Construct upgraded shoulder/path from north of 32nd St SW to Mayowood Road; construct path from Ponderosa Dr to Mayowood for Type B/C users	$493,000
CSAH 1	45th St SE to TH 52	0.74	Construct upgraded shoulder bikeway along CSAH 1 from 40th St SE to TH 52	$284,300
TH 63 Southbound	9th St - 28th st South	2.19	Sign TH 63 as shoulder bike route southbound to serve Type A and higher skill Type B user	$11,000
TH 63 Northbound	3rd Ave to 9th St	1.67	Sign TH 63 as shoulder bike route northbound to serve Type A and higher skill Type B user	$8,400

Route	Termini	Length (mi)	Improvement	Cost
	CROSSING IMPROVEMENT LOCATIONS			
INTERSECTION	Intesection of 20th St and CSAH 1		Bicycle Box or two stage queue area & signage to facilitate transition of East/West path from north to south side at high volume intersection of 20th st and CSAH 1	$7,500
INTERSECTION	TH 63/12th St Intersection		At intersection of Th 63 and 12th St, apply High Conflict Intersection treatments inc. colored lane crossing of free flow ramps; two stage queue box in each quadrant; continuous bike box or bike lane indication across intersecctin	$103,700
INTERSECTION	TH 63 South / major Intesections		Apply shared right turn / through bike lane pavement markings at 3 nb / 5 sb high volume intersections	$4,000
INTERSECTION	Marion Rd and 20th St SE		Install high visibility crossover improvements for transition of Marion Rd path from east side to west side	$4,000
INTERSECTION	14th St and 3rd Ave SE Crossing		Add Advisory Beacon and Bike Trail X-ing Signage	$15,000
INTERSECTION	11th Ave SE at Pinewood Rd		Enhanced markings & signage plus Advisory Beacon to connect Pinewood Rd bike lanes and Willow Creek Trail on west side	$19,000
INTERSECTION	Westwood Ct and 18th Ave SW		Enhanced markings & signage at crossing from Bamberwood area to Merrihills area at Westwood Ct SW	$2,000
Design Study				
11th Ave SE *(Potential Major City Bikeway)*	11th Ave SE between 12th St and 20th St SE	1.08	Evaluate options to provide service in corridor as part of 11th Ave East super route and for access to Mayo High School. *(Cost Estimate assumes cycle track)*	
Bamber Valley Road *(Regional Bikeway)*	Mayowood Rd to Waterford Place	0.16	Provide facility for NB cyclists connecting trails along CR 125 and north of Waterford Pl	
16th St SW *(Potential Major City Bikeway)*	16th St SW: TH 63 to CSAH 22	1.23	Evaluate options for providing bike service along 16th St SW	
Alignment / Need Study				
Mayowood Road & 20th St SW *(Major City Bikeway)*	Mayowood Rd from 16th St SW to 18th Ave SW; 20th St SW from Forest Hills Dr to Mayowood Rd		Assess constructibility/feasiblity of bike facility along Mayowood Rd and 20th St SW versus improving direct connections to Zumbro River Trail from 18th Ave SW and route utilizing Restoration Dr SW	
South Beltway *(Regional Bikeway)*	CR 104 to TH 63		Include consideration of bikeway facility in future South Beltway Corridor Preservation Study	


Ward 2
East
Cascade Lake Park
52
11th Ave
Civic Center Dr
2nd St SW
23rd Av SW
St. Mary's Hosp
4th St SW
6th St SW
Folwell Dr
11th St SW
Soldier's Field
12th St SW
Crossing Improvements
Grade Separation
Bridge Improvement
Active Warning
Median Refuge
Transition Box
Colored Lane Crossing
2 Stage Left Turn
Crossing Study
CORRIDOR IMPROVEMENT CONCEPTS
Trail
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Future Path
Shoulder Bikeway
Wide Outside Lane
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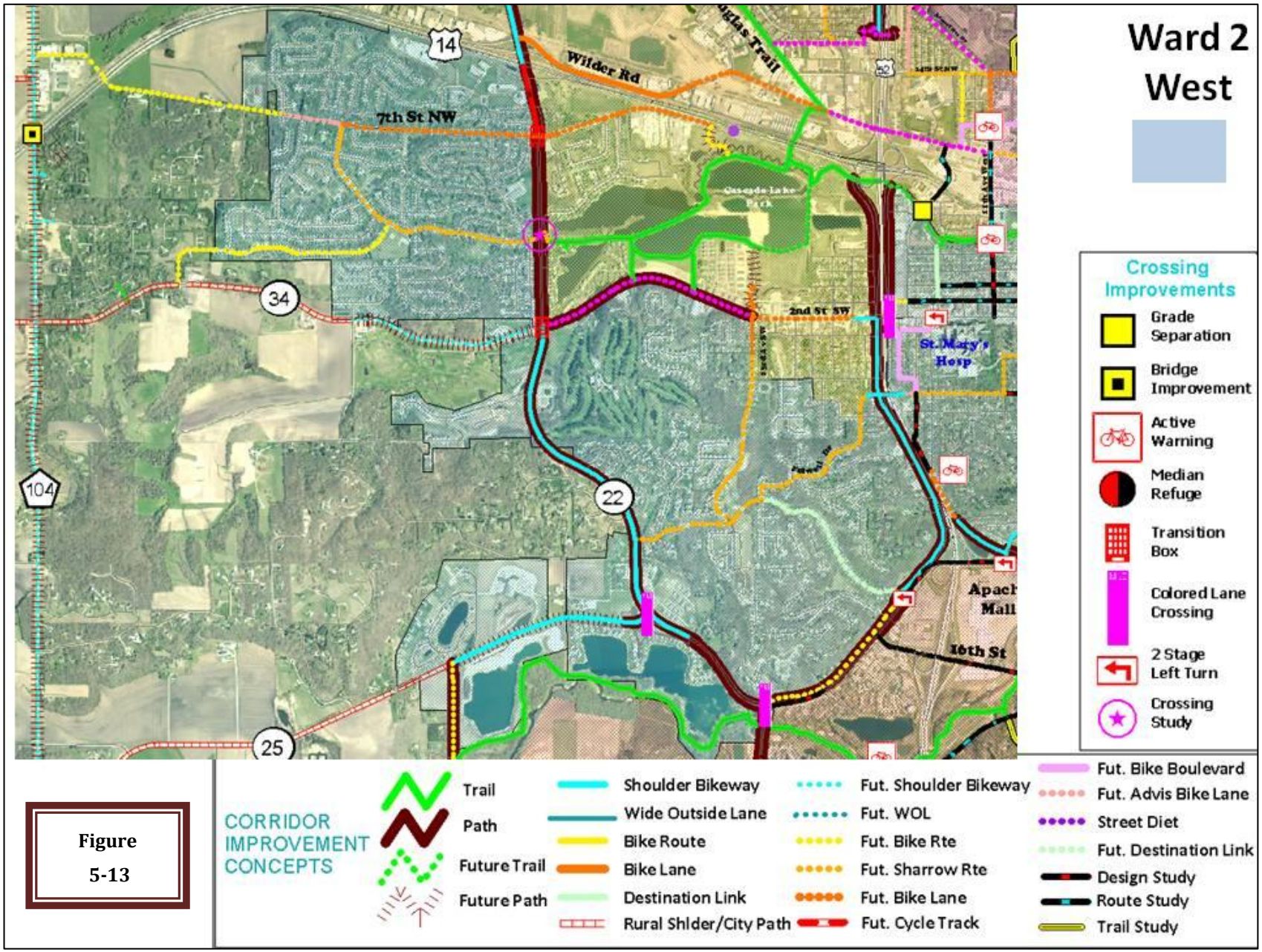
Destination Link
Rural Shlder/City Path
Fut. Shoulder Bikeway
Fut. WOL
Fut. Bike Rte
Fut. Sharrow Rte
Fut. Bike Lane
Fut. Cycle Track
Fut. Bike Boulevard
Fut. Advis Bike Lane
Street Diet
Fut. Destination Link
Design Study
Route Study
Trail Study

Figure 5-12


Ward 2
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Crossing Improvements
Grade Separation
Bridge Improvement
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Transition Box
Colored Lane Crossing
2 Stage Left Turn
Crossing Study
CORRIDOR IMPROVEMENT CONCEPTS
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Shoulder Bikeway
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Fut. Bike Rte
Fut. Sharrow Rte
Fut. Bike Lane
Fut. Cycle Track
Fut. Bike Boulevard
Fut. Advis Bike Lane
Street Diet
Fut. Destination Link
Design Study
Route Study
Trail Study
Wilder Rd
7th St NW
2nd St SW
16th St
14
34
104
22
25

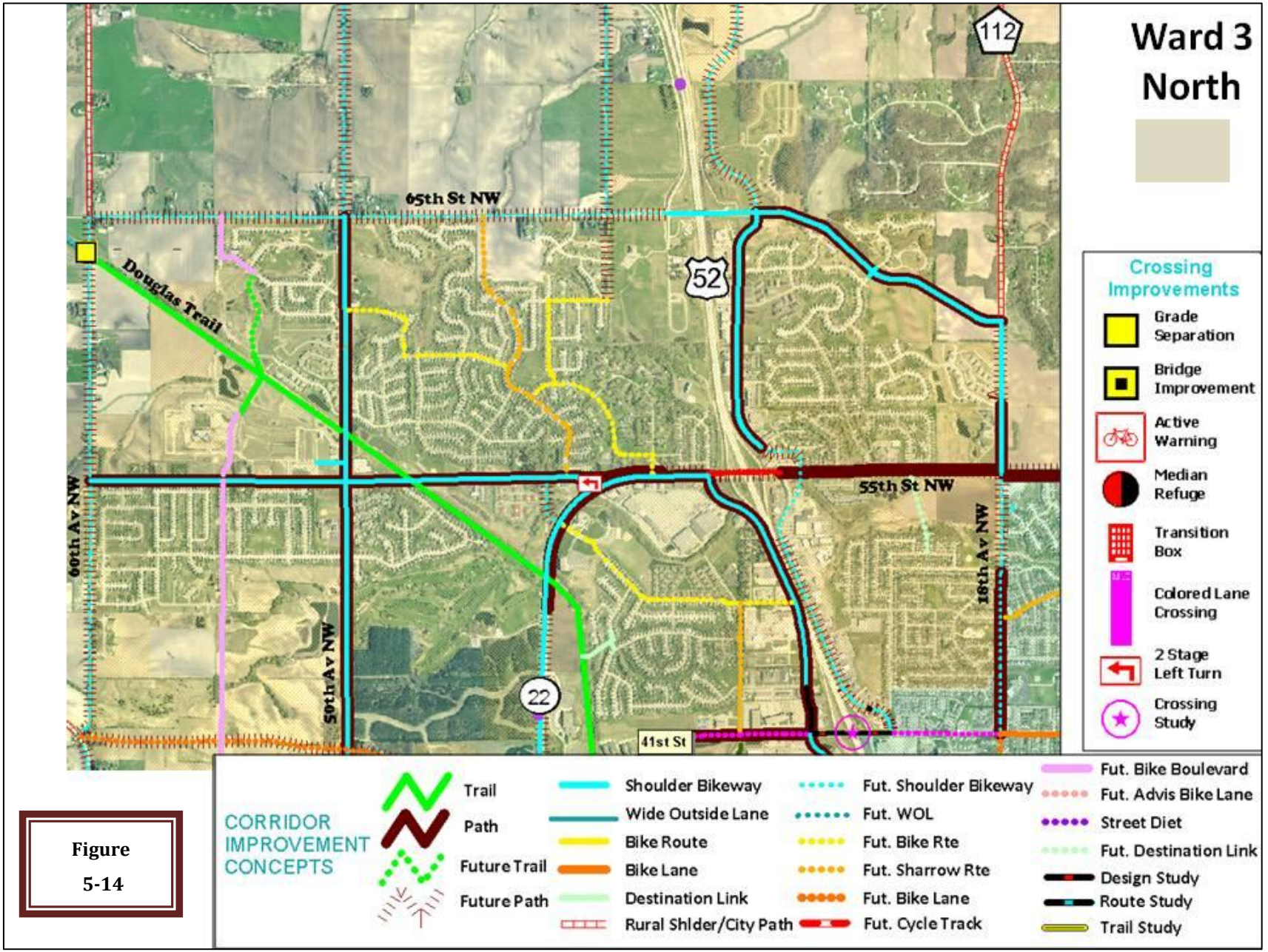
Figure 5-13

TABLE 5-12: WARD 2 IMPROVEMENT TABLE

Route	Termini	Length (mi)	Improvement	Cost
WARD 2	**SOUTHWEST ROCHESTER – West of 6th Ave West between TH 14 /Civic Center Dr and West Circle Drive**			
	REGIONAL BIKEWAYS			
CSAH 34	CSAH 22 to 45t Av SW	0.83	CSAH 34 Path from 45th Ave SW to CSAH 22	$220,900
2nd St SW	CSAH 22 to 23rd Av SW	0.95	Implement Road Diet	$55,000
Cascade Creek Trail	E Frontage Rd to 16th Ave NW	0.95	Construct Bike Trail	$1,650,000
Cascade Lake Trails	North Lake Trail to 2nd St SW	0.48	Construct trail along lake frontage to west end of parking lot and path south along 23rd Av to 2nd st SW	$133,100
	MAJOR CITY BIKEWAY			
Cascade Lake N/S Spine	7th St NW to North Trail	0.19	Construct trail/path from east end 7th St to north trail / include ped/bike bridge across Cascade Creek	$51,200
2nd St SW	18th Av to 23rd Av SW	0.42	Implement Bike Lanes through Parking/Lane reduction & Right Turn Lane/Bike Lane striping at 18th and 23rd Aves	$22,000
2nd St SW at TH 52 Interchange	14th Ave SW to 18th Ave SW	0.00	**Route to areas south of 2nd St east of TH 52 (including St Mary's) served by :** *- Bike Boulevard along future 3rd St SW between 14th and 16th Av SW* *- Connection from west end of 3rd St to 2nd St Bridge by path along East Frontage Rd* **Route to areas north of 2nd St east of TH 523 and Central Business District served by:** *- High Conflict N/S Crossover Treatment / east side of 2nd St SW / East Ramp-Frontage Rd intersection* *- Path along East Frontage Road north of 2nd St SW* *- Bike Route on 1st ST SW between East Frontage Rd and 16th Ave West* **West of Bridge** *-for westbound cyclist, one way cycle track west ramp to 18th Ave SW*	$57,300
7th St NW *Country Club Manor*	CSAH 22 to Manor Ridge Dr	1.84	Implement Bike Lanes	$38,900
	Manor Ridge Dr to Forbrook Ln	0.00	Implement Advisory Bike Lane / Priority Shared Lane	$6,400
6th St SW	West Frontage Rd TH 52 to 15th Ave SW	0.09	Interim Advisory Bike Lane or High Conflict Sharrow Route (*Long Term - widen with reconstruction for WOL)*	$4,100
6th St SW	15th Ave to 10th Ave SW	0.68	Implement High Conflict Sharrow Route	$5,400

Route	Termini	Length (mi)	Improvement	Cost
Salem Rd (CSAH 25)	CSAH 22 to west Mayowood Road	0.85	Construct south side path Salem Ln to Mayowood Rd with high visibility crossover at Autumn Rdg Rd	$209,100
1st St SW/ West Center	6th Ave to 16th Ave SW	0.76	Implement High Conflict Sharrow Route or Level 3 Bicycle Boulevard	$94,700
4th St SW	6th Av to 10th Av SW	0.34	Implement Sharrow Route	$3,500
2nd St NW	9th Av to 6th Av NW	0.28	Implement Sharrow Route	$2,900
Memorial Parkway	12th St to East end	0.15	Implement Signed bike route	$800
15th Ave / 16th Ave SW	(Future) 3rd St SW to 6th St SW	0.34	Implement Level 1 Bike Boulevard	$10,300
East Frontage Rd TH 52	17th Ave to 11th St SW	0.00	Implement Bike Lanes for all users or WOL for Type A with Type B/C users on east sidewalk	$10,700
6th Av/ 11th St / 9th Av SW	9th St to Memorial Parkway	0.49	Implement Sharrow route	$5,000
West Circle Dr	TH 14 to 7th St SW	1.08	Construct Raised Bike Lane / One Way cycle track southbound from South Ramp to 7th ST SW	$65,300
10th Ave SW	4th st to 6th st SW	0.17	Implement Sharrow Route	$1,800
	LOCAL AREA BIKEWAY			
Folwell Dr	TH 52 to Fox Valley Dr	0.76	Implement Sharrow route	$7,600
3rd St NW / Manor Park Dr	7th St NW to 36th Ave NW	1.10	Implement Sharrow route	$11,000
3rd St NW / Westchester Dr	(E) Manor Park Dr	1.06	Implement Signed Bike route	$5,400
Fox Valley Dr	(E) TJ Maxx Plaza	1.38	Implement destination signing	$7,000
13th Ave West	Kutxky Park to St Mary's Hospital	0.38	Implement destination signing	$1,900
23rd Ave SW	2nd St to Fox Valley	0.91	Implement Bike Lane to 5th St SW and Sharrow Route to Fox Valley Dr	$14,800
	EXPRESS BIKEWAY			
NONE				
	CROSSING IMPROVEMENTS			
INTERSECTION	CSAH 22 & CSAH 25		Add High Visibility Crossing improvements at Free Flow Ramps at CSAH 25	$4,400

Route	Termini	Length (mi)	Improvement	Cost
INTERSECTION	CSAH 22 at 2nd St SW and 7th St SW		Need High Conflict Intersection Crossover Transitions at 2nd St S and 7th St N	$15,000
INTERSECTION	CSAH 22 @ CSAH 8 and 16th St SW		Add High Visibility Crossing improvements at Free Flow Ramp at CSAH 22/8 Intersection	$17,300
INTERSECTION	17th Ave/14th Ave Intersection		High Visibility Intersection Crossing between 15th Av Bikeway and E Frontage Rd; pavement markings & signage	$11,600
INTERSECTION	Cascade Creek Trail Crossing /11th Ave NW		Install High Visibility Crossing where Cascade Creek Trail crosses 11th Ave Nw using Advisory Beacon and pavement markings	$26,600
INTERSECTION	CSAH22 @ Fox Valley; 12th St @ Memorial Pkw		Construct Turn Bays for two stage bicycle left turns	$15,000
Design Study				
15th Av / 17th Av SW *(Major City Bikeway)*	6th St SW to 14th Av SW	0.34	Determine alignment and facility type past Folwell Elementary and on 17th Av SW	
6th St SW *(Major City Bikeway)*	6th Ave to 10th Ave	0.32	Evaluate feasiblity for 6th St improvement to provide east - west connectivity to future University Center Campus	
West Circle Dr *(Express Bikeway)*	CSAH 8 to Fox Valley Dr	0.12	Determine facility type for eastbound cyclists (all types) from CSAH 8 to CarriageDr	
West Circle Dr & 12th St SW *(Major City Bikeway)*	Memorial Parkway to Fox Valley Drive	0.48	Evaluate options for extending 12th St bike lane to Fox Valley Drive intersection	
11th Ave W	Cascade Creek Trail to 2nd St SW	0.44	Determine final improvement type including parking diet or lane diet to create 7p/12t/11t/6bl with SB sharrow, OR 7p/5bl/10t/14t with NB Wide Outside Lane	$15,300
West Circle Dr at 3rd St NW *(Local Bikeway)*	3rd St NW @ CSAH 22		Evaluate options for improving crossing safety at intersection of 3rd St NW and CSAH 22	
Alignment / Need Study				
7th St NW in Country Club Manor	TH 14 Overpass		Feasiblity Study to evaluate options to connect 7th St NW to north side of TH 14 at CR 104 or 19th St NW	


Ward 3
North
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55th St NW
41st St
60th Av NW
50th Av NW
18th Av NW
Douglas Trail
Crossing Improvements
Grade Separation
Bridge Improvement
Active Warning
Median Refuge
Transition Box
Colored Lane Crossing
2 Stage Left Turn
Crossing Study
CORRIDOR IMPROVEMENT CONCEPTS
Trail
Path
Future Trail
Future Path
Shoulder Bikeway
Wide Outside Lane
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Bike Lane
Destination Link
Rural Shlder/City Path
Fut. Shoulder Bikeway
Fut. WOL
Fut. Bike Rte
Fut. Sharrow Rte
Fut. Bike Lane
Fut. Cycle Track
Fut. Bike Boulevard
Fut. Advis Bike Lane
Street Diet
Fut. Destination Link
Design Study
Route Study
Trail Study

Figure 5-14

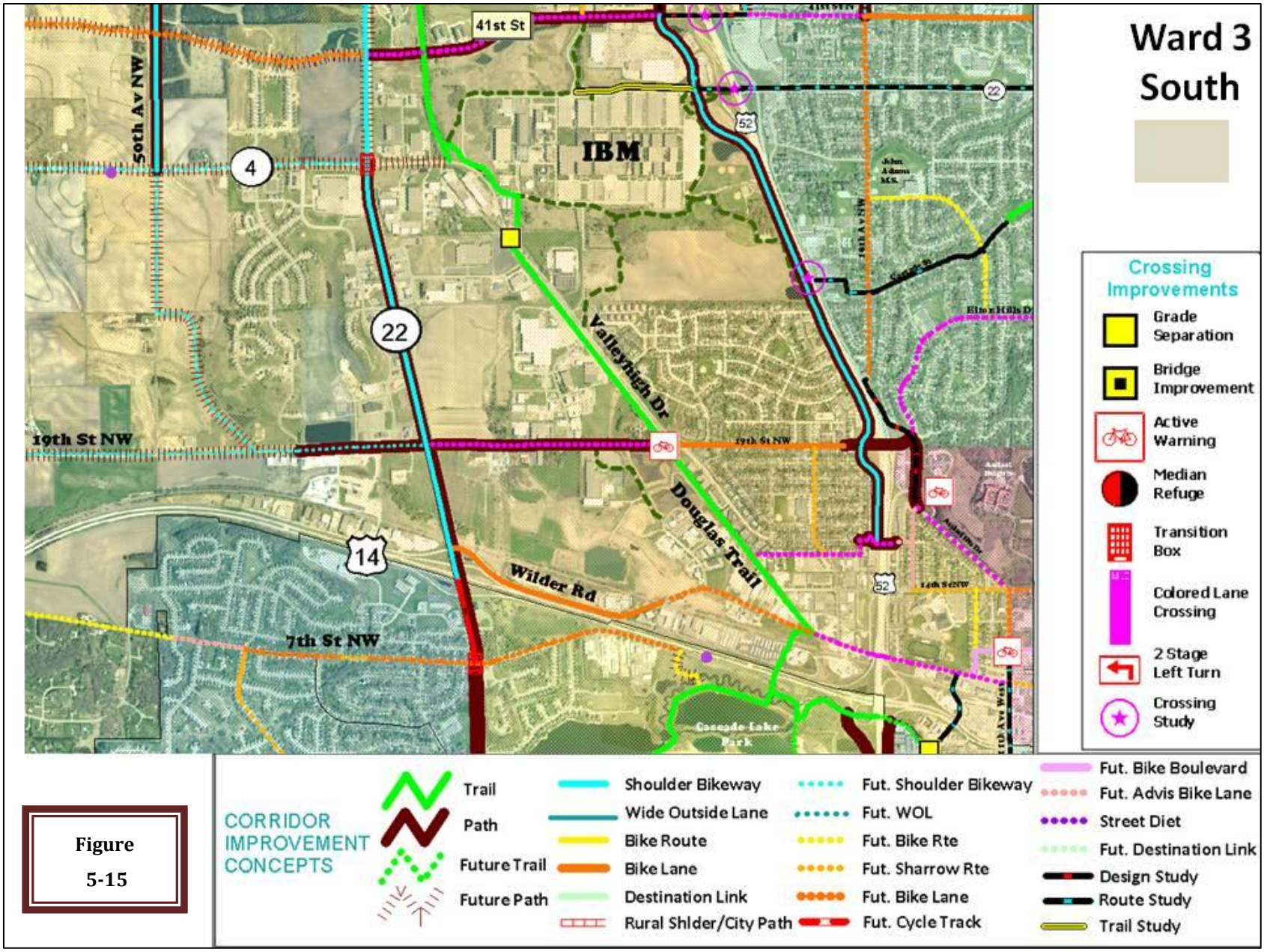

Ward 3
South
41st St
50th Av NW
IBM
4
22
52
Valleyhigh Dr
19th St NW
Douglas Trail
14
Wilder Rd
7th St NW
Crossing Improvements
Grade Separation
Bridge Improvement
Active Warning
Median Refuge
Transition Box
Colored Lane Crossing
2 Stage Left Turn
Crossing Study
CORRIDOR IMPROVEMENT CONCEPTS
Trail
Path
Future Trail
Future Path
Shoulder Bikeway
Wide Outside Lane
Bike Route
Bike Lane
Destination Link
Rural Shlder/City Path
Fut. Shoulder Bikeway
Fut. WOL
Fut. Bike Rte
Fut. Sharrow Rte
Fut. Bike Lane
Fut. Cycle Track
Fut. Bike Boulevard
Fut. Advis Bike Lane
Street Diet
Fut. Destination Link
Design Study
Route Study
Trail Study

Figure 5-15

TABLE 5-13: WARD 3 IMPROVEMENT TABLE

Route	Termini	Length (mi)	Improvement	Cost
WARD 3	**NORTHWEST ROCHESTER – Generally north of TH 14 West / West of TH 52, including area west of 18th Av NW north of 41st St NW**			
	REGIONAL BIKEWAYS			
65th St NW	TH 52 to CR 104	2.33	Reconstruct to standard 52' arterial with striped shoulder bike lane and path on south side	$729,200
55th St NW	18th Av to 25th Av NW	0.85	Construct path on south side of 55th St	$132,500
CSAH 4	CSAH 22 to CR 104	1.72	Reconstruct road to include wide paved shoulders and paths on both sides	$913,500
18th Ave NW	Overland Dr to 55th St	0.59	Construct path along 18th Ave NW OR complete trail through Crimson Ridge and VOA site to connect Overland D and 55th St	$242,500
CR 104	TH 14 to CSAH 14	4.26	Reconstruction of Road to include paved shoulders and path on both sides	$2,258,600
	MAJOR CITY BIKEWAYS			
19th St NW	Valleyhigh Dr to Jordyn Rd NW	0.89	Implement Road Diet	$51,700
19th St NW	Jordyn Rd NW to CR 104	1.89	Future Reconstruction of 19th St to include path on north side and WOL or striped shoulder for Type A cyclist	$389,000
7th St NW	W 7th St Bike /Ped Bridge to 11th Av NW	0.70	Implement Road Diet	$100,700
14th St NW	16th Av NW to 11th AV NW	0.44	Implement Sharrow Route	$4,400
15th St NW	TH 52 14th St Overpass to Douglas Trail	0.34	Implement Parking Diet with parking on one side and Implement Sharrow route	$3,500
TH 52 West Frontage Rd	65th St to 75th St NW	1.14	Future construction - standard 52' arterial with combined 6' shoulder / bike lane and path on west side	$301,200
TH 52 East Frontage Rd	41st ST NW to 55th St NW	1.15	Construct path along west side of corridor and implement shoulder bikeway or WOL for Type A/B cyclist during future reconstruction of East Frontage Road	$306,200
50th Ave NW	65th St to 75th St NW	1.00	Extend design north of 65th St to 75th St / striped shoulder bikeways and path both sides	$1,060,000
50th Ave NW	19th St NW to CSAH 4	1.00	Future construction - include standard 52' arterial with combined 6' shoulder / bike lane and paths	$1,060,000

Route	Termini	Length (mi)	Improvement	Cost
TH 52 West Side Path	55th St to 65th St NW	1.29	Develop north/south Bike Route Corridor between 55th and 65th Streets on west side of TH 52 using combination of path (along future extension of West Backage Road) and on-road bike route (along Blossom St, Hillsboro Dr and Villa Rd)	$93,000
16th Ave NW	Assissi Hts Dr to 14th st NW	0.34	Implement Advisory Bike Lane or Priority Marked Sharrow Rt	$7,200
7th St NW	CSAH 22 to Cascade Lake	0.64	Implement Bike Lanes	$31,000
CSAH 4 / Valleyhigh	Douglas Trail trailhead to CSAH 22	0.27	Construct path along north side of road	$71,300
CSAH 22	Chateau Rd to Clearwater Rd	0.19	Construct Bike Path	$50,200
	LOCAL AREA BIKEWAY			
41st St NW	West Frontage Rd to CSAH 22	1.03	Implement Lane Diet or Road Diet	$59,900
48th St NW / Nottingham Dr	31st Ave to Members Parkway	0.66	Implement High Volume Signed Bike Route	$5,000
41st St NW	CSAH 22 to CR 104	0.76	Future construction with development; path one side for Type B/C cyclists; shoulder bike lanes for Type A Cyclist	$471,800
Wilder Rd NW	CSAH 4 to CSAH 22	1.48	Implement Bike lane or one way cycle tracks maintaining wide vehicle lane for trucks from Industrial Dr to Valleyhigh Dr	$19,100
Savannah Dr NW	50th Av to Fairway Dr	0.78	Implement Signed Bike route	$3,300
10th St / 13th Ave NW	7th St to 11th Ave NW	0.20	Implement Level 3 Bicycle boulevard	$6,000
31st Ave	41st St to 48th St	0.49	Implement Sharrow Bike Route	$5,000
East Frontage Rd	65th St to 75th St NW	1.10	Future construction - include standard 52' arterial with combined 6' shoulder / bike lane and path	$291,100
Bandel Rd	55th St NW to 57th St Nw	0.21	Extend path and bike lane north of 57th St south to 55th St with proposed Phase I of 55th St Interchange improvements	$57,600
55th Ave NW	65th St to CSAH 4	1.76	As development in area is fully built out implement Level 1/2 Bicycle Boulevard to link neighborhood destinations including George Gibbs School, Douglas Trail, and paths on CSAH 4, 55th St and 65th St	$52,900
Fairway Dr	55th to 65th St	1.16	Implement Sharrow Route	$11,600
19th Ave	19th St to 14th St NW	0.36	Implement Sharrow Route	$3,600
	EXPRESS BIKEWAYS			

Route	Termini	Length (mi)	Improvement	Cost
NONE				
	CRITICAL CROSSING IMPROVEMENT LOCATIONS			
INTERSECTION	10th St NW and 11th Ave Nw		Implement high visibility crossing for 10th St Bicycle Boulevard at 11th Ave intersection	$2,000
INTERSECTION	55th St / Fairway Dr @ West Circle Dr		Install high conflict area crossing improvement such as colored pavement or advisory bike lanes to improve awareness of bicycle path routes	$13,200
INTERSECTION	19th St NW and Valleyhigh Drive		High Visibility Intersection Crossing between 15th Av Bikeway and E Frontage Rd; pavement markings & signage	$11,600
CORRIDOR	ValleyHigh Dr at West Circle Dr	0.28	Construct path and/or paved shoulder to connect paths to Douglas Trail; add high visibility crossover lanes on free flow right turn lanes, crossover markings and Advisory Beacon if crossover is installed east of intersection at 40th Av or Prow Ln	$104,300
GRADE SEPARATION	Douglas Trail at 60th Ave NW		Construct grade separated crossing	$1,500,000
GRADE SEPARATION	Douglas Trail at 65th St		Construct grade separated crossing	$1,500,000
Design Study				
55th St Interchange *(Regional Bikeway)*	East Frontage Rd to West Frontage Road		If plans to upgrade or replace interchange bridge advance consider Diverging Diamond design with 2-way cycle track in median.	
IBM North Loop Trail *(Major City Bikeway)*	31st Av to West Frontage Rd	0.45	Assess feasiblity of constructing trail/path along north side of IBM Loop Access Road from 37th St Bridge to north access road from 41st St.	
Alignment / Need Study				
11th Av / 16th Av NW	7th St NW to Cascade Creek		Evaluate need and options for north / south travel corridor west of Central Business District between John Marshall area and St Mary's Hospital area	

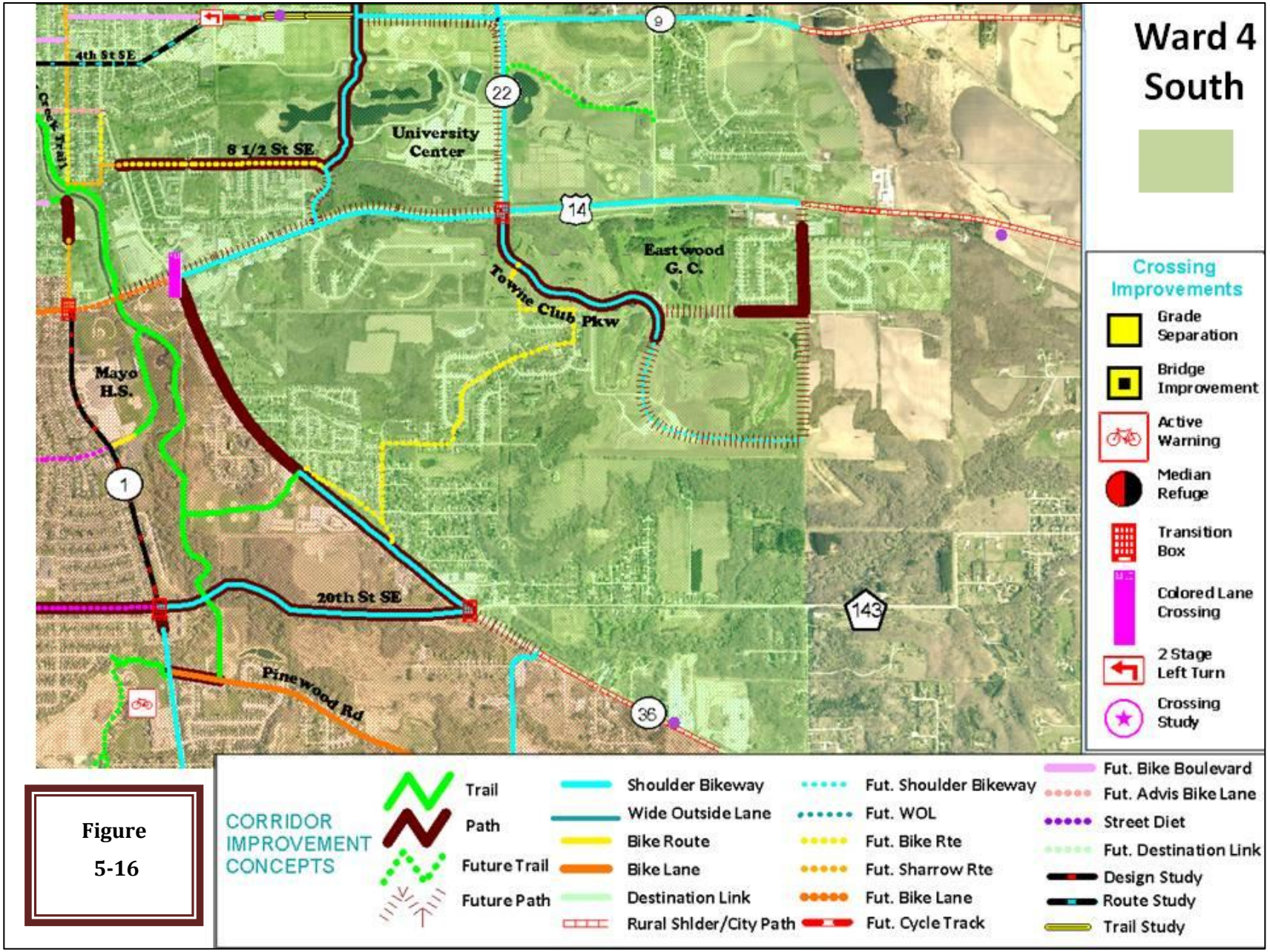
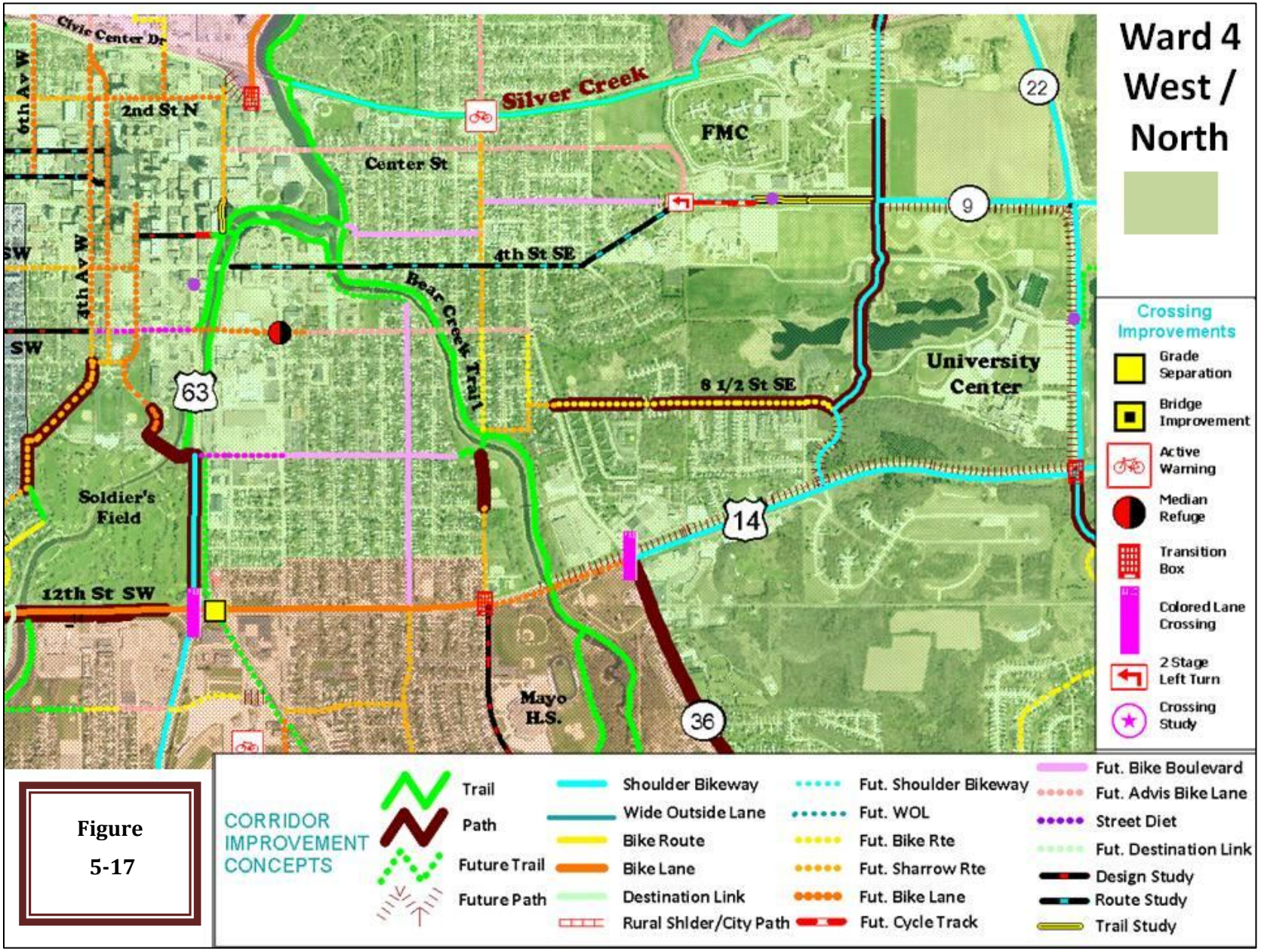

Ward 4
South
Crossing Improvements
Grade Separation
Bridge Improvement
Active Warning
Median Refuge
Transition Box
Colored Lane Crossing
2 Stage Left Turn
Crossing Study
4th St SE
Creek Trail
6 1/2 St SE
University Center
Eastwood G. C.
Towne Club Pkw
Mayo H.S.
20th St SE
Pinewood Rd
9
22
14
1
143
36
CORRIDOR IMPROVEMENT CONCEPTS
Trail
Path
Future Trail
Future Path
Shoulder Bikeway
Wide Outside Lane
Bike Route
Bike Lane
Destination Link
Rural Shlder/City Path
Fut. Shoulder Bikeway
Fut. WOL
Fut. Bike Rte
Fut. Sharrow Rte
Fut. Bike Lane
Fut. Cycle Track
Fut. Bike Boulevard
Fut. Advis Bike Lane
Street Diet
Fut. Destination Link
Design Study
Route Study
Trail Study

Figure 5-16


Ward 4
West /
North
Civic Center Dr
6th Av W
2nd St N
Silver Creek
FMC
22
Center St
9
4th St SE
4th Av W
SW
Bear Creek Trail
SW
63
8 1/2 St SE
University
Center
Soldier's
Field
14
12th St SW
Mayo
H.S.
36
Crossing
Improvements
Grade
Separation
Bridge
Improvement
Active
Warning
Median
Refuge
Transition
Box
Colored Lane
Crossing
2 Stage
Left Turn
Crossing
Study
CORRIDOR
IMPROVEMENT
CONCEPTS
Trail
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Future Trail
Future Path
Shoulder Bikeway
Wide Outside Lane
Bike Route
Bike Lane
Destination Link
Rural Shlder/City Path
Fut. Shoulder Bikeway
Fut. WOL
Fut. Bike Rte
Fut. Sharrow Rte
Fut. Bike Lane
Fut. Cycle Track
Fut. Bike Boulevard
Fut. Advis Bike Lane
Street Diet
Fut. Destination Link
Design Study
Route Study
Trail Study

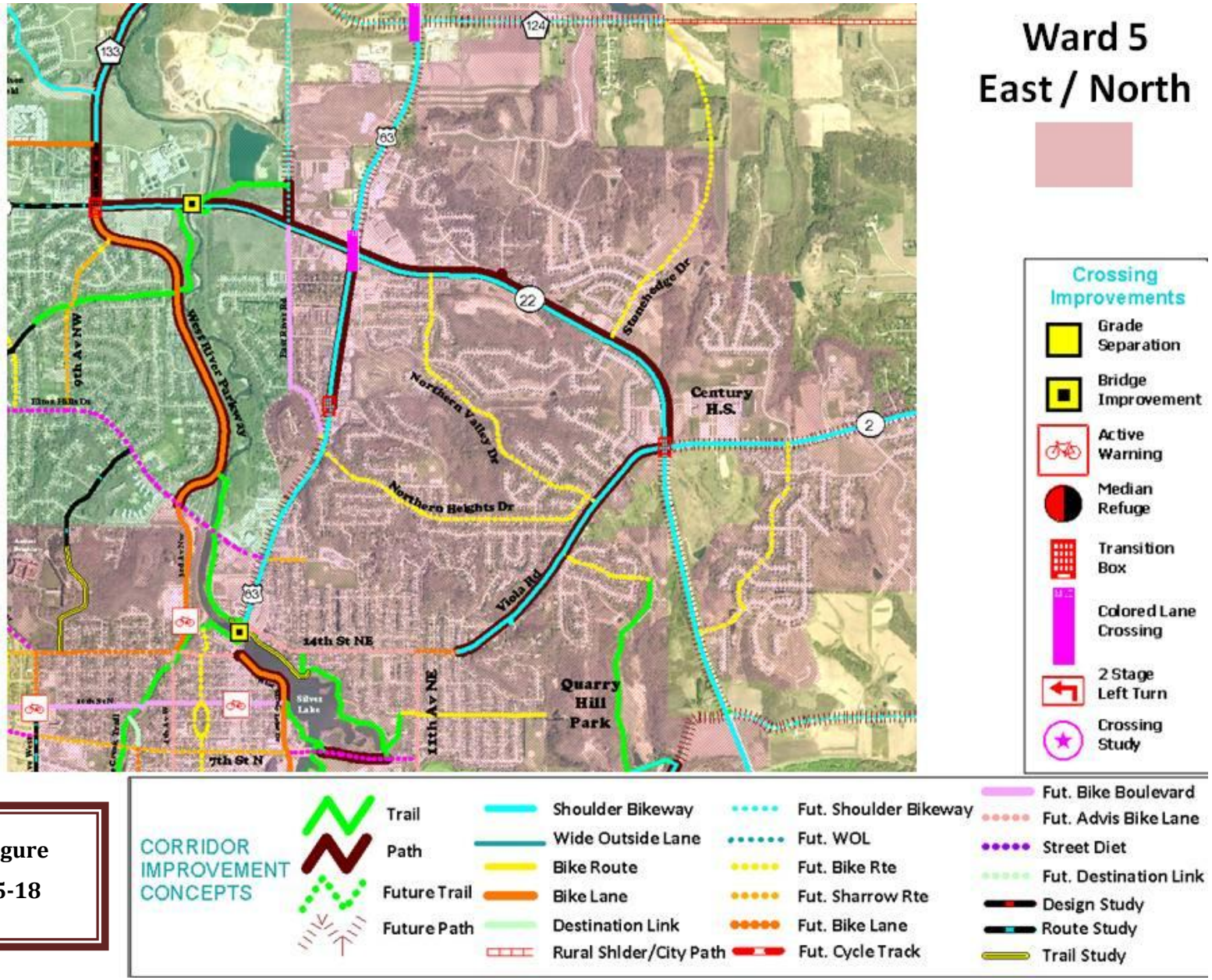
Figure 5-17

TABLE 5-14: WARD 4 IMPROVEMENT TABLE

Route	Termini	Length (mi)	Improvement	Cost
WARD 4	**SOUTHEAST ROCHESTER, generally including area betweenCP rail corridor and 12th St SE east of 6th Ave West, along with area east of Marion Road**			
	REGIONAL BIKEWAYS			
East Circle Dr	CSAH 9 to TH 14	0.65	Construct path along CSAH 22 from CSAH 9 to TH 14	$173,200
CSAH 9	Silver Creek Rd to CSAH 22	0.48	Construct path along CSAH 9 from Silver Creek Rd to CSAH 22	$128,000
Silver Creek Rd	Silver Creek to CSAH 9	0.22	Construct path to close gap along Silver Creek Rd from Campus Dr SE to Silver Creek	$59,000
	MAJOR CITY BIKEWAYS			
TH 14 E	Marion Rd to CSAH 22	1.15	Construct path along north side of TH 14 from Marion Rd to CSAH 22	$303,700
8 ½ St SE	UCR Dr to 15th Av	0.70	Implement signed bike route	$3,600
CSAH 9	Center St to Silver Creek Rd	0.18	Correct gaps in paved shoulder on WB approach to 19th Av / Center St and add one way cycle track for EB cyclist from 19th Av / Center St to west RCTC parking lot entrance & path east to UCR Drive	$166,300
9th St SE	Slatterly Park to 3rd Av SE		Implement Level 1 Bike Boulevard	$13,100
9th St SE	3rd Av to TH 63	0.21	Implement 4 lane to 3 lane Road Diet	$12,100
2nd St/3rd St SE	6th Ave SE to intersection of Center St / 19th Av East	0.88	Implement Level 3 Bike boulevard including cycle track from east end of 2nd St SE to 19th Ave/Center St	$109,900
3rd Ave West	Civic Center Dr to 6th St SW	0.72	Implement one way northbound Bike Lane	$19,200
4th Ave West	Civic Center Dr to 6th St SW	0.70	Implement one way southbound Bike Lane	$18,700
4th St SW	2nd Av SW to 6 Av SE	0.28	Implement Bike Lane (2nd Av to 4 Av) and Sharrows (4 Av to 6th Av)	$7,200
2nd St North	1st Av NE to 6th Av NW	0.47	Implement Bike Lane 1st Av NE to 4th Av NW; Sharrow Route from 4th Av NW to 6th Av NW	$17,000
UCR Drive South	81/2 St to TH 14	0.23	Construct Bike Path	$52,000
11th Ave East	Silver Creek Bike Path to 7th St NE	0.37	Implement Advisory Bike Lane	$18,500

Route	Termini	Length (mi)	Improvement	Cost
11th Ave East	Silver Creek Bike Path to TH 14	0.76	Implement Sharrow Route north and south of Slatterly Park	$7,600
8th Ave SE	6th St SE to 12th St SE	0.68	Implement Level 2 Bicycle Boulevard;	$20,500
TH 63	9th St SE to 12th St SE	0.38	Construct path along CP RR Spur Line corridor	$100,400
2nd Ave SW	2nd St SW to south end of E Soldier's Field Dr	0.47	Implement Bike Lanes	$22,800
6th Ave West	Civic Center Dr to 1st St SW	0.37	Implement Bike Lanes	$17,800
Soldier's Field Dr	6th st SW to 6th Ave SW	0.34	Implement Sharrow Route	$3,500
Bear Creek Trail south of 4th St Bridge	4th St SE to 8th Av SE	0.21	Construct trail on south side of Bear Creek to 8th Av Sharrow Route	$83,400
	LOCAL AREA BIKEWAYS			
6th St South	4th Av SE to 2nd Av SW	0.36	EAST of TH 63 Construction of Bridge with bike lanes; WEST of TH 63 implement Bike lanes thorugh combination parking diet and/or future widening with Univ of Minnesota Campus Development	$415,900
Center St E	CSAH 9 to 2nd av NE	1.24	Implement Advisory Bike Lane or Priority Marked Sharrow Route	$59,600
1st Av NE	Civic Center Dr to 3rd St SE	0.18	Implement Sharrow Route on street with off street path from 2nd St to 3rd St SE	$47,000
1st Ave NW	(N) Civic Center Dr to 2nd St N	0.11	Implement Bike Lanes (*assumes Goose Egg Park Bike Boulevard is implemented)*	$5,500
24th Ave / 15th St / Rose Harbor Dr	Eastwood Rd to Marion Rd	1.63	Implement Signed Bike Route	$8,200
40th Ave SE	TH 14 to Eastwood Rd	0.34	Complete path on west side north to TH 14	$15,900
6th St SE	4th Ave SE to 15th Ave SE	0.61	Implement Advisory Bike Lane or Priority Shared Marked Route	$15,200
Stonebrook Neighborhood path	36th Ave SE to CSAH 22	0.63	Construct path of Type B/C cyclists to access bikeway network	$165,700
	CRITICAL CROSSINGS			
INTERSECTION	Marion Rd at 12th St		Improve Intersection Crossing with two stage left turn queue boxes and Intersection Markings	$13,500

Route	Termini	Length (mi)	Improvement	Cost
INTERSECTION	Center St / 19th Ave/4th St		Improve Intersection crossing with bike lane crossing markings connecting 2nd St Bikeway with CSAH 9 Bikeways east of intersection	$10,000
INTERSECTION	TH 63 & 3rd St SW		Improve Crossing Safety with implementation of bike connection along 3rd St from Zumbro River to 2nd Av SW	$80,500
INTERSECTION	6th St SE at 3rd Av SE		When 6th St Bridge is constructed, install E-W median refuge crossing for 6th St bikeway route as recommended in Downtown Mobility Plan	$12,500
INTERSECTION	Silver Creek Trail at 11th Ave NE		Install High Visibility Roadway Crossing where Silver Creek Trail crosses 11th Ave SE using Advisory Beacon and pavement markings	$26,600
Bike Connector	13th Ave SE on South Side of 6th St		Implement connector path between 6th St SE and 13th Av Cul-De-Sac on south side of 6th St to provide connection between 8 1/2 St & 6th St	$5,100
Bike Connector	1st Av NE at Civic Center Dr		To connect 1st Av NE Sharrow Route with West Silver Lake DR bike lanes, construct path in SE quadrant of Civic Center Dr/ Silver Lake Dr intersection, implement high visiblity pavement markings at intersection of Civic Center Dr and West Silver Lake Dr and install Advisory Beacon	$74,700
Design Study				
3rd St SW *(Local Bikeway)*	Zumbro River to 2nd Av SW	0.25	Evaluate implementation of Downtown Mobility Plan to connect Zumbro River Trail to 2nd A v SW bike lanes along 3rd St SE	
Alignment / Need Study				
Chester Woods Trail Connection *(Regional Bike Route)*	CSAH 11 at Meadow Dr SE to CSAH 22 @ TH 14		Evaluate alternative routes for Regional Bike Route connection of Chester Woods Trail to Urban Area Bike System at intersection of TH 14 and East Circle Dr	
4th St SE	3rd Av SE to 19th Av SE		Assess need and feasibility of developing on-street bike facility along 4th St SE	


Ward 5
East / North
Crossing Improvements
Grade Separation
Bridge Improvement
Active Warning
Median Refuge
Transition Box
Colored Lane Crossing
2 Stage Left Turn
Crossing Study
CORRIDOR IMPROVEMENT CONCEPTS
Trail
Path
Future Trail
Future Path
Shoulder Bikeway
Wide Outside Lane
Bike Route
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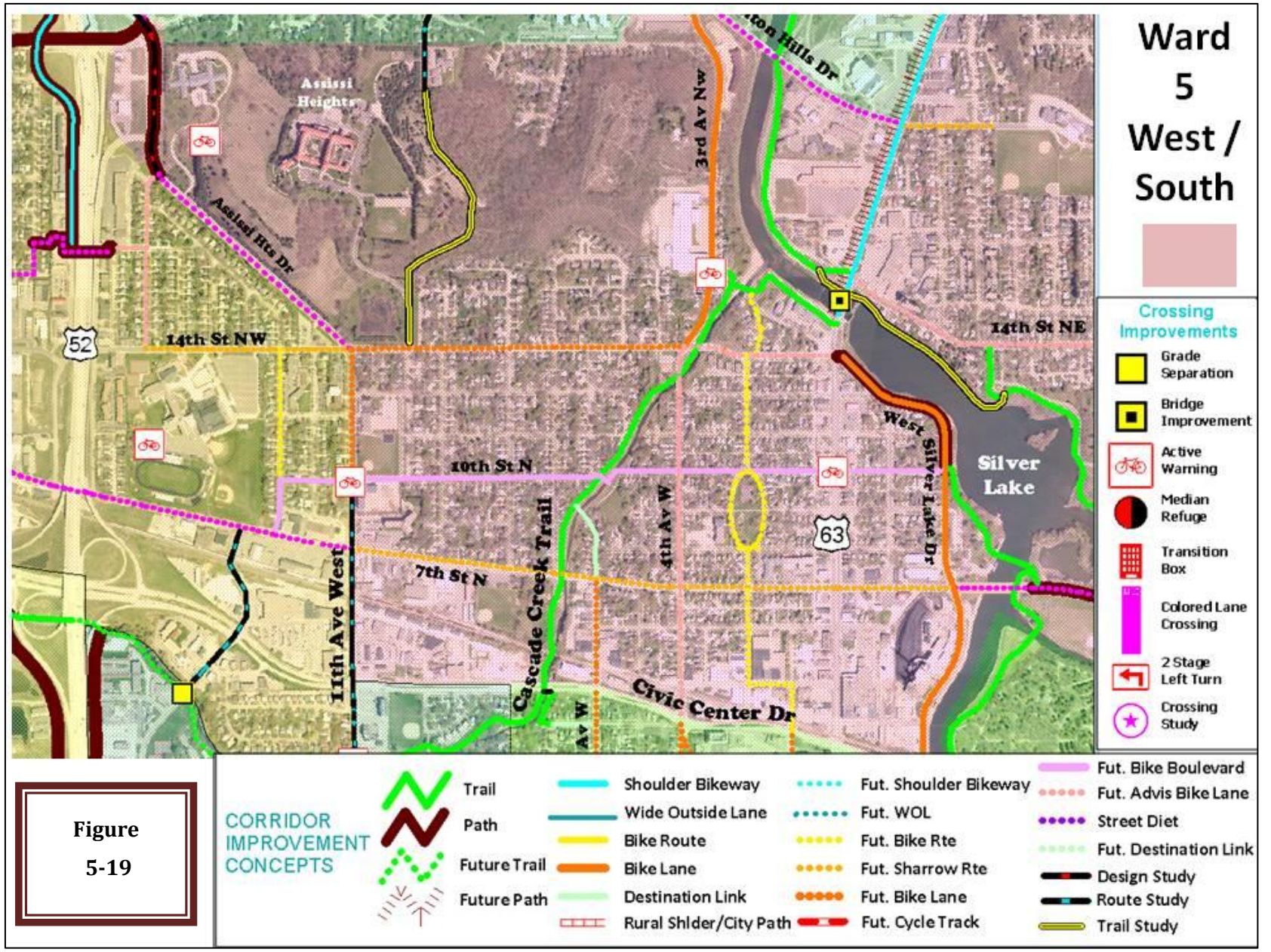
Fut. Sharrow Rte
Fut. Bike Lane
Fut. Cycle Track
Fut. Bike Boulevard
Fut. Advis Bike Lane
Street Diet
Fut. Destination Link
Design Study
Route Study
Trail Study
Century H.S.
Quarry Hill Park
14th St NE
7th St N
11th Av NE
9th Av NW
West River Parkway
Northern Valley Dr
Northern Heights Dr
Viola Rd
Stonehedge Dr
Silver Lake

Figure 5-18


Ward 5 West / South
Crossing Improvements
Grade Separation
Bridge Improvement
Active Warning
Median Refuge
Transition Box
Colored Lane Crossing
2 Stage Left Turn
Crossing Study
Assisi Heights
Assisi Hts Dr
3rd Av Nw
14th St NW
14th St NE
52
10th St N
7th St N
11th Ave West
Cascade Creek Trail
4th Av W
63
West Silver Lake Dr
Silver Lake
Civic Center Dr
CORRIDOR IMPROVEMENT CONCEPTS
Trail
Path
Future Trail
Future Path
Shoulder Bikeway
Wide Outside Lane
Bike Route
Bike Lane
Destination Link
Rural Shlder/City Path
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Fut. WOL
Fut. Bike Rte
Fut. Sharrow Rte
Fut. Bike Lane
Fut. Cycle Track
Fut. Bike Boulevard
Fut. Advis Bike Lane
Street Diet
Fut. Destination Link
Design Study
Route Study
Trail Study

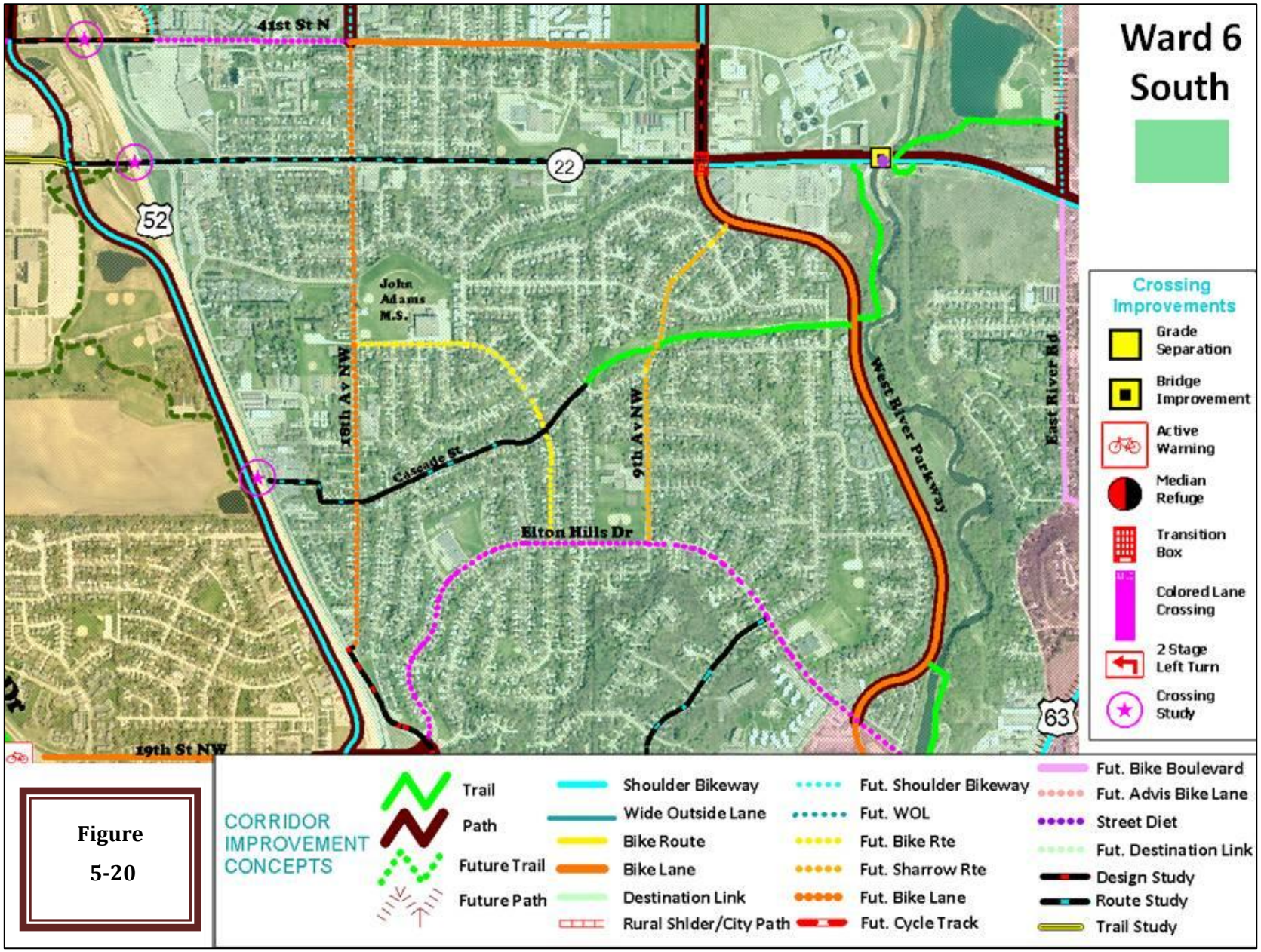
Figure 5-19

TABLE 5-15: WARD 5 IMPROVEMENT TABLE

Route	Termini	Length (mi)	Improvement	Cost
WARD 5	**NORTHEAST ROCHESTER – Generally the area north of CP Railroad corridor and east of Broadway, including area south and east of Assisi Heights**			
	REGIONAL BIKEWAYS			
55th St NE	TH 63 to West River Road	1.48	Include wide paved shoulders in road construction for Type A cyclist and construct path on south side for Type B/C	$391,500
TH 63	37th St NE to 48th st NE	0.97	Eliminate gaps in path between 37th and 41st St NE and extend path from 41st St to 55th St	$130,500
	MAJOR CITY BIKEWAYS			
37th St NE	TH 63 to E River Rd	0.27	Widen path on south side and add high conflict pavement markings across free flow right turn lanes at TH 63	$78,300
Viola Rd	CSAH 22 to 36th Av	1.02	Eliminate gaps in path along south side of Viola Rd	$125,500
14th St NE	TH 63 to 14th Av NE	0.72	Implement Advisory bike lanes	$36,000
14th St NW	TH 63 to 11th Av NW	0.80	Implement Advisory bike lanes	$39,800
4th Av NW	14th St to Civic Center Dr	0.61	Implement Advisory bike lanes	$30,700
Assissi Hts Drive	11th Ave to 16th Ave NW	0.43	Implement Road Diet	$25,000
7th St NE	11th Ave NE to West Silver Lake Dr	1.00	Implement 4 lane to 3 lane road diet to add bike lanes. Reduce bridge to two lanes with two bike lanes	$58,300
7th St NE	West Silver Lake Dr to 11th Ave NW	1.00	Implement Sharrow route	$15,000
North Broadway	14th St NE to 37th St	1.52	Construct path along west side of TH 63 from 14th St to Northern Hills; add crossover transition at Northern Hills intersection including markings and advisory beacon to shift path from east to west side	$418,600
11th Av NE	7th St NE To 14th St NE	0.40	Implement Advisory Bike lanes	$19,900
6th Ave NW	Cascade Creek to Civic Center Dr	0.30	Implement signed bike route north of 7th St and bike lanes from 7th St to Civic Center Dr	$9,000
	LOCAL AREA BIKEWAYS			
48th St NE	TH 63 to CR 124	0.98	When road is reconstucted include paved striped shoulders for Type A cyclists; construct path on south side for Type B/C cyclists	$261,000

Route	Termini	Length (mi)	Improvement	Cost
10th St NE/NW	Silver Lake Dr to 11th Ave NW	0.98	Implement Level 2 Bicycle Boulevard; Implement High Visibiity crossing improvements at TH 63	$44,600
17th St NE	TH 63 to Kellogg MS Entrance	0.17	Implement Sharrow route	$1,800
Stonehedge Dr	CSAH 22 to 48th st NE	1.36	Implement Signed Bike route	$6,900
Silver Creek Rd	CSAH 22 to 1 mile east	0.95	Bike Path on north side and Shoulder Bikeway with development	$255,700
Northern Heights Dr	TH 63 to Viola Rd	1.19	Implement Signed Bike Route	$14,300
Northern Valley Dr	CSAH 22 to Viola Rd	1.27	Implement Signed Bike Route	$22,800
24th St / 3rd Ave NE	TH 63 to 37th St		Implement Level 2 Bicycle Boulevard; Implement High Visibiity crossing improvements at TH 63	$27,300
1st / 2nd Av NW	14th St NW to Civic Center Dr	0.72	Implement Signed Bike Route	$5,400
11th Ave NW	14th St NW to 10th st NW	0.21	Install Bike lanes from 14th St to 10th St NW	$10,000
Century Hills Dr	CSAH 2 to CSAH 22	0.95	Implement Signed Bike Route	$4,800
Parkwood Hills Dr	Viola Rd to Quarry Hill Trail	0.34	Implement Signed Bike Route	$1,800
	EXPRESS BIKEWAYS			
None				
	CRITICAL CROSSINGS			
North Broadway Bridge	14th St NE to 14th St NW	0.13	Evaluate options and implement improvement to provide bike facility across North Broadway Bridge. Study options may include 1) removal of median across bridge ($$ estimated); 2) construct cantilevered path addition to bridge; 3) replace bridge	$672,000
INTERSECTION	TH 63 & 37th St		implement colored bike lane on free flow right turn lane crossovers with advisory signage	$14,400
INTERSECTION	TH 63 and 55th St		Implement bike path intersection crossover lanes & advisory signage	$8,000
INTERSECTION	Assissi Hts Dr and 16th Ave NW		Install bike lane across east approach at Elton Hills Dr and High Visibilty crossing at intersectin of Assissi Dr and 16th Av NW including Hawk or Advisory Beacon and Pavement Marking	$60,000
BIKE CROSSING	3rd Ave NW connection to Cascade Creek Trail north of 14th St		Install colored pavement markings and advisory beacon to accommodate crossover from SB bike lane to trail connection along 3rd Ave NW north of 14th St Nw	$27,500

Route	Termini	Length (mi)	Improvement	Cost
Design Study				
Assissi Hts Drive / East Frontage Rd	16th Av NW (S) to 18th Av NW (N)	0.52	Evaluate options and implement improvement to provide on-street facility for Type A/B users. Among options to consider include 1) WOL; 2) Bike Lanes($); 3) Cycle track	$25,200
Alignment / Need Study				
Assissi Heights Trail			Assess opportunity and need to develop trail across Assissi Heights to connecting Elton Hills & Washington neighborhoods	


Ward 6
South
41st St N
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52
John Adams M.S.
10th Av NW
9th Av NW
Cascade St
Elton Hills Dr
West River Parkway
East River Rd
63
19th St NW
Crossing Improvements
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Fut. Bike Rte
Fut. Sharrow Rte
Fut. Bike Lane
Fut. Cycle Track
Fut. Bike Boulevard
Fut. Advis Bike Lane
Street Diet
Fut. Destination Link
Design Study
Route Study
Trail Study

Figure 5-20

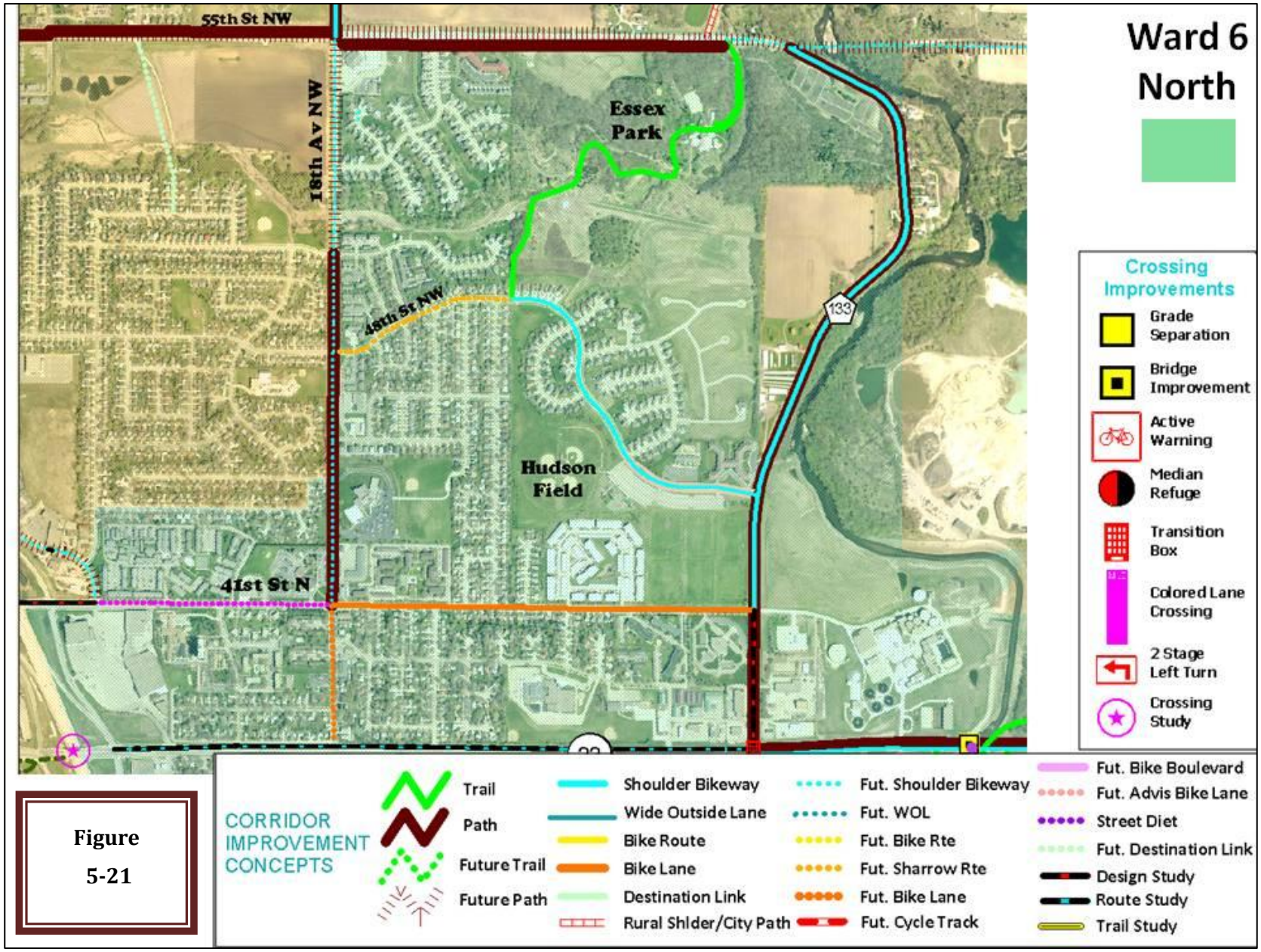

55th St NW
18th Av NW
Essex Park
48th St NW
Hudson Field
41st St N
133
Ward 6 North
Crossing Improvements
Grade Separation
Bridge Improvement
Active Warning
Median Refuge
Transition Box
Colored Lane Crossing
2 Stage Left Turn
Crossing Study
CORRIDOR IMPROVEMENT CONCEPTS
Trail
Path
Future Trail
Future Path
Shoulder Bikeway
Wide Outside Lane
Bike Route
Bike Lane
Destination Link
Rural Shlder/City Path
Fut. Shoulder Bikeway
Fut. WOL
Fut. Bike Rte
Fut. Sharrow Rte
Fut. Bike Lane
Fut. Cycle Track
Fut. Bike Boulevard
Fut. Advis Bike Lane
Street Diet
Fut. Destination Link
Design Study
Route Study
Trail Study

Figure 5-21

TABLE 5-16: WARD 6 IMPROVEMENT TABLE

Route	Termini	Length (mi)	Improvement	Cost
WARD 6	**Elton Hills Area– Area generally north of Elton Hills Dr between East River Rd and TH 52**			
	REGIONAL BIKEWAYS			
55th St NW	West River Rd to 18th Ave	0.76	Construct path on north side of 55th St	$165,700
West River Rd	37th St to 41st St	0.23	Implement WOL or Bike Lane to serve southbound Type A cyclist	$6,100
	MAJOR CITY BIKEWAYS			
Elton Hills Dr	Broadway Av to Assissi Dr	1.86	Implement 4 lane to 3 lane Road Diet	$107,700
37th St NW	East River rd to West River Rd	1.80	Upgrade path west of Zumbro River for B/C Users; (*See note for Zumbro River Bridge under Barriers/Conflicts)*	$47,000
18th Ave NW	41st St to 55th St NW	0.98	Extend west side path from 45th to 55th St; upgrade path south of 45th St to 8' width; provide shoulder bike lane or WOL for Type A cyclist when road reconstucted	$183,700
18th Ave NW	41st St to East Frontage Rd	1.27	Implement Bike Lane	$61,000
	LOCAL AREA BIKEWAYS			
48th St NW	18th Av NW to West River Rd	1.40	Implement Bike Lane from Essex Park connection west to 18th Av & Signed Bike Route east to West River Rd	$6,500
9th Ave NW	West River Rd to Elton Hill DR	0.74	Implement Sharrow Route	$11,100
12th Ave / 31st St	18th Ave to Elton Hills Dr	0.74	Implement Signed bike Route	$3,700
	EXPRESS BIKEWAYS			
NONE				
	CRITICAL CROSSINGS			
37th St NW	West River Road Intersection		Install high conflict transition crossing from south side path to north side cycle track on east approach to 37th st / West River road Intersection	$32,400
Design Study				
BRIDGE (*Major City Bikeway)*	Zumbro River Bridge on 37th St NW		Evaluation of 37th St Bridge to improve bridge crossing with full size path crossing on south side/ shoulder enhancement or cantilevered path on north side	

Route	Termini	Length (mi)	Improvement	Cost
Alignment / Need Study				
Elton Hills Neighborhood TH 52 Crossover	TH 52 between 26th St and 41st St NW		Evaluate options for connecting bike network east of TH 52 to the TH 52 West Frontage Rd and bike corridors west of TH 52; consider options including 41st St and 37th St Bridges and option of developing a Cascade Street bike corridor in Elton Hills neighborhood leading to grade separated crossing of TH 52 north of 26th St NW	
37th St NW	West River Rd to East Frontage Rd TH 52		Improve path on south side & construct 2-way cycle track from West River Rd to 18th Av NW and west end N Frontage Rd to E Frontage Rd TH 52 , using N Frontage Rd for 2-way bike traffic from 18th Ave to Maplewood entrance	

CHAPTER 6

Bicycle Support Infrastructure

For cycling to serve as a viable and attractive form of not only recreational but utilitarian transportation, a system of support facilities and services is essential to complement planned improvements in the bikeway network. Useful complementary facilities and services include such items as convenient and sufficient bicycle parking, other end-of-trip facilities such as showers or lockers at convenient locations, in-trip items such as wayfinding signage with clearly marked bike routes and destination information, complemented by online or print materials such as bike maps or route planning services. Providing this type support infrastructure ensures that bicycling can serve not only as a viable form of recreation but a viable transportation mode as well.

The information related to support infrastructure and services found in this chapter includes:

- *A summary highlighting the specific needs related to bicycle supporting infrastructure that were identified as part of the public input and policy review phase of the study.*
- *A summary of best practices and potential action items responding to the goals and objectives for support infrastructure identified in Chapter 4.*
- *A review of key features that need to be considered in the implementation of bicycle support infrastructure, including cost information and other resources needed to implement recommended actions.*

Prioritized recommendations for bicycle supporting infrastructure are included as part of **Chapter 8, Recommendations and Implementation**, of the Bicycle Master Plan report.

SUPPORT INFRASTRUCTURE NEEDS AND ISSUES

For the purposes of this plan support infrastructure and services are grouped in five primary areas of action. These include

1. Bicycle Parking
2. Information about the Bikeway Network (pre-trip and in-route information)
3. Maintenance Policies and Practices
4. Bus / Bike Integration
5. End-of-Trip Facilities (other than bike parking)

The final section of this chapter includes a discussion of these items in the context of zoning and land development regulations. A number of these support items, such as bicycle parking, could potentially be addressed in the form of zoning or land use regulations or guidelines if the community chose to approach the issue from that perspective.

In the early input Focus Groups and Public Meetings conducted as part of the plan development process, all five of these support items were identified by multiple individuals as important needs. The following list reflects a brief synopsis of the comments received:

- *There is a need for more bike parking and different types of bike parking (racks, lockers, corrals, valet, etc) at key destinations in the city of Rochester*
- *There is a need for wayfinding signage along the bikeway network including route identification, destination/directional indicators and distance information.*
- *There is a need for a better Rochester area bike map accessible through various means (paper maps, on-line) with both route and service information.*
- *Inadequate street cleaning and potholes are the most frequently encountered factors that discourages the use of bicycles for day to day trips.*
- *a means of easily reporting maintenance issues such as potholes, cracks or glass/sand on trails and paths should be developed.*
- *(Pre-trip) Route Planning information would be useful to have available*
- *Bike Rental or Bike Share programs in key locations such as in the medical campus area should be considered.*
- *Businesses should be encouraged to provide workplace accommodations like showers, lockers and changing rooms for people who wish to bike to work*

OBJECTIVES / BEST PRACTICES /ACTION ITEMS

In Chapter 4 a set goals and objectives were listed specific to the infrastructure supporting bicycling. The following table identifies for each of the objectives Best Practices and potential actions that could be considered to address the needs that have been articulated

Table 6-1: Best Practices to Enhance Support Services and Facilities

Goal: Improve supporting facilities and services to make bicycle travel more convenient and improve in-trip and end-of-trip service quality

Objective #1	Maintain roadways and bikeways to a reasonable level of rideability with consideration of surface and clearance conditions in all seasons
Best Practices	**Adopt Bikeway Network Maintenance Policies** See Seattle Bicycle Master Plan Bike System Maintenance Policies for on-road and trail facilities http://www.seattle.gov/transportation/bikemaster.htm See City of Minneapolis Bicycle Master Plan Maintenance Policies http://www.ci.minneapolis.mn.us/bicycles/bicycle-plans.asp See City of Long Beach Bicycle Master Plan Maintenance Policies (Chapter 9 of Plan) http://www.longbeach.gov/pw/traffic/projects/bicycle_master_plan.asp **Reporting System for Maintenance needs and hazards** See City of New Haven, CT use of SeeClickFix online reporting tool *http://seeclickfix.com/search?q=bicycle+&at=New+Haven%2C+CT&x=5&y=9*

	See Alameda and Contra Costra County hazard reporting system http://www.bfbc.org/?q=hazards_map **Winter Bikeway Maintenance** See City of St Paul Marshall Ave Winter Bike Lane plowing pilot project to provide weekly maintenance using nighttime plowing to keep routes clear http://www.bikewalktwincities.org/news-events/events/public-meetinghearing-marshall-avenue-winter-bike-lane-plowing
Typical Costs	Typical Maintenance Costs for planning purposes based on Peer City Review: Bike route: $1,025/mi (Milwaukee); $1,000/mi (San Diego) Bike Lane: $6,860 /mi (Milwaukee); $2,000/mi (San Diego) Bike Trail: $2,250/mi (Milwaukee); $17,000/mi (San Diego) Snow Removal: $4146/mi (Des Moines);
Potential Actions	Create a process for community residents to report maintenance issues or suggest improvements Establish guidelines for maintenance of bikeways to guide routine maintenance Develop/Maintain a list of priorities for overlay and reconstruction Identify bikeway corridors where year-round accessibility will be provided Develop dedicated funding stream(s) to maintain the bikeway system at desired level of service; Identify new or innovative methods to more effectively and efficiently maintain system Implement Adopt-a-Bikeway programs on selected multi-use paths and recreational trails to assist with maintenance efforts. Seek funds to perform tree trimming that will enhance the effectiveness of streetlights on bicycle routes Standardize signage and pavement markings for bikeways and develop a strategy and funding for maintaining them
Objective #2	**Insure that secure and convenient bicycle parking is available at all cycling destinations**
Best Practices	**Comprehensive Bike Parking Program** See Ann Arbor Bicycle Parking Program http://www.getdowntown.org/bike/bike_parking.html **Bike Parking Regulation or Ordinance** The Edina Bicycle Master Plan includes recommendations for a range of land uses and distinguishes between long term and short term bike parking, which require different types of bike parking structures.

	http://www.bikeedina.org/ **Programs to assist in development of Bike Parking** Business Bike Rack Program / Chicago Works with businesses to install bike racks; has a bike rack finder feature; http://www.chicagobikes.org/bikeparking/ Minneapolis Bike Rack cost share program involving sharing of cost 50/50 with businesses at eligible locations with free installation at locations such as schools. http://www.ci.minneapolis.mn.us/bicycles/bikeparking-rack.asp **On- Street seasonal Bike parking** Seattle On-Street Bike Parking Program http://www.seattle.gov/transportation/bikeparking.htm
Typical Costs	Typical Costs for Bike Parking for Peer City Review Bike Rack (One Rack provides space for two bicycles) • $200 - $250 per structure is typical cost for bike rack structure Bike Lockers (One locker will provide space for two bicycles) • $1500 per locker
Potential Actions	Inventory bicycle parking downtown and at all commercial centers and develop a plan to improve or enhance bicycle parking. Ensure the provision of adequate short-term and long-term bicycle parking (at least a portion of which should be covered) in employment centers, commercial areas and multi-family residential developments Develop guidelines for acceptable rack designs; Produce a flier with acceptable rack guidelines for business owners and developers Work with local business associations and other stakeholders to develop short and long term plans to address immediate and future bicycle parking needs Develop a streamlined process for businesses wishing to install bicycle parking in the public right of way in downtown and other pedestrian-scale business districts; Finalize policy and facility requirements for the approval and funding of on-street grouped bicycle parking facilities in metered and non-metered areas. Develop incentives and assistance to encourage private building owners to purchase, obtain permit and install bicycle racks in the public right-of-way. Work with event organizers to provide attended bicycle parking at large events such as Down by the Riverside or Thursday's on First. Consider the adoption of bicycle parking requirements as part of local land development ordinances to insure that a minimum level of bicycle parking is provided in future development. The Rochester Downtown Master Plan includes recommended requirements for typical downtown land uses that could be utilized as a starting point for an ordinance.

Objective #3	Provide user-friendly information about the bicycle network and cycling practice that is easily accessible to users
Best Practices	**Wayfinding (In-route directional and destination signing)** The Washington DC region undertook a comprehensive study to identify Best Practices in Wayfinding and used the information to coordinate deployment of wayfinding signage. http://www.mwcog.org/uploads/committee-documents/t1dZW1k20070516090831.pdf **Bike Maps** Davis, CA, provides a highly informative Bike Map that includes information on repairs, rentals, etc http://www.city.davis.ca.us/gis/bikemap.pdf Minneapolis provides access to a high resolution version of its bike map available on-line. http://www.ci.minneapolis.mn.us/bicycles/bikemap/ **Informational Handbooks and Websites** Bike/Walk Twin Cities web site provides a wide range of information of interest to cyclists http://www.bikewalktwincities.org/ Examples of Handbooks packed with information for commuters or other active riders include New Haven, CT Smart Cycling Handbook and Georgia's Bike Sense Handbook http://www.cityofnewhaven.com/streetsmarts/index.asp http://admin.ibt.org.il/files/544855262122.pdf More cities are beginning to maintain a presence for local bicycling on all the various social networking sites such as Facebook, Twitter. **Route Plannning Tools** In Minneapolis, a University of Minnesota professor is developing an online route planning tool titled Cyclopath which is a geo-wiki allowing user annotation and user editable content to be added to the on-line map for others to view. http://www.cts.umn.edu/Publications/CTSReport/2011/07/bicycle.html Similar results may be achievable using a tool such as Google Maps **Branding the local Bike Program** City of Milwaukee has developed a "Brand" identity for its bicycling program: http://city.milwaukee.gov/BicyclePlanning22332.htm Edina provides a simple structure under the brand **BikeEdina** that includes a range of information http://www.bikeedina.org/
Typical Costs	Bike Map Production Cost - $15,000 to $50,000 (Des Moines) Bike Map Reproduction Costs – approximately $1/map for paper version . Milwaukee has a budget of $7,000/yr for bike maps and $5,000/yr for printing information pamphlets. Whatcom County (rural Spokane WA) budgets $2,000 for printing costs.

	Web Site Development for Informational Website – cost up to $40,000 (Portland)
Potential Actions	Implement the recommendations from the Wayfinding Study being conducted by Olmsted County Public Health Services Work with City of Rochester to enhance the existing bicycle map with additional information on parking/rentals/repairs and update on an annual basis. Make bike map available on line and paper copies through local merchants. Consider advertising to help defray the cost of printing the map. Develop an on-line bicycle trip planning feature on the City's website or Bike Rochester website Develop the "Bike Rochester" brand by developing a logo and widely using it on bicycle related materials and web sites Develop a central "Bike Rochester" web site containing a wide range of information useful to frequent and casual riders Provide in-route amenities such as information kiosks, rest areas, water fountains, etc; identify routes and locations on which in-trip service kiosks or facilities should be provided
Objective #4	**Provide enhancements that would facilitate bike & ride multimodal trip-making on the local bus system or at Park and Ride locations.**
Best Practices	**Bike Parking at Transit Hubs** See Seattle program that includes lockers, bike racks and bike stations at transit centers and park and ride lots http://metro.kingcounty.gov/tops/bike/parking.html
Typical Costs	Cost for Bus Bike Rack will range from $600 to $1500 per bus Bike to Work Programs including information, education, promotional materials • Des Moines Master Plan proposes of $5,000-$15,000 per year • Milwaukee Master Plan proposes $5,000 per year for Bike to Work program
Potential Actions	Continue to provide training for bicyclists on the use of bike racks on buses and expand availability of tools such as current video available on Rochester Transit System web site Promote to individuals the combined use of bicycle and transit for purposes such as the trip to work through information packets, mentoring, or incentives such as providing Guaranteed Ride Home services to bike commuters, Identify park and ride lots that are not connected to the urban bikeway network and work to connect bikeway facilities to these sites Establish bicycle "park and ride" facilities with secure long term parking and other amenities as well as scheduled transit service in order to encourage persons to bike to transit at park and ride lots

	Ensure that all fixed route transit vehicles continue to be equipped with bike racks Work with major employers and activity center managers to identify end of trip infrastructure needed to encourage employees to bike to work
Objective #5	**In high demand areas where it can be justified, provide self-serve or staffed repair, rental and information services for bicycle users.**
Best Practices	**Self Service Repair** Trek Bicycles has developed prototype self-service bicycle repair stations which have been deployed in Madison, WI to provide cyclists the opportunity to do quick routine maintenance if needed during a trip. Information on this pilot program was accessed on page 3 of the following document: http://www.ci.minneapolis.mn.us/bicycles/Ch6SupportFacilities.pdf **Bikestations** Find information about the Bikestation ©brand of staffed service facilities http://home.bikestation.com/ Minneapolis FreeWheel Bike Center http://freewheelbike.com/articles/freewheel-midtown-bike-center-pg302.htm **Bike Rental Programs** Minneapolis Bike Share Program http://www.ci.minneapolis.mn.us/bicycles/bikesharing.asp Denver Bike Sharing Program http://denverbikesharing.org/
Typical Costs	City of Edina identified startup cost of $250,000 in its 2007 Master Plan for a Bike Station at Southdale Shopping Center. Typical start-up costs for a bike sharing program will range from $3000 to $4000 per bike on the low end to $10,000 per bike on the high end. Cost will vary by coverage area, number of stations, level of marketing effort, etc.
Potential Actions	Work with cycling interests and downtown business interests to identify potential locations for a Bike Station facility Evaluate the demand for Bike Sharing in targeted areas such as downtown Rochester and investigate piloting a program if demand for such a program can be demonstrated.
Objective #6	**Provide visitors to Rochester with access to bicycles and targeted information about biking opportunities in the Rochester area**
Best Practices	**Bike Information Programs for Visitors** See targeted information programs such as Stanford University program for parents and visitors, or San Antonio program highlighting sight-seeing by bicycle http://transportation.stanford.edu/bike-parents/ http://www.visitsanantonio.com/visitors/play/outdoor-recreation/FiveDowntownBikeRides/index.aspx

	Short term Bicycle Rental Programs Bike Sharing Minneapolis Bike Share Program https://www.niceridemn.org/index.php
Potential Actions	Work with the hospitality industry to create a bicycle tourism package that can be distributed to visitors by local lodging establishments

KEY FEATURE DISCUSSION: BICYCLE PARKING

Like motorists, bicyclists desire secure, convenient facilities to store their vehicles when they reach any destination. The lack of adequate bicycle parking facilities and fear of theft are deterrents to bicycle riding. Well-designed racks and lockers located close to building entrances can encourage bicycle use and increase overall parking capacity at little cost. Well planned bicycle parking also eliminates the clutter of haphazard parking options, will reduce hazard to pedestrians and tree damage from chained bicycles.

By following a number of simple and basic principles when planning and creating bicycle parking facilities, it is possible to provide good solutions. A good set of principles to consider when considering the placement of bicycle parking include:

- *Racks should be convenient*

  Bicycle parking must be as convenient or more convenient than auto parking. In strip developments, place parking units no further than 50 feet from the main building entrance or no further than the closest non-handicap automobile parking spaces. In commercial neighborhoods, smaller racks should be dispersed along sidewalks to provide close access to multiple storefronts.

- *Racks must be visible*

  Parked bicycles should be easily visible from the street or adjacent to high pedestrian traffic areas to discourage bike theft and vandalism.

- *Racks must be accessible*

  Locate racks far enough away from walls and other obstacles so that a bicycle can maneuver in and out even when other bikes are using the rack.

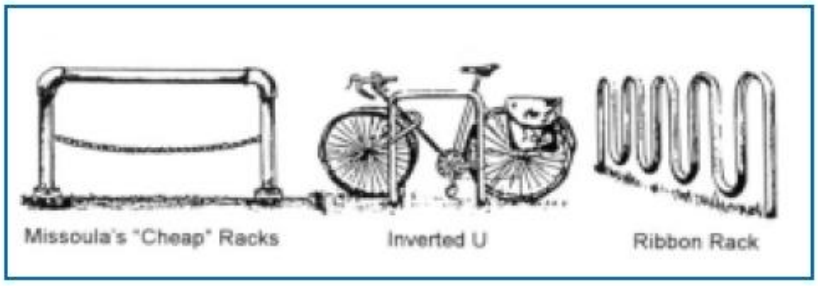
- *Racks should not interfere with other uses*

  This includes taking care not to infringe on pedestrian travel zones, as well as separating bike and auto parking areas to protect parked bicycles from being damaged by motor vehicles.

- *Racks should ideally be protected from inclement weather*

Whenever possible, install bicycle parking under an existing awning or overhang, and always place racks on a paved surface.

Bicycle parking should be provided that serves the different needs of short term and long term parkers. **Short-term parking is** meant to accommodate visitors, customers, messengers and others expected to depart within two hours. Key factors to account when designing short term parking are rack design, location, and weather protection. Most of the demand for bicycle parking is met through short-term parking.



Short-Term Bicycle Parking

Long-term parking is meant to accommodate employees, students, residents, commuters, and others expected to park more than two hours. Key factors to account for in designing long term parking is that it be secure and weather-protected.

Above: Missoula, Montana.

Above: Public Service Center lockers.

Some cities are beginning to use on-street space to meet the need for short term bike parking on either a permanent or seasonal basis. A typical vehicular parking space can provide adequate room for up to ten bicycle parking spaces. Different approaches to on-street parking development have included public provision of bike parking, as well as public authorization of privately installed parking upon request from adjacent business or residential property owners.

There are many examples of model bicycle parking guidelines that address acceptable size, type, material, placement and maintenance of bike racks which could be used to prepare a brief flier summarizing acceptable rack types and placement in Rochester. This could be included with all permits for construction of new commercial, industrial, office and multifamily housing. The city should also lead by example by providing bicycle lockers or indoor bicycle rooms at all

municipal employment locations with over ten employees

Consideration should also be given to the development and adoption of parking requirements that public and private development would be required to meet as a condition of permit approval. Such requirements are typically tailored so that parking space requirements vary by type of land use, with criteria recommended for both short term and long term parking. The Rochester Downtown Mobility Plan includes recommendations for typical land uses in Downtown Rochester. Some cities have paired adoption of bike parking ordinances for new development with programs that provide for public participation in the development of bike parking, through means such as providing racks (in order to insure standardized design) or matching funds to assist private owners in the installation of facilities.

ROCHESTER
DOWNTOWN MOBILITY PLAN

BICYCLE NETWORK ACTION PLAN

Figure 1 Recommended Bike Parking Requirements for Typical Land Uses in Downtown Rochester

	Short-term (less than 3 hours)		Long-term (all day)	
Type of Activity	Bike Parking Requirement	Bike Parking Minimum	Bike Parking Requirement	Bike Parking Minimum
Residential (Multi-family)[1]	0.05 spaces per bedroom	2 spaces	0.5 spaces per bedroom	2 spaces
Hospital/Health Care	1 space for each 20,000 sf of floor area	2 spaces	1 space for each 20 employees or one space for each 75,000 sf of floor area, whichever is greater	2 spaces
Office	1 space for each 20,000 sf of floor area	2 spaces	1 space for each 10,000 sf of floor area	2 spaces
Retail[2]	1 space for each 5,000 sf of floor area	2 spaces	1 space for each 12,000 sf of floor area	2 spaces
College/University	1 space for each 10 students of planned capacity	2 spaces	1 space for each 10 employees plus 1 space for each 10 students of planned capacity; or 1 space for each 20,000 sf of floor area, which-ever is greater	None provided
Civic (Government/ Library)	1 space per 10,000 sf of floor area	2 spaces	1 space per 10 employees	2 spaces

1 Assumes units are not provided a private garage.

2 General retail; does not include general food sales or grocery stores, which would have a greater requirement.

Source: Association of Pedestrian and Bicycle Professionals, Bicycle Parking Guidelines, 2nd Edition, p. 3-2 – 3-4 (2010).

Note: This is a selection of typical land uses found in downtown Rochester. A more comprehensive bike parking policy would require a more detailed set of requirements for all land uses specific to Downtown.

KEY FEATURE DISCUSSION: WAYFINDING

The ability to navigate through a city is informed by landmarks, natural features and other visual cues. Placing signs along bikeway corridors can provide bicyclists information about their direction of travel, direction to destinations and the riding time/distance to those destinations. Wayfinding signage also visually cues motorists that they are driving along a bicycle route and should use added caution. These measures can increase users comfort and the accessibility of the bikeway network.

Signs are typically placed at key locations along bicycle routes, including the intersection of multiple routes. While guidance on the placement of signs exists in recognized publications on standards for traffic sign placement, such as the Manual on Uniform Traffic Control Design

(MUTCD), local jurisdictions may want to consider refining these standards to address such factors as insuring signs are posted at a level most visible to bicyclists, or to raise awareness among motorists about the potential presence of bicyclists at locations such as complex intersections where standard signage may not adequately alert all users.

Olmsted County Public Health Services has been working on a Wayfinding Program initiative in parallel with development of the Bicycle Master Plan. Desirably, the results of this effort will be implemented to create a community-wide bicycle wayfinding signage plan that will identify:

- Principles for sign locations or identification of recommended locations;
- The type of information and design features of wayfinding signage;
- The destinations to be highlighted along the bikeway network.

Costing about $250 each, wayfinding signs are a relatively cost-effective means for improving the bicycling environment.

KEY FEATURE DISCUSSION: END OF TRIP FACILITIES

End of trip facilities are those provisions made for cyclists at the end of their trip that makes it more convenient and inviting for people to arrive by bicycle at a destination. End-of-trip facilities include bicycle parking (discussed separately in previous section), showers, changing facilities, car-sharing, and bike repair services. These components of the bicycle system are important elements that can make the decision to bicycle more attractive to users.

One of the major factors to consider when assessing end-of-trip facilities is the power such improvements have to influence an individual's decision of whether or not to commute by bicycle. A review of the literature indicates that the lack of facilities including bicycle parking, showers, and locker rooms at workplaces significantly deters bicycle commuting.

Above: Clothing Storage Lockers at the Mellennium Park Bicycle Station in Downtown Chicago.

Left/Right: Federal Building showers and clothing storage lockers. The Hawthorne Transportation Center at the intersection of 10th Street and Hawthorne also has showers and clothing storage lockers for public use. These facilities can be rented in addition to bicycle lockers. Several Downtown Minneapolis companies including Target and Ameriprise provide showers and clothing storage areas for employees in addition to secure bicycle parking.

Inclusion of adequate ancillary facilities for bicyclists, though sometimes viewed as optional components of a transportation or land use plan, is as much a logical requirement for making cycling more inviting as is providing adequate parking for automobiles. Some cities have adopted code changes to encourage developers to provide end-of-trip facilities by providing incentives to those who provide both showers, changing areas, and locker rooms for commuting cyclists.

More significant end of trip investments that would likely require public participation include "Bike Stations", which are full service bicycle service facilities typically staffed or with membership-only access, providing indoor bicycle storage and services such as bike repair, bike rentals, concessions, bicycle sales, and merchandising. Some bicycle stations include restrooms, drinking fountains, lockers, and shower facilities, and they are also excellent locations to distribute maps and to provide the public with basic information about local trails, safety, and rules of the road. Bicycle Stations are also good locations for holding bicycle maintenance workshops or other community meetings.

KEY FEATURE DISCUSSION: BIKES / BUSES / PARK AND RIDES

Enhancing the bicycle-transit connection can play an important role in allowing bicycling to play a bigger role in meeting everyday travel needs. Easy and convenient linkages between bicycle and transit routes can help increase the number of potential bicycle users by allowing cyclists to reach more distant destinations within a reasonable travel time, and by alleviating potential concerns about lengthy trips, riding at night, or in poor weather. Good bike-transit connections also help make transit more effective if people on bicycles can easily reach transit stations. Bicycle and transit integration can serve to expand the number of residents who consider both bicycling and transit as feasible transportation alternatives. By using transit for a portion of their trips, cyclists have the option to avoid segments with steep hills or difficult connections as well as avoiding bad weather or other barriers to bicycling.

There are four main components of bicycle-transit integration:

- Accommodating bicycles on transit vehicles
- Offering bicycle parking at transit and park and ride locations
- Improving bikeways to transit or park and ride locations
- Encouraging usage of bicycle and transit programs

Bikes on transit

Allowing bikes on transit helps extend the distance that a cyclist may reach in a reasonable travel time. The Rochester City Lines system has greatly strengthened the interconnection between cycling and transit in the Rochester area by providing bike racks on all of its buses.

Bike parking at transit

Providing secure long-term bicycle parking at transit hubs can help reassure bike commuters that their bikes will still be there when they return from work and will encourage bike commuting to transit connections. With the Rochester transit system considering the development of remote transit hubs outside of the downtown transit center, it would be appropriate to consider providing a minimum level of bike parking at least as a pilot project at those locations.

Currently the park and ride system in the Rochester area is primarily a partnership between the city transit system and private commercial property owners, who lease the city space in parking lots for use as park and ride locations. Similar arrangements for bicycle parking, potentially on a seasonal basis, could be explored with these same owners to attract bicycle commuters to outlying locations who may not otherwise consider a bike and ride arrangement.

Cyclists are only likely to leave their bicycles at remote locations if they are confident that it will be there when they return. Bike parking is generally considered to be "secure" only if it meets one of the following conditions:

1) Is in a locked room or area enclosed by a fence with locked gate;
2) Is within view or within 100 feet of an attendant or security guard;
3) Is in an area that is monitored by a security camera; or
4) Is in a location that is visible from employee work areas.

Bicycling to transit

National and local surveys consistently show that the biggest barrier to more frequent cycling is the lack of safe and comfortable routes to destinations. If efforts are made to attract bicycle commuters to the idea of bike and ride, improvements will need to be considered to insure reasonable access to transit pick-up points. In addition to considering bike parking or service facilities at transit hubs or park and ride lots, accessibility to the bikeway network will need to be reviewed to identify improvements needed for safety or access purposes, since transit stops have not traditionally been viewed as an important destination for cyclists.

Encouraging biking and transit

Letting people know about existing bike and transit facilities (and showing them how to use them) is one of the best ways of encouraging and increasing their use. Sharing information on the practical benefits of combining bicycling and transit (greater radius of reachable distance, convenient connection to destinations, health benefits from physical activity, and potential time and cost savings over driving an automobile) will help invite potential cyclists to combine their trip with transit. Programs such as "Guaranteed Ride Home" for cyclists who ride their bike to work may also help reduce reluctance. Offering discounts or other incentives to people who arrive at a destination by bus or bike can also help increase the number of bicycle and transit riders.

Other possible actions include distributing special maps identifying recommended bikeways to transit hubs, identifying bike trail information on the local bus route map, or advertising bike/bus travel at stops or on buses. Events such as a Bike to Transit week with prizes and incentives could be another means to advertise this option.

KEY FEATURE DISCUSSION: MAINTENANCE

Like all roadways, bicycle facilities require regular maintenance. This includes sweeping, maintaining a smooth surface, ensuring that transition areas such as between a gutter and adjacent pavement remains relatively flat, and installing bicycle-friendly drainage grates. Some basic principles should be followed in the management of a bikeway maintenance program include:

Sweeping

A regularly scheduled sweeping program helps to ensure that litter and other debris is regularly removed from bicycle facilities. It may be appropriate to increase the frequency of the existing street sweeping schedule for roadways that also have bicycle facilities. It may also be necessary to increase the frequency of sweeping in the fall, when leaves are likely to accumulate more quickly. This is especially important on greenway paths in forested areas.

Surface Repairs

Routine inspections on bikeways should be conducted to identify surface irregularities, potholes, ridges, cracks, and other surface problems that present a hazard to cyclists. It is also recommended that government agencies be able to respond in a timely manner to reports from the public on specific hazards.

Additional action items related to maintaining the roadway surface include:

- On all bikeways, use the smallest possible chip for chip sealing bike lanes and shoulders
- Maintain pavements so ridge buildup does not occur at the gutter-to-pavement transition or adjacent to railway crossings
- Inspect the pavement 2 to 4 months after trenching construction activities are completed to ensure that excessive settlement has not occurred.

Repaving

Repaving is a good opportunity to improve conditions for bicycling. In some cases, bike lanes can be added, shoulders can be widened, conventional lane widths can be adjusted, and surface hazards can be addressed. Pavement overlays are recommended to extend across the entire roadway pavement width. It is recommended that abrupt edges or vertical ridges within the path of travel for cyclists are avoided. Storm grates, manhole covers, and other such roadway features are recommended to be raised after repaving. It is recommended that the surface of such features is not offset from the pavement surface by more than one-quarter inch. Repaving also presents a good opportunity to pave gravel driveways that connect to the roadway. It is recommended that driveways be paved back about fifteen feet from the edge of the roadway pavement to prevent gravel from spilling onto the roadway and shoulder.

The City of Rochester has adopted and Olmsted County is considering adoption of a Complete Streets Policy. Under this policy, the city will assess the need for and feasibility of improving street corridors to serve all users safely and effectively. This policy, adopted in 2009, has

already led to installation of bike lanes on approximately 3 miles of city streets in its first two years. Continued commitment to implementation of Complete Streets should be a priority.

Utility Cuts

When a utility cut occurs within a roadway, care should be taken to ensure that cut lines that are parallel to the flow of travel are located outside of the bikeway. This approach avoids an asphalt joint that can deflect a bicycle tire. Utility cuts can leave a rough surface for cyclists if not back-filled with care. Cuts should be backfilled and compacted so that the cut will be flush with the existing surface when completed.

Spot Improvement Program

While routine maintenance and regular inspections are essential to well-maintained bicycle facilities, bicyclists are often the first to be aware of any new hazard or other deficiency. A system for reporting minor maintenance issues through a phone – in or online system may also be beneficial to insure timely correction of defects. It is important to the success of such a program that the government agency has the staff and funding available to respond to most routine maintenance problems.

Although paper forms should be available to those without internet access, a form on the government website can be the most efficient way to manage the program. Not only can an on-line maintenance request be immediately forwarded to the responsible agency, it also makes it easier to follow-up with the citizen who made the request. Many of the leading cities in providing accommodations for bicyclists have instituted programs such as this to help maintain infrastructure for bicycle use.

Another element that could be blended into a spot improvement program would be to allow cyclists to report vegetation encroaching into a bikeway that is creating a hazard. Tree branches or shrubs encroaching in a roadway or path, or tree roots causing premature break-up of surfaces should be included among the conditions that could be reported.

Signage and Striping

There are over 100 miles of dedicated bikeways within the Rochester area. Maintenance of the signage and striping must be considered in any program. In general, a sign will last approximately 10 years before readability begins to degrade, and striping of roadways is done on a 1 to 3 year schedule.

Maintenance Budgeting

It is important to recognize the need for additional operations and maintenance funding when a new bikeway is constructed. As the bikeway network expands, the need to fund maintenance will grow along with the network. One of the initial steps a community can take to understand the implications of an expanded bikeway network is to consideration adoption of maintenance guidelines, which can serve as a starting point for estimating maintenance needs. Figure 6-1 illustrates an example of a bikeway maintenance checklist from the City of Long Beach (CA) that could serve as a starting point for estimating maintenance needs.

Figure 6-1: Sample Maintenance Checklist

Bikeway Maintenance Check List and Schedule	
Item	Frequency
Sign Replacement/Repair	1 - 3 years
Pavement Marking Replacement	1 - 3 years
Tree, Shrub & grass trimming	5 months - 1 year
Pavement sealing/potholes	5 - 15 years[1]
Clean drainage system	1 year
Pavement sweeping	Weekly-Monthly/As needed
Shoulder and grass mowing	Weekly/As needed
Trash disposal	Weekly/As needed
Lighting Replacement/Repair	1 year
Graffiti removal	Weekly-Monthly/As needed
Maintain Furniture	1 year
Fountain/restroom cleaning/repair	Weekly-Monthly/As needed
Pruning	1 - 4 years
Bridge/Tunnel Inspection	1 year
Remove fallen trees	As needed
Weed control	Monthly/As needed
Remove snow and ice	Weekly/As needed
Maintain emergency telephones, CCTV	1 year
Maintain irrigation lines	1 year
Irrigate/water plants	Weekly-Monthly/As needed

WINTER MAINTENANCE

With an increase in the number of people using bicycling as a means of everyday travel will come heightened interest in bicycling year-round. Given Minnesota's weather, planning for snow and ice removal on bikeway facilities would be a key expectation if bicycle facilities will continue to be used during winter months. Some basic principles regarding winter maintenance include:

- Care should be taken to place snow and ice removed from streets well out of the portion of the travel lane that bicyclists use.
- Bike trails and paths will need to be swept with regularity.
- Bikeways, gutters and curb ramps should not be used as snow storage areas for snow removed from streets; policies should treat the clearance of snow from bicycle ways and road shoulders as being of equal importance as clearance of snow from the automobile travel lanes in streets.

The city of Minneapolis and St Paul have been leaders in efforts to improve winter biking conditions. In Minneapolis, bikeways are plowed relatively soon after a snowfall, with arterial trails are often plowed before many of the streets. The goal is to have bikeways plowed once by the end of the next business day after a snowfall. All bikeways are also sanded and salted as needed. For on-street bikeways, the policy is that they will receive the same level of winter maintenance as the rest of the street surface.

The city of St Paul has undertaken pilot projects to evaluate the effectiveness of special winter maintenance practices for streets with bikeways, which involves allowing no parking one night a week to allow snow and ice removal operations to operate unimpeded on the entire width of the street.

KEY FEATURE DISCUSSION: ACCOMMODATING BICYCLES IN ZONING AND LAND USE PLANNING

Bicycle travel is often an afterthought in the land development process. The results can include impassable barriers to non-automobile travel, both within and between developments, lack of connections to key destinations from the bikeway network, or gaps in the bikeway network. There are a number of ways land development regulations can be modified to place greater emphasis on bicycle and other modes of alternative travel. Following are some examples of how local zoning ordinances can be amended to reflect the needs of pedestrians and bicyclists.

- Require residential subdivision layout that provides safe, convenient, and direct bicycle access to nearby areas (within 2 miles for bicycling) such as adjacent residential areas; bus stops; and neighborhood activity centers, such as schools, parks, commercial and industrial areas, and office parks.
- Cul-de-sacs have proven to be effective in restricting automobile through-traffic; however, they also have the effect of restricting bicycle and pedestrian mobility. Trail connections between cul-de-sacs and adjacent streets should be provided wherever possible to improve access for bicycles and pedestrians.
- During the approval of subdivision developments, bikeways and low volume streets should be designed to connect to adjacent properties likely to be subdivided in the future, so that a secondary system of roads and sidewalks develops over time. When subdivisions are built with only one outlet to a main thoroughfare, the result is heavy traffic congestion and difficult intersections for cyclists and motorists.
- Parking Reductions: Parking codes should be modified to allow for a “reduced parking option” for developments that are located on transit routes and which provide facilities that encourage bicycling and walking.
- Bicycle Parking: Adequate bicycle parking facilities should be included in convenient locations for all types of development. Secure long term parking facilities should be included in multi-family residential developments and for employees in business developments. Short-term bicycle parking should be placed close to building entrances in a well-lit and visible location.
- Street Pattern. Direct links between destinations are important for all transportation modes, but they are particularly important for non-motorized travelers. Increased distances caused by circuitous routes, large blocks, and cul-de-sacs all conspire to discourage walking and bicycling. It is important for residents and employees to be able to easily walk or bicycle to stores, parks, and other destinations.

Implementation of these types of requirements would need to be incorporated into the Land Development Regulations and addressed during the development review process. City planning

officials and staff should routinely review the assumptions of land use plans and zoning ordinances and compare them to non-motorized travel needs.

Use of Incentives

A number of cities in North America have implemented incentive provisions for the private sector to partner with public agencies in order to encourage provision of bicycle parking, commuter showers, and lockers. Among them are cities such as Boulder, Minneapolis, and Seattle. Many of these incentives can be offered at little or no actual expense to the City. Two key timeframes in which the incentives can be effective are upon initial land development approval and during tenant build-out and/or remodeling or renovation. Among the potential incentives for the construction of bicycle parking / locker/changing/shower facilities at the initial land development phase are:

- Trip generation (hence traffic impacts) reduction during traffic impact assessments (e.g., up to five percent of total trip generation, depending on land use);
- Floor area bonus (equal to the space taken up by the bicycle commuter facility) for those districts and uses that specify maximum square footage;
- Administrative variances for more compact parking lot dimension(s); and
- Green space requirement reduction, (e.g., up to twenty times the building square footage dedicated to the bicycle facility).

Examples of incentives for actions subsequent to initial development (i.e., tenant build-outs and internal building renovations) include ad valorem tax exclusion of at least two times the square footage of the building dedicated to the locker/changing/shower facility. This exclusion could be increased if the tenant businesses participated in additional transportation demand management programs offered by the City. As the City transforms its transportation system in the public rights-of-way, a concomitant partnership by the private sector will ensure the effectiveness of the public initiative, resulting in increased opportunities for area residents to choose bicycling for commuting and travel.

Chapter 7

Education / Encouragement / Enforcement

Developing new bicycle infrastructure is only one element of a comprehensive program to increase bicycling. The companion to "build it and they will come" is "tell people about it and they will ride". Between the two extremes of those who would will ride in any and all conditions and those who would never consider biking is a significant group of residents who may be open to cycling as an option for travel.

However, attracting this group will likely require extra effort be made in the form of a variety of promotional, educational and encouragement strategies. A typology developed for Safe Routes to School plans commonly refers to the five "Es" of Engineering, Education, Encouragement, Enforcement and Evaluation as the categories of strategies needed to increase biking or walking. This multi-faceted approach has been successful in cities with high levels of cycling in increasing bicycling mode share while keeping crash rates low. This chapter provides an in-depth review of potential strategies to consider related to the education, encouragement and enforcement elements of the five "E's".

In communities with successful education and encouragement programs experience has shown that it typically involves a partnership between government as well as non-profit organizations, neighborhoods and businesses. Policies and programs may not rely solely on local efforts; there are regional and statewide initiatives, particularly in the area of safety, that can be tailored to the local community and used to help educate residents about bicycling issues. Existing efforts to promote bicycling by local agencies such as Olmsted County Public Health services, organizations such as the Mayo Clinic, and initiatives such as Active Living Rochester already exist in the Rochester area. The Bicycle Master Plan recognizes these initiatives and supports continued attention to promote and build upon these efforts.

The following paragraphs briefly introduce the main components of the education / encouragement / enforcement continuum of activities, and concerns that were identified during the early input phase of the study are summarized. Following that, a summary of best practices and typical costs of education/encouragement/enforcement initiatives are highlighted. The last section of the chapter identifies those partners who are likely to have a role to play in implementing these E/E/E efforts in the future.

SAFETY AND EDUCATION

The key aspects of bicycle safety and education programs are to teach cyclists safe bicycling habits and to educate and remind bicyclists and motorists about how to co-exist safely in the roadway environment. Drivers should be expected to treat bicyclists as legitimate users of the road and operate safely around bicyclists, while bicyclists should understand the ramifications of their unsafe actions on the safety of the transportation network. Improving cycling skills through education is an important part of any strategy to make streets as safe as possible.

Other elements of a safety and education program should include teaching bicycling skills and safety to all Rochester area elementary age children. This effort logically should be coordinated with area school district and existing Safe Routes to School programs. Another aspect of a program should focus on getting information out to the public when new facilities such as bike lanes, bike boxes or bike boulevards are implemented to educate motorists, pedestrians as well as bicyclists as to the use and benefits of the new facility. Many teenagers and adults also lack basic safety knowledge and skills and should have educational opportunities made available to them. Some jurisdictions offer diversion programs involving education courses in lieu of fines for traffic offenses involving cycling.

ENFORCEMENT

Enforcement is a key component of traffic safety as it reinforces the laws that serve to protect the users of the road. The primary role of traffic enforcement is to reduce crashes, save lives, and facilitate the safe and efficient movement of vehicular, bicycle and pedestrian traffic throughout an area. Strategies to emphasize include maintaining open lines of communication between law enforcement and the bicycle community and insuring that law enforcement personnel receive adequate training regarding cycling laws and reporting requirements. Enforcement effort should focus on those infractions that most imperil cyclists and pedestrians including speeding, right-of-way violations and dangerous passing.

PROMOTION AND ENCOURAGEMENT

Promotion and encouragement strategies help residents understand that bicycling can be a reasonable option for many trips and in addition can provide health benefits, generate household savings and maximize roadway travel capacity. Designed to motivate ‘interested but concerned’ residents to ride a bicycle confidently, programs should help residents view bicycling as a reasonable transportation option and give them the opportunity to try bicycling in a low stress and safe setting. With experience comes confidence, and with confidence bicyclists will ride in more varied settings.

Special attention may need to be given to certain groups who could bicycle but choose not to for cultural or other reasons. Select populations who may benefit from targeted efforts include businesses and their employees, students, immigrants, women, or people who’ve just moved to

the Rochester area. Promotion and encouragement programs typically address one or more of the following factors:

Information Services: Information about routes, wayfinding systems and parking locations is key and should be communicated through a number of formats and locations such as local web sites, bicycle shops, bicycle groups, government offices, local news agencies and other venues. The production of a readily available Bicycle Map showing area bicycle routes with information about supporting services is a useful resource. Information about cycling gear, bike maintenance, how to deter bike theft and other tips also can prove useful to those making the step from casual recreational rider to user of a bicycle for utilitarian travel.

Behavior change: The process of behavior change typically follows a series of steps that create a level of comfort with and reinforce new behavior, such as making the choice to commute to work by bicycle. This process typically starts with creating awareness through exposure to messages about the benefits and features of bicycling, a process which is highly dependent on repeat messages being delivered in a timely manner. Following this initial step, creating conditions to allow a person to leap to trial use is the next hurdle. Incentives and / or triggering event(s) play a key role in this step. Encouragement programs that can provide multiple incentives and opportunities to encourage a new cyclist over a condensed period of time are likely to be most effective. These actions can be as simple as a mailer, offering discounts on purchases or providing mentoring services as a resource to the new rider. Social marketers and behavior change experts focus on the need to give trial users a positive experience so they will continue to try the new activity, believing it takes about 21 days to effectively form a new habit. To ensure continued participation, the follow-up step of providing recognition, rewards or loyalty programs should be explored to reinforce continued participation in the new activity.

Awareness: Awareness programs comprise the bulk of activities in which most jurisdictions engage to encourage bicycling. As a rule, bicycling awareness programs alone do not create behavior change from non-cyclist to cyclist. Awareness programs generally reinforce existing behaviors and inform people about how to behave in a safer, easier, and more comfortable manner. For this reason it is critical that the infrastructure, services, and behavior change programs are promoted through awareness activities. Awareness efforts will likely be most successful if they go beyond simply reaching out to individuals and include efforts to contact community, business and media leaders to engage these entities in promoting and mainstreaming bicycling as an easy, convenient and safe option for transportation.

Incentives: Incentives for bicycling often focus on commuting and energy efficiency. For example, the City of Portland, OR, offers city employees the opportunity to earn an additional $38 (as of 2009) each month for bicycling to work 80 percent of all scheduled workdays, which matches the City's transit subsidy. Businesses nationwide can also take advantage of the federal commuter tax incentive by offering bicycle commuters up to $20 each month in tax-free incentives for qualifying expenses.

Identified Issues and Needs for Education and Encouragement

In the early input Focus Group and Public Meetings many comments were received in regards to needs for education and encouragement. The most frequent heard comments included:

- *There is need for more safety and skills training opportunities for both youth as well as adult riders*
- *There is a need to educate citizens about new facility types such as bike lanes and how to share turn lanes at intersections*
- *There is a need for ongoing public education to raise awareness and reinforce messages about the rules of road related to bicycle travel targeting both motorists and cyclists*
- *The bike network and use of the bicycle for everyday travel needs to be promoted more broadly*
- *There should be more events promoting bicycling as a form of transportation*
- *Efforts should be made to develop incentive programs in conjunction with employers and retailers*
- *Information programs such as Bike Ambassadors or work-based or neighborhood-based Smart Trips programs should be established*
- *Encouragement efforts like a bike buddy or bike mentorship program should be considered*

Best Practices /Action Items related to Education / Encouragement / Enforcement

Tables 7-1 and 7-2 (page 7-9) identify for each of the objectives related to education, enforcement and encouragement goals of the Master Plan examples of Best Practices, costs and potential actions that could be considered to address the needs that have been articulated through the goals and objectives of the plan. Table 7-1 specifically focuses on best practices related bicycle safety and the goal of reducing travel conflict between bicycling and other modes and reducing the number of bicycling injuries. Final recommendations and priorities related to these program elements are found in Chapter 8.

Table 7-1: Best Practices to Assure Safe and Secure Bicycle Travel

Goal: Reduce travel conflict between bicycling and other modes and the number of bicycling injuries

Objective #1	**Ensure that the bikeway network, intersections and barrier crossings such as bridges are safe and functional for all users**
NOTE	*Objective #1 is primarily infrastructure related and is discussed in Chapter 5 of the plan.*
Best	**Bike Safety in Workzones**

Practices	The organization WorkZoneSafety.Org has developed guidelines for management of bicycle travel in workzones. http://www.workzonesafety.org/node/10856 **Information on New Facilities** Many communities make sure that when new bicycle facilities are introduced an effort is made to provide educational material to residents about the use and operation of the facility. See examples from Provo UT and Ottawa, CA http://www.bikeprovo.org/new-bike-lanes-on-100-south/ http://www.ottawa.ca/residents/public_consult/bikelane/index_en.html
Potential Actions	Insure that alternative bicycle routing is planned for during design of roadway reconstruction or improvement projects Provide information about new bike facilities on the BPAC web page and provide links through other sites such as City of Rochester web site and RNeighbors web site to this information.
Objective #2	**Ensure age-appropriate safety and skills training opportunities are available for new or inexperienced riders**
Best Practices	**Safety and Skills Training for Children** Whatcom County, WA transitioned from a Teacher based program to a Trainer – based program for youth training when it was determined that sufficient teacher commitment was unobtainable Stewartville MN., School District has adopted the Florida Curriculum for bicycle and pedestrian education which will be delivered through a combination of Physical Education and after-school programs in grades K-7. In England, a nationwide program encourages organization of local Children's Traffic Clubs which offers membership beginning for pre-school children to familiarize them with road safety skills through messages and behaviors. http://www.trafficclub.co.uk/ **General Safety and Skills Training for Adults** Whatcom County WA offers quarterly "Full Cycle" classes to introduce adults to basic skills and safety and a "First Gear" program offered monthly as a follow-up to the "Full Cycle" program for those wishing more intensive /comprehensive information **Targeted Adult Safety and Skills Training** Tilburg, NL developed a program focused on Immigrant women. http://www.presto-cycling.eu/images/factsheets/presto%20promotion%20fact%20sheet%20on%20tageted%20adult%20training%20programmes.pdf **Bicycling Handbooks** Cities and states have produced comprehensive Bicycling Handbooks for their residents with information on a wide range of basics on bicycling including laws pertaining to bicycling,

	bicycle equipment, bicycle operation, bike security, bike programs and other information. See examples from New Haven, Georgia, Minneapolis http://www.cityofnewhaven.com/streetsmarts/index.asp http://admin.ibt.org.il/files/544855262122.pdf http://www.scribd.com/doc/29441549/Bike-Minneapolis
Typical Costs	A typical budget for Student or Adult education programs is $5,000-$15,000 per year for an ongoing program (*ref Des Moines Master Plan, Milwaukee Master Plan, Whatcom County WA)*
Actions	**Safety and Skills Training for Children** Work with area School Districts to maintain and expand bicycle education curriculum in local elementary schools Develop engaging materials for younger children such as coloring books or colorful pamphlets with information about safe cycling behavior Develop a program of events targeting children such as bicycle rodeos to provide safety training in a fun environment **Safety and Skills Training for Adults** Develop a plan to promote education and training opportunities and identify new options for adults to learn or refresh their knowledge regarding bicycling laws and how to share the road. Enhance existing adult education / training program opportunities by expanding number of training sessions led by certified League of American Bicyclists instructors **General Safety and Skills Training** Support work of Active Living Rochester to secure funding to maintain a commitment to the SEE.SAFE.SMART pedestrian and bicycling safety campaign. Unify all bicycle or bicycle-pedestrian safety campaigns locally under a single brand Develop Public Service Announcements (PSA) that could be broadcast on TV or made available online as Youtube videos on cycling-related topics such as a bicycle helmets, bicycle lights, correct use of shared use paths and other topics relevant to promotion of safe bicycle travel
Objective #3	**Continue efforts to educate and raise awareness among motorists and cyclists on the rights of bicyclists and safe bicycle and vehicle operation in urban traffic**
Best Practices	**Informational Materials** Pima County, AZ Share the Road Brochure uses a high quality graphically illustrated handbook to highlight key safety and skill information for motorists and bicyclists http://biketucson.pima.gov/Pubs/STR06.pdf Portland OR Bureau of Transportation prepares materials on demonstration projects such as bicycle boulevards, cycle tracks, buffered bike lanes to educate the public about new and innovate concepts in on-road bicycling

	http://www.portlandonline.com/transportation/index.cfm?c=50254 **Bicycling Handbooks (see information in previous section)**
Actions	Work with law enforcement and other community partners to expand existing efforts related to the Share the Road message. Identify existing ongoing initiatives and potential new activities to consider and seek funding for implementation. Educate local residents about new Bike Facility types as projects are completed and opened for use Seek to get bicycling and motorist education messages added to routine mailings such as tax renewal documents, driver's licensing and testing sessions, or as inserts with utility bills. Insure that schools and private driving schools include bicycle information in driver's education curriculum Conduct a survey to see what point of sale information is available to purchasers of bicycles and assess the need for improved information resources regarding safety programs, rules of the road and safety equipment such as bike helmets and lights.
Objective #4	**Provide for effective enforcement of and compliance with laws that affect bicyclists travel and safety**
Best Practices	**Sidewalk Riding** In areas where bicycling on sidewalks is creating conflict consider more visible "Dismount Zone" programs to reinforce laws against riding on sidewalks See UC Berkeley Dismount program http://police.berkeley.edu/prevention/bike.html#dismountzone See Western Washington University Dismount Program http://onlinefast.org/wwutoday/news/police-begin-enforcing-bike-skateboard-dismount-zones-campus See Fort Collins, CO dismount program rules http://www.fcgov.com/bicycling/rules.php **Diversion classes** In order to advance the goal of improving travel behavior in lieu of simply punishing those who have violated traffic law, the Marin County CA Superior Court will refund a portion of a traffic infraction citation fee related to bicycling upon successful completion of "Basic Street Skills" Bicycle Safety Classes http://www.marinbike.org/Campaigns/ShareTheRoad/Index.shtml#StreetSkills
Actions	Work with local law enforcement to identify potential bicycle enforcement issues and develop education program to address the issues Work with the City of Rochester to increase compliance with sidewalk cycling restrictions through various education and information dissemination efforts. Continue work with local judicial system to implement diversion program for persons found to have broken bicycling law (or motorist's who have infringed on bicyclist's rights)
Objective #5	**Conduct periodic assessments to identify safety or security issues and identify countermeasures to address problem areas or behavior**

Best Practices	**Bike Equipment** Encouraging bicyclists to have lights on their vehicles for riding at dusk or after dark with Light the Bike campaign; examples include Portland OR and Bozeman, MT http://www.portlandonline.com/transportation/index.cfm?&c=deibb&a=bebfjh **Safety Audits or Safety Teams** The concept of Safety Audits or Safety Teams is used in many locales to address the issue of facility safety in a coordinated manner. Teams of individuals representing various disciplines (law enforcement, traffic management, emergency response, community representatives) gather to intensively study problematic locations and identify solutions. For example, in Arlington, VA, every school in the county was visited by a team with representatives from the Dept of Public Works, the Police and the School District to assess conditions for walking and biking at each school. Lists of problems and solutions were developed and short-term projects such as painting crosswalks were done right away while larger construction projects are on-going. **Road Hazard identification Project** Green Bay WI served as the location for a pilot study by WISDOT whose goal was to develop a system which could be used by public or private entities to easily and inexpensively facilitate the identification and repair of bicycle road hazards. The project involved surveys of users to identify existing on-road hazards, with information entered into a centralized database for future tracking. A project coordinator worked with six communities involved to follow-up on identifying potential solutions and the implementation of fixes to the various hazards identified. Information on this project is from the publication **BIKESAFE: The Bicycle Countermeasure Selection System**, published by the FHWA, May 2006 **Targeted Safety Programs** Targeted efforts such as bike helmet programs for children or programs to increase conspicuity of cyclists through distribution of vests have been initiated by many communities along with bike testing to improve injury reduction efforts
Actions	Establish an ongoing inventory process to identify roadway features that can contribute to potential safety problems. Develop and annually update a high risk location list and high risk behavior list in collaboration with all stakeholders. Develop a process to identify critical safety locations where detailed safety audits or detailed evaluation by a traffic safety team is warranted in order to identify potential safety upgrades Consider use of innovative measures such as bike boxes or other intersection or crossing safety measures to improve safety. Work with local and state road authorities to conduct pilot study/test on innovative intersection safety measures Conduct periodic surveys to collect information on bicycle usage and other issues or concerns from users of the local bike network

Table 7-2 on the following page focuses on best practices related to encouragement and promotion of bicycling, organized by objectives related to the Master Plan goal of increasing the number of bikeway system users. Final recommendations and priorities related to these program elements are found in Chapter 8.

Table 7-2: Best Practices to Encourage and Promote Bicycling

Goal: Increase the number of bikeway system users and the share of trips made by bicycle

Objective #1	Develop programs that will encourage people to shift to biking for short trips
Best Practices	**Resident Encouragement Program** Portland OR Smart Trips is a program that seeks to encourage alternative transportation choices. It aims to make sure everyone who lives, works or runs a business in Portland knows about all the options they have for getting around. Three elements include Business Smart Trips, Welcome Smart Trips (for new residents) and an annual program that targets specific neighborhoods http://www.portlandonline.com/transportation/index.cfm?c=43801 St Paul MN Smart Trips Program provides packets to residents with information on alternative travel choices (walking, biking, transit) as well providing targeted neighborhood information packets delivered to residents and trip planning assistance. http://www.smart-trips.org/ Boulder Community Cycles (CC) is a non-profit organization of bicycle enthusiasts whose mission is to educate and advocate for the safe use of bicycles as an affordable, viable and sustainable means of transportation and personal enjoyment within our community. CC provides re-cycled bikes and a welcoming space to learn about bicycle repair, maintenance and operation through outreach and advocacy activities http://www.communitycycles.org/ Stockholm, Sweden conducts a marketing campaign focused specifically on getting residents to consider alternative modes for short trips. The ”Half of all Car Trips are Ridiculously Short” campaign uses advertising, brochures, maps and giveaways. The League of American Bicyclists classifies general encouragement activities or programs in four main categories 1) **Incentives** / cold hard cash like commuter benefits or rewards programs offering equipment 2) **Information** / including information about where to ride and best routes accomplished through maps, guides, on-line route mapping, route signing or mentoring or with individualized social marketing such as smart trip programs 3) **Comfort and Company** / using events such as open streets to attract those who may be hesitant to ride to gatherings where their comfort level may be higher 4) **Bikes** / including bike sharing, convenient rental for short rides
Typical	St Paul Smart Trips program start up costs were $130,000 in the first year for development

Costs	and production of materials plus 1.5 staff to conduct the program. Portland OR estimates in their 2010 Master Plan that a modest Smart Trip program would cost $100,000 per year and a high level program $280,000 per year. *Note that with larger population base in these cities there will be more cost for production of materials and potential for not needing full time staff person could reduce costs. Milwaukee, for example, estimates its cost for Smart Trips program at $33,000 annually, and Des Moines has estimated costs in $15,000 to $50,000 range*
Actions	Develop a social marketing program that can be tailored to target a different geographic area every year Promote local bicycling organizations through the city and county website and publications Develop the "Bike Rochester" brand and deploy it more broadly to create a well recognized identity for the bicycling program in the Rochester area Organize an annual walk/bike summit to both track and celebrate progress on the plan and develop stronger relationships among advocates for non-motorized travel.
Objective #2	**Establish new partnerships with the business community to develop encouragement programs that target employees and customers**
Best Practices	**Commuter Support and Encouragement Programs** Programs emphasize social marketing, incentives and support for employees considering the use of alternative modes of travel for the trip to work. Examples of programs include: Employer Based Program: Seattle Children's Hospital http://www.gooseexpress.com/about/clients/sch-case-study Community Program: Portland Bike Commute challenge http://bikecommutechallenge.com/ Olympia WA: Intercity transit bicycle commuter contest encourages, rewards and recognizes residents of all ages and abilities who try to bicycling as a means of everyday transportation. http://www.biketoworkinfo.org/programs/program_story.cfm?ID=39 **Bicycle Ambassadors** City of Chicago has developed a Bicycle Ambassadors program in which Ambassadors attend community events or workplace events where they teach the public about bike safety, sharing the road, bike lane and bike path etiquette and how to bike to work and school. http://www.bicyclingambassadors.org/ **Programs targeted to Business Owners** Albequerque NM Smart Business Partnership Program allows area businesses to team with ABQ RIDE to promote the use of alternative transportation among their employees and customers

	http://www.cabq.gov/transit/business/business-partners **General Information on Commuter Programs** National Bike To Work website is sponsored by Pedestrian And Bicycle Information Center, University of North Carolina Highway Safety Research Center and FHWA http://www.biketoworkinfo.org/index.cfm
	Bike to Work program costs are on the order of $2,500 to $5,000 per year (*ref: Milwaukee Master Plan, Long Beach Master Plan)*
Actions	Disseminate information directly to local area residents about choosing to use a bicycle for the trip to work including informational materials and training opportunities to enhance skills and techniques related to bike commuting Educate businesses about why it is important to be bike friendly and provide recognition for those that do (and provide incentives for those willing to do more) Develop marketing materials to educate employers on federal and state credits for energy efficiency efforts, including promoting bicycling, and potential incentives that could be used to attract more employees to use alternatives modes for the journey to work Increase share of utilitarian trips made by bicycle by working with retailers to offer convenient parking and promotions targeting bicyclists Continue to work with local Farmers Market to do a monthly bike to market event with incentives Work with local government and employers to establish programs to develop end of trip infrastructure needed to encourage employees to consider biking to work
Objective #3	**Encourage and work with education institutions to facilitate and encourage student and staff bicycle travel to and from school**
Best Practices	**Comprehensive Safe Routes to School Program** Marin County, California is one of leaders in Safe Routes to School movement and provides a variety of programs and strategies to encourage biking and walking to school http://www.saferoutestoschools.org/ **Comprehensive Community Level Youth Program** Boulder Community Cycles includes targeted programs for youth including Youth Earn a Bike (YEAB), After School Bike Classes (8 week session), four day BLAST (Bike Lesson and Safety Training) incorporated into Physical Education classes, bike swaps that allow kids to trade up when they have outgrown their bike, volunteer mechanics program that include school visits, organized after school rides and other programs. http://www.communitycycles.org/programs.html **Post Secondary or University Level Programs** University of California –Davis http://taps.ucdavis.edu/bicycle/

	Michigan State University Program –MSU Bikes http://bikes.msu.edu/
Actions	Work with local school districts to insure that all students enrolled in local elementary schools receive a minimum level of bicycle and pedestrian safety and skills training. Coordinate with Safe Routes to Schools programs in local school districts to increase bike use among students for the trip to school Promote Rochester as a bikeable and walkable city to incoming higher education students and develop a plan to develop and distribute biking materials to prospective student/residents. Work with the members of the University Center-Rochester including the University of Minnesota-Rochester, Rochester Community and Technical College and Winona State-Rochester to distribute information to incoming students. Conduct an annual Transportation Fair that will emphasize the use of alternative transportation including bicycling and transit for students travel needs
Objective #4	**Increase the comfort level of inexperienced bicyclists in using the bikeway network through training, information and mentoring.**
Best Practices	**Bike Mentorship Programs** Evolve existing bicyclist mentorship programs to reach a wider range of community members. See examples of programs in Spokane (WA), Charlotte(NC) and San Francisco (CA) http://groups.google.com/group/bikementor, http://www.spokanebicycleclub.org/bikebuddy.htm http://www.bicyclealliance.org/commute/bikebuddy.html http://www.sfbike.org/?bikebuddy **Adult Training Program** See Bellingham WA "First Gear" Program http://www.nwactivities.com/activities/details/2859/first_gear_bicycle_class **Targeted Adult Training** Women's Cycling Survey conducted in 2009 found that among the key elements that would encourage women to bicycle more often included • Bike Repair Classes targeted to women (20% of respondents) • Easy to Read information on Bike Parts / Rules of the Road (10% of respondents) • Cycling with a Buddy (16%) • Organized social rides (12%) • Ladies – only Cycling classes (6%) **Women on Bikes Programs** http://www.portlandonline.com/transportation/index.cfm?c=44100 http://www.toronto.ca/cycling/canbike/canbike_cffw.htm **Targeted Population Programs** The Community Cycling Center in Portland (OR) undertook a project called 'Understanding

	Barriers to Bicycling'. They began partnering with organizations serving communities of color in North and Northeast Portland in order to understand the cultural and economic barriers to bicycling and to design a pilot project to overcome those barriers. In Portland (OR), the Community and School Traffic Safety Partnership funded the purchase 20 three-wheel recumbent bicycles to use for its senior bicyclist rides. Seniors gathered at the Vera Katz Eastbank Esplanade for a guided three-mile ride along the esplanade, waterfront and over the Steel Bridge. The program was designed to show just how safe and easy it can be for seniors to get back on the right bicycle.
Actions	Conduct an assessment to determine the best methods for delivering personalized training to targeted populations or groups through mentoring or ambassador programs. Explore culturally-specific classes and rides to help novice bicyclists with varied cultural backgrounds get familiar with bicycling. Develop partnerships with community organizations to provide bicycle training and education to targeted resident populations.
Objective #5	**Encourage and promote the many benefits of bicycling to a wide audience via effective use of media and public outreach as well as through private and public events**
Best Practices	See 2003 Milwaukee Bicycle Publicity Plan for ideas on how to raise awareness and increase interest in bicycle travel for non-recreational purposes http://util.bfw.org/milwaukeebikeplan/files/Milwaukee_by_Bike_Publicity_Plan.pdf http://cicloviarecreativa.uniandes.edu.co/english/index.html **Open Streets or Ciclovia Events** Events that close off street corridors to auto traffic and turn the space over for an afternoon to pedestrians, bicyclists and groups and individuals. See Minneapolis Open Streets Program http://openstreetsmpls.com/page/2 **Special Bike Events** Pittsburgh Car Free Fridays http://bike-pgh.org/events/car-free-fridays/ **Ambassador Programs** Boulder GO(Great Options) Ambassadors facilitate the "Courtesy is Contagious" safety education and public outreach campaign. Representatives work solo or in conjunction with other Ambassadors to develop and/or set up displays at scheduled public events and at high traffic pedestrian and bicycle spot locations, distributing information and inviting the public to discuss the many aspects of bicycling and walking http://www.bouldercolorado.gov/index.php?option=com_content&task=view&id=9031&Itemid=2973 **Comprehensive Information Sites** Continue to work with the consortium that has developed **Go Southeast Minnesota Healthy Living** website, to maintain information regarding on and off road bicycle routes that are available within the Rochester and Olmsted County area

	Also see Missoula in Motion at http://www.missoulainmotion.com/
Typical Costs	Cost to conduct 1 to 3 organized rides per year in the range of $2,500 (*ref: Long Beach Master Plan* Cost to conduct bicycle events such as a transportation fair estimated at $650 t $800 per event (*ref Portland OR 2010 Master Plan)* City of Portland estimated costs of $20,000 for a limited "Visibility Campaign" with a single window of media exposure; $60,000 for a modest program with two media windows and $160,000 per year for four windows of broad media exposure
Actions	Set up community celebrations and/or rides each time the community completes a new bicycling related project to promote efforts to improve the bicycle network Identify an organization that can act as a clearinghouse for all existing bicycle related programs and resources Undertake efforts to identify and connect all partners with an interest in promoting bicycling in an effort to maximize the effectiveness of existing resources, programs and materials. Foster collaborations among bicycling advocacy groups to support encouragement initiatives and events and establish partnerships with organizations to promote bicycling as part of a green and active lifestyle, chronic disease prevention and youth recreation efforts. Undertake efforts to establish partnerships with the business community to develop encouragement programs that target employees and customers Provide age appropriate events for children to experience the fun of bicycling and to learn about benefits of and skills needed for bicycling Develop and a publicity plan incorporating various media and venues for disseminating a wide range of information about bicycling Seek recognition for Rochester as a great city for bicycling through continued efforts such as LAB recognition program Create a BPAC award program that recognizes local champions of cycling.

Partnerships and Outreach

One of the keys to keep in mind when planning outreach and education efforts is to not "reinvent the wheel". Effective bicycle education and encouragement programs already up and running should be maintained, and new campaigns should seek to utilize resources or organizational capacity that is already available.

Other communities throughout the U.S. and Canada have already developed tools that can be adapted and modified for use locally. This adaptation is important in order to effectively localize campaigns, since campaigns that include materials with a local feel have been shown to have a more noticeable influence on motorist and bicyclist behaviors than generic materials produced by FHWA or others.

Table 7-3 identifies a list of potential partners that may be able to assist in the development, delivery or dissemination of educational and encouragement materials. An effort should be made to survey existing organizations, agencies or non-profit groups to identify opportunities for new partnerships or the enhanced use of resources. Not all of the potential partners are specifically focused on bicycle-related issues, but may still be a useful partner for their ability to communicate with a certain part of the Rochester area population.

Table 7-3: Partnership Opportunities Matrix

Organization Name	Bicycle Safety	Bicycle Facility Maintenance & Development	Bicycle Travel for Health	Bicycles & the Environment	Transportation Equity	Neighborhood Liveability	Bicycles & the Economy	Funding
Boys and Girl's Club	■				■			
Police Athletic League	■							
Park & Recreation Department		■		■		■		■
Active Living Rochester	■		■		■			
Rochester Active Sports Club			■	■				
Bicycle Pedestrian Advisory Committee	■	■	■	■	■	■		
Blue Cross Blue Shield Foundation	■		■					■
Convention and Visitors Bureau							■	
United Way					■			
Mayo Clinic Trauma Center	■							
Rochester School District	■		■					
Small City School Districts	■		■					
YMCA								
University Center Rocheser	■	■						
University of Minnesota-Rochester	■	■						
Rneighbors		■				■		
Rochester Area Foundation		■		■		■		
Rochester-Olmsted Planning Dept	■	■	■	■	■	■	■	
Rochester Public Works Department	■	■			■			■
Olmsted County Public Works Dept	■	■						■
Rochester Police Department	■							

Organization Name	Bicycle Safety	Bicycle Facility Maintenance & Development	Bicycle Travel for Health	Bicycles & the Environment	Transportation Equity	Neighborhood Liveability	Bicycles & the Economy	Funding
Olmsted County Sheriffs Dept.	■							
Rochester City Lines	■	■			■			
Olmsted County Public Health Services	■		■	■				■
Kiwanis Club	■							
League of American Cyclists Certified Trainers	■							
Healthy Living Rochester	■		■					
PAIIR (Parents are Important in Rochester)	■							
Department of Natural Resources		■		■			■	■
Intercultural Mutual Assistance Association					■			
Rochester Community Education	■							
Rochester Youth Commission	■				■			
Major Employers		■					■	
Cable TV Companies	■							
City Council and the Mayor		■				■	■	■
City/County Administration		■						■

Chapter 8

Recommendations and Implementation

The Rochester Area Bicycle Master Plan articulates a vision for improving conditions and infrastructure for bicycling within the greater Rochester area. To successfully achieve this vision, a range of strategies and actions will need to be considered. This chapter summarizes identified implementation measures that set out the "means" by which the recommendations of the Bicycle Master Plan can be advanced. It will be important to build and maintain momentum over time in order to achieve the goals of the plan. The strategies included involve actions related to building and maintaining support for the bicycle program, co-ordination among many partners and entities, advocacy and public consultation, in addition to traditional areas of project development and construction, securing funding and resources, and monitoring implementation. Among the most important actions will be to

1. Identify a leadership framework to ensure that ongoing efforts are being made to implement the plan and develop support for the actions recommended;
2. Secure commitments from key agencies to advance recommended strategies;
3. Sustain efforts at securing funding, particularly through various grant programs;
4. Develop a strong partnership with the bicycling community and nurturing of ongoing community involvement.

Chapters 5 through 7 identified potential bicycle network improvements, ideas to enhance supporting infrastructure, and best practices in the areas of bicycle education, encouragement and enforcement. Successful implementation will require ongoing cooperation between the public sector, bicycle advocates, the nonprofit sector and the private sector. Developing a working partnership of citizens, advocates, community leaders and professionals from various disciplines will be important to the successful implementation of this plan. Efforts to build institutional and community capacity can help to create the energy and enthusiasm needed to bring new resources to the table, resulting in potentially expanded programming and support for bikeway network completion.

Table 8-1 on page 8-2 presents a summary of actions recommended by this plan, with subsequent sections of the chapter providing information about these actions in terms of potential costs, implementation partners and likely funding sources. The list of actions in Table 8 is prioritized into three tiers (1st Priorities, 2nd Priorities, Lowest Priorities) and are grouped into the six major themes of 1) Partnerships and Plan Deployment, 2) Planning & Policy, 3) Programs & Promotion, 4) Supporting Infrastructure, 5) Bicycle Network, and 6) Resources. The chapter includes a summary of recommended Infrastructure Improvements beginning on page 8-23, including a list of the recommended highest priority projects that should be implemenged on page 8-26, and a summary of funding considerations beginning on page 8-27.

Table 8-1: SUMMARY OF RECOMMENDATIONS

Table 8-1 presents a summary of the actions and measures recommended to advance implementation of this plan. Activities highlighted include measures already in place which should be sustained going forward, as well recommended new projects or programs presented according to priority. Tables 8-2 through 8-7 which follow provide additional discussion of each item as well as information on anticipated costs, potential funding sources and those who will likely have a role in implementation.

Activity Area	Current Activities to Continue	1st Priorities among New Activities	2nd Priorities among New Activities	Low Priorities among New Activities
Partnerships for Plan Deployment	Developing and deploying the institutional capacity and community resources to deliver the programs and projects recommended in the Bicycle Master Plan			
	*Continue to support the ROCOG **Bicycle-Pedestrian Advisory Committee** (BPAC).*	Establish a **Bicycle Plan Coordinator** or **Coordination Team** to spearhead work related to implementation of the Bicycle Master Plan(BMP) Work with the proposed Downtown Rochester **Transportation Management Association (TMA)** to deliver bicycle programs and services related to downtown travel	Establish a **non-profit Bicycle Advocacy Organization** for the Rochester area that can support and complement the public sector efforts of local agencies and BPAC and private /public partnership approach of a TMA to provide advocacy, fund-raising and targeted implementation related to the Bicycle Master Plan.	
Planning & Policy	Identifying and advancing opportunities to achieve Bicycle Plan objectives through public policy and public projects by incorporating bicycle considerations into the early planning stages of proposals			
Information Resources	*Continue to monitor data currently collected on crashes and bicycle usage to identify future needs*		Develop & deploy a **Data Collection Plan** to support BMP monitoring & evaluation Publish an annual **Bicycle Master Plan Progress Report**	Develop a **Bicycle Information Clearinghouse**

Activity Area	Current Activities to Continue	1st Priorities among New Activities	2nd Priorities among New Activities	Low Priorities among New Activities
Planning Studies	*Insure that bicycle needs are considered in all Subarea and Corridor transportation studies and the development review process*	**1st Priority Studies:** **Chester Woods Regional Trail Connection Study** **3rd St NW / West Circle Drive Crossing Alternatives**	**2nd Priority Studies:** **Elton Hills Neighborhood / TH 52 Crossover & 37th St Corridor** **3rd St SW River Trail Connection**	**Update the BMP** every 5 to 7 years As part of annual progress report reassess priority of planning studies identified in Chapter 5 and initiate studies as funding / resources are available
Programming	*Review all projects for consistency with adopted Complete Streets Policies to ensure early consideration of bicycle network needs*	Develop and disseminate through **Fact Sheets** & other media information about new bicycle projects, particularly improvement types new to Rochester	Implement a community-based **Project Prioritization** process	
Development Policy		Conduct a review of Land Development Regulations to identify possible changes that would advance implementation of the Bicycle Master Plan	Conduct a review of the **Traffic Impact Report requirements** to determine how to address bicycle needs and use of bicycle improvements as possible traffic mitigation	
Programs and Promotion	Providing a range of on-going services to bicyclists in the community to attract new users to the bicycle network and enhance the user experience			
Safety & Education	*Maintain a commitment to the ALR **SEE.SAFE.SMART** pedestrian/bicycle safety campaign* *Implement adopted Safe Routes to School projects identified in adopted Safe Routes to School Plans* *Support the work of the Kiwanis Club, the Police Athletic League and the Rochester Police Department to provide bicycle safety training to*	Complete a Rochester **Safe Routes to School Plan**	Develop a strategy to deliver **Urban Cycling Workshops** for university students and adults in the community **(Collaborate with TMA)**	Conduct periodic assessment of bicycle safety and skills training being delivered to the community's youth and identify needed enhancements

Activity Area	Current Activities to Continue	1st Priorities among New Activities	2nd Priorities among New Activities	Low Priorities among New Activities
	elementary age children			
Information	*Update bicycle information on **Go Southeast Minnesota** web site as needed (gosoutheastmn.com)*	Develop a high quality Rochester area **Bike Map** Develop a comprehensive **"Bike Rochester" web site**	Develop a **Bicycle Information Handbook** for local residents	Develop & deploy a **Resident Smart Trips Program (Collaborate with TMA)** Develop an on-line route planning service for bikeway travel
Awareness	*Complete development and establishment deployment plan for **"Bike Rochester" brand / logo*** *Support efforts such as RNeighbors "Think Green" Fair and the PAIIR Transportation Fair to disseminate information on the benefits of bicycling*		Develop a **Bicycle Ambassadors** Program Assist Convention & Visitors Bureau in developing bicycling resources for visitors to Rochester	Develop a **awareness campaign** focusing on the benefits of bicycling for individuals / households / businesses and the local resources available **(Coordinate with TMA)**
Encouragement	*Expand participation in **Rochester's Commuter Challenge Week*** *Expand participation in school programs such as **Bike to School Day*** *Continue to develop and expand participation in the **Earn-a-Bike** project initiated by Kiwanis Club* *Continue the work of Healthy Living Rochester and Active Living Rochester initiatives to encourage persons to incorporate more physical activity into their daily lives*	Develop a **Commuter Support / Encouragement Program** for downtown Rochester **(TMA lead)**		Develop a **Bicycle Friendly Business Program (Coordinate with TMA)**
Events	*Support the Rochester Active Sports Club recreational group rides, particularly those focused on persons*	Develop an **Annual Bicycle Recognition Program**	Develop signature promotion event(s) such as an **Open Streets** program	Assess the feasibility of coordinated marketing & promotion for Rochester-

Activity Area	Current Activities to Continue	1st Priorities among New Activities	2nd Priorities among New Activities	Low Priorities among New Activities
	new to group rides	Organize an **Annual Bicycle Summit**		area **Bicycle events**
Enforcement	*Continue to deploy and improve **Share the Road messaging** and targeted program efforts*	Expand efforts to educate cyclists about rules regarding **sidewalk riding** and assess need for more visible **Bicycle Dismount Program**. ***(Coordinate with downtown business alliance)***		Deploy targeted bicycle enforcement campaign(s) as needs and resources are identified
Built Environment / Supporting Infratructure	Providing auxiliary infrastructure to serve bicyclists on their trip to and upon their arrival at various key destinations within the Rochester area			
Bicycle Parking	*Maintain & market existing public bicycle parking options including bike lockers in ramps* *Implement **Downtown Master Plan** bicycle parking recommendations*	Conduct a **Comprehensive Parking Survey** to quantify the number / location of bicycle parking	Develop **Bike Parking Guidelines and incentives** for existing private development to provide bicycle parking Develop **bicycle-parking ordinance** for new development	Develop a program to permit **seasonal on-street bicycle parking** through limited use of on-street auto parking space ***(work with TMA in downtown area)***
Wayfinding	*Complete deployment of signage under the 2011 OCPH Wayfinding project targeting the Rochester Trail system*		Complete a Wayfinding Deployment Study for the on-street bicycle network	Deploy on-street wayfinding signage beginning with the Major City bikeway network
End of Trip Services			Investigate options to encourage employers to provide end-of-trip facilities for commuters ***(Coordinate with TMA)***	Explore options to ensure shower and locker room facilities are available in key activity centers ***(work with TMA in downtown area)***
Bike Hub / Bike Share		Investigate market for Bike Share system in Rochester ***(work with downtown TMA)***	Deploy Bike Share program if justified & external funding is secured ***(work with downtown TMA)***	Identify partners and assess feasibility of Bike Hub / Bike Station® in Downtown Rochester ***(work with downtown TMA)***

Activity Area	Current Activities to Continue	1st Priorities among New Activities	2nd Priorities among New Activities	Low Priorities among New Activities
Bikes and Buses	*Continue to install and maintain Bike Racks on all regular route transit vehicles*		Develop and Promote a bike and ride program ***(work with downtown TMA)***	Develop secure bicycle parking at existing and future bus hubs
Built Environment / Bikeway Network	Strategies or actions impacting the built environment that affect bicycling, including removal of barriers, eliminating gaps in the network and enhancing safety, through a wide range of project types			
Bikeway Network Development	*Consider the provision of bikeways consistent with the BMP in the following cases:* • *All new highway or bridge construction/reconstruction projects;* • *Pavement preservation projects on roads / bridges designated as part of bikeway network;* • *As part of park or open space development* • *In public and private sector development projects*	**Public consultation** should be a priority as part of the planning & design process for all bikeway routes Assess the **balance of investment** between larger trail/path projects and smaller on-street signing or striping projects to determine how best to maximize bicycle network development given constrained resources	Utilize when feasible **standard Bicycle Design** options to insure safe travel Where use of standard design options is not feasible, consider the use of **innovative design treatments** that have been tested in other states and localities and work with Mn/DOT and FHWA as needed to conduct experimental projects.	Consider parkland dedication requirements to permit creation of linear park facilities for path or trail development where it would enhance overall system connectivity ***(ROCOG Plan)***
Bikeway Maintenance	*Maintain at a minimum the current level of commitment to bikeway maintenance*	Develop and deploy a **Bicycle Network Maintenance Request System**	Work with bicycle users to develop system **maintenance strategies aimed at reducing costs** Work with bicycle users to develop a **policy for the Seasonal Management** of Bikeway Facilities	
Resources	Identify and cultivate various types of resources, including financial, community and human, that can aid in implementing the Bicycle Master Plan action plan			
	Continue to apply Adequate Public Facility standards and policies for the dedication or acquisition of easements	Discuss with elected officials and community leaders the goal of establishing a	Discuss with elected officials and community leaders the **distribution of effort in** time	Encourage **private donor support** for Bikeway Network development or Bicycle

Activity Area	Current Activities to Continue	1st Priorities among New Activities	2nd Priorities among New Activities	Low Priorities among New Activities
	and rights-of-way for bikeways in conjunction with development approval. *Consider the opportunistic acquisition of easements or right of way for major trail or path projects even if construction funding has not been secured, in order to prevent missed opportunities.* *Local agencies should continue to pursue available grant opportunities by insuring staff time is available for grant preparation activities.*	**dedicated level of annual funding** for bicycle programs and projects	and money that should be directed to large trail/path projects versus smaller, less costly signage and striping improvements.	Programs by establishing mechanisms through which resources could be contributed . Identify new sources of revenue and resources that could support bikeway network maintenance efforts.

DISCUSSION OF RECOMMENDATIONS: Tables 8-2 to 8-7

Tables 8-2 through 8-7 provide additional discussion and information for each of the recommendations included in Table 8-1, including information on anticipated costs, parties who may have a role in implementation, and potential funding sources. (A*bbreviations found in these tables are indexed at the end of Chapter 8*).

PARTNERSHIP AND PLAN DEPLOYMENT

Most highly successful bicycle programs share some common characteristics. Usually they feature some level of dedicated staff, citizen involvement facilitated through advisory or non-profit committees, and the routine integration of bicycle considerations into public and private development decision making processes.

This plan envisions there will be an increase in responsibilities associated with achieving the goals of the plan that will go beyond overseeing the construction and maintenance of bicycle facilities or single purpose programs or events.

To achieve the objectives of the Bicycle Master Plan, consideration needs to be given to who will function as the "point person" for activities related to a bicycle program and how partnering between various entities with a role in achieving successful implementation can be coordinated. Developing a working partnership of citizens, advocates, community leaders and professionals from various disciplines

can ensure early and frequent involvement of relevant parties, and also can increase public awareness for the Bicycle Program. Representation from fields such as public health, health/medical providers, city planning, transportation, parks and recreation, environmental organizations, community development, housing, schools, elected officials, local government and the media need to be included. A diverse partnership will ensure a range of contribution and constant feedback on interdisciplinary issues and challenges.

TABLE 8-2: PARTNERSHIP AND PLAN DEPLOYMENT ACTIONS

Action / Strategy	Description	Implementation Considerations
Bicycle Plan Coordinator or Coordination Team	Consideration should be given to institutionalizing the role of Bicycle Program Coordination within local government. Historically, the Public Works Department with the assistance of the Planning Department in regards to infrastructure, and from the Public Health Department, School District and Law Enforcement in regards to safety or promotion programs, have taken the lead on individual projects. Given the scope of the Bicycle Master Plan recommendations, strengthening and broadening the scope of cooperation among various government agency staff as well as with and among community members will be important to the successful implementation of the bicycle master plan. Non-infrastructure projects in particular will require a sharing of responsibilities between agencies and private or non-profit groups. Sharing responsibilities will allow for more collaboration and will result is less redundancy, which should reduce costs, and will also result in a common message with regard to education and encouragement initiatives. To insure that the needed coordination occurs the plan recommends that some type of coordination framework be established with defined responsibilities for overseeing implementation of Bicycle Plan implementation assigned to an individual or group. Examples of options other communities have used to insure coordination and leadership include: 1) Execution of a Bicycle Plan Implementation Charter signed by all applicable public, private, and non-profit organizations having a stake in the implementation of this Plan. The Charter should address anticipated functions, frequency of tasks, and staffing requirements, and should encourage efforts to unify existing organizations, groups, and non-profits. 2) Organize a Bicycle Coordinating Council that provides a forum for a broad cross section of public, private, non-profit and business interests to interact for the purpose of identifying project leaders and potential partners and funding for activities, particularly in the areas of education, encouragement, promotion and enforcement. 3) Designate a staff coordinator(s) to lead implementation efforts among community stakeholders and agency	Different models exist for how to handle coordination of the Bicycle Program. Many cities in the forefront of mainstreaming bicycling have one or more full time staff dedicated to bicycle and pedestrian issues. In a study by the Alliance for Bicyling & Walking it was found that the presence of dedicated highly correlates to higher levels of bicycle and pedestrian travel. One of the potential benefits of staffing up will

TABLE 8-2: PARTNERSHIP AND PLAN DEPLOYMENT ACTIONS		
Action / Strategy	**Description**	**Implementation Considerations**
	partners. Smaller communities that have used this approach have found that the position need not be full time, but should be permanently funded and allow a new or existing staff person to dedicate a minimum of 10 hours per week to bicycle-related issues. Rather than take primary responsibility implementation, a coordinator should facilitate, support, and offer resources, where appropriate, to organizations that currently undertake these activities	be better coordination between projects and programs.
Transportation Management Association (TMA) Role	The Rochester Downtown Master Plan adopted in 2011 recommended the establishment of a Transportation Management Association (TMA), which typically are organized as non-profit, member controlled organizations that provide transportation services in a particular area such as the Central Business District. The goal of the TMA is to focus on the more efficient use of transportation and parking resources to support economic development, in part to help achieve the Master Plan goal of reducing Single Occupant Vehicle travel from 70% of all downtown travel to 50% of travel in 20 years. To the extent bicycle travel can help achieve this goal through encouraging commuter, customer or downtown resident travel by bicycle, the TMA can play an important role through the delivery and/or promotion of bicycle programs targeting the downtown travel market. In Table 8- specific actions or strategies where a TMA role is envisioned where identified for future consideration.	As of November 2011 preliminary discussions were still underway regarding establishment of a TMA for Downtown Rochester
Non Profit Bicycle Advocacy Organization	Bicycle Advocacy Organizations (BAO) provide the opportunity for highly motivated individuals interested in working on bicycle-related advocacy, education, encouragement or promotion activities. These organizations are typically organized as a non-profit organization under Section 501 of the federal tax code, are membership-based, and rely on the volunteer efforts of their members to accomplish their goals. These organizations typically raise funds through memberships, sponsorships and fund raising events. They can serve an important role as a voice for bicyclists in policy deliberations, plus have the ability to bring resources to the table to assist in the implementation of Bicycle Plan recommendations. A BAO can be a great complement to public or public/private sector organizations in working with the community to advance the goals of the Bicycle Master Plan.	

PLANNING AND POLICY

Public policy and planning related activities can play an important role in achieving the goals of the Bicycle Master Plan. Policies as reflected in ordinances, regulations or planning and design documents establish a framework for not only public actions but private actions affecting both the built environment as well as the level of services provided to residents, visitors, employers and workers in the community. Policies and planning activities affect a broad and diverse

range of potential elements, from design and maintenance to funding and safety.

Policy and planning work can help to change the perception of bicycling from one perceived as an alternative mode to one treated as a mainstream activity. Given the significant share of population without access or the ability to use vehicles, mainstreaming non-motorized travel has the potential to provide great benefits to the community.

Activities typically associated with planning action such as monitoring of outcomes and documenting trends through surveys and audits can help provide quantitative support for future improvements.

TABLE 8-3 PLANNING AND POLICY ACTIONS

Action	Description	Level of Effort / Cost	Implementation Role	Funding
Information resources				
Data Collection Plan	Agencies involved in development of the bicycle network should develop a **Data Collection strategy** to monitor changes in bicycle activity and attitudes about bicycling in the community. Data collection elements to consider include 1) expanded annual bicycle counts , 2) collection of before and after data associated with programs or new infrastructure to assess their success, and 3) surveys and evaluation to assess the public attitudes about bicycling improvements.	Medium – High	ROPD, OCPH, ALR, RPW	Agency Budget; Volunteers; Outside Groups
Periodic Progress Report	A periodic **Bicycle Master Plan Progress Report** should be prepared to report the community on the quantitative and qualitative progress being made in implementing the Bicycle Master Plan. In addition to reporting advancements, the report could also be used to identify changes in direction and priorities in upcoming year(s) and confirm budget needs.	Low	ROPD, OCPH, BPAC, RPW	Local Agency
Bicycle Informa-tion Clearing-house	A Bicycle Information Clearinghouse could serve as a centralize repository for information about all existing bicycle-related programs and resources. Despite the fact that many programs and resources already exist locally, there is no central location keeping track of the efforts. One of the least expensive ways to improve the effectiveness of existing or proposed effort is through partnerships and connections. If a clearinghouse were to be established, it could help different groups identify potential partners, catalog the campaigns and materials that are available for use, and enhance communication and coordination. It would be logical to mesh this activity with the development of a "Bike Rochester" website do to the overlap such site would have with a clearinghouse function.	Medium (startup) Low (Maintenance)	ROPD, OCPH	T/H Grants; Local Agency
Planning Studies				
Planning Studies	Chapter 5 of the BMP identified locations in each Ward where additional assessment and evaluation is needed to determine the need and feasibility of bicycle improvements in specific corridors. Table 8-1 identifies the current highest priority studies identified, but the list should be revisited each year to re-assess priorities based on changing conditions.	$5-$10,000 for minor to $30-$40,000 for major	ROPD RPW	Agency Budgets; Incorporate into road

TABLE 8-3 PLANNING AND POLICY ACTIONS				
Action	**Description**	**Level of Effort / Cost**	**Implementation Role**	**Funding**
		work		study
Periodic Plan Update	It is recommended that the recommendations of the BMP be revisited or updated on a comprehensive basis every 5-7 years to account for changing conditions in the community as well as successful project or program implementation efforts	Range of $25-$50,000	ROPD OCPH RPW	Grant Funding
Programming				
Fact Sheets	Educational materials describing the design and operational characteristic of new bikeway projects should be developed and distributed to area residents and others known to travel in an affected street corridor, as well as through general media outlets such as the local newspapers.	Low	ROPD RPW	Fit within agency budgets
Project Prioritiza-tion	Efforts should be made at providing members of the community the opportunity to offer comment and input during the process of developing annual capital programs and budgets related to projects in the Bicycle Master Plan. A centralized body such as ROCOG would be logical entity to facilitate this review, which could be incorporated into an annual Bicycle Summit.	Low	BPAC, ROPD, RPW, OCPH	Fit within agency budgets
Development Policy				
Land Develop-ment Regulation	Review the interpretation and application of local Land Development regulations to identify changes that may be warranted to facilitate the incorporation of bicycle facilities into development plans of public and private property to the greatest extent possible. Areas of consideration can be as narrowly drawn as requirements for providing bicycle parking or end of trip facilities, or more broadly drawn to include consideration of the role street layout or land use patterns play in the encouragement of safe bicycling.	Low	ROPD	Fit within Agency Budget
Traffic Impact Reports	Traffic Impact Reports are typically required at the rezoning or site development stage for large developments to identify the need for vehicular traffic mitigation. Consideration should be given to the role the TIR process can play in assuring adequate bicycle accommodations are provided on site.	Low	ROPD RPW	Fit within Agency Budget

PROGRAM AND PROMOTION ACTIONS

Education and encouragement efforts are an integral part of a sound bicycle program that aspires to create a safer, more predictable environment for all transportation users. Education or training increases confidence, which translates into a greater number of individuals who will choose to ride a bicycle. Education efforts should not simply include skills and safety instruction, but should help bicyclists find bicycle routes, locations of parking, and other information that could alleviate any apprehension an individual may have about bicycling.

Encouragement to choose bicycling as a mode of transportation can include information about benefits of bicycling as well as efforts to attract people to bicycling through the use of incentives as well as marketing and advertising campaigns.

Programs only for the general public should not be sole focus of efforts. Targeted programs aimed as specific populations and audiences can have significant payoffs. There are many potential sub-markets, including children, women, commuters, employers or students that may respond to tailored messages or programs more than general programs. Consideration in program design also should take note of potential cultural differences, and materials should be provided not only in English but other languages use by significant numbers in the area.

In the implementing of outreach and education efforts it is not necessary to "reinvent the wheel". Successful programs or campaigns from other communities can be used as models with materials modified to reflect local conditions in order to save costs and speed implementation.

TABLE 8-4 PROGRAM AND PROMOTION ACTIONS

Action	Description	Level of Effort / Cost	Implementation Role	Funding
SAFETY & EDUCATION				
Safe Routes to School Plans	Communities should continue to work with local school districts to implement adopted Safe Routes or School Travel Plans to encourage children and parents to consider bicycling for the trip to school. Eyota, Byron and Stewartville adopted Safe Routes plans in 2010 and 2011; ROCOG will facilitate development of a plan for the Rochester School District in 2012.	Low to Medium	ISD, ROPD, OCPH, RPW, ALR,	SRTS; ISD; Grants
Urban Cycling Workshops	Many people do not consider bicycle transportation because they don't feel safe on the road, don't know how to maintain a bicycle for either regular use or in adverse situations such as flat tires or slipped chains, or can't afford to buy a bicycle. Cycling workshops focused on maintenance and safety can reduce reluctance about bicycle travel by teaching important skills and allowing participants to practice new skills in realistic settings. Targeted workshops for specific groups such as women or immigrants with different cultural norms have been found to be successful in some communities.	$5,000-$15,000	OCPH, ALR, ROPD, UMR, RCTC, WSU	T/H Grants'; Other Safety Grants
Youth Training	Efforts should be made to partner with area School Districts to assess the level of bicycle skills and safety training being delivered to students and the need for enhancements or additional resources to achieve the level of training desired. One example of recent training upgrade being implemented is the Stewartville Public Schools adoption of the Florida Traffic and Bicycle Safety Education Program curriculum for bicycle and pedestrian safety training.	$10-$50,000	OCPH, ISD, ROPD, ALR, LEC	SRTS; T/H Grants; Safety Grants; ISD funds

TABLE 8-4 PROGRAM AND PROMOTION ACTIONS				
Action	**Description**	**Level of Effort / Cost**	**Implementation Role**	**Funding**
INFORMATION				
Go SoutheastMN	The **Go Southeastmn** (gosoutheastmn.com) web site is an on-line information resource that highlights existing bike facilities throughout southeast Minnesota including the Rochester area. Efforts should be made to maintain the information in the database to reflect the latest and most up-to-date information about bicycling opportunities in the area.	< $1000 (annual maintenance)	OCPH, ROPD	Fit within Agency Budget
Bikeway Network Map	Resources such as the Rochester Trail Map that have been developed by the Rochester Park and Recreation Department could be enhanced to allow for development of a Regional Bike Map. Among the enhancements to consider including would be bicycle suitability ratings, safety tips for bicyclists, listing / location of area bicycle shops and repair services, location of secure bicycle parking (bicycle lockers) and how to obtain access to use them, and information about how to use the bike racks provided on local buses. Such as resource should be widely available at places such as major employment sites (as part of a commuting alternatives program) public buildings, bicycle shops, and schools.	$10,000-$20,000; Print @ $1/map	BPAC, ROPD, ALR, OCPH, RPW, RPR	Local Agency; T/H Grants; Small Grants; Advertising
"Bike Rochester" web site	Develop a comprehensive web site to provide easy access to information about a wide range of bicycle related information including where to ride in the community, where to rent bikes, where bicycle parking is available, basics about the laws and regulations pertaining to bicycle travel, where to go to get instruction about cycling, etc.	Development cost: $2,500-$5,000 Maint. Cost < $1000/yr	BPAC, ROPD, RPW, OCPH	Grant for startup cost; Agency Budget for maintenance
Bicycle Information Handbook	Develop a Bicycling Information Handbook for residents and visitors with standard information on a wide range of topics about the basics on bicycling in Rochester, including laws pertaining to bicycling, bicycle equipment, bicycle operation, bike security, bike programs, etc.. A number of models around the country exist on which this handbook could be patterned. Make the handbook available on local government and local bike related websites and if funds can be secured, make print copies available for distribution at local bicycle retailers	$10,000-$20,000 w/o printing	BPAC, OCPH, ROPD,	Local Agency; T/H/A Grants
Resident Smart Trips Program	Develop a **Resident Smart Trips Program** that seeks to encourage alternative transportation choices by ensuring that everyone who lives and works in Rochester know about the options they have for getting around. Smart trips programs rely on social marketing and typically involve development and delivery of information packets to residents or businesses. The program can be scaled to serve a wide geographic area, or targeted to specific neighborhoods on a rotating basis. This effort could be lead by a Transportation Management Association if one is formed to serve downtown Rochester	Moderate program $15,000-$50,000 / yr	ALR, OCPH, ROPD,	T/H/A Major Grants; TMO; Parking Fees

TABLE 8-4 PROGRAM AND PROMOTION ACTIONS				
Action	**Description**	**Level of Effort / Cost**	**Implementation Role**	**Funding**
AWARENESS				
Bicycle Ambassadors Program	Develop a team of "Bicycle Ambassadors" that would be available to participate in public events as well as make presentations to local businesses or groups about the role bicycling can play in meeting individual travel needs and what p person needs to know about bicycling in the Rochester area. Such a program has been specifically recommended to the City of Rochester by the League of American Bicyclists.	$500-$1,000/yr	TMA ROPD BPAC	Small Grants; Local Agency
Informational Material for Visitors	The Rochester Convention & Visitors Bureau has indicated an interest in developing a resource that visitors to the community could access if they wish travel by bicycle for leisure/recreation or for other travel needs. Information on bicycle routes, tour routes or regional trail opportunities, as well as brochures that highlight where bicycles can be rented as well places of interest for cyclists should be made available.	$5,000-$15,000	CVB; OCPH, ALR ROPD	CVB; Small Grants
General Awareness Campaign	Develop a media strategy for deploying positive messages about bicycling as both a recreational as well as utilitarian means of travel and the benefits that can accrue to an individual or the community from increased use of alternative modes of travel including cycling. General awareness campaigns could focus on themes (which would change periodically) such as promoting bicycling as a viable travel mode for both work and non-work trips, encouraging motorists and bicyclists to "share the road" through better understanding of the rules of the road, promoting the health benefits of cyling, or illustrating the low cost and ease of maintenance associated with bike travel	< $5,000 / yr - materials	OCPH, ALR, ROPD, BPAC,	PSA's; T/H/A Grants
ENCOURAGEMENT				
Commuter Programs	A **Bicycle Commuter Benefit program** could be established to market and encourage bicycling as an option for commuting either through a TMA or employer-based programs. A comprehensive program would include incentives and rewards such as a monthly subsidy to employees who commute by bike, convenient bike parking and other end of trip amenities such as access to shower and locker facilities. These programs can be further enhanced by providing access to Guaranteed Ride Home and individualized trip planning services.	Medium to High	TMA, RPW, Transit Provider, Parking Managmnt	TMA program, Parking Fees, Employers
Bicycle Friendly Business Program	Develop and promote a **Bicycle-friendly Business Program** and recognize businesses that participate. This program could be focused on working with employers directly or within the framework of a local Travel Demand Management program to promote bicycle commuting through measures such as :	TBD	TMA RPW ROPD BPAC	Grants; Business, TMA

TABLE 8-4 PROGRAM AND PROMOTION ACTIONS				
Action	**Description**	**Level of Effort / Cost**	**Implementation Role**	**Funding**
	1. offering tax-advantaged allowances for travel to work by bicycle, 2. making Bicycle Ambassadors or other individuals available to provide workshops on bicycle commuting topics 3. working with employers to offer secure bicycle parking and locker room facilities, 4. working with employers to offer a guaranteed ride home program for emergencies 5. working with local bike merchants to obtain group discounts on bicycle equipment and accessories 6. Developing a Bicycle Friendly Business recognition program 7. Establishing a Bike Buddies or Bike Coaches program to match interested employees with experienced bicycle commuters			
EVENTS				
Annual Recognition Program	BPAC could develop an **annual recognition program** to celebrate individuals or organizations that have provided effective leadership or have led the implementation of projects or programs in furtherance of the goals of the Master Plan. Nominations could be solicited from the community at large, and multiple categories of recognition could be considered. The story of award recipients could also be used to inform a general awareness campaign with local examples of how bicycling is positively affecting the Rochester area.	< $1,000 / yr	BPAC, Staff Coordinator	Agency Budget
Annual Bicycle Summit	BPAC or a Master Plan coordinating committee should consider organizing an annual Bicycle Summit to bring together interested individuals and elected leaders in the community with public agency staff involved in bicycle issues to provide for a two-way dialogue about plans and programs and a sharing of insights about opportunities and issues.	< $1,000 / yr	Staff Coordinator, BPAC	Agency Budget
Signature Events	Recurring bike related community events to highlight and encourage cycling such as periodic "Sunday Parkways" for traffic-free biking and walking on a network of selected streets, or an annual Fun Ride, are a great way to encourage individuals to consider bicycling.	< $1,000 / yr	Staff Coordinator, BPAC	Grants for Startup; participation fees
ENFORCEMENT				
Share the Road campaign	Efforts should be made to broaden efforts in cooperation with local law enforcement to disseminate information and raise awareness about the need for both bicyclists and motorists to respect the rights of other users of the public right of way and to accept the responsibilities that come with operating within the public right of way. This could be incorporated as part of a general awareness campaign or focused on periodic high visibility campaigns, making use of multiple media, including television and radio PSAs, advertising	$5,000-$15,000	OCPH, LEC, DPS, RPW, OCPW,	Safety Grants/Prg; Agency

TABLE 8-4 PROGRAM AND PROMOTION ACTIONS				
Action	**Description**	**Level of Effort / Cost**	**Implementation Role**	**Funding**
	signs (e.g., posters on buses, seasonal banners), newspaper ads, insertion of information into utility company mailings, as well as various electronic media.			
Sidewalk Bicycle Riding	Sidewalk riding was a particular area of concern noted during the public input phase of the Bicycle Master Plan. A select number of communities have undertaken efforts to establish Dismount Zones featuring prominent signage to deliver messages related local and state laws regarding sidewalk riding.	Agency Support; Additional signs $250-$500 / sign	BPAC, CVB, DBA	Local Agency Safety Grant Business Association
Targeted Bicycle Enforcement Campaigns	Work with local law enforcement and traffic safety staff periodically to assess the need for targeted bicycle enforcement campaigns that involve efforts to enforce the traffic laws as they relate to bicycle safety. Among the key behaviors that should be monitored include: 1. The level of riding at night without lights that is occurring; 2. The level of traffic signal violations that is occurring; 3. The level of riding on sidewalks in Downtown Rochester that is occurring; and 4. The frequency of riding against traffic on area roadways. Any enforcement campaign should consider the use of soft enforcement, with little or no ticketing that features the distribution of educational materials, to help raise awareness.	$5,000-$10,000	LEC, ALR, OCPH, ROPD, RPW,	Safety Grants; Small Grants; Agency

BUILT ENVIRONMENT / SUPPORTING INFRASTRUCTURE

This section describes actions and strategies identified to improve support facilities that will make bicycling more efficient and convenient for Rochester area residents. In order for bicycling to be a fully viable form of transportation, other programs and facilities are needed to complement the Bicycle Facility Network. This includes integrated bicycle and transit services, adequate bicycle parking at all destinations, showers at employment centers, convenient repair services, and coordination with a variety of other essential components of a multi-modal transportation system.

Provision of secure bicycle parking and end of trip facilities is an important element in encouraging the use of bicycles as a mode of travel for shopping, work and recreational trips. End of trip facilities such as change rooms, showers and lockers should be provided at places of employment or higher education centers to encourage bicycle use. Wayfinding

signage can enhance use of the network through giving cyclists better information about trip routes as well enhanced security and improved convenience. Special services such as a bike sharing service or a bike hub are another type of improvement that should be considered as bicycle traffic grows in order to meet the needs of an expanding base of potential riders.

These measures can improve the bicycle experience by providing riders information and/or assurances that they can reach desired destination without major surprises or barriers, that options to secure their vehicle will be available at their destination, and that they will be able to conduct their affairs after a trip with minimal disruption.

TABLE 8-5 BUILT ENVIRONMENT / SUPPORTING INFRASTRUCTURE ACTIONS

Action	Description	Level of Effort / Cost	Implementation Role	Funding
BICYCLE PARKING				
Comprehen-sive Parking Survey	Conduct a comprehensive survey to quantify the amount of publicly accessible bicycle parking that is available throughout the city at public, non-residential and multi-family residential development, as well as issues related to available parking in terms of design or location, and develop recommendations as to where bicycle parking should be added.	Low	ROPD with BPAC	Local Agency
Bicycle Parking Guidelines	Produce bicycle parking guidelines for use by developers for incorporating bike parking into projects, based on best practices from around the United States.	Low	ROPD with BPAC	N/A Policy Effort
Bicycle-Parking Ordinance	Develop bicycle-parking requirements for new development that could be presented to jurisdictions for adoption as part of local land development codes. Among the key factors to address include 1) what percentage of spaces should be weather protected; 2) the location of spaces in relation to entrances; and 3) the need for signage if not visible from the street. Consideration should be given to permitting a reduction of auto parking spaces for providing a combination of short- and long-term bicycle parking.	Low	ROPD with BPAC	N/A Policy Effort
On-street Seasonal Bicycle Parking	Consider permitting bicycle parking areas through the conversion of a limited number (no more than one per block) of on-street auto spaces on a seasonable basis upon request of nearby business owners. A single auto space can provide parking for up to ten bicycles.	Low to Medium	RPW	Applicant Fees; TMA, Parking Fund
WAYFINDING				
Wayfinding Program	Olmsted County Public Health completed a 2011 Wayfinding Study that was focused on the regional trail network in the City of Rochester and began deployment of wayfinding signage on the trail network. As the on-street bikeway network develops, the wayfinding program should be expanded to include Major City Bikeways as a first priority with Local Area	Low to Medium	OCPH, RPW, RPR	T/H/A Grants

TABLE 8-5 BUILT ENVIRONMENT / SUPPORTING INFRASTRUCTURE ACTIONS				
Action	**Description**	**Level of Effort / Cost**	**Implementation Role**	**Funding**
	Bikeways as a 2nd priority. To accomplish deployment on these on-street networks an addendum to the Wayfinding Study should be completed as a first step.			
END-OF-TRIP				
End of Trip facilities	Ensure that showers and locker room facilities are available by bicycle commuters at major employment destinations in the area. Public employers could serve as a leading example by including such facilities in new public building projects. Working with health and fitness clubs in or near employment centers, create arrangements whereby, for a small fee, bicyclists could use the club shower and locker room facilities.	Low (costs would be for coordination)	TMA ROPB with BPAC, Staff Coordinator	Local Agency (Assessmnt); Private; TMO
BIKE SHARE / BIKE HUB				
Bike Share Feasibility Study	Investigate the market for and interest in a Bike Share program that would serve the downtown Rochester employment and visitor travel markets. Careful consideration will need to be given to the level of demand for such a service and financial viability in a small urban market such as Rochester.	Low to Medium	BPAC, ROPD, TMA, MMC, CVB, DBA, RPW	T/H Grant
"Bike Hub" Feasibility Study	Explore the feasibility of developing a downtown "Bike Hub" or "Bike Station®" to serve the needs of bicyclists with destinations in downtown Rochester. Features to consider include secure bike parking, locker room facilities, bicycle equipment sales and repair, information about bicycling in Rochester, bicycle rentals and food and drink items. This concept could potentially be integrated with a Downtown "Transportation Store" if one is developed as part of the implementation of a Transportation Management Association (TMA) as recommended in the 2010 Rochester Downtown Master Plan	Low to Medium	TMA, BPAC, ROPD, MAYO, DBA, RPW	T/H Grant TMA Funds
BIKES AND BUSES				
Bike and Ride program	Working with a downtown TMA if one is established, develop marketing materials to promote the combined use of bicycle and transit travel for trips to downtown Rochester or other major destinations. A key part of any such promotion would be the identification of potential incentives that could be provided to individuals to consider such multi-modal opportunities.	Low	Transit Provider; RPW	Transit Marketing
Secure bicycle parking at Bus Hubs	With anticipated changes to the local transit system that will results in the development of additional transit hubs as well as permanent park and ride facilities, consider including provisions for the storage of bicycles to facilitate a bike and ride travel option, with discounted fares for bicyclists who use the service.	$250/Rack $1500 / Locker	BPAC, RPW, OCPH, ALR	Fed/State Transit Grants; Local CIP

BUILT ENVIRONMENT / BIKEWAY NETWORK

Every transportation project offers an opportunity to implement a piece of the Bicycle Master Plan. Much of the proposed on-street network will likely be achieved through routine road resurfacing projects, while other improvements will occur as part of major road rehabilitation projects, major land developments, new road construction, or stand alone bicycle facility projects. Across these many varied types of projects, however, some basic considerations should be reflected in the project development process, including adequate public consultation and consideration of both standard design options as well as innovative designs where physical constraints or barriers exist that limit standard design approaches.

As the bicycle network grows maintenance needs will also grow, which will present a challenge in times of flat-line or decreasing budgets dollars. As a result, innovation in maintenance polices and approaches also need to be considered in order to preserve quality infrastructure conditions.

TABLE 8-6 : BUILT ENVIRONMENT / BIKEWAY NETWORK

Action	Description	Level of Effort / Cost
Public consultation	Building and maintaining support for new bicycle facilities will increasingly depend on sharing information and listening and responding to citizen concerns as projects are developed and brought on-line. Efforts should be made to develop a working partnership of citizens, advocates, community leaders and professionals to increase public awareness and ensure a range of contribution and feedback on design issues and challenges.	Public consultation should be reflected in project development costs
Investment Focus	To maximize the reach of the bikeway program, consideration should be given to shifting emphasis over time in budgeting from large trail or path projects to smaller on-street signage and striping improvements. This transition may take several years to accomplish given projects that are in the pipeline, but increased emphasis on on-road bikeways will be needed to develop a fully connected network of regional, major and local bikeways.	Policy question in which RPW, ROPD, BPAC and others such as BAO would be involved
Design Options	There are a set of established improvement standards that have been tested through experience across many cities and found to enhance bicycle travel, including guidelines such as the AAASHTO Bicycle Design guide and the Minnesota Department of Transportation Bicycle Design Manual. These guidelines should always be consulted initially to determine the applicability of standard design to a particular location. However, where implementation of standard designs treatments is difficult due to conditions unique to a specific corridor, the community should consider the use of innovative designs that are being implemented more	This would primarily involve RPW working with Mn/DOT to conduct pilot studies; would need to include evaluation phase. Assistance could be provided by BPAC or a

	frequently in cities across the country. There are a number of available resources for ideas and specific designs for roadways and intersections that can better accommodate bicyclists in constrained conditions. Many if not all of the cities with the highest levels of bicycling in the country, such as New York City, Portland, Minneapolis and Chicago, have relied on the use of innovative treatments to enhance their bicycle networks, and that experience is available to consider in development of the local bike network. The National Association of City Transportation Officials (NACTO) published in 2011 the *Urban Bikeway Design Guide* that gathers much of this experience into one publication, and FHWA is conducting on-going research in partnership with various communities to assess the safety of these measures.	BAO in terms of data collection efforts
Land Acquisition	Right of way or property easements needed for major bikeway projects should always be acquired whenever the opportunity presents itself, even if construction funding has not been secured, in order to prevent missed opportunities. Various mechanisms exist or could be considered to enhance the ability to preserve corridors for future use. Official mapping or advance acquisition of property easements for future projects in major linear corridors are tools that can be used to secure land needed for facility. The city of Rochester could also consider permitting parkland dedication requirements to be met through creation of linear park facilities that could serve the development of trails or paths.	Land Acquisition or corridor preservation activities are part of standard work of RPW and ROPD and would be managed by those agencies with Council oversight
Bicycle Facility Maintenance Request System	Various cities have been establishing maintenance request hotlines using telephone technology (x11) or on-line webites such as SeeClickFix to permit the reporting and routing of maintenance requests with more efficiency. Implementing such tools can improve response time and allow for a greater exchange of information between the public at large the agency staff working on maintenance needs.	Low to Medium startup cost, could be an in-house effort using public domain software.
Maintenance Practices	Because of tight budgets, local roadway agencies jurisdictions have been working with local bicycle communities to identify ways to reduce costs and stretch maintenance dollars. Among the strategies to maximize the efficient of limited maintenance funds include: ➢ Identify routes in the network that will get a high level of service. ➢ Identify and test in partnership with local bicycle advocates any innovative treatments and practices that could reduce maintenance funding needs. ➢ Allow volunteers and residents to help with basic infrastructure chores such as trash removal and sweeping glass. An example of a program is the Adopt-a-Greenway program has been a tremendous success along the Midtown Greenway in Minneapolis	Implementation would involve RPW in discussion with advocates including BPAC and a BAO, with consideration of integrating work within standard RPW maintenance activities or utilizing other arrangements

	➢ Establish policies on the frequency of street sweeping, ➢ Establish protocols for spot replacement needs such as pothole repair, the replacement on non-bike safe drainage grates, and maintenance of signs and striping.	
Seasonal Maintenance	With increasing numbers of bicycle riders communities are seeing increasing numbers of year round riders. Specific concerns that arise from this are needs for winter trail grooming, safety impacts of freeze/thaw cycles, ice management and spring runoff of sand and gravel at trail/roadway sections. These concerns are combined with a limited construction and maintenance season that limits trail projects to approximately six months of the year. These issues can also be seen as opportunities, especially since residents and visitors are able to enjoy the bikeways and trails in different ways, with a variety of experiences throughout the seasons.	Implementation would involve RPW in discussion with advocates including BPAC and a BAO, with consideration of integrating work within standard RPW maintenance activities or utilizing other arrangements

FUNDING & RESOURCES

Regular and consistent funding of the goals, objectives, and action items of this Plan are critical to the increased use of the bicycle network, as well as the completion and maintenance of a safe and functional bicycle system.

Success in achieving the goals of the plan will depend in part on strategic decisions made in regards to the identification of funding sources and the budgetary allocation of funds to a comprehensive Bicycle Program. The items outlined recommended for consideration in this section reflect general funding strategies that have been considered in some of the Best Practice communities that were investigated during the preparation of this report.

TABLE 8-7 FUNDING AND RESOURCES

Action	Description
Dedicated Funding	The capital program for bicycle projects would benefit from having a dedicated funding source. In Minneapolis, for example, the Bicycle Plan recommended that 2% of the City of Minneapolis annual capital transportation budget be set aside for bicycling projects, while in Portland, OR, the target established in the Bicycle Master Plan was 5%. Even at these levels, larger projects would likely require banking funds over several years or would need infusion of one-time funds from outside sources such as grant programs. Establishing an annual base funding stream creates a reasonable public expectation of what can realistically be done each year, and helps to balance staffing needs .

TABLE 8-7 FUNDING AND RESOURCES	
Maintenance Funding	Providing adequate funding for maintenance presents a great challenge for communities since typically cities do not have as many sources of funding for maintenance as they do for capital funding of projects. The Rochester Park and Recreation and Public Works Department currently maintain trails and paths, though funding is not at a level to provide full life cycle funding. Some ideas that have been considered in other communities that have been considered to help generate additional revenue for infrastructure maintenance include: ➢ Consider a user fee structure where "those who benefit help pay". License fees are used in some communities to support infrastructure projects ➢ Create a maintenance endowment where the interest from donations would be used. ➢ Implement a specific sales tax for bicycles and bicycle related equipment. ➢ Allow advertising for events, brochures, and maps. Corporate sponsorships or other public/ private partnerships could be pursued. ➢ Consider naming rights for bicycle infrastructure. ➢ Consider other fundraising to benefit specific maintenance projects.
Private Donor Support of the Bikeway/Trail System	Some communities have taken the approach of developing "Friends of" groups that can provide volunteer construction and maintenance services as well as funding small projects, such as signage and wayfinding programs. Through such a program, or an "Adopt a Bikeway" program, corporations, institutions, and individual private donors can support the existing and proposed bikeway and shared-use path system. This program can be leveraged to enhance maintenance through volunteer work and can connect philanthropy with fundraising to sustain the system.

Network Infrastructure Summary

Chapter 5 identified for each area in the City of Rochester and adjoining township areas a bikeway network and proposed improvement recommendations. This section summarizes the overall level of system investment that would be needed to develop the recommended bikeway network.

Table 8-8 summarizes the centerline mileage of various bikeway improvement types included in the infrastructure plan. On-road facilities, including bike routes, sharrow routes, bicycle boulevards and bike lanes account for the majority of new mileage, with 70+ miles of on-road facilities proposed. In addition, based on the recommendations included in the City of Rochester adopted Comprehensive Plan, 50 miles of additional off road path and trail development is envisioned for the Rochester urban area.

Table 8-8

Corridors	Miles
Signed Bike Route	29.84
Bike Lanes	22.19
Sharrow Routes	11.02
Advisory Bike Lane	4.16
Bike Boulevard	2.97
Cycle Track	0.28
	-
Path	41.79
Trails	8.46

Table 8-9 summarizes the recommended critical crossing improvements included in the plan at intersections and other barriers that were identified during development of the plan. The majority of these locations involve the implementation of pavement markings or colored pavement crossings to draw attention to high conflict areas or provide clear demarcated travel paths for bicycles through complex areas. Higher cost improvements including Advisory Beacons or HAWK signals, median refuges and major bridge structures to provide for grade separation are proposed in a limited number of locations.

Table 8-9

Crossings	Locations
Median Refuges	2
Two Stage Lefts	2
Shared right Turns	12
Intersection Markings	25
Bicycle Boxes	2
Ramp Markings	7
Advisory Beacons	8
HAWK	3
Grade Separation	4

Table 8-10 summarizes estimated construction costs for the infrastructure improvements recommended in the plan. High cost construction items such as grade separations, trails, paths and the incremental cost of shoulder widening account for approximately 93% of the total estimated costs. Lower cost projects such as Bike Routes or Sharrow Routes that consist primarily of signage and pavement markings account for the remaining 8% of the implementation costs. Historically high cost projects such as trails or grade separations have been supported to a high degree with outside funding sources such as state or federal grants, and the expectation is that those sources will still be available on a competitive basis in the future. Lower cost signing and pavement marking projects will rely heavily on local funding though non-traditional outside sources may be available to assist with this work.

Table 8-10: Estimated Implementation Costs

		Shared Roadway Improvements (Bike Rts / Sharrows)	Bike Lanes (No Construction - use existing road)	New Road Construction (Primarily Paths & Shoulder Upgrade)	Off Road Construction (Primarily Trails & Grade Separation)
Ward	**1**	$ 119,000	$ 173,000	$ 3,149,000	$ 4,268,000
Ward	**2**	$ 360,000	$ 89,000	$ 4,424,000	$ 272,000
Ward	**3**	$ 169,000	$ 62,000	$ 774,000	$ 10,923,000
Ward	**4**	$ 273,000	$ 162,000	$ 716,000	$ 1,161,000
Ward	**5**	$ 124,000	$ 224,000	$ 857,000	$ 1,882,000
Ward	**6**	$ 114,000	$ 78,000	$ 32,000	$ 396,000
TOTAL		$ 1,159,000	$ 788,000	$ 9,952,000	$ 18,902,000
			GRAND TOTAL		**$ 30,801,000**

In addition to the upfront cost of construction, there are on-going costs as well that must be considered for the maintenance and repair of infrastructure improvements. Table 8-11 summarizes estimated ongoing annual costs that should be planned for in order to keep proposed improvements in reasonable condition. Table 8-11 assumes that facilities such as paths and trails will need to be resurfaced with an overlay on a 20 year cycle, while lane striping or other pavement markings would be refinished on a four year cycle and bike route and safety signage would be replaced on a 10 year cycle. The summary also builds in a cost for miscellaneous actions such as patching or sweeping of facilities.

Table 8-11 Estimated Maintenance Costs

	Existing Mileage	Future Mileage	Unit Cost per mile	Annual Cost Existing Facilities	Annual Cost Future Facilities	Annual Cost Total
Trail / Path	100	50	$ 3,300	$ 330,000	$ 165,000	$ 495,000
Bike Lanes	12	26	$ 3,400	$ 40,800	$ 88,400	$ 129,200
Bike Routes	5	30	$ 600	$ 3,000	$ 18,000	$ 21,000
Sharrow Routes		14	$ 1,600	$ -	$ 22,400	$ 22,400
Cycle Track/Raised Lane		0.5	$ 4,950	$ -	$ 2,475	$ 2,475
TOTAL				$ 373,800	$ 296,275	$ 670,075

Prioritization

The plan recommends periodic reassessment of infrastructure project priorities as a means of focusing project development efforts and as a step to provide on-going momentum for implementation. Prioritization also plays a role in the funding process, since demonstration that projects have been vetted through a systematic project selection process can improve the chances of securing grant funding as well as helping to target limited local funds to the most important projects.

Table 8-12 identifies recommended criteria for use in bikeway related prioritization. The criteria are intended to rank projects against each other as an indication of their relative importance.

TABLE 8-12: Proposed Prioritization Criteria

SYSTEM IMPORTANCE	
Enhances system connectivity	Project addresses a significant gap in the Primary Bikeway Network or will establish a connection to a Regional Trail
Addresses Existing Safety Need	Project will address a location with a documented safety issue, taking into account available crash data as well as feedback from the community regarding the level of conflict at the location.
Enhances Accessibility to Key Destination	Project will provide connectivity to a key destination not currently served such as a school, community or regional park, employment or retail center, or cultural center.
PROJECT DEVELOPMENT	
Project Readiness	Project readiness is assessed based on how many steps in the development of a project have been accomplished (ie. planning, design, right-of-way or easement acquisition, funding, etc.).
Project Feasibility	Assessment of how difficult it will be to implement the project, taking into account such constraints as topography, environmental issues, and impact on existing development.
Community Support	Degree of support for proposed project taking into account oral and written feedback received at the community meetings.
Cost and Funding	Have financial resources to implement the project been identified or is it the type of project that would likely complete well for grant funding or for which leveraging of multiple sources can realistically be considered.
COMMUNITY FEASIBILITY	
Network Coverage	Does the project provide a foundation for further improvements in an in underserved area where residents or workers are more than one mile from an off-street trail or more than one half mile from a designated on-street bikeway?
Project Timing	Project timing is appropriate based on needs of adjacent land use and consideration of outside factors such as the redevelopment of an area.
Approved Plan	Is the project part of an approved plan? An approved plan can be a city plan, an agency plan, neighborhood plan, or regional plan. Planning grants may result in an approved plan or amendment to an existing plan

Table 8-13 highlights three “Top Ten” lists of priority projects, broken into “High Cost” projects that will likely require outside funding, “Moderate Cost” projects , and “Low Cost” projects that would involve mainly changes in pavement marking and addition of bike related signage.

Table 8-13: Project Prioritization "Top Ten" Lists (non-funded projects)

High Cost Projects	Moderate Cost Projects	Lower Cost Projects
Willow Creek Trail / Willow Creek Middle School to Gamehaven/CR 101	**8th Ave SE** Bikeway / Bear Creek to 20th St SE	**9th St SE** / Slatterly Park to TH 63 *(SE Area Downtown Access Route)*
North Broadway Bridge / connecting trails & paths crossing TH 63 at bridge	**Elton Hills Dr** Bike Lanes / Assisi Drive to TH 63	**2nd Av SW** / Soldier's Field to 2nd St SW *(SE Area Downtown Access Route)*
Improve crossing at intersection of **3rd St NW** and West Circle Dr	**Zumbro South River Trail** connections to 18th Ave SW and 20th St SW	**6th St / 10th Av SW** Sharrow route from TH 52 to 4th Ave SW on Mayo Campus
Extend **Cascade Creek Trail** from 16th Av NW to TH 52	Westside Access to **St Mary's Hospital** area (*Part of future 3rd St SW)*	**7th St North from** 11th Av NE to East Frontage Rd TH 52 – combination of road diet (East and West end) and Sharrow Route
North Broadway Bikeway / 14th St NE to Northern Hills Drive	**Assissi Drive** / bike lanes from Elton Hills Dr to 11th Av NW	
18th Ave NW Bike Path / 48th St to 55th St	**2nd St / 3rd St SE** Bicycle Boulevard from 6th Av to 19th Av (*connecting Downtown to Campus Area)*	**Kutzky Park** Bikeway: Downtown to TH 52 (*Bike Route or Sharrow route to be determined*)
18th Ave SW Shoulder Bikeway from Mayowood Rd to 32nd St SW	**2nd St SW** bike lanes / 15th Ave to 23rd Ave SW	**Stonebrook Neighborhood Connector** (*also serves Softball complex*)
TH 14 East bike path from Marion Rd to CSAH 22 East	**3rd Ave / 4th Ave West** bike lanes from 14th St North to 6th St South	**West Silver Lake Bikeway Connector** to 1st Ave NE *(NE Area Downtown Access)*
Chester Woods Trail Connection East Circle Drive to CSAH 11	**10th St North** Bicycle Boulevard / 13th Ave NW to Silver Lake Park	Warning upgrades for **Trail Crossings** / Silver Creek Trail @ 11th Av NE Cascade Creek Trail @ 11th Av NW
Complete construction of path along 11th Av SW to **Willow Creek Reservoir** south of 48th St SW	**18th Ave NW** Bike Lanes / 41st St to East Frontage Rd with connector to Elton Hills Dr	**16th St SE** Road Diet / Broadway to 11th Ave SE
Bear Creek trail (south side) from 4th St SE bridge to 8th Ave SE	**11th Av East** bike lane / sharrow route from 14th St N to Bear Creek	**14th St N** bike lane from 11th Av East to 11th Av West

Funding

As described in this chapter, the recommended Rochester-area Bicycle Master Plan consists of a comprehensive network of on and off-street bikeways, supporting infrastructure and various education and encouragement program measures. Regular and consistent funding of the action items of this Plan are important to the increased use of the bicycle network, as well as the completion and maintenance of a safe and functional bicycle system. Planning-level cost opinions for these proposed improvements and activities identified on the order of $35 million dollars in investment would be needed to fully develop the proposed bikeway network and programs.

Current best practice in cities actively attempting to increase the bicycle mode split typically spend approximately 1 to 5% of their annual transportation budget on bicycle implementation. Currently the level of dedicated funding for the program is relatively low, represented by the City of Rochester's ongoing efforts to fund maintenance, preservation and small infrastructure projects through its Public Works Department and Department of Parks and Recreation. Table 8-14 summarizes the current level of funding for these programs:

Table 8-14: Current Bicycle Funding Programs

Bike Path Preservation	**Funds seal coating, patching, crack sealing and overlay of bike paths/trails**	**$20,000 per year – will support about 2-4 miles of preservation per year.**
Trail System Development	Funds completion of short segments of trail, primarily in neighborhood parks	$25,000 per year – will support construction of 1+ miles of paving per year.
Bituminous Street Rehabilitation and Resurfacing/Preservation Programs	These programs involve street reconstruction or mill&overlay projects needed to restore condition of street surface to acceptable level. Provides opportunity to consider how roadway space is allocated as pavement markings must be replaced	$500,000 per year for Street Reconstruction. This will typically fund about 1 mile of reconstruction $1,000,000 per year for Mill & Overlay program. This will typically fund about 5 miles of mill & Overlay
Traffic Calming	Program focus is on vehicular speed and volume control on neighborhood residential streets; projects could include measures that enhance bicycle safety	$100,000 per year (50/50 public/private split). Typically will support implementation of 1 or 2 projects per year

The City of Rochester has also been active in the pursuit of infrastructure grants through different programs, with a focus on the federal Transportation Enhancement program and the State Department of Natural Resources Local Trail Grant program. The City Council has

exhibited a willingness to budget the necessary matching dollars needed for every successful competitive grant the city has been awarded in the past through these programs, and has also used flood control enhancement funds for specific projects such as trails associated with flood control improvements. Table 8-15 summarizes an average estimate of funding that could be expected to be secured over a 25 year period based on historic experience with the most commonly awarded grants.

Table 8-15: Average Grant Funding Anticipated

Grant Program	Frequency of Grant Award Assumed	Size of Grant Award Assumed	Total 25 Year Funding
Federal Enhancement Funds	One award every two funding cycles (1/4 yr)	$500,000	$3,100,000
DNR Local Trail Connection	One award/ 5 years	$50,000	$250,000
DNR Regional Trail Grant Award	One award per decade	$250,000	$625,000
DNR Legacy Grant Program	One award / 5 years	$200,000	$1,000,000
Legislative Bonding	100% of State Trail Projects over lifetime of plan (20-25 years)	Projects Anticipated to get funding *(Chester Woods Connection)* *(Douglas Trail Overpasses)*	$4,400,000
TOTALS			**$7,375,000**

The local property tax funding devoted to bicycle improvement summarized in Table 8-14 and anticipated grant funding summarized in Table 8-15 reflect the most common funding sources for bicycle improvements. There are a wide range of other potential funding sources that have been used by communities across the country in an effort to secure funding for bicycle related initiatives. Table 8-16 describes the types of funding different communities have utilized to implement Bicycle Master Plans around the country.

Table 8-16: Possible Sources of Funding

SOURCE	DESCRIPTION	Applicable Projects
Federal	**Surface Transportation Program (STP) funds** and specifically the Federal Transportation Enhancement (TE) program have been used to fund many major trail and path projects in the Rochester area. Projects are awarded on a bi-annual schedule, typically with a 2-4 year lead time. Federal projects require a minimum 20% match plus design/engineering fees to be paid with local sources. An evaluation in the Twin Cities estimated that it takes 65 cents of local money to match a dollar in federal funding when factoring in all project costs.	Federal grants are most applicable to funding a specific infrastructure improvement project or

SOURCE	DESCRIPTION	Applicable Projects
	Federal Earmarks—In past years members of Congress were allowed to set aside funding for special projects in their district. These funds most often went to construct signature projects. Earmark funding has been significantly curtailed in the current Congress and the availability of funding through this mechanism may continue to be severely restricted in the future. **Federal One-Time Programs**—TIGER grants are an example of a current special program that has been used in some cities to fund bike improvements as part of integrated multi-modal projects. Rules on how to spend funds in special programs such as TIGER are unique to the program, and the funding opportunities typically do not reoccur after the initial funding is distributed. **Safe Routes to School Funding**—The SR2S Program is an example of general STP funding targeted for a specific purpose, in this case projects to identify and reduce barriers and hazards to children walking or bicycling to school (70 to 90 percent of funds) or for non-infrastructure encouragement and education programs (10 to 30 percent). **Community Development Block Grant (CDBG):** Through the Community Development Block Grant program cities can direct money for streetscape revitalization, including but not limited to acquiring real property and constructing public facilities and improvements, such as streets, sidewalk and various types of land development, as well as providing public services for youths, seniors, or the disabled; and initiatives such as neighborhood watch programs. **Federal Health Grants**: Federal Health grants focusing on addressing behaviors and habits that lead to chronic health conditions such as diabetes or heart disease are broadening their mandates in terms of interventions to include measures to increase personal physical activity, such as the funding of infrastructure for active transportation such as bicycling or programs to educate and encourage individuals to pursue such activities.	providing funds for a task-specific program for a defined period of time, such as start-up funding for an education or encouragement program
State	**State Bonds**—On a bi-annual basis the State of Minnesota creates a bonding bill with specific projects and programs included. There is typically no match required, however there may be other conditions applied to this funding by the Legislature **DNR Local Trails and Regional Trails Funding**—The Department of Natural Resources (DNR) administers grant programs to fund construction of local trail connections to regional trails or the construction of regional	The use of State grants is similar to that of federal grants, most commonly used to fund specific

SOURCE	DESCRIPTION	Applicable Projects
	trails. **Legacy Funding**—This new funding source was created when voters passed a sales tax referendum to improve the outdoors and the arts. There is a yearly solicitation for trail projects using this funding administered by the DNR	infrastructure projects
Local	**Property Tax –** Property taxes are the mainstay of the local funding sources and are used to provide base funding for many of the activities of cities, townships and counties, including infrastructure improvements and programs. Property tax funds are allocated annually through a budget and capital improvement program process, although most communities have a multi-year capital improvement program based on educated assumptions about revenues for a five (+/-) year period **Tax Increment Financing (TIF)** - TIF is a tool that utilizes future gains in property taxes from a designated area that meets certain economic criteria to finance current improvements that will create those gains. When a public project (e.g., sidewalk improvements) is constructed, surrounding property values generally increase and encourage development or redevelopment in the area. The increased tax revenues are then dedicated to financing the debt created by the original public improvement project. **Local Option Sales tax** – Voter-approved Local Option Sales Tax is a special-purpose tax implemented and levied at the city or county level. A local option sales tax is often used as a means of raising funds for specific local projects, such as improving area roads or refurbishing a community's downtown area. **Parking Fees –** A small percentage of parking fees collected in downtown parking ramps or on-street downtown parking spaces could be utilized as a source of funds for programs specifically targeting the reduction of traffic levels and parking demand in the Central Business District, such as development of a downtown bike share program or a downtown bike hub, as well as support for commuter incentive programs targeted at downtown employers. **Local Bond Measures -** Local bond measures are usually initiated by voter-approval of a proposal to issue general obligation bonds for specific projects. Bond measures are typically limited by time, but could be used for right-of-way acquisition, engineering, design and construction of bicycle and trail facilities. **Partnership Projects -** Similar to the incorporation of bike facilities into road reconstruction projects, opportunities to piggyback improvements in conjunction with other public improvement projects such as school	Local funding will have the most flexibility in terms of what it can be used for, and will often be the sole source of funding for maintenance of existing facilities or the ongoing costs associated with education or encouragement programs. The sources of these funds are wide and varied.

SOURCE	DESCRIPTION	Applicable Projects
	construction, park development, utility improvements should be monitored and pursued where specific bicycle improvements are planned. **Fund-raising rides and events** - Communities may use annual events as a mechanism for raising needed funds. For example, the annual Thunder Road Bikeathon in the Dayton, Ohio area raises funds to pay certain costs associated with the Miami Valley Regional Bicycle Committee program.	
Private Resources	**Developer Dedications**–can be established to require developers to construct bicycling and walking facilities as a condition for enabling a project to proceed via subdivision agreements, parkland dedication requirements or bonusing provisions, **Private and Corporate Donations**—Private donation and corporate gifts can be accepted to fund bike projects, such as in Broward County, where the Florida Bicycle Advisory Committee created a special fund to receive public and corporate donations for the county bicycle and pedestrian programs **Business Improvement Districts** could be used to supplement other bikeway funds for improvements within business improvement districts. BID's collect levies on businesses within a defined area in order to fund district improvements that benefit businesses and improve access for customers. may include provisions for bicycle such as landscaping a buffer area and constructing appropriate crossings **Bicycle Industry Funding**—Bicycle industry funding or contributions are sometimes available to develop bicycling. For example, in Madison WI Trek Bicycles developed and deployed Repair Waystations for use by cyclists on major bicycle routes in the city. **Utility Agency Partnerships** – In some cases, paths can be built along utility or rail corridors with little or no impact to the service providers, who may be willing to grant easements at low or no cost for a trail facility.	Private sources can provide funds or in-kind resources such as land dedication to assist in the implementation of bicycle programs. These sources may be very targeted (as in the case of developer dedications) or have great latitude in how resources are deployed
Non-Profilt	There are several funding sources that have become more commonly used for bike related activities, particularly in regards to education, enforcement, and encouragement initiatives **Health Industry Funding**— Organizations such as Blue Cross Blue Shield and others offer grants through business foundations to encourage healthier lifestyles and habits. In Rochester, BCBS has funded the Active Living Rochester initiative for 3 years which has resulted in Complete Streets Policy development, a public safety campaign targeting bicycle and pedestrian travel, and other information sharing activities.	Non-profit resources typically are targeted towards supporting infrastructure or measures such as educational,

SOURCE	DESCRIPTION	Applicable Projects
	Bikes Belong - The Bikes Belong Coalition of bicycle suppliers and retailers has awarded $1.2 million in grants since its inception in 1999 for corridor improvements, trails, and park access. **Non-Profit Groups / Charitable Foundations**—Groups such as the McKnight Foundation offer opportunities to fund projects that contribute to community livability and sustainability, which are hallmarks of non-motorized travel. **"Friends of" Groups** have been established that can provide volunteer construction and maintenance services as well as funding small projects, such as signage and wayfinding programs. Through such a program, or an "Adopt-a-Bikeway" program, corporations, institutions, and individual private donors can support existing and proposed bikeways.	encourage-ment or promotion.
Fee Generating	Opportunities to generate revenue to help fund operations could be considered, such as accepting **advertising or sponsorship revenue** to support a program. The use of advertising in particular is becoming common in many of the newer bike sharing programs being established. **Bicycle licensing fees, trail registration fees or dedicated fees on bicycle related purchases** could help to fund local bikeway facilities. **Street utility fee** (SUF) are similar to water or sewer utilities where monthly fees are assessed for the ongoing upkeep of the system. While a street utility fee would be dedicated to the maintenance of streets in a jurisdiction, bicyclists would benefit from improved maintenance and roadway conditions. In the city of Seattle, those streets that are important to bicyclists as primary bikeway corridors receive priority treatment	The examples of fees listed here tend to be focused on maintenance related needs, which is one area where a dedicated, on-going funding source can be critical to success.

Funding Strategy

This plan is being developed during a period of steady or declining tax revenue and considerable budget constraints. As a result, the community will need to be open to innovative or creative funding of projects from both traditional and non-traditional sources and efforts made to identify and assemble multiple sources of funding to implement projects in the plan.

To maintain momentum in terms of implementing the plan, it is recommended that efforts be made to complete lower cost or low effort improvements on a regular basis, and to be aware of other projects or initiatives onto which projects could be piggy-backed. The following tasks in particular should be assigned to appropriate parties to insure all opportunities are captured:

1. The Bike Plan coordination team should monitor grant opportunities and insure resources are readily available to prepare grant applications

2. BPAC or a local Bicycle Advocacy Organization (if organized) along with the staff coordination team could be assigned the task of assessing potential new funding sources or funding streams for bicycle facilities

3. A Bicycle Advocacy Organization (if formed) could be assigned the task of organizing fundraising events to support items in the plan

4. Coordination and collaboration opportunities on non-infrastructure projects where responsibilities can be shared between local agencies, city departments, and private groups should be identified

5. Efforts should be made by local advocates to encourage corporations, institutions or individual private donors to support the existing and proposed bikeway/trail system.

6. The concept of establishing an endowment program that could be used to support the maintenance of bikeways and trails should be explored

7. Opportunities to leverage program funding through volunteer work should be identified and implemented as they arise.

A key opportunity to advance implementation of the bicycle network will be to incorporate facilities routinely into planned roadway projects Examples of this work include:

- Addition or upgrading of **paved shoulders** on all reconstruction projects;
- Incorporation of **paths** in the construction of new or upgraded urban area arterials consistent with the area Long Range Transportation Plan
- Addition of **bike lanes or sharrow routes** under the Complete Streets Policy as routine elements of mill and overlay projects on arterial and collector roadways

Funding to support bicycling may be either extremely limited or readily available, depending on political conditions and economic forces. The available funding will significantly affect the quality and extent of the bicycle program and network. Success in implementation of the Bicycle Plan will require the efforts of many parties supported by a high level of ongoing collaboration and coordination.

Chapter Addendum

ABBREVIATIONS related to Implementation Role

ALR – Active Living Rochester
BPAC – ROCOG Bicycle Pedestrian Advisory Committee
CVB – Rochester convention & Visitors Bureau
DPS – Minnesota Dept of Public Safety
ISD – Local School Districts (generic)
LEC – Law Enforcement Center
MMC – Mayo Medical Center
MNDOT-Minnesota Dept of Transportation
OCPH – Olmsted County Public Health Services
RCTC – Rochester Community & Technical College
RDA – Rochester Downtown Business Alliance
ROPD – Rochester / Olmsted Planning Dept
RPR – Rochester Parks & Recreation Dept
RPW – Rochester Public Works Dept
TBD (To Be Determined)
UMR – University of Minnesota Rochester
WSU – Winona State – Rochester

ABBREVIATIONS under FUNDING Column

Advertising – Sale of advertising, such as on bike maps, to local entities such as bike shops.
Business or Merchant: Funds contributed by businesses that would directly benefit customers or employees
FTA- Federal Transit Administration or State Transit Program funding
Local Agency – Funding could be provided as part of annual agency budget
ISD –School district funding
Parking Fees – Revenue from Downtown Parking System for projects that would specifically reduce downtown parking demand
Private – Donations from private parties
Safety Grants – State or Federal Safety programs
Small Grants – Grants from foundations such as Bike Belong or non-profits, typically under $5,000 to $10,000 in size
SRTS – Federal Safe Routes to School Funding
Tech Industry partners – Grants or in-kind services from software or hardware companies
T/H/A Grants – Grants through state or federal transportation or health programs or Active Living Grants through health / insurance groups such as Blue Cross Blue Shield
TMO – Funding from Transportation Management Organization for Downtown Rochester Agency –