

**City of Whitewater
Bicycle and Pedestrian Master Plan
Steering Committee Agenda
Tuesday, September 24 – 6:00 PM**

City Manager's Conference Room - 2nd Floor, City Municipal Building
312 W. Whitewater St. Whitewater, WI 53190

Call to Order

Hearing of Citizen Comments:

No formal action will be taken during this meeting, although issues raised may become part of a future agenda. Participants are allotted a 3 minute speaking period. Specific items listed on the agenda may not be discussed at this time; however, citizens are invited to speak to those issues as designated in the agenda.

Agenda

1. Review Implementation Plan
2. Review and Approve Final Draft of Bicycle and Pedestrian Master Plan
3. Review Proposed Integration of Implementation into the City Capital Improvement Plan
4. Discuss future of Steering Committee & Advocacy Needs/Network
5. Adjourn

Bike/Ped Implementation Plan

2013

1	Map Creation					
2	UW-W New Student Orientation					
3	Crosswalk & Speed Enforcement					
4	Volunteer Bike/Ped Coordinator					
5	Bike/Ped Advisory Committee					
6	E Main Street bike lanes	S Franklin Street	S Newcomb Street	1.08	2013	Included in CIP
7	Treyton's Field of Dreams		Shared Use Path		2013	Included in CIP
8	Waters Edge Path Ext to WHS		Shared Use Path		2013-2014	Included in CIP
9	Annual Report Card					

2014

1	Bicycle Friendly Community App					
2	Safe Routes to School Program					
3	Bike/Ped Counts					
4	Bike/Ped Website					
5	UW-W New Student Orientation					
6	Volunteer Bike/Ped Coordinator					
7	Bike/Ped Advisory Committee					
8	East Gate Project		Shared Use Path & Markings		2014	Included in CIP
9	Bicycle & Pedestrian Signage program		See Greenways Tab		2014	Included in CIP
10	W Main Street	S Prince Street	S Franklin Street	0.48	2014	Road Diet project
11	S Ardmore Street Extension		Shared Use Path	0.07	2014	
12	Annual Report Card					

2015

1	Safe Routes to School Program					
2	Bike/Ped Counts					
3	UW-W New Student Orientation					
4	Volunteer Bike/Ped Coordinator					
5	Bike/Ped Advisory Committee					
6	Indian Mound Parkway	W Walworth Street	W Main Street	0.54	2015	
7	W Walworth Street	Indian Mound Parkway	S Prince Street	0.83	2015	
8	W Walworth Street	STH 12	Indian Mound Parkway	0.37	2015	
9	S Elizabeth Street	S Elizabeth Street	W Main Street	0.76	2015	
10	W Walworth Street	S Prince Street	S Franklin Street	0.5	2015	
11	E Clay Street Connector Path		Shared Use Path	0.05	2015	
12	Annual Report Card					

Bike/Ped Implementation Plan

2016

1	Safe Routes to School Program					
2	UW-W New Student Orientation					
3	Volunteer Bike/Ped Coordinator					
4	Bike/Ped Advisory Committee					
5	Open Streets Event					
6	N Fremont Street	W North Street	E Schwager Drive	0.8	2016	
7	Shaw Court Ext Path		Shared Use Path	0.45	2016	
8	N Newcomb Street	E Milwaukee Street	E Executive Drive	0.62	2016	
9	E Bluff Road	Elkhorn Road	Howard Road	0.66	2016	
10	S Wisconsin Street	Willis Ray Road	E Milwaukee Street	1.16	2016	
11	W Main Street	Indian Mound Parkway	S Prince Street	0.71	2016	Road Diet project
12	Annual Report Card					

2017

1	Safe Routes to School Program					
2	UW-W New Student Orientation					
3	Volunteer Bike/Ped Coordinator					
4	Bike/Ped Advisory Committee					
5	Open Streets Event					
6	Tratt Street	W Main Street	Bloomingfield Drive	1	2017	
7	E Milwaukee Street	E Main Street	S Newcomb Street	0.53	2017	Included in CIP
8	E Milwaukee Street	N Newcomb Street	E Bluff Road	0.41	2017	Included in CIP
9	Annual Report Card					

2018

1	Safe Routes to School Program					
2	UW-W New Student Orientation					
3	Volunteer Bike/Ped Coordinator					
4	Bike/Ped Advisory Committee					
5	Open Streets Event					
6	Indian Mound Parkway	Indian Mound Parkway	W Walworth Street	0.63	2018	bridge-is paint important?
7	E North Street	S Franklin Street	N Newcomb Street	0.99	2018	
8	Dann Street Bridge Replacement		Shared Use Path		2018	SRTS Grant, include in CIP
9	Annual Report Card					

Bike/Ped Implementation Plan

2019

1	Safe Routes to School Program				
2	UW-W New Student Orientation				
3	Volunteer Bike/Ped Coordinator				
4	Bike/Ped Advisory Committee				
5	Open Streets Event				
6	Elkhorn Road Resurfacing		Bike Lane Markings		2019 State Project
7	E County Line Road	N McMillen Road	Indian Mound Parkway	1.99	2019
8	STH 89	Willis Ray Road	STH 12	0.22	2019
9	Annual Report Card				

2020

1	Safe Routes to School Program				
2	UW-W New Student Orientation				
3	Volunteer Bike/Ped Coordinator				
4	Bike/Ped Advisory Committee				
5	Open Streets Event				
6	South Franklin/East Gate Path/S Rice		Shared Use Path	2.48	2020 grants, include in CIP
7	Annual Report Card				

Future Projects (2020-2025)

West Walworth-West Main Path	Shared Use Path	0.68
West Main-West Carriage Path	Shared Use Path	0.62
West Walworth Street Path	Shared Use Path	0.36
WHS-S Franklin Path	Shared Use Path	0.9
E Main Street Path	Shared Use Path	0.86
E Commerical Ave/Moraine View Park	Shared Use Path	0.39
Hospital Hill Ext Path	Shared Use Path	0.11

Other Projects to Consider:

E Main Street	N Newcomb Street	E Bluff Road	0.57	future PASER project?
N Prairie Street	W Main Street	E Schwager Drive	0.74	parking concerns
S Franklin Street	S Janesville Street	W Main Street	0.96	ASAP partner w/street improve



UW-Whitewater Photo

City of Whitewater Bicycle and Pedestrian Plan

June 2013

DRAFT

PREPARED BY:
Alta Planning + Design
Madison, WI / Portland, OR
(503) 230-9862



**WISCONSIN
BIKE FED**

Acknowledgments

The City of Whitewater appreciates the efforts of the numerous residents and enthusiasts who participated in the development of this plan. Their creativity, energy, and commitment were the driving force behind this effort. In addition, the following residents, staff, and other agency and organization members contributed regularly to the City of Whitewater Bicycle and Pedestrian Plan.

Common Council

Patrick Singer, President

Lynn Binnie

Dr. Ken Kidd

Jim Olsen

Andrew Crone

Jim Winship

Stephanie Abbott

Parks & Recreation Board

Brandon Knedler, Chairperson

Dr. Ken Kidd

Nathan Jaeger

Jen Kaina

Teri Smith

Rachel DePorter

Bruce Parker

Kim Gosh, Alternate

City Staff

Michelle Dujardin, Recreation & Community Events Programmer

Latisha Birkeland, Neighborhood Services Manager

Scott Weberpal, GIS Technician

Dean Fischer, Public Works Director

Chuck Nass, Parks/Streets Superintendent

Cameron Clapper, City Manager

Kevin Brunner, Former City Manager

Lisa Otterbacher, Chief of Police

Brian Uhl, Captain

Saul Valadez, Juvenile Officer

Timothy Swartz, Patrol Officer

Alta Planning+Design, Wisconsin Bicycle Federation



Alta Planning + Design is firmly committed to the development of a sustainable global community and planet by enhancing transportation options, investing in local communities and reducing our carbon footprint in our personal and professional lives. For more information visit: www.altaplanning.com

Executive Summary

The City of Whitewater is located in southeastern Wisconsin just west of the Kettle Moraine in the beautiful rolling countryside of Walworth and Jefferson counties.

The city has made excellent use of its waterfront by developing park land and public gathering spaces on Cravath Lake and trails along Trippe Lake and Whitewater Creek. The trails provide an excellent opportunity for Whitewater residents and visitors to enjoy the outdoors on foot or on bike.

The City of Whitewater Bicycle and Pedestrian Plan builds on efforts by the community to improve transportation options and the quality of life in Whitewater. The Plan guides the development of a network of bicycle routes linking activity centers within the City as well as to the larger regional network. The improved network will not only make bicycling a more viable mode of transportation, but will contribute to economic development opportunities and enhanced quality of life for the community. Pedestrian policies are discussed to assist Whitewater in making it easier and more pleasant to walk for transportation and recreation.

Vision

The City of Whitewater will enhance transportation choices by developing a network of on-street and off-street bicycle and pedestrian facilities that provide connections to destinations throughout the city and regionally significant assets.

Why Bicycling and Walking?

Bicycling and walking are low-cost means of transportation that are non-polluting, energy-efficient, versatile, healthy and fun. Both modes can help build physical activity into our daily lives while reducing traffic congestion and air pollution and saving money. The many advantages to walking and bicycling include:

- Bicycling and walking are good for the economy. Bicycling makes up \$133 billion of the US economy, funding 1.1 million jobs.¹
- Walkable and bikeable neighborhoods are more livable and attractive; increasing home values property tax revenue.²
- Walking and bicycling can save families money. By replacing short car trips, bicycling and walking can help lessen personal transportation costs.³
- Walking and bicycling are good for public health. Bicycling for exercise can reduce the cost of spending on health care by as much as \$514 per person every year.⁴
- More people walking and bicycling increase safety for others. In a community where twice as many people walk, a person walking has a 66 percent reduced risk of being injured by a motorist.⁵

¹ Flusche, Darren for the League of American Bicyclists. (2009). The Economic Benefits of Bicycle Infrastructure Investments.

² Cortright, Joe for CEOs for Cities. (2009). Walking the Walk: How Walkability Raises Home Values in U.S. Cities.

³ Center for Neighborhood Technology. (2005). Driven to Spend: Pumping Dollars out of Our Households and Communities.

⁴ Feifei, W., McDonald, T., Champagne, L.J., and Edington, D.W. (2004). Relationship of Body Mass Index and Physical Activity to Health Care Costs Among Employees. *Journal of Occupational and Environmental Medicine*. 46(5):428-436

⁵ Jacobsen, P.L. (2003). Safety in numbers: more walkers and bicyclists, safer walking and bicycling. *Injury Prevention* 9:205-209.



Existing Conditions

Whitewater's bikeway network today consists of bike lanes along a few of the busier streets, an off street path system running along Whitewater creek and Cravath and Trippe Lake shores, connecting paths through parks, and many peaceful local streets that carry very little traffic through the city. This Plan seeks to leverage opportunities and to overcome barriers to accommodating and encouraging bicycle and pedestrian trips.

Opportunities include:

- A pedestrian- and bicycle- friendly downtown district;
- Existing walk- and bicycle-friendly streets through the local neighborhoods;
- The trail along Whitewater Creek, connecting parks, lakes, open space and the UW-Whitewater campus;
- Space in many locations to provide low-cost bicycle improvements; and
- A large base of potentially high-demand in the students of UW-Whitewater.

Constraints include:

- A bottleneck at the East Gateway over Cravath Lake makes full accommodation of all users difficult.;
- Lack of wayfinding tools along existing walkway and bikeway networks;
- Uncomfortable walking and bicycling environments along high-volume roadways, in particular Main Street.

Public Involvement

Whitewater residents, community stakeholder groups and public agency staff helped guide the development of this Plan. Public input about the opportunities and challenges to better bicycling and walking in Whitewater was obtained in several ways, including two public input workshops (June 2012 and December 2012), and through several project meetings with the plan Steering Committee from April of 2012 to March of 2013.

Implementation

The City of Whitewater Bicycle and Pedestrian Plan is a 20-year plan for completing the system of bikeways, shared-use paths and spot improvements in Whitewater. The completed network will result in a city where biking and walking for transportation and recreation are every day, safe activities that are enjoyed by residents and visitors alike. The recommended network builds upon

previous and on-going local and regional planning efforts and reflects the input offered by county staff, the project Steering Committee, stakeholder groups, and Whitewater residents. Implementation of the plan will take place over many years. The implementation strategy presents a targeted methodology for how the City of Whitewater can institutionalize bicycle and pedestrian improvements into local and regional planning processes and projects.

The following strategies and action items are provided to guide the City of Whitewater toward the vision identified in the plan:

- Establish a Permanent Pedestrian and Bicycle Advisory Committee.
- Implement the wayfinding sign program on the existing trails in 2013 and 2014.
- Begin a feasibility study of the “road diet” on Main Street in 2013 or 2014
- Strategically pursue infrastructure projects by obtaining capital improvement and grant funding as well as incorporating projects into upcoming public works projects,

especially the short-term bicycle improvements.

- Regularly revisit project priorities in the plan as projects are completed, conditions change and new projects are needed.
- Partnering with W3 and the university implement education, encouragement and enforcement activities to encourage more walking and bicycling in Whitewater.

Short-term Project List

- Shared Lane Markings along W Whitewater and E Main in Downtown to promote business access;
- Neighborhood Greenways on N Prince St, N Franklin St, E Clay St, W Highland St, and other low-stress neighborhood streets to offer comfortable routes close to home;
- Bike Lanes on S Wisconsin St, W Main St, and Elkhorn Rd, and other busier streets to help people reach key destinations along those corridors.

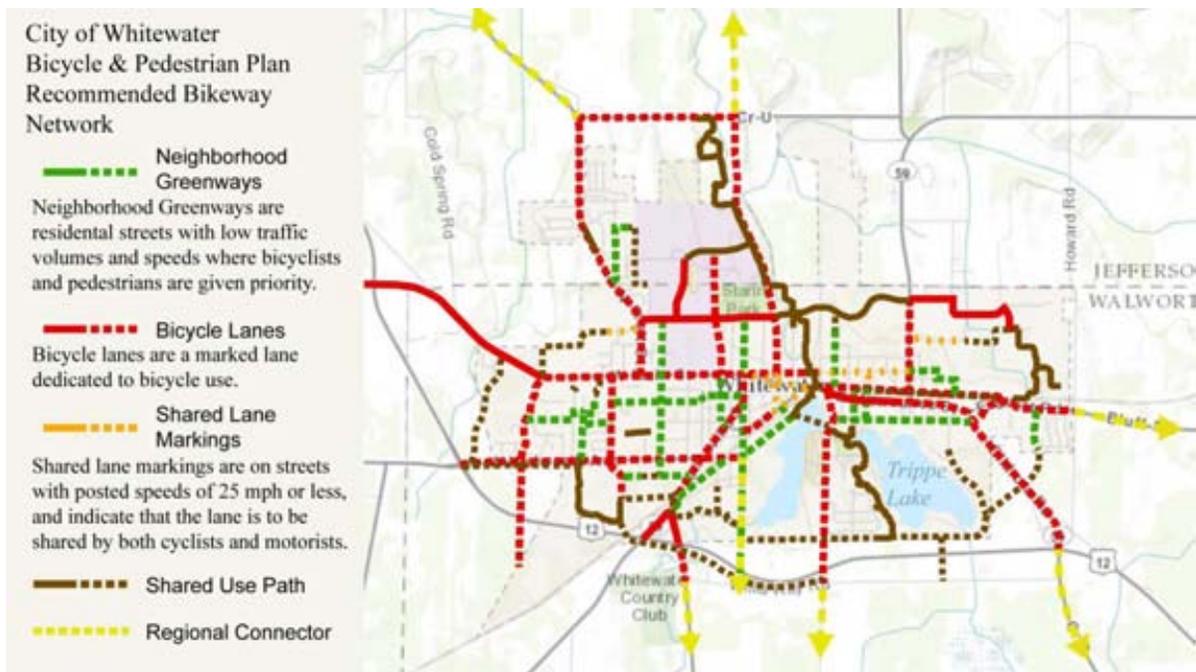


Table of Contents

1	Introduction	1
	Contents of the Plan.....	1
	Goals and Objectives.....	3
	Public Involvement.....	5
	Policy Review	5
2	Needs Analysis	7
	Demand Potential and Benefits	7
3	Existing Conditions	11
	Pedestrian Policy Assessment.....	11
	Existing Bikeway Facilities	13
	Opportunities and Constrains.....	19
4	Recommended Bikeway Network	25
	Facility Definitions for the Whitewater Network	25
	On-Street Bikeways	26
	Shared Use Paths	39
	Bike/Ped Bridge over Cravath Lake	41
	Bicycle Facility Selection	41
	Safe Routes to School Recommendations.....	42
5	Recommended Pedestrian Policies	45
	The City of La Crosse Experience.....	45
	Proposed Complete Street Policies for the City of Whitewater	49
6	Recommended Programs	51
7	Implementation	55
	Infrastructure Project Prioritization.....	56
	Priority Project Sheets	69
	Cost Estimates.....	77
	Funding Sources.....	77

Appendix A: Best Practices Review of Vision, Goals and Objectives

Appendix B: Plan and Policy Review

Appendix C: Demand Benefits Model

Appendix D: Bicycle and Pedestrian Design Guidelines

Appendix E: Safe Routes to School Audits

Appendix F: West Main Street Safety Project

Appendix G: Funding Sources

List of Maps

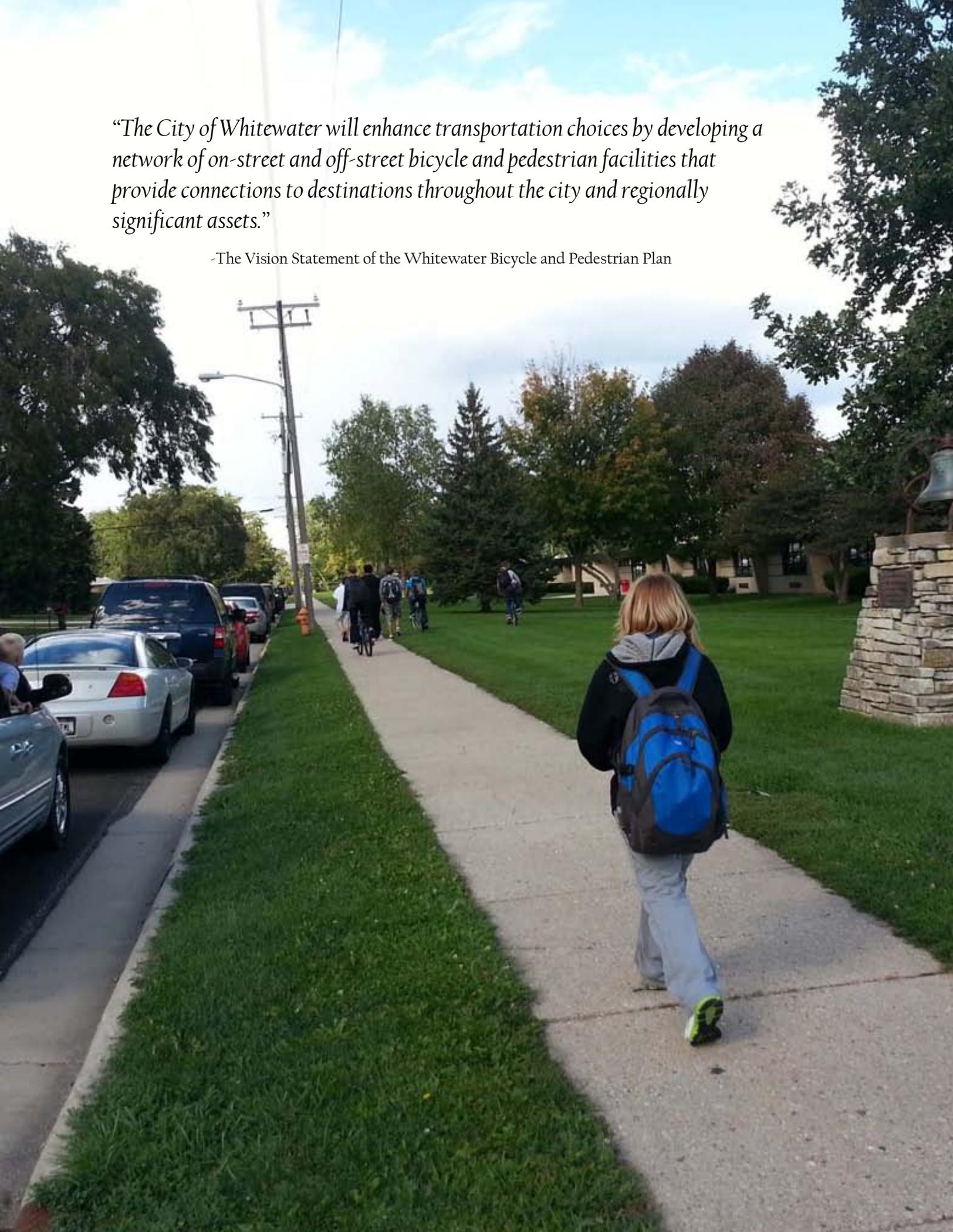
Map 3-1: Existing Bikeways in Whitewater.....	17
Map 3-2: Opportunities and Constraints.....	23
Map 4-1: Proposed Bikeway Network.....	37
Map 7-1: Project Prioritization: Overview.....	61
Map 7-2: Project Prioritization: Short Term (0 – 5 Years).....	63
Map 7-3: Project Prioritization: Medium Term (5 – 10 Years).....	65
Map 7-4: Project Prioritization: Long Term (More than 10 Years).....	67

List of Tables

Table 2-1: Model Estimate of Current Walking and Bicycling Trips.....	7
Table 2-2: Future (2025) Bicycling and Walking Trips.....	8
Table 4-1: Proposed Bike Lanes.....	34
Table 4-2: Proposed Neighborhood Greenways.....	35
Table 4-3: Proposed Shared Lane Bike Routes.....	35
Table 4-4: Bicycle Facility Selection Matrix.....	42
Table 7-1: Recommended Programs and Projects Implementation Summary.....	55
Table 7-2: Bicycle Facility Prioritization Criteria.....	56
Table 7-3: Recommended Bikeway Project Phasing.....	57
Table 7-4: Cost Assumptions.....	77
Table 7-5: Summary of Potential Funding Sources.....	80

“The City of Whitewater will enhance transportation choices by developing a network of on-street and off-street bicycle and pedestrian facilities that provide connections to destinations throughout the city and regionally significant assets.”

-The Vision Statement of the Whitewater Bicycle and Pedestrian Plan





1 Introduction

Setting

The City of Whitewater is located mostly in the northwest corner of Walworth County, with the northern edge of the city in Jefferson County. In 2010 the city's population was 14,390. University of Wisconsin–Whitewater (also known as UW–Whitewater) is located in the northwest corner of the city. It is a four-year, co-educational, residential college accredited by the North Central Association of Colleges and Secondary Schools. Enrollment in 2010-11 was over 11,500. The city hosts a vibrant downtown, and two large commercial areas on the east and west ends of town. Located less than an hour to either Madison or Milwaukee, and twenty minutes from Whitewater Lake, the Kettle Moraine and other beautiful natural resources, Whitewater is a great place to live and work.

Whitewater Creek, Cravath Lake and Trippe Lake are all located within the city boundaries. The city has made excellent use of its waterfront by developing park land and public gathering spaces on Cravath Lake and trails along Trippe Lake and Whitewater Creek. The trails provide an excellent opportunity for Whitewater residents and visitors to enjoy the outdoors on foot or on bike. The rolling rural landscape surrounding Whitewater also provides fantastic biking opportunities, both on-road and off-road.

In addition to its setting that encourages active and healthy living, Whitewater is fortunate enough to have a community-based collaboration working to increase the longevity and quality of life here. Working for Whitewater's Wellness (W3) is comprised of individuals representing healthcare, school systems, and municipalities within the Whitewater community.

Contents of the Plan

The Whitewater Bicycle and Pedestrian Plan provides a path forward for expanding and enhancing the existing bicycling and path network, and guides the City toward a solid policy basis for pedestrian focused improvements. The Plan is organized as follows:

Chapter 1: Introduction, provides an overview of this plan and its purpose, and the planning context within Whitewater and Wisconsin.

Chapter 2: Needs Analysis, estimates the amount of walking and bicycling in Whitewater today, and models the benefits of potential increases of walking and bicycling in 2025.

BICYCLE AND PEDESTRIAN PLAN

Chapter 3: Existing Conditions, describes Whitewater’s existing bikeway and path network and summarizes strengths and weaknesses of the system.

Chapter 4: Recommended Bikeway Network, depicts the recommended system of bikeways and facility types to provide opportunities for cycling throughout the city.

Chapter 5: Recommended Pedestrian Policies, makes the case for a strong Complete Streets policy to support development of the pedestrian environment.

Chapter 6: Recommended Programs, describes education, encouragement, enforcement and evaluation measures the City of Whitewater and/or other local agencies should implement to promote bicycling, increase bicyclist safety, and increase the awareness of bicycling and walking as a viable travel mode.

Chapter 7: Implementation presents evaluation criteria for facilities and programs and details several top-priority projects. This chapter provides cost opinions for the recommended bicycle and trail projects and programs, and identifies potential funding strategies and supporting policies.

Goals and Objectives

The vision, goals and objectives of the Plan are principles that will guide the development and implementation of bicycle and pedestrian improvements in coming decades. Goals and objectives direct the way the public improvements are made, where resources are allocated, how programs are operated and how implementation priorities are determined. The goals and policies in this Plan were developed through an analysis of existing policies and review of best practices in other similar communities and discussion with the public and stakeholders.

Several objectives are measurable and allow tracking and benchmarking to demonstrate the extent of the City’s progress toward the goals and overall vision over time. The Plan has three levels in its framework:

Vision. Pursuit of this statement underpins all of the Plan’s goals and objectives.

Goals. The four principal goals provide guidance for achieving the Plan vision.

Objectives. Objectives guide the community on how to achieve and measure progress toward realizing each goal.

Benchmarks. Potential measurable metrics that describe Whitewater’s progress towards Plan implementation.



Goal 1. Support bicycling and walking as viable transportation modes in the City of Whitewater.

Objective 1.1. Implement the Whitewater

Bicycle and Pedestrian Plan facility recommendations to provide bicycling and walking routes to key destinations.

Objective 1.2. Seek new funding sources and strategies to support the implementation of the Whitewater Bicycle and Pedestrian Plan.

Objective 1.3. Improve bicyclists’ and pedestrians’ safety and comfort by creating a greater awareness and understanding of how these modes may be accommodated during construction or facility repair activities.

Benchmarks

- Miles of new bikeways and sidewalks completed; percentage of high-priority projects identified in the City of Whitewater Bicycle and Pedestrian Plan completed.

Planning Priorities

The most effective bicycle and pedestrian plans are holistic and consider the “Five Es” of non-motorized transportation planning: *Engineering, Education, Encouragement, Evaluation and Enforcement.*



1.) Engineering



2.) Education



3.) Encouragement



4.) Evaluation



5.) Enforcement

BICYCLE AND PEDESTRIAN PLAN

- Proportion of roadway restriping, reconstruction, and construction projects that include bicycle and/or pedestrian improvements.
- Number of grants applied for; amount of grant funding acquired.



Goal 2. Promote bicycling and walking in the City of Whitewater by improving awareness of the benefits of bicycling and walking to the entire community.

Objective 2.1. Improve public awareness of the bicycle network and presence of bicyclists.

Objective 2.2. Support education and encouragement efforts in the City.

Objective 2.3. Establish a bicycle and pedestrian count program following the National Bicycle and Pedestrian Documentation Program (NBPD) methodology.

Benchmarks

- Development of a wayfinding signage and trail naming plan;
- Number of signs installed
- Number of encouragement/safety training events in the community
- Completed BFC application; goal of initial recognition at the bronze level with a target of obtaining gold level recognition.
- Track and publish the use and change of active transportation modes over time.



Goal 3. Integrate bicycle and pedestrian planning into the City of Whitewater's planning processes.

Objective 3.1. Institutionalize bicycle and pedestrian planning into all of The City of Whitewater's planning efforts by establishing a Bicycle and Pedestrian Advisory Committee (BPAC).

Objective 3.2. Require inclusion of bicyclists and pedestrians in citywide planning efforts.

Objective 3.3. Adopt and implement a Complete Streets policy.

Objective 3.4. Encourage annual staff and decision maker attendance at conferences and other training opportunities that emphasize bicycle and pedestrian friendly design.

Objective 3.5. Coordinate with neighboring jurisdictions to develop regionally serving on-and off-street bicycle facilities.

Benchmarks

- Revised project priorities list every five years.
- Adopted Complete Streets Policy.

Public Involvement

The planning process included many opportunities for residents of Whitewater to share their experiences and knowledge of biking and walking in the city. Many people shared detailed information on where they bike and walk, things they would like to see improved and their program ideas to encourage more people to bike and walk. The information gathered from residents inspired the recommendations for both on-road and trail improvements, and ideas for programs to encourage citizens to use active transportation modes and to educate them on how to do so safely. This information has helped to create a better plan. The meeting dates are provided below.

Steering Committee

The Steering Committee followed the plan development closely, and met 5 times throughout the planning process:

- April 2012
- June 2012
- September 2012
- October 2012
- December 2012
- March 2013



Figure 1-1: The public information meeting featured presentation boards and other plan materials to communicate concepts and proposals to the public.

Public Information Meetings

Two public meetings formed the foundation of direct outreach with the public during the planning process:

- June 2012
- December 2012

Policy Review

Over 10 years of plans and policy documents relevant to the Whitewater Bicycle and Pedestrian Plan were reviewed to support the creation of the Plan. The review focuses on plans and studies prepared by the Wisconsin Department of Transportation (WisDOT), as well as relevant information from the City of Whitewater and related regions of Jefferson, Walworth and Rock counties.



Figure 1-2: Administrative code Trans 75 aims to “ensure that bikeways and pedestrian ways are established in all new highway construction and reconstruction projects funded in whole or in part from state funds or federal funds.”

BICYCLE AND PEDESTRIAN PLAN

The following plans were reviewed for this analysis. A detailed description of each plan is included in Appendix B: Plan and Policy Review.

Statewide Planning Documents

- Administrative Code Trans 75: BIKEWAYS AND SIDEWALKS IN HIGHWAY PROJECTS (2009)
- Wisconsin State Bicycle Transportation Plan 2020 (1998)
- Wisconsin Pedestrian Policy Plan 2020 (2002)
- Wisconsin Department of Transportation Guide for Path/Street Crossings (2011)
- Developing a Model for Reducing Bicycle/Motor Vehicle Crashes (2006)
- Wisconsin Bicycle Planning Guidance (2003)
- Wisconsin Bicycle Facility Design Handbook (2004)
- Wisconsin Guide to Pedestrian Best Practices (2010)

County Planning Documents

- 2010 Jefferson County Bicycle Plan (2010)

City of Whitewater Planning Documents

- City of Whitewater Comprehensive Bikeway Plan (2000)
- City of Whitewater 2009 Comprehensive Plan Community Survey (2009)



2 Needs Analysis

Demand Potential and Benefits

To support and quantify the objectives of the Plan, analysts used a walking and biking demand model to measure the impacts of current and potential future trip activity within Whitewater. A detailed description of model assumptions and data sources is included in Appendix C: Demand Benefits Model.

This model uses Census and other national studies to extrapolate the number of bicycling or walking trips taken today within Whitewater. Comparing today's trip making with aspirational future mode share targets can illustrate the potential benefits of achieving such changes.

Current Demand and Benefits

Table 2-1 shows the results of the model, which estimates that 2,428 bicycle and 16,765 walking trips occur in Whitewater each day for transportation purposes. The majority are utilitarian trips not related to work, which include medical/dental services, shopping/errands, family or personal business, obligations, meals, and other trips.

Table 2-1: Model Estimate of Current Walking and Bicycling Trips

	Bicycling	Walking
Work Commute Trips (Daily)	590	2,298
K-12 School Trips (Daily)	15	229
College Commute Trips (Daily)	350	1,364
Utilitarian Trips	1,473	12,874
Total Current Daily Trips	2,428	16,765

To the extent that bicycling and walking trips replace single-occupancy vehicle trips, they reduce emissions and have the tangible economic benefits of reducing traffic congestion, crashes, and maintenance costs. In addition, the reduced need to own and operate a vehicle saves families money. The current annual household transportation cost savings alone is estimated at \$280 per person. Full benefits calculations are available in Appendix C: Demand Benefits Model.

Future Demand and Benefits

Estimating future benefits requires additional assumptions regarding Whitewater’s future population and anticipated commuting patterns in 2025, the timeframe for this planning effort. Future population predictions determined in *A Multi-Jurisdictional Comprehensive Plan for Walworth County: 2035* were used in this model. Table 2-2 shows the model results for future trip making in Whitewater.

Table 2-2: Future (2025) Bicycling and Walking Trips

	Bicycling (6% Share)	Bicycling (8% Share)	Walking
Work Commute Trips (Daily)	999	1,332	2,598
K-12 School Trips (Daily)	147	196	259
College Commute Trips (Daily)	594	792	1,545
Utilitarian Trips	2496	3328	14564
Total Current Daily Trips	4,236	5,648	18,966

The important factor to consider with these future assumptions is not the accuracy of the mode share percentages, but the benefits that would accrue to Whitewater *if* those numbers are reached. As more cities across the country track changes in bikeway mileage over time and participate in annual bicycle counts, more data will be available to better understand and refine mode share predictions.

For the 6% bicycle mode share assumption, transportation savings are estimated to accrue at a rate of \$322 per person. An 8% bicycle mode share would result in an estimated \$366 per person savings. Additional future benefit calculations are available in Appendix C: Demand Benefits Model.

Difficult-to-Quantify Benefits of Bicycling and Walking

Bicycling is a low-cost and effective means of transportation and is non-polluting, energy-efficient, versatile, healthy, and fun. Bicycles offer low-cost mobility to the non-driving public. Bicycling as a means of transportation has been growing in popularity as many communities work to create more balanced transportation systems and individuals seek to be healthier. In addition, more people are willing to bicycle more frequently if better bicycle facilities are provided.⁶

In addition to the tangible financial savings estimated above, bicycling has many other benefits that are challenging to quantify, are increasingly the subject of study. Bike lanes can improve retail business directly by drawing customers and, indirectly, by supporting the regional economy. Patrons who bike to local stores have been found to spend more money than patrons who drive.⁷ Other studies show that bikeable and walkable communities attract the young creative class,⁸ which can help cities and counties gain a competitive edge and diversify economic base. By replacing short car trips, bicycling can help middle-class families defray

⁶ Pucher, J., Dill, J. and Handy, S. (2010). *Infrastructure, programs, and policies to increase bicycling: An international review*. Preventative Medicine 50:S106-S125.

⁷ The Clean Air Partnership. (2009). *Bike Lanes, On-Street Parking and Business: A Study of Bloor Street in Toronto’s Annex Neighborhood*.

⁸ Cortright, Joe for CEOs for Cities. (2007). *Portland’s Green Dividend*.

rising transportation costs. Families that drive less spend 10 percent of their income on transportation, compared to 19 percent for households with heavy car use,⁹ freeing additional income for local goods and services.

Bicycle Friendly Community Benefits

The League of American Bicyclists sponsors the Bicycle Friendly America program [bikeleague.org] to encourage businesses, cities, states and universities to provide good cycling infrastructure, education, evaluation and enforcement through a standardized review process. Typically, bicycle friendly communities are places where people want to live, work and visit. Benefits of increasing bicycle use include reduced motor vehicle traffic, greater physical health and fitness and improved air quality. People that ride bicycles more often reduce their transportation costs, have more disposable income, and achieve their recommended weekly exercise without a gym workout. Bicycle Friendly Community status can help a community understand how it relates to peers across the US and, by studying the experiences of these communities, put the potential benefits of increasing bike friendliness into perspective. 2012 Gold level BFC Communities with populations comparable to Whitewater include Steamboat Springs, CO; Jackson & Teton County, WY; and Breckenridge, CO.

⁹ Center for Neighborhood Technology. (2005). *Driven to Spend: Pumping Dollars out of Our Households and Communities*.



3 Existing Conditions

This chapter describes the current on- and off-street bikeway network and local pedestrian policies in Whitewater. The chapter begins with a local pedestrian policy assessment, followed by an inventory of existing bicycle lane and shared use path facilities. An analysis of system strengths and weaknesses highlights key areas where improvements may be needed concludes this chapter.

Pedestrian Policy Assessment

Whitewater, like all Wisconsin cities, must conform to Administrative Code Trans 75. The rule aims to “ensure that bikeways and pedestrian ways are established in all new highway construction and reconstruction projects funded in whole or in part from state funds of federal funds.”

Local Whitewater Policy

Administrative Code

The municipal code for Whitewater contains many pedestrian-focused regulations. Specific chapters or code items are identified below, sorted according to whether they support or serve as impediments to active travel.

Supportive Code Items	
5.19 - Sidewalk Café Permit	<p>This chapter recognizes the value of active uses of the public right of way and provides guidelines for the placement and use of dining areas on sidewalks adjacent to restaurants.</p> <ul style="list-style-type: none"> • Placement restrictions identified in the code include: • Sidewalk cafés shall be located in such a manner that a distance of not less than four feet is maintained at all times as a clear and unobstructed pedestrian path. For the purpose of the minimum clear path, parking meters, traffic signs, trees, light poles and all similar obstacles shall be considered obstructions. • Shall not be placed within five feet of fire hydrants, alleys, or bike racks. Shall not be placed within five feet of a pedestrian crosswalk or corner

Supportive Code Items	
	<p>curb cut.</p> <ul style="list-style-type: none"> • Shall not block designated ingress, egress, or fire exits from or to the restaurant, or any other structures. • Shall be readily removable and shall not be physically attached, chained or in any manner affixed to any structure, tree, signpost, light pole, or other fixture, curb, or sidewalk. • No portion of an umbrella shall be less than six feet eight inches above the sidewalk. <p>All sidewalk shall be constructed in accordance with applicable provisions of the State of Wisconsin Standard Specifications for Road and Bridge Construction, 1981 Edition.</p>
12.20 - Sidewalks	This chapter covers the use and upkeep of sidewalks within Whitewater. It requires the owner or occupant of the adjacent property to ensure the removal of trash and obstructions from the sidewalk, as well as requires the daily removal of snow accumulation.
12.22 - Construction Standards of Sidewalks	This chapter covers the construction, installation, and repair standards of sidewalks within Whitewater. Aside from key streets identified in the Code, "All sidewalks shall be laid within the street right-of-way and shall be laid one foot from the property line, and shall be four feet in width"
Restrictive Code Items	
12.04 – General Regulations	Item 12.04.020 - Ball playing on streets prohibited, discourages active use of streets within Whitewater. While the penalty is minimal, and enforcement is unlikely, Code items prohibiting active uses may act as a barrier to encouraging pedestrian use of the right of way.
12.22 Construction Standards of Sidewalks	<p>The Code identifies four conditions in which the normal requirement for sidewalks on major roads is waived. As sidewalk provision is an important part of a complete street, waiving the construction requirements should be done after careful considerations. The identified conditions are:</p> <ul style="list-style-type: none"> • Sidewalk will not be required when the nature of the terrain creates insurmountable engineering problems. • Sidewalk will not be required where there is insufficient right-of-way. • Sidewalk will not be required if the installation would generate a safety hazard by encouraging pedestrian traffic in dangerous areas. • Sidewalks will not be required along vacant land which extends to the city limits which is not situated between areas generating pedestrian traffic, and streets on which curb and gutter has not been installed.

Future Policy Opportunities

The City of Whitewater may want to consider additional policies and programs to bolster its currently existing pedestrian-supportive regulations. These policies include:

- Creation of a network of "complete streets"
- Balancing motor vehicle mobility with bicycle and pedestrian accessibility
- Encouraging traffic calming and intersection improvements
- Prioritizing traffic calming measures over congestion management
- Assigning high priority to pedestrian and bicycle projects
- Considering establishment of pedestrian only zones
- Enforcing laws that protect pedestrians
- Ensuring that bicycling and walking facilities are provided for all demographics, including people of different ages, races, ethnicities, incomes, and different neighborhoods
- Establishing and participating in Safe Routes to School programs
- Amending Ordinance 12.04.020 so as to encourage Open Streets and other on-street events
- Minimizing impervious surface area

Existing Bikeway Facilities

Federal and state bicycle planning and design guides define bikeways as preferential roadways accommodating bicycle travel through the use of bicycle route designations, bike lane striping, or shared-use paths to physically separate cyclists from motorists. Map 3-1 shows the existing bikeway network in Whitewater.

Existing On-Street Bikeways

On-street bikeways can take several forms, depending on the speed and volume of traffic on the roadway, space available to accommodate bicyclists, and type of users expected on the facility. Currently, bike lanes are the only implemented on-street bikeway type in Whitewater. The Whitewater Bicycle and Pedestrian Plan recommends a variety of on-street bikeway facility types in addition to conventional bike lanes. These recommended bikeway types are described briefly below, and are discussed in detail in Appendix D: Bicycle and Pedestrian Design Guidelines.

- **Bike Lanes:** Designated exclusively for bicycle travel, bike lanes are separated from vehicle travel lanes with striping and also include pavement stencils. Bike lanes are most appropriate where higher traffic volumes and/or speeds warrant greater separation of bicyclists and motor vehicles.

There are approximately 3.33 miles of existing bike lanes in Whitewater. These are illustrated on Map3- 1 and detailed in Table 3- 1.

Table 3-1. City of Whitewater On-Street Bikeways (Bicycle Lanes Only)

Street	From	To	Miles
Corporate Dr	N Technology Dr	Whitewater University Tech Park Path	0.06
E Executive Dr	N Newcomb St	N Prospect Dr	0.26
N Prospect Dr	E Executive Dr	N Universal Blvd	0.09

BICYCLE AND PEDESTRIAN PLAN

N Technology Dr	N Universal Blvd	Corporate Dr	0.13
N Universal Blvd	N Prospect Dr	N Technology Dr	0.31
S Janesville St	USH 12	S Janesville St	0.43
W Starin Dr	N Tratt St	N Newcomb St	1.68
Warhawk Dr	W Schwager Dr	W Starin St	0.37
Total			3.33

Existing Off-Street Bikeways

Off-Street Bikeways, commonly called shared-use paths (also referred to as “trails” and “multi-use paths” or “off-street trails”) are often viewed as recreational facilities, but they are also important corridors for utilitarian trips. Off-street facilities that accommodate bicycle travel can be categorized into the following typologies: multi-use path, a facility that has an exclusive right-of-way; side path, a two-way trail on one side of the road located within the road right-of-way; and park trail, a shared-use facility located within a park.



Figure3-1. Shared use paths through Brewery Hill Park accommodate bicyclists and pedestrians.

The following section briefly describes these off-street facilities.

- **Shared-Use Paths** have exclusive right-of-way and are not directly adjacent to a roadway. They provide access across the city and connect to the regional network. Multi-use paths are frequently used by cyclists riding long distances, whether to go to work in neighboring towns and villages or to get out for a long-distance weekend ride. In addition to fast-moving cyclists, recreational riders use the shared use trails for family outings or more leisurely rides.
- **Side Paths:** Some shared-use paths in Whitewater are directly adjacent to roadways and within the street right-of-way, such as the path adjacent to East Starin Road. These ‘side paths’ serve both bicyclists and pedestrians and are wider than a standard sidewalk. Side paths provide commuter routes between residential areas and employment centers, as well as to retail areas. They are used by recreational riders mainly to access the shared use path or regional trail network. The high frequency of street crossings limits fast and continuous riding, making them less preferable to on-street bikeways for transportation-oriented riders.

Current off-street bikeways in Whitewater are a mixture of all types of paths and trails, with several facilities providing access to the University of Wisconsin-Whitewater campus. In total, there are approximately 7.5 miles of existing off-street bikeways in Whitewater. These are illustrated on Map 3-1, and identified in Table 3-2 below.

Table 3-2. City of Whitewater Off-Street Bikeways

Name	Miles
Starin Road	0.88
City Garage/Brewery Park	0.73
Whitewater University Tech Park	1.38
Prairie Village	1.34
Waters Edge South	1.37
Cravath Lakefront	0.23
Prairie Village to Lauderdale Dr	0.75
North Tratt	0.16
Schwager Drive	0.41
Whitewater Middle School Path	0.16
Total	7.4

Bicycling and Walking at the University of Wisconsin-Whitewater

Several bicycle facilities exist around and through campus including bike lanes on Warhawk Drive and West Starin Road, and off-street trails along portions of Schwager Drive and Fremont Road. The central east-west roadway through campus, West Starin Road, is a boulevard style street that accommodates cyclists, pedestrians and motor vehicles. There are periodic pullouts for motor vehicle loading and parking. In-pavement pedestrian crosswalk signs are placed in the bike lane and may create a hazard for bicycle traffic. Motor vehicle volumes in the campus area range from 4,800 ADT (Average Daily Trips) on Prince Street to 15,100 ADT on Prairie Street. Roadways such as Prince Street that are already designated bikeways, could be enhanced with additional signing, marking and potential traffic calming. Bicycles may be ridden on campus except where prohibited by posted signs or otherwise noted in the Campus Policy on Skating and Bicycling¹⁰.

Pedestrians around the university are accommodated by sidewalks, which are generally separated from motor vehicle traffic by a wide planter strip. The bulk of pedestrian traffic occurs in the academic core, south of Starin Road and crosswalks are typically provided at all intersections. In addition to sidewalks, pedestrians are accommodated along numerous pathways connecting campus buildings. Direct access to downtown Whitewater and the Main Street Commercial Area is provided via West Main Street (Old Highway 12).

Constraints and Opportunities

¹⁰ Office of the Vice Chancellor for Administrative Affairs. "Skating & Bicycling Policy." 2002. Web. Accessed June 6, 2012.

Opportunities and Constrains

Constraints

Described below, bicyclists in Whitewater face a variety of challenges. Major barriers, challenging intersections, and network gaps are identified on .

Limited Bikeway Network

The existing network of bicycle routes is limited in scope, and does not comprehensively provide full access to common destinations. Current bikeway corridors do not serve recreational riders who want to connect quickly into the regional trail system for long recreational rides. Filling these gaps can quickly increase the effectiveness of existing bicycling infrastructure. The system also does not serve utilitarian cyclists who want to ride to a workplace or shopping center quickly. A complete network of on- and off-street bikeways would provide routes for cyclists of all abilities and trip purposes.

Barriers

The waterways in Whitewater are a barrier to comfortable bicycle travel. Bridges tend to be narrow, without adequate room for all users. Successfully implementing comfortable facilities on these corridors will be impossible if overcrossings are not made to be bicycle friendly. Overcrossings to consider for improvement include:

- Main Street
- East Starin Road

Challenging Intersections

Major intersections can be challenging for cyclists riding on the bikeway network. These challenges include:

- Intersections of existing shared use paths at arterial roadways that do not provide marked crossings, such as the shared use path through Brewery Hill Park at West North Street.
- Intersections where sidepaths end abruptly or offer inadequate transition to other bikeway types. This may be seen at the transition from the Fremont Street sidepath to a shared use trail in the northeast corner on Starin Park.
- Intersections where on-street bikeways are terminated in advance of the intersection, often done to assign roadway space to turn lanes. This can be seen at West Starin Road & North Fremont Street.

Gaps

While bicyclists in Whitewater benefit from the existence of some on- and off-street bicycle facilities, these do not offer continuous travel opportunities throughout the entire city. Even small network gaps between facilities require bicyclists to either ride on the road or on a sidewalk to access another bikeway. Filling gaps is

BICYCLE AND PEDESTRIAN PLAN

an effective way to capitalize on existing infrastructure and was a key strategy used in both development of the cycling network and phasing of project recommendations.

Lack of Wayfinding Tools

Whitewater's bikeway system could benefit from signage and additional wayfinding tools to orient users and direct them to and through major destinations like the downtown, schools, parks, and commercial areas. Currently bicycle and pedestrian wayfinding signing in Whitewater is limited and found primarily at trailheads and within some parks. As the on-street network is being developed, cyclists should be directed to key destinations along the bikeway, to raise awareness of the new facilities and to encourage more residents to try bicycling to different destinations around the city.

Side Path Safety Concerns

The *AASHTO Guide for the Development of Bicycle Facilities* generally recommends against the development of trails adjacent to roadways. Also known as "side paths," these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic. Key concerns about shared-use paths directly adjacent to roadways (e.g., with minimal or no separation) are:

- When the path ends, cyclists riding against traffic tend to continue to travel on the wrong side of the street, as do cyclists going to the path. Wrong-way bicycle travel is a major cause of crashes.
- At intersections, motorists crossing the path may not notice bicyclists approaching from certain directions, especially where sight distances are poor.
- Ambiguity as to expected user behavior at the crossings of paths, streets, and driveways.¹¹
- Stopped vehicles on a cross-street or driveway may block the path.
- Because of the closeness of vehicle traffic to opposing bicycle traffic, barriers are often necessary to separate motorists from cyclists. These barriers serve as obstructions, complicate facility maintenance and waste available right-of-way.
- Paths directly adjacent to high-volume roadways diminish users' experience by placing them in an uncomfortable environment. This could lead to a path's underutilization.
- When implementing a side path, special attention should be paid to the design of intersections and driveway crossings to mitigate the concerns noted above.

When designing a bikeway network, the presence of a nearby or parallel path should not be used to preclude adequate shoulder or bike lane width on the roadway, as the on-street bicycle facility will generally be superior to the side path for experienced cyclists and those who are cycling for transportation purposes. Bike lanes should be provided as an alternate (more transportation-oriented) facility whenever possible.

Driver Behavior/Lack of Awareness of Bicycling Facilities

¹¹ Wisconsin DOT published the *Wisconsin Department of Transportation Guide for Path/Street Crossings* in 2011 to help clarify path/street crossing ambiguities, though user awareness of this guidance is likely to be limited.

In Whitewater, motorists often disregard marked crosswalks and warning devices. At trail crossings, this lack of compliance requires trail users to wait until the road is clear before proceeding across the street. Motorists' lack of compliance with posted speeds is another safety concern, particularly to bicyclists riding on the shoulder of major roads.

Opportunities

Various characteristics foster an environment where bicycling is safe and enjoyable in Whitewater. These system strengths are described below.

East Main Street Repaving

Routine paving of roadways may offer an opportunity to add bike lanes where adequate right-of-way exists. East Main Street is scheduled for repaving in the next five years and should be considered for such an upgrade.

Highway 12 Undercrossing

Built at the time of highway construction, the undercrossing of Highway 12 will offer a safe way to cross the busy roadway away from traffic. When the opportunity arises to connect to this location, the grade-separated crossing will be a useful asset to connecting corridors.

Existing Trail Network

Whitewater already has a number of existing recreational trails that can form the basis of a first-class off-street trail network that provides access to destinations like the Whitewater Creek Natural Area and Cravath Lake. Whitewater could enhance the existing trails by providing improved trailhead facilities, providing wayfinding and extending the existing network. A trail map could be developed and marketed to help increase tourism and recreation associated with the system.

Potential for Neighborhood Greenways

Most neighborhood or residential streets in Whitewater can be classified 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 (25 MPH or less) and lower traffic volumes (3,000 average daily traffic volume or less). Figure 3-2 identifies the traffic volumes of a selection of city streets, and reveals that many of these local streets feature low-traffic volumes appropriate for shared roadway bicycle use.

These streets present a generally good environment for bicycling. Formally designating streets as neighborhood greenways often requires little more than signage and pavement markings, as well as improving crossings at major streets. Other streets that have higher traffic volumes and speeds (but not sufficient to warrant bike lanes or cycle tracks), may require traffic calming techniques to reduce vehicle speeds while limiting conflicts between motorists and bicyclists.

BICYCLE AND PEDESTRIAN PLAN

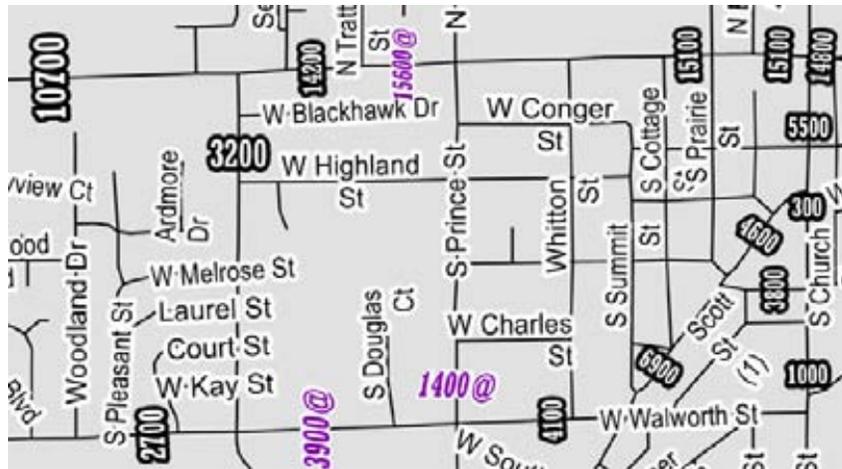
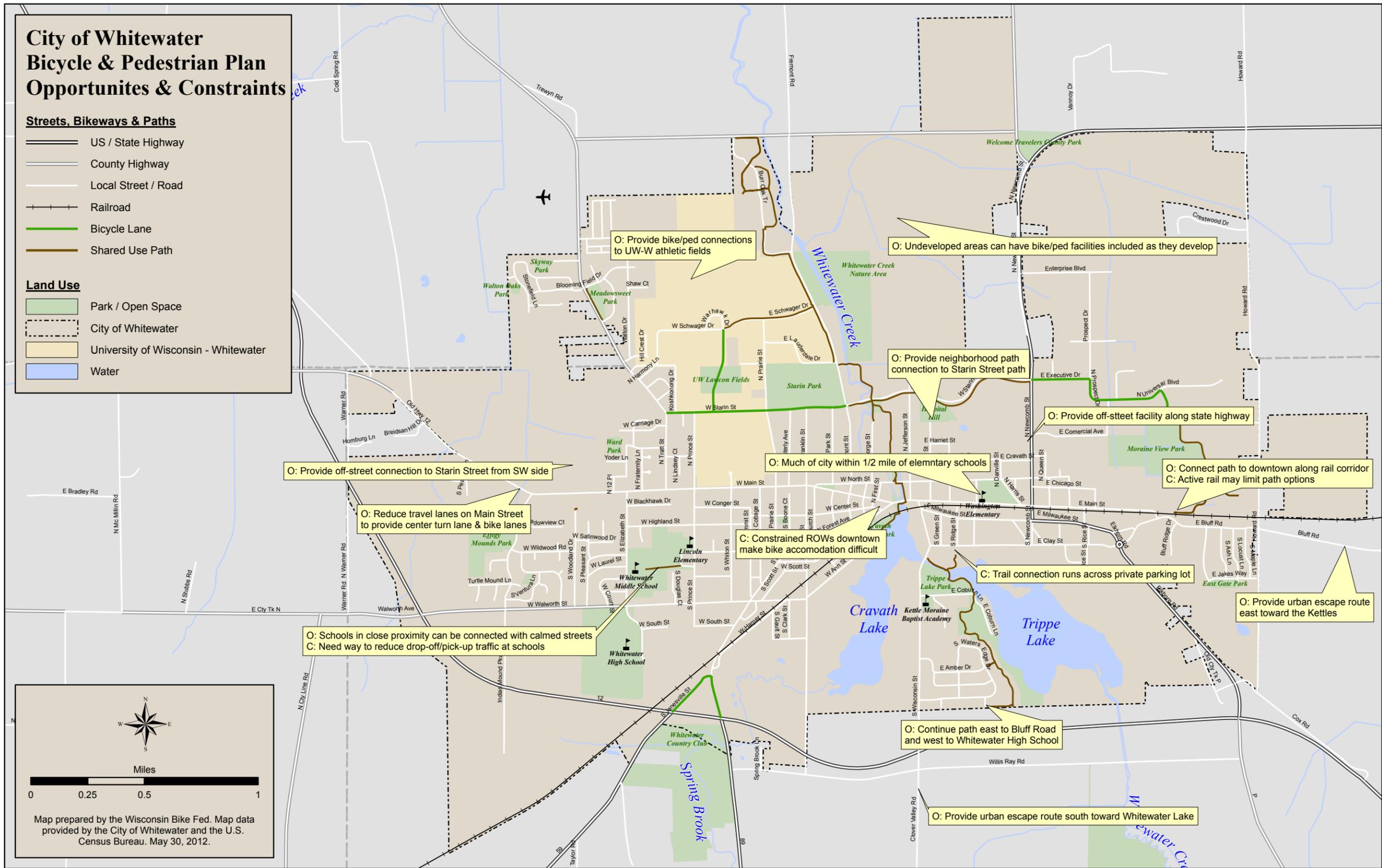


Figure 3-2: 2009 Roadway Traffic Volumes (Figures followed by @ are from 2006)

Planned Bikeway Improvements

Although there are few existing bikeways in Whitewater, many miles have been proposed in existing planning documents. See Appendix B: Plan and Policy Review.

Map 3-2: Opportunities and Constraints





4 Recommended Bikeway Network

This chapter lays out a 20-year plan for completing the system of bikeways in Whitewater. The recommended network builds upon previous and on-going local and regional planning efforts and reflects the extensive input offered by city staff, the project Steering Committee, bicycle and pedestrian stakeholder groups, and Whitewater residents.

The recommended bikeway network includes a comprehensive and diverse set of bicycle and trail facilities connecting key destinations in and around Whitewater. System improvements include establishing a formalized on-street bikeway system, upgrading intersections for safer trail crossings, improvements to bicycle and pedestrian facilities downtown and projects to enhance safety and encourage bicycling and walking. Suggested improvements include low-cost measures yielding immediate results, such as re-striping of streets to accommodate bike lanes (Figure 4-2), map development and low cost signage. Other improvements, such as expanding the local trail system, represent longer-term strategies for transforming Whitewater into a truly bicycle- and pedestrian-friendly community.

Facility Definitions for the Whitewater Network

Many on-street bicycle facilities can be developed inexpensively with paint and signs. These facilities include bike lane restriping, shared lane markings, and neighborhood greenways. The Draft Bicycle Network for Whitewater has recommendations for four facility types: bike lanes, shared lanes, neighborhood greenways and shared use paths. Each facility type is illustrated below and describe in detail in Appendix D: Bicycle and Pedestrian Design Guidelines.



Figure 4-1: Bikeway facility types recommended in the Whitewater Bicycle and Pedestrian Plan

On-Street Bikeways

A list of recommended on-street bikeways was developed based on public comments, street widths, and providing an interconnected network that links schools, parks, commercial areas, paths and other attractions. Wherever possible, bike lanes were recommended over shared lane markings as they provide both bicyclists and motor vehicle operators with a higher level of comfort. However a number of streets, particularly in the downtown area, are not wide enough to provide bike lanes. In those cases, shared lane markings are recommended.

The proposed network provides formal bicycle facilities in most areas of the city, and will greatly increase the visibility of existing routes. When combined with the existing and proposed shared-use paths, the on-street bikeways will provide a comprehensive network connecting all parts of the city.

Bike Lanes

Designated exclusively for bicycle travel, bike lanes are separated from vehicle travel lanes with striping and are denoted by pavement stencils and signs. On streets in Whitewater that have higher vehicle speeds and carry higher levels of traffic, dedicated bike lanes are appropriate to separate bicyclists from motor vehicle travel and turn lanes. On many roads in Whitewater, sufficient space exist to accommodate bike lanes without removing parking or narrowing drive lanes to less than 11-foot width.



Figure 4-2. Restriping bike lanes is a cost effective infrastructure improvement.

Recommendations for Bike Lanes Requiring Construction

While several of the bike lane projects can be accomplished simply by restriping a roadway, other projects would require additional construction and engineering effort. These projects may be able to reallocate existing street width through road diets or parking reduction to accommodate bike lanes, while some projects may require road widening. Future roads should be constructed with sufficient right-of-way to accommodate bicyclists via bike lanes.

Shared Lane Markings

Shared lane markings are often used on streets where bike lanes are desirable but are not possible due to width constraints, and where motor vehicle speeds are moderate (less than 35 mph). High visibility pavement markings (MUTCD Section 9C.07) are placed in the travel lane to alert motorists of bicycle traffic, while also encouraging cyclists to ride at an appropriate distance from the “door zone” of adjacent parked cars. Placed in a linear pattern along a corridor, shared lane markings also encourage cyclists to ride in a straight



Figure 4-3. Shared lane markings alert motorists of bicycle traffic.

line so their movements are predictable to motorists. These pavement markings have been successfully used in many small and large communities throughout the U.S.

Neighborhood Greenways

Neighborhood greenways are lower-order, lower-volume streets that employ various treatments to promote safe and convenient bicycle travel. These roadways accommodate bicyclists and motorists in the same travel lanes, often with no specific vehicle or bicycle lane delineation. Greenways assign higher priority to through bicyclists, with secondary priority assigned to motorists. These facilities can also include treatments to slow vehicle traffic to enhance the bicycling environment. Neighborhood greenways serve multiple bicyclist types, including commuter cyclists, family cyclists and less-experienced cyclists. Most of the streets selected for this treatment in Whitewater currently have low traffic volumes and low traffic speeds and will only require signage (and in some cases pavement markings) to become part of the neighborhood greenway system.



Figure 4-4. Neighborhood greenways offer a calm bicycling environment.

Shared Use Trails

A shared use trail is defined as a paved or gravel path (minimum width of 10-feet or 12- to 14-feet if heavy traffic is expected) that accommodates all sorts of non-motorized traffic such as pedestrians, bicycles, in-line skates, strollers, etc. The shared use trail may have a right of way of its own or it may share a right of way with a street or highway. A shared use path that shares right of way with a street or highway has special issues with crossing traffic and careful design is necessary to provide a safe facility. Even when the shared use path has its own right-of-way, careful design at each street or rail road crossing is necessary to assist users safely across the street.

Street Corridor Recommendations

Table 4-1, Table 4-2, and Table 4-3 list recommended on-street bike lanes, neighborhood greenways and shared lane bike routes, respectively. Figure 4-5 through Figure 4-10 depict how the bike lanes might fit with existing curb to curb street widths typically found in Whitewater. Further study will be necessary before any recommendations can be implemented. Map 4-1 provides an overview of the proposed network.

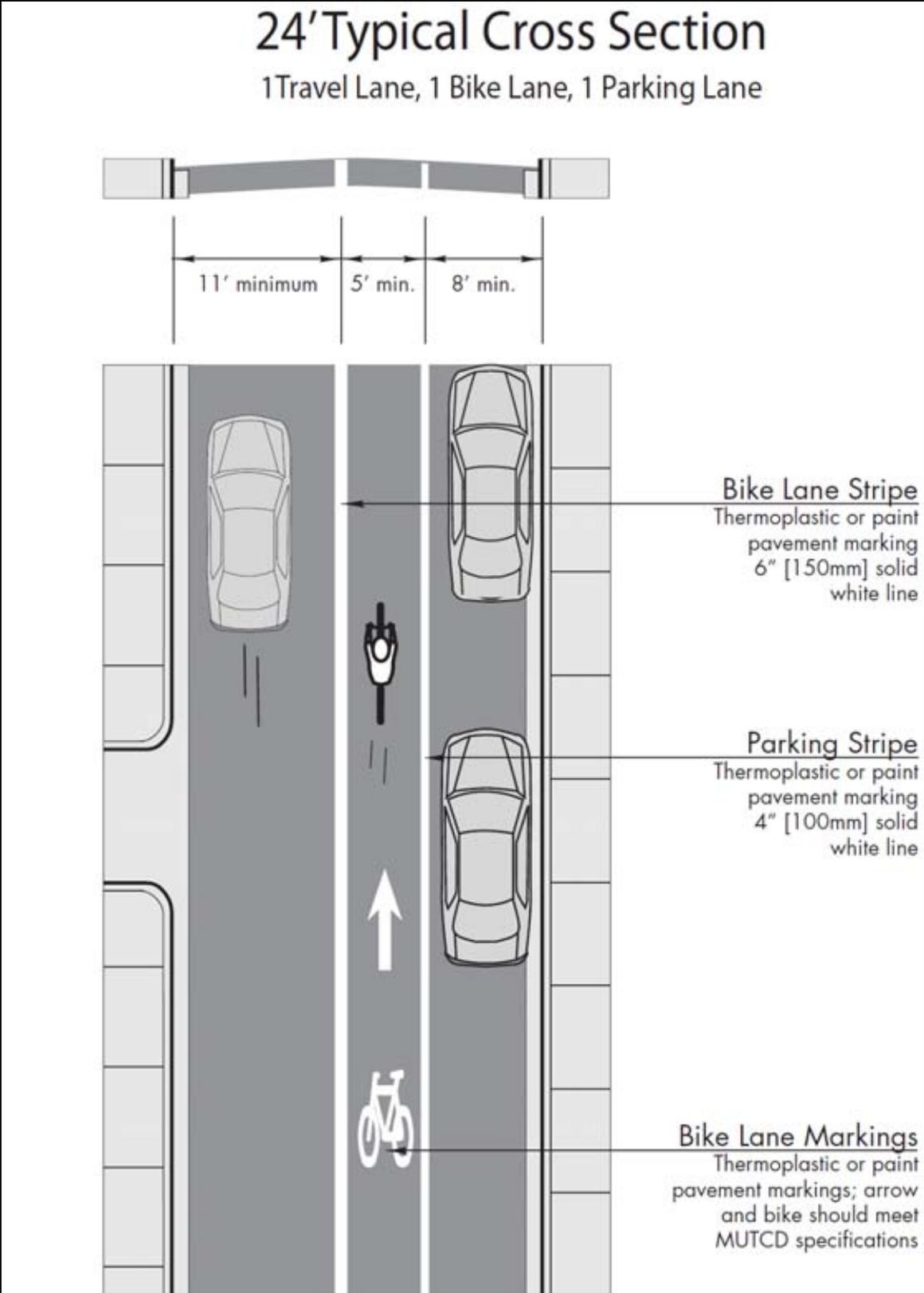


Figure 4-5: Typical 24' Wide Roadway Cross Section

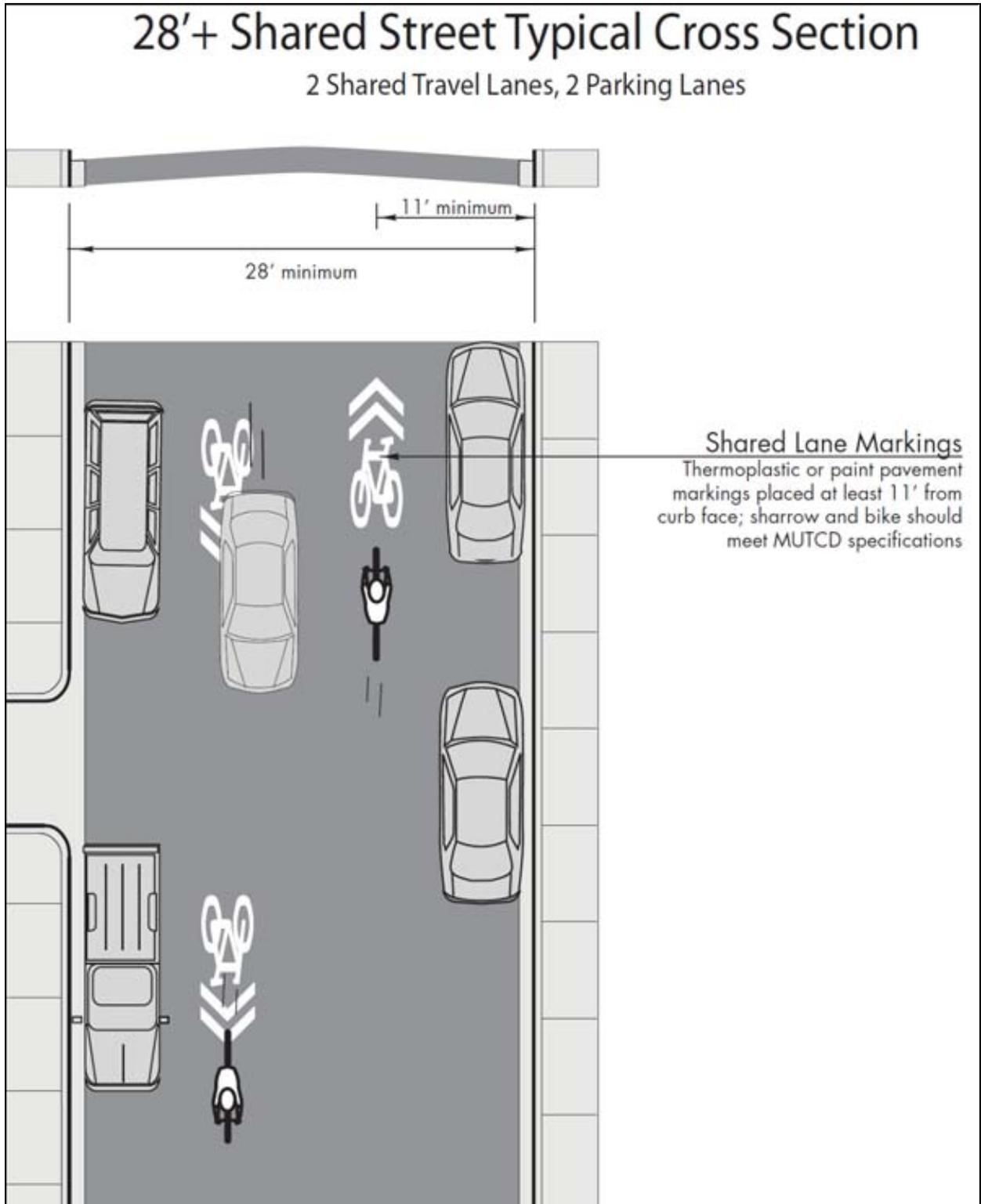


Figure 4-6: Typical 28' Wide Roadway Cross Section

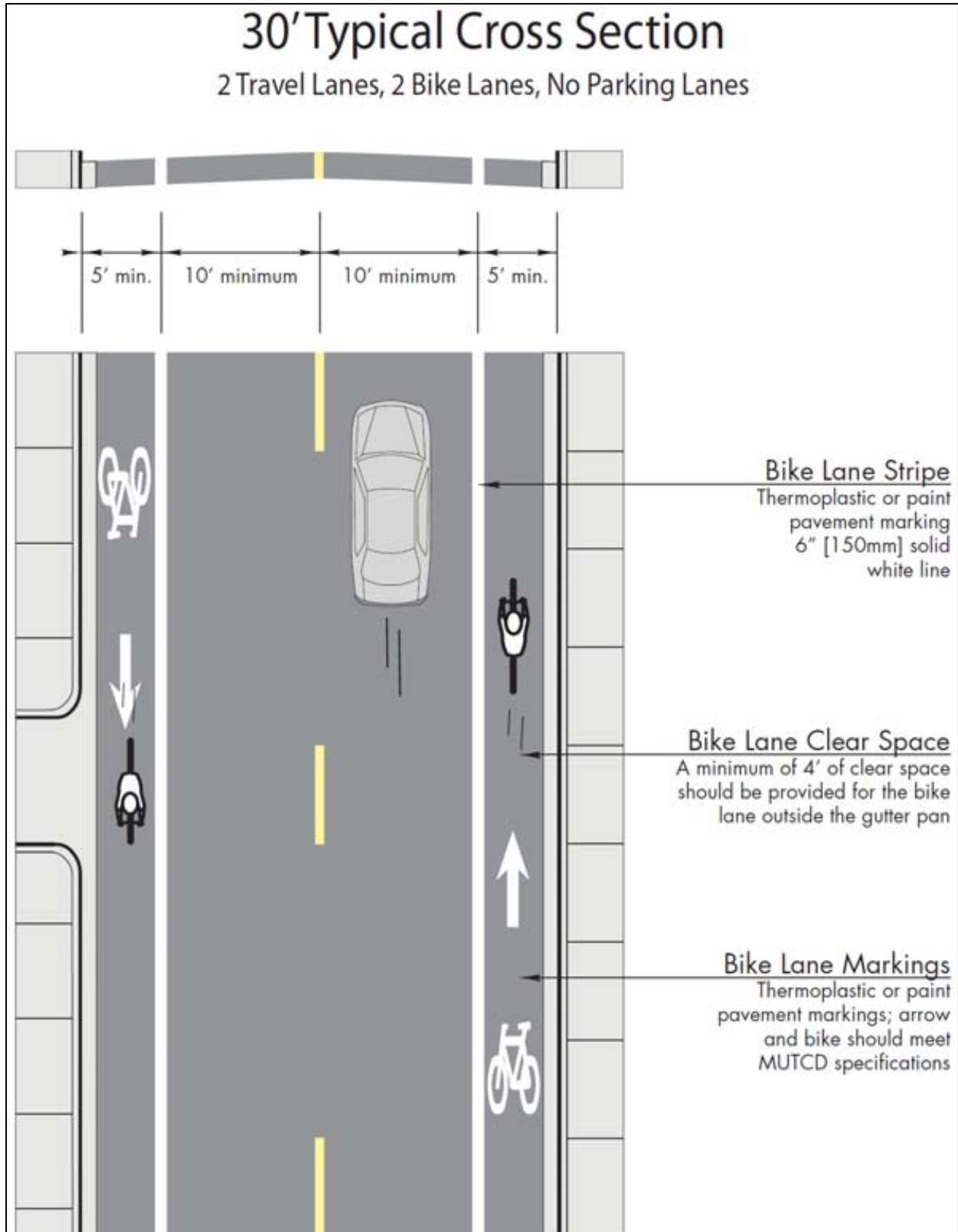


Figure 4-7: Typical 30'Wide Roadway Cross Section

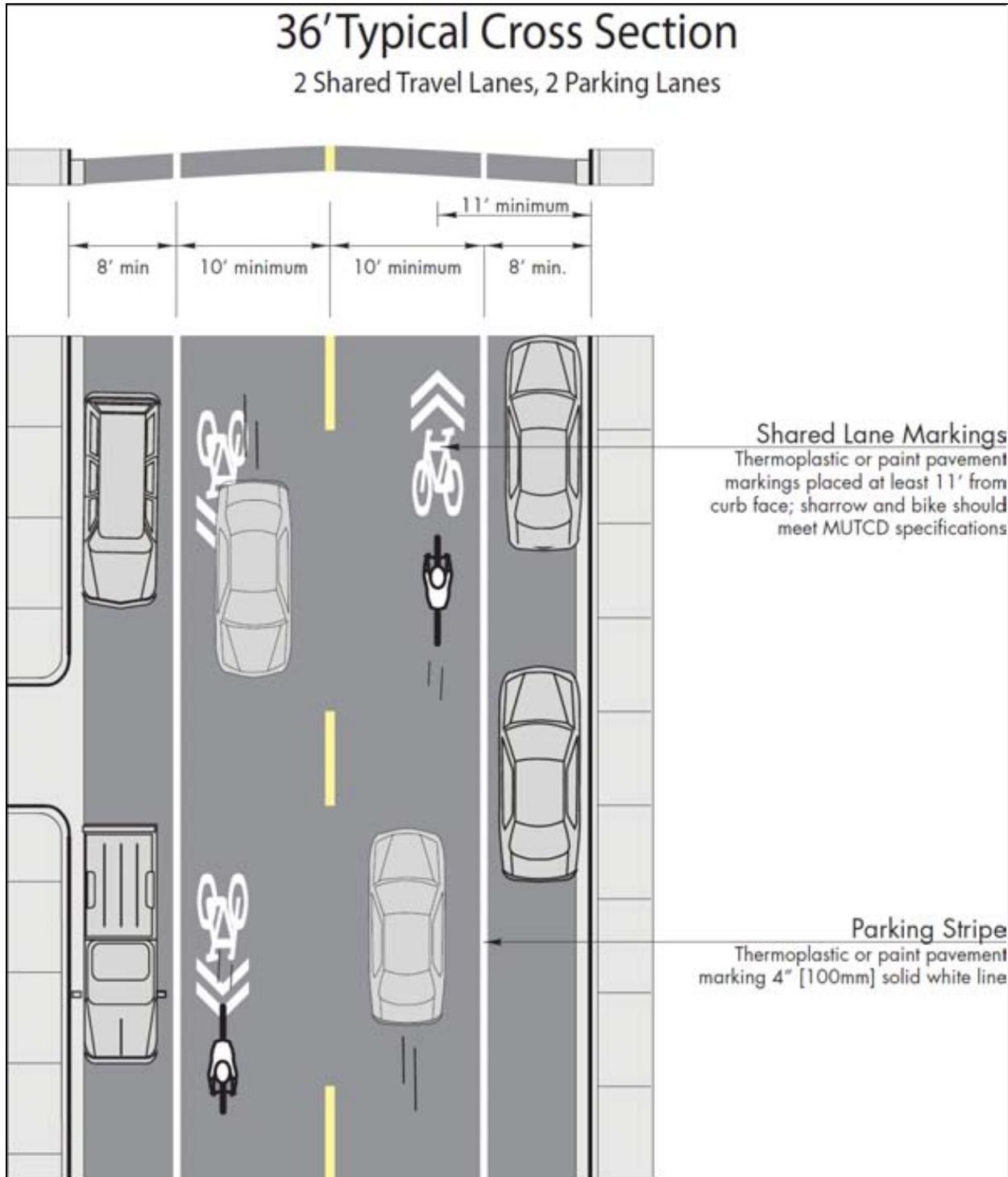


Figure 4-8: Typical 36' Wide Roadway Cross Section

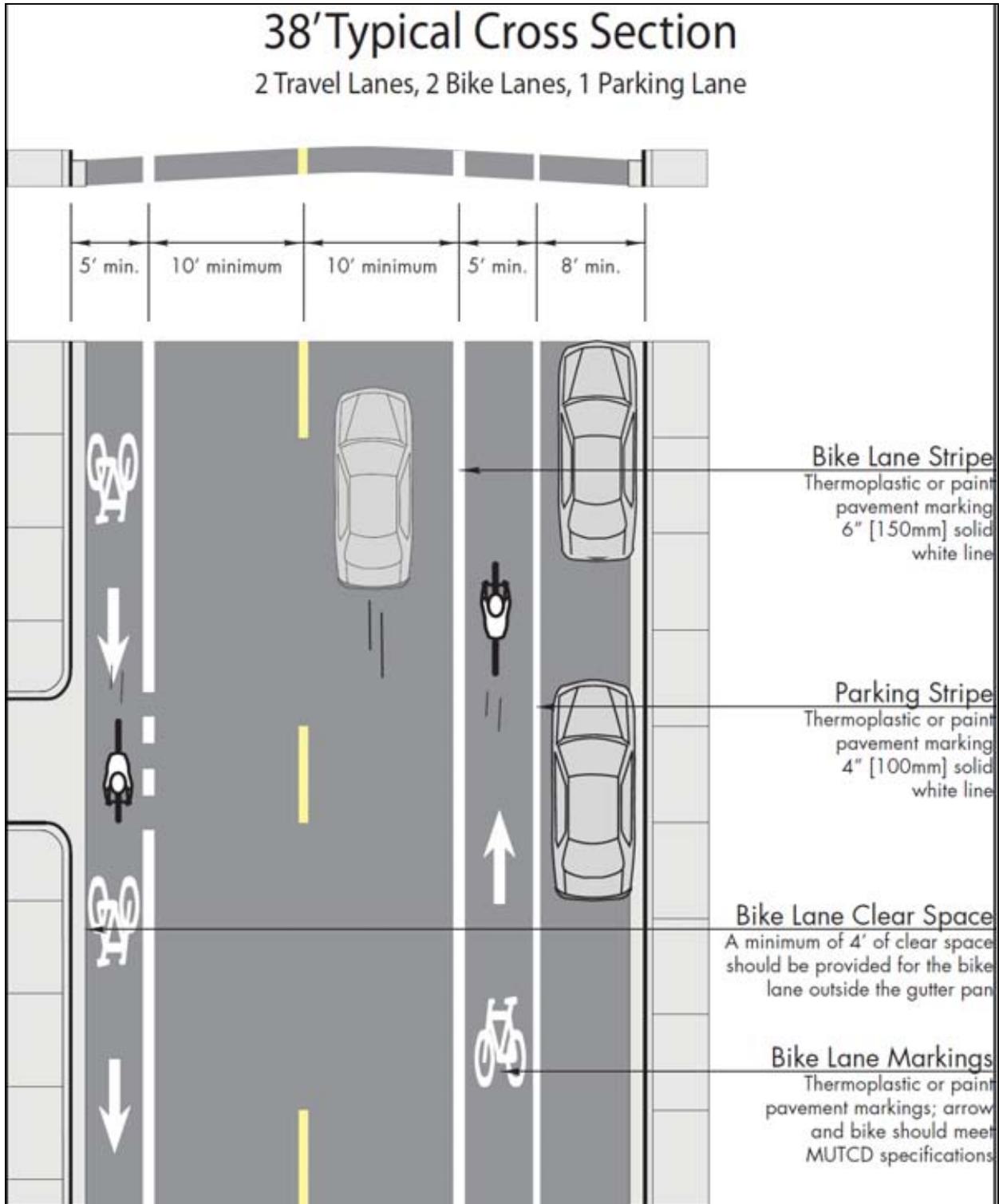


Figure 4-9: Typical 38' Wide Roadway Cross Section

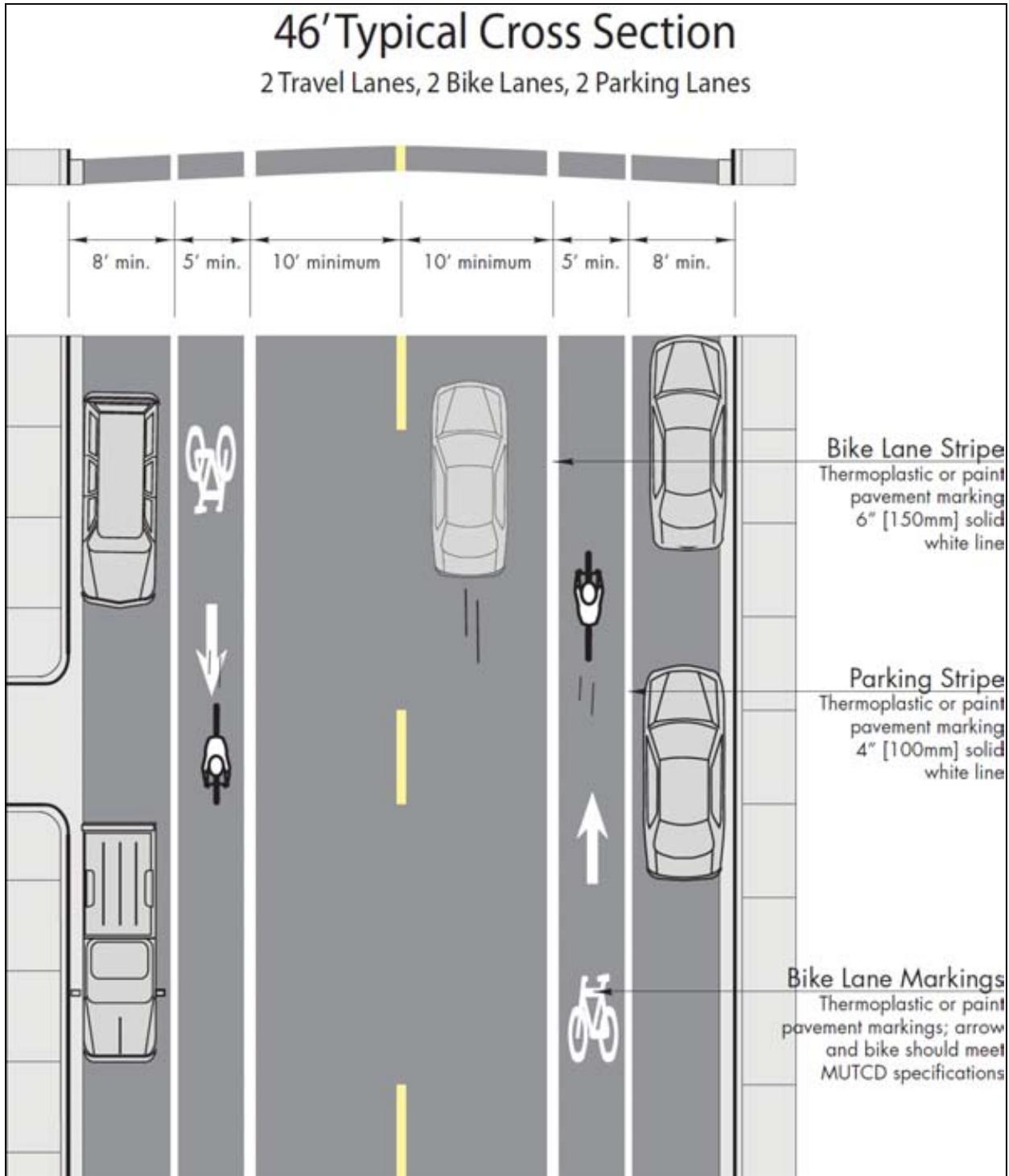


Figure 4-10: Typical 46' Wide Roadway Cross Section

BICYCLE AND PEDESTRIAN PLAN

Table 4-1: Proposed Bike Lanes

Street	From	To	Miles
E County Line Rd	N McMillen Rd	Indian Mound Pkwy	1.99
Indian Mound Pkwy	Indian Mound Pkwy	W Walworth St	0.63
Indian Mound Pkwy	W Walworth St	W Main St	0.54
W Walworth St	STH 12	Indian Mound Pkwy	0.37
W Main St	Indian Mound Pkwy	S Prince St	0.71
W Walworth St	Indian Mound Pkwy	S Prince St	0.83
S Elizabeth St	S Elizabeth St	W Main St	0.76
W Walworth St	S Prince St	S Franklin St	0.50
W Main St	S Prince St	S Franklin St	0.48
S Franklin St	S Janesville St	W Main St	0.96
N Prairie St	W Main St	E Schwager Dr	0.74
CTH N	W Main St	Bloomingtonfield Dr	1.00
CTH N	Bloomingtonfield Dr	E Schwager Dr	2.39
N Fremont St	W North St	E Schwager Dr	0.80
E Main St	S Franklin St	S Newcomb St	1.08
E North St	S Franklin St	N Newcomb St	0.99
E Milwaukee St	E Main St	S Newcomb St	0.53
N Newcomb St	E Milwaukee St	E Executive Dr	0.62
E Bluff Rd	Elkhorn Rd	Howard Rd	0.66
E Main St	N Newcomb St	E Bluff Rd	0.57
E Milwaukee St	N Newcomb St	E Bluff Rd	0.41
STH 89	Willis Ray Rd	STH 12	0.22
S Wisconsin St	Willis Ray Rd	E Milwaukee St	1.16
Total			18.94

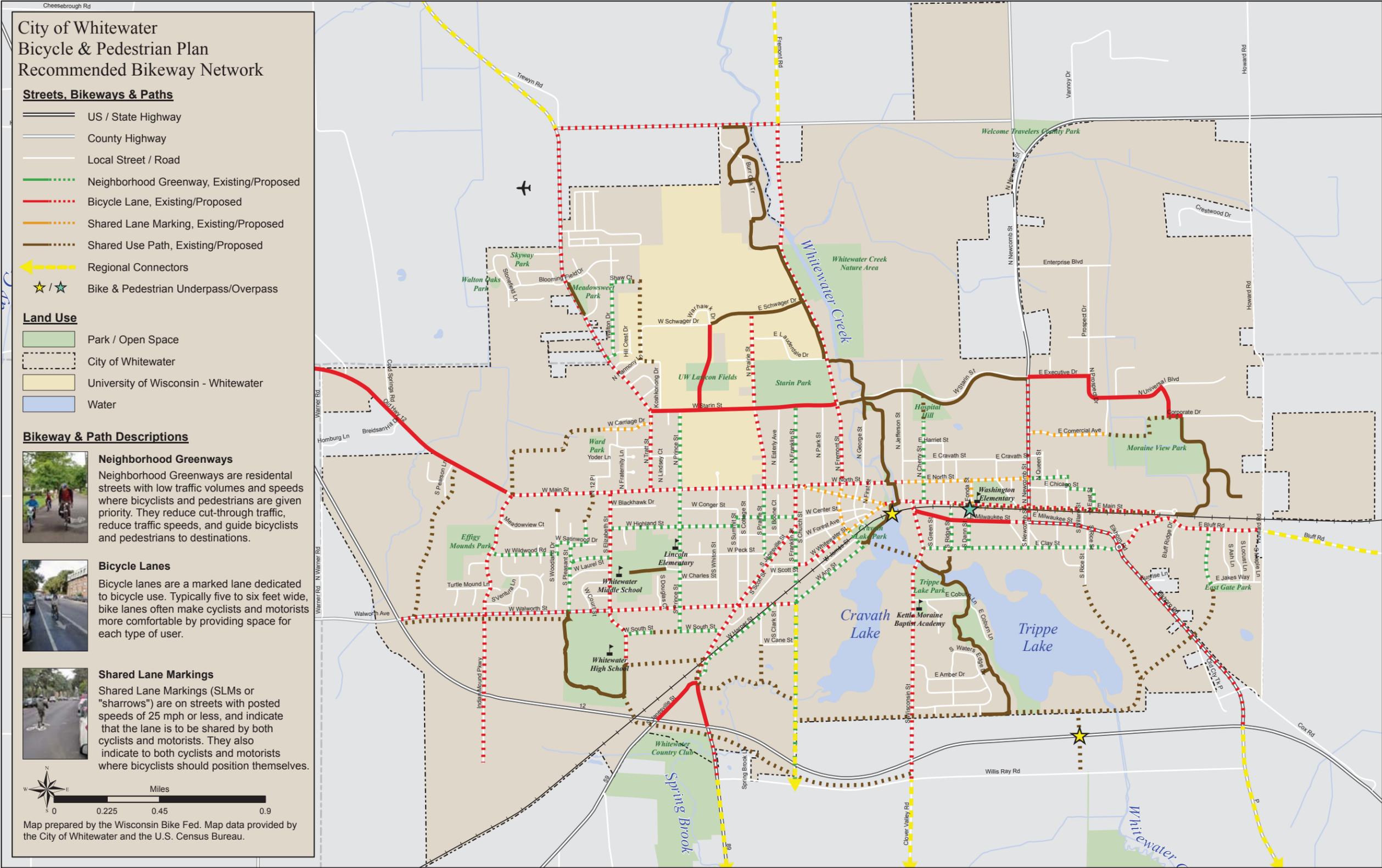
Table 4-2: Proposed Neighborhood Greenways

Street	From	To	Miles
S Pleasant St	W Walworth St	S Ardmore Dr	0.38
W Laurel St	S Pleasant St	S Elizabeth St	0.18
W Wildwood Rd	Indian Mound Pkwy	S Pleasant St	0.39
S Prince St	W South St	W Starin St	0.94
W Peck St	S Prince St	S Janesville St	0.40
S Prairie St	W Peck St	W Main St	0.28
W Harper St	S Janesville St	W Walworth St	0.46
S Franklin St	Willis Ray Rd	S Janesville St	1.09
W Ann St	S Franklin St	W Whitewater St	0.45
N Franklin St	W Main St	W Starin St	0.34
N Cherry St	E Main St	N Cherry St	0.34
E Clay St	S Wisconsin St	Elkhorn Rd	0.83
S Moraine View Pkwy	E Jakes Way	E Bluff Rd	0.24
Total			6.32

Table 4-3: Proposed Shared Lane Bike Routes

Street	From	To	Miles
S Janesville St	STH 12	STH 59	0.19
W Carriage Dr	W Carriage Dr	N Tratt St	0.21
W Main St	W Main St	E Main St	0.35
S Fremont St	W Whitewater St	W North St	0.21
N Fonda St	E Main St	E North St	0.10
E Commercial Ave	N Newcomb St	Industrial Dr	0.33
Total			1.39

Map 4-1: Recommended Bikeway Network



Shared Use Paths

A number of shared use paths are recommended for Whitewater. These paths range from short segments of a few hundred feet to longer paths of up to two miles. All of these paths serve the same purpose: they increase bicycle and pedestrian access in areas where access does not currently exist, or where users do not feel safe or comfortable using existing streets.

A number of shared use paths are proposed for Whitewater. These paths range from short segments of a few hundred feet to longer paths of up to two miles. All of these paths serve the same purpose: they increase bicycle and pedestrian access in areas where access does not currently exist, or where users do not feel safe or comfortable using existing streets.



Figure 4-11. Recommended Shared use paths.

1. West Walworth – West Main Connector

This 0.68 mile path will provide an off-street connection between West Walworth Avenue and West Main Street, west of the Effigy Mounds Park. This connection would create a pleasant north/south connection in the city as well as provide access to the park via a spur.

2. West Main to West Carriage Drive Connector

This path will connect users from the proposed bike lane on Indian Mound Parkway to the proposed shared lane markings on West Carriage Drive. The proposed 0.62 mile trail will allow users to avoid West Main Street when accessing the southwest part of the UW campus.

3. West Walworth Street Trail

This 0.36 mile proposed trail will allow users to connect off street from the proposed bike lanes on Indian Mound Parkway to the trail that circumnavigates Whitewater High School. Providing this connection will allow for students to ride their bikes to school in a more comfortable atmosphere.

4. South Ardmore Street Extension

This short segment (0.07 miles) will allow users to connect from the proposed Neighborhood Greenway on South Ardmore Drive to the back of St. Patrick's Catholic Church, where they can continue on to access West Main Street.

5. Whitewater High School to S. Franklin Street Connector

This 0.9 mile trail will create a connection between the existing trail at the high school, which terminates on South Elizabeth Street, and the proposed neighborhood greenway on South Franklin Street. The trail is proposed to follow the outlet for Cravath Lake – which will make for a pleasant ride. There is also a 0.16 mile spur proposed from this trail to connect with South Gault Street.

6. South Franklin Street/East Gate Park Connector

This proposed 1.2 mile trail will travel parallel the city boundary on the southeast side and connect the proposed neighborhood greenway on South Franklin to East Gate Park. It will utilize a segment of the existing trail located on the west side of Trippe Lake. From East Gate Park, cyclists will be able to access Moraine View Park to the north, where many recreational and youth sports events are held.

7. Spur connection from East Gate Park Trail to S. Rice Street

This 0.48 mile path will connect from the proposed trail mentioned above (East Gate Park) to South Rice Street, on the east side of Trippe Lake. This connection will help to complete a Trippe Lake off-street loop.

8. East Main Street Rail with Trail

This 0.86 mile trail will run alongside the active rail line from Ridge Street to the existing trail located at the end of East Main Street on the city's northeast side. This trail will facilitate traffic to Washington Elementary School and allow for convenient access to Moraine View Park, home to many sporting events.

9. East Clay Street Connector

This very short 0.05 mile connection will fill the gap between the existing trail segment that travels to the east of the Trippe Lake condominium development, and East Clay Street.

10. East Commercial Avenue/Corporate Drive Connector

This 0.39 mile path will provide access from the current terminus of the trail in Moraine View Park to East Commercial Avenue, utilizing existing City of Whitewater parkland. East Commercial Avenue is slated to receive shared lane markings as well.

11 . Hospital Hill Extension

This 0.11 mile proposed trail will connect the proposed Neighborhood Greenway on North Cherry Street to the existing trail that parallels West Starin Street.

12 . Shaw Court Extension

This trail extension, 0.45 miles, will formalize the footpath between Shaw Court and the UW Whitewater Miller Stadium, located on the northwest side of campus (Figure 4-12). The trail will continue to the n/s portion of Koshkonong Drive.



Figure 4-12. The footpath/desire line pictured was created by students accessing campus from Shaw Court.

Bike/Ped Bridge over Cravath Lake

This bike/ped bridge would connect the two sides of the lake. One side would originate from Cravath Lakefront Park and the other end on public land on the east side of the lake. This bridge would directly connect the residential neighborhood on the east side of the lake to downtown and could be a landmark icon for the city.

Bicycle Facility Selection

The table below is provided to assist the City of Whitewater in making decisions in the future as to which facility to use for streets with various posted speed limits and average daily traffic (ADT) levels. Guidance from the Minnesota Department of Transportation (MNDOT) was used as a basis for these recommendations. Other factors beyond speed and volume which affect facility selection include traffic mix of automobiles and heavy vehicles, the presence of on-street parking, intersection density, surrounding land use, and roadway sight distance. These factors are not included in the facility identification chart above, but should always be a consideration in the facility selection and design process.

Table 4-4: Bicycle Facility Selection Matrix

2 Lane, ADT	<500	500-1,000	1,000-2,000	2,000-5,000	5,000-10,000
4 Lane, ADT	<2,000	2,000 to 4,000	4,000 to 10,000	10,000 to 20,000	20,000+*
25 MPH	RSO/NG	RSO/NG	SLM	5' BL	6' BL
30 MPH	RSO/NG	SLM	5' BL	5' BL	6' BL
35 MPH	SLM	SLM	5' BL	5' BL	6' BL
40 MPH	5' BL	5' BL	5' BL	6' BL	6' BL
45 MPH	5' BL	5' BL	6' BL	6' BL	6' BL

RSO/NG Route Signs Only/Neighborhood Greenway
 SLM Shared Lane Marking
 BL Bike Lane, width increases to six feet at higher speeds and ADTs
 Source Based on guidance provided by Minnesota Department of Transportation

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

Safe Routes to School Recommendations

As a part of the Whitewater Bicycle and Pedestrian Plan, a condensed SRTS audit was performed for two schools in the City of Whitewater. These audits included establishing the existing conditions of a school site and operations, assessing the existing conditions and proposing a series of recommendations. Recommendations are based around the 4 E's. Summarized recommendations for each school are included on the following pages and the full audit reports are available in Appendix E: Safe Routes to School Audits.

Washington Elementary School SRTS Issues/Recommendations



Washington Elementary List of Issues and Recommendations

Key	Location	Issue/Problem	Recommendation
A	Dann Street Pedestrian Bridge	Bridge is old and not ADA compliant, trails/sidewalks leading to the bridge are in rough condition	Replace the bridge, consider moving the location to S Ridge Street, replace the trails and sidewalks leading to the bridge
B	E Main Street crosswalk	Key SRTS crosswalk	Upgrade to a ladder crosswalk and consider its maintenance a high priority
C	Back parking lot	Currently a mix of student drop off and staff parking	Do not allow parents to drop off here
D	Fonda Street	Parent drop off area, congested	Consider loading the cars in platoons and adding student or staff safety patrols
E	Fonda Street and E North Street	Key SRTS crosswalk	Upgrade to a ladder crosswalk and consider its maintenance a high priority
F	E Main Street from Fonda St to N Harris Street	School zone area	Formalize school zone pavement markings and signing following MUTCD guidance
G	E Main Street near school entrance	Parents dropping off on Main along with the buses	Formalize parent pick up area on Fonda Street, add written policy, and enforce it
H	E North Street from Fonda Street to N Harris Street	Lack of sidewalk on the campus side	Install sidewalks on the campus side of E North Street
I	Dann Street and Milwaukee	Recent pedestrian improvements are an asset	
J	Ridge Street and Milwaukee Street	Recent pedestrian improvements are an asset	
K	Cravath Lake Park parking lot	Parking lot about 3.5 blocks from the school is an asset	Consider a Walking Wednesdays program where students are walked into the campus from here with an adult escort

LINCS SRTS Issues/Recommendations



LINCS List of Issues and Recommendations

Key	Location	Issue/Problem	Recommendation
A	Peck Street and South Prince Street	Congestion at arrival and pick up, skewed crosswalk makes crossing longer, parked cars on Peck and Lincoln cause sight distance issues for the guard	Sign and enforce "no parking" for 50 feet east from the intersection of Peck and Prince, (at least during arrival and pick up hours), consider constructing bump outs on the north east and southeast corners of Peck Street to lessen the crossing distance, add a crosswalk to the east leg of intersection
B	Trail through campus	Paved trail exists on campus but it not a direct route to Middle School	Consider formalizing the dirt trail the students use between campuses to provide a more direct connection
C	Trail connection at Middle School	Paved trail deadends into the parking lot/driveway on the east side of the building	Install a formal paved path to connect to the school and the sidewalk on S Elizabeth Street
D	S Elizabeth and W Melrose	Due to students crossing into neighborhoods west of here, this is a key SRTS crossing	Install crosswalks and associated pedestrian crossing signs, place location high on the maintenance list
E	S Elizabeth and W Court	Due to students crossing into neighborhoods west of here, this is a key SRTS crossing	Install crosswalks and associated pedestrian crossing signs, place location high on the maintenance list
F	S Elizabeth and W Laurel	Due to students crossing into neighborhoods west of here, this is a key SRTS crossing	Install crosswalks and associated pedestrian crossing signs, place location high on the maintenance list
G	Parking lot on W Highland Street	Due to its location close to the north parking lot and the connection via the running track, this would be an excellent place for remote drop off or pick up	Formalize the connection between the north lot and this lot, train staff to watch from students from this location, encourage parents to consider dropping or picking up their student from here rather than use the north lot
H	School Driveway on north end of campus on S Prince Street	Key location for SRTS	Continue to staff this driveway to help students cross during arrival and dismissal, consider a cross walk and maintain the stop bar/stop sign combination
I	North parking lot	Lot is congested during arrival and dismissal	Consider platooning the cars for drop off and pick up, ask the parents not to idle their motors while waiting in the afternoons, encourage car pooling to decrease the numbers of private cars on campus



5 Recommended Pedestrian Policies

In order to fulfill the vision outlined for this plan and create a safe, connected pedestrian system, an update to City policies should be pursued to establish a Complete Streets policy. This policy would be in support of State of Wisconsin Complete Street legislation, and further advance the needs of pedestrians and bicyclists in Whitewater.

A Complete Street is a roadway that, in addition to general purpose vehicular travel lanes, includes sidewalks, bike lanes or shoulders, bus lanes, transit stops, crosswalks, median refuges, curb extensions, appropriate landscaping, and other features that add to the usability and livability of the street as determined by context. Complete streets principles aim to provide a balanced transportation system for all modes of travel providing transportation options that are safe, comfortable, and convenient for anyone to travel by foot, bicycle, transit, and automobile regardless of age or ability. Most importantly, complete streets are based on community desires and are the outcome of good planning and design.

The City of La Crosse Experience

Wisconsin's Pedestrian and Bicycle Accommodations law addressing complete streets was codified in 2009 as State statute SS 84.01(35) and later into administrative rule as Transportation 75 (Trans-75). The rule aims to “ensure that bikeways and pedestrian ways are established in all new highway construction and reconstruction projects funded in whole or in part from state funds of federal funds.”

In 2011 the City of La Crosse became the first local municipality in Wisconsin to adopt a complete streets policy. This major milestone was the natural partner to the state- and county-level complete streets policy.

Figure 5-1 on the following page displays the full text of the policy passed by the City of La Crosse, and identifies the key elements of their policy. The City of Whitewater should use the language and content of the La Crosse policy as a starting point for a Whitewater specific Complete Streets policy.

Figure 5-1: Breakdown of a city-level complete streets policy

City of La Crosse Municipal Code 5.18 GREEN COMPLETE STREETS	
(A) PURPOSE	
<p>The purpose of the City’s Green Complete Street regulation is to establish standards to safeguard life and property and promote and preserve public welfare and community aesthetics and to allow citizens to enjoy the use of streets and corridors within the city of La Crosse by the establishment of comprehensive standards, regulations and procedures governing the planning, design and construction or major construction of corridors within the City. The regulations found in this section attempt to balance the needs of all users of city streets and corridors including motorists, transit users, pedestrians and cyclists. The purpose of this ordinance is to ensure that the streets of the City of La Crosse provide safe, convenient, and comfortable routes for walking, bicycling, and public transportation, encourage increased use of these modes of transportation, enable convenient travel as part of daily activities, improve the public welfare by addressing a wide array of health and environmental problems, and meet the needs of all users of the streets, including children, older adults, and people with disabilities. This ordinance is further intended to provide a mechanism to combine the principles of complete streets and traffic calming with improving the stormwater quality and quantity problems that the City faces by incorporating stormwater considerations into each and every complete street or traffic calming activity where feasible.</p>	Vision and Goals
(B) FOCUS AREAS	
<p>The City shall focus Green Complete Streets implementation in areas where the Green Complete Streets infrastructure is most immediately needed such as missing links in sidewalks, along transit routes and stops, areas where non-motorized transportation modes are common or anticipated to become common, corridors which provide primary access to significant destinations such as parks, schools, commercial areas, or employment centers, and streets/intersections which have high pedestrian and/or bicycle crash rates. In addition to focus areas, all corridor projects shall be considered for Green Complete Streets. Green Complete Streets may be achieved through single projects or incrementally through a series of smaller improvements or maintenance activities over time. It is the Council’s intent that all sources of transportation funding be drawn upon to implement Green Complete Streets. The City believes that maximum financial flexibility is important to implement Green Complete Streets principles.</p>	Description and Clarification
(C) DEFINITIONS	
<p>The following words and phrases, whenever used in this ordinance shall have the meanings defined in this section unless the context clearly requires otherwise:</p>	
<p>(1) Green Complete Streets. Green Complete Streets are streets that safely accommodate all users of the right-of-way, including pedestrians, people requiring mobility aids, bicyclists and drivers and passengers of transit vehicles, trucks, automobiles and motorcycles, while at the same time incorporating best management practices for addressing stormwater runoff.</p>	
<p>Examples of green complete street design features that contribute to a safe, convenient, or</p>	

comfortable travel experience for users, include but are not limited to incorporating a combination of treatments such as: sidewalk; shared use paths; bicycle facilities; automobile lanes; paved shoulders; street trees and landscaping; planting strips; curbs; accessible curb ramps; bulb outs; crosswalks; refuge islands; pedestrian and traffic signals, including countdown and accessible signals; signage; street furniture; bicycle parking facilities; public transportation stops and facilities; transit priority signalization; traffic calming devices such as rotary circles, traffic bumps, and surface treatments such as paving blocks, textured asphalt, and concrete; narrow vehicle lanes; raised medians; and dedicated transit lanes, as well as stormwater and native vegetation features such as curb cuts to vegetation and permeable pavements, and those features identified in the City of La Crosse Bicycle/Pedestrian Master Plan.

(2) Corridor. Any right of way, public or private, including arterials, connectors, alleys, ways, lanes, and roadways by any other designation, as well as bridges, tunnels, and any other portions of the transportation network.

(3) Projects. The Construction, reconstruction, retrofit, alteration, or repair of any corridor, including the planning, design, approval, and implementation processes, but does not include minor routine upkeep such as cleaning, sweeping, mowing, spot repair, or interim measures on detour routes.

(4) Users. People of all ages and abilities that use corridors, including pedestrians, bicyclists, motor vehicle drivers, public transportation riders and drivers.

(D) REQUIREMENT OF INFRASTRUCTURE ENSURING SAFE TRAVEL

(1) The City Engineering Department, Street Department, Board of Public Works and Planning Department shall make Green Complete Streets practices a routine part of everyday operations and shall approach every transportation project and program as an opportunity to improve public and private corridors and the transportation network for all user groups, and shall work in coordination with other departments, agencies, and jurisdictions to achieve Green Complete Streets.

(2) Every corridor project on public or private property shall incorporate Green Complete Streets infrastructure sufficient to enable reasonable safe travel along and across the right of way for each category of use; provided, however, that such infrastructure may be excluded, upon written approval by the Board of Public Works where documentation and data indicate that:

- (a) Use by non-motorized users is prohibited by law;
- (b) The cost would be excessively disproportionate (greater than 20 percent) to the need or probable future use over the long term (stormwater and facilities for non-motorized users are weighted equally);
- (c) There is a demonstrable absence of current or future need;
- (d) Inclusion of such infrastructure would be unreasonable or inappropriate in light of the scope of the project, or because it would be contrary to public safety;
- (e) Loss of on-street parking shall not be considered a singular criterion for exclusion of a Green Complete Street Project.

Actions to Achieve Complete Streets

Including discussion of Planning, Design, Operations and Construction standards

Exceptions

BICYCLE AND PEDESTRIAN PLAN

- (f) Public transit facilities are not required on streets not serving as transit routes.
- (g) For repairs made pursuant to the pavement openings and restorations or to ordinary maintenance activities designed to keep assets in serviceable condition (e.g., mowing, cleaning, sweeping, spot repair and surface treatments such as chip seal, or interim measures on detour or haul routes;
- (h) Because freight is important to the basic economy of the City and has unique right-of-way needs to support that role, freight shall be the major priority on streets classified as truck routes. Green Complete Street improvements that are consistent with freight mobility but also support other modes shall be considered on these streets.
- (3) The City of La Crosse shall incorporate Green Complete Streets infrastructure into existing and future public and private streets to improve the safety and convenience of users, construct and enhance the transportation network for each category of users, and create employment.
- (4) If the safety and convenience of users can be improved within the scope of pavement resurfacing, restriping, or signalization operations on public or private streets, such projects shall implement Green Complete Streets infrastructure to increase safety for users.
- (5) Trainings in how to integrate, accommodate, and balance the needs of each category of users shall be provided for planners, civil and traffic engineers, project managers, plan reviewers, inspectors, and other personnel responsible for the design, construction, and maintenance of streets.

Exceptions (cont.)

- (E) DATA COLLECTION, STANDARDS, AND PUBLIC INPUT
- (1) The City of La Crosse shall collect data measuring how well the streets of The City of La Crosse are serving each category of users. Data may include latent demand, existing levels of service for different modes of transport and users, collision statistics, bicycle and pedestrian injuries and fatalities, or others.
- (2) The City of La Crosse shall put into place performance standards with measurable benchmarks reflecting the ability of users to travel in safety and comfort. Performance standards may include transportation mode shift, miles of new bicycle facilities or sidewalks, percentage of streets with tree canopy and low design speeds, public participation, or others.
- (3) The City of La Crosse shall establish procedures to allow full public participation in policy decisions and transparency in individual determinations concerning the design and use of streets.
- (4) The City of La Crosse shall incorporate Green Complete Street principles into all appropriate plans, zoning and subdivision codes, laws, manuals, rules, regulations and programs as appropriate; including Confluence The La Crosse Comprehensive Plan and the Bicycle/Pedestrian Master Plan; to integrate, accommodate, and balance the needs of all users on public and private streets.

Process and Assessment

Proposed Complete Street Policies for the City of Whitewater

To achieve a roadway network that is safe, comfortable, and attractive for all users, the City of Whitewater should adopt a complete streets policy that is consistent with Trans-75 and considers the following topics:

- | | | |
|--|--|--|
| <ul style="list-style-type: none"> • Planning • Design • Construction | | <ul style="list-style-type: none"> • Operations • Exceptions |
|--|--|--|

Action items listed below can form the basis for either a formally adopted policy, or an informal action plan.

Planning

1. Regularly discuss current roadway projects to provide seamless transitions between existing facilities.
2. Adopt a green transportation hierarchy as a common basis for transportation planning.
3. Review and provide comment on the Transportation Plans of Jefferson and Walworth Counties
4. Coordinate trail development with Jefferson and Walworth Counties to prioritize trail segments that provide connectivity to the regional system.

Design

1. When appropriate, consider roadway design that slows motor vehicles and/or limits access so as to provide greater safety for cyclists, pedestrians, and motorists (e.g. lane narrowing or the reduction of lanes; reduction of access etc.).
2. Adopt consistent design principles for cyclists and pedestrians as recommended in this Plan and other Statewide planning documents.
3. Evaluate existing and potential on-road bicycle use in all repaving and re-striping projects (i.e. striping of bicycle lanes, wide curb lanes, paving of roadway shoulders or widening of curb lanes) as well as new roadway construction and reconstruction projects.
4. Evaluate the effectiveness of narrowing pedestrian crossing distances at intersections where high motor vehicle counts and high pedestrian counts are expected.
5. Provide appropriate bicycle accommodation on and along all highway, arterial and collector streets.
6. Maintain the function of existing freight corridors, but evaluate design treatments to improve function of the corridor for cyclists and pedestrians.
7. Provide pedestrian accommodation in the form of sidewalks or shared-use paths adjacent to all arterial, highway and collector streets.
8. Develop a complete streets checklist to guide the development of individual transportation projects.¹²

Construction

1. Provide alternate routes for cyclists and pedestrians during construction, reconstruction, and repair of streets.
2. Develop standards to maintain pedestrian and cyclist access during construction activities.

Operations

¹² A sample checklist from the Metropolitan Transportation Commission in the San Francisco, CA area can be found here: http://www.mtc.ca.gov/planning/bicyclespedestrians/Routine_Accommodation_checklist_FINAL.pdf

BICYCLE AND PEDESTRIAN PLAN

1. Time traffic signals to provide adequate/comfortable pedestrian and cyclist crossing time.
2. In pedestrian areas, provide audible and countdown signal heads. Consider exclusive pedestrian timing or leading pedestrian intervals where appropriate.
3. Provide bicycle signal detection at all actuated signals along bikeways and major roads typically used as cycling routes.
4. Develop a coordinated maintenance schedule or program to address bikeway, sidewalk, and shared use path maintenance needs.
5. Establish performance metrics to track the implementation of this policy. These metrics should be consistent with or included in the Policy, Vision, Goals, Objectives and Benchmarks and could include:
 - a. Miles of bikeways, shared use paths, and sidewalks in relation to miles of roadway
 - b. Reduced collisions involving people who ride bikes or pedestrians
 - c. Improvements to air quality
 - d. Reduced transportation system maintenance costs
 - e. Increased numbers of people walking and riding bicycles (counted annually)
 - f. Increased percentage of traffic signals with countdown signalization and/or bicycle detection

Exceptions

Not every street can be ideal for every traveler. However, it is still important to provide basic, safe, and direct access for users regardless of the design strategy used.

Exceptions to the complete streets policy should be made by the mayor or other transportation authority where:

1. A suitable or more desirable alternative is available within a reasonable distance based on public and staff input or criteria defined in Trans-75.
2. The cost of accommodation would be excessively disproportionate to the need or probable use as defined by Trans-75.



6 Recommended Programs

The infrastructure recommendations in the Plan provide safer, more comfortable places for further growth in bicycling and trail use. While improving infrastructure is critical to increasing walking and bicycling rates, the importance of non-infrastructure strategies should not be underestimated. This chapter contains recommendations for education, encouragement, enforcement, and evaluation programs that should be pursued in conjunction with infrastructure investments.

Safe Routes to School (SRTS) Program

A SRTS program in Whitewater should address all "Five E's": Engineering, Education, Encouragement, Enforcement, and Evaluation. Several potential partners are already working on or have expressed willingness to address one or more of the E's. The Working for Whitewater's Wellness (W3) organization, a community-based coalition of healthcare, school systems and municipalities within the community, is the right forum for determining the correct next step in light of the organization's mission and membership, especially since the school district is already a partner. The City will take leadership in the Engineering component of SRTS by pursuing funding for school-specific infrastructure recommendations that emerge from this Plan; the School District will actively support this effort. The City should further support the School District as they develop leadership around the remaining 4 E's together. The School District should assign high-level leadership to this effort and plan to support the program on a site-specific level as the program may begin locally with interested parents and teachers rather than the district level. W3 can provide additional support, particularly in the health and encouragement components. Potential first steps include promoting walking school buses and park-and-walk routes and implementing infrastructure recommendations at LINCS Middle School and Washington Elementary School.



Figure 6-1. Walking schoolbuses are an effective programmatic component of SRTS programs.

Whitewater Biking Map

This biking map, which was created as part of this Plan, should be oriented at residents (rather than planners), and should show both biking routes as well as destinations. The City will print and distribute copies of the map, but online distribution will be an important way to extend the reach of the product, including exploring the option of offering it for use on mobile devices. There would be great benefit in having the City partner with the University to print and distribute additional copies of the map as part of university orientation, as well as at other community events. Other potential partners for printing and distribution include the Whitewater Tourism Council, the Whitewater Area Chamber of Commerce, and Downtown Whitewater, Inc.

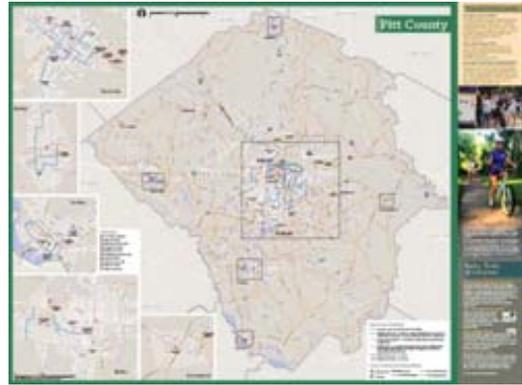


Figure 6-2. Sample biking map

UW-Whitewater New Student Orientation

Incoming students (at least freshmen, but preferably all students annually) should receive the walking/biking map and a list of existing community resources, rides, and classes (e.g. Everyone's Biking Group, Lady Flyer's Biking Group, and volunteer opportunities). In addition, workshops and clinics could be offered, such as Bike Commuting 101, flat tire and basic maintenance clinics, or women's biking classes.

Crosswalk Enforcement Actions and Speeding Enforcement Campaigns

The goal of these campaigns is to reduce vehicle speeding, increase yielding to pedestrians by both drivers and cyclists, and reduce jaywalking. These campaigns should be organized to garner maximum media attention (e.g. a "Santa sting" in costume during December) and should focus on the beginning of the school year and the end of daylight savings. Main/Old Hwy 12 south of campus should be one priority corridor for these campaigns. For campaigns specific to school traffic safety, state Safe Routes to School grants may be able to fund police overtime for the purposes of enforcement activities.

Bicycle/Pedestrian Counts

The City should identify key locations for bicycling and walking, and organize consistent annual counts at these locations. The counts should follow the National Bicycle and Pedestrian Documentation Project guidelines, and could be manual counts (supported by W3 and local volunteers), automated counts, or a combination of the two. A volunteer training should be coordinated with a professional who is familiar with count procedure (Figure 6-3).



Figure 6-3. Volunteers can be trained to assist with annual bicycle and pedestrian counts.

Pedestrian and Bicycle Advisory Committee (PBAC)

It is recommended that the City formalize the current Plan advisory committee as a standing quarterly or bimonthly committee that advises the City on walking and bicycling issues (Figure 6-4). If a City bicycle/pedestrian coordinator is identified, that person should be the staff liaison to the PBAC.



Figure 6-4. Ongoing community input and support is critical for Plan implementation.

Bicycle/Pedestrian Coordinator

Identify a single staff person at the City who is the community liaison for answering walking/bicycling questions, working with W3 and other community organizations, and coordinating Plan implementation.

Professional Development Courses for Engineers and Planners

The City should continue to allow staff to participate in Wisconsin Active Communities Action Institute trainings, and other webinars and on-site trainings (such as webinars offered by the Association of Pedestrian and Bicycle Professionals). These opportunities can support City staff by imparting technical expertise on pedestrian and bicycle infrastructure issues.

Annual Report Card

The City should publish an annual report summarizing accomplishments (both infrastructure and programs), partnerships, and count results. This report should be co-authored by the PBAC and reviewed by W3 for presentation by the Bicycle/Pedestrian Coordinator to the City Council. The goal is to celebrate accomplishments and raise the overall profile of bicycling and walking efforts in the community (Figure 6-5).



Figure 6-5. Tracking Plan implementation progress is useful for the community, staff and visitors alike.

Walk & Bicycle Friendly Community Designation

The City, assisted by W3, should apply for both Bicycle Friendly Community (BFC) and Walk-Friendly Community (WFC) designations, and celebrate the awards with media outreach and a public event (e.g. group ride or walk) when they are received. The application process is involved but very valuable. To reduce the impact on City staff, it is recommended that BFC and WFC applications be completed during different years, and supported by partners from W3.

Bike/Pedestrian Resources Website

BICYCLE AND PEDESTRIAN PLAN

The City website should include all official planning documents and reports related to bicycling and walking in Whitewater, including the adopted Plan, any updates about implementation of the Plan, media releases (e.g. about crosswalk enforcement actions), bike/ped counts, the annual report card, and PBAC agendas/minutes. In addition, the City website should include any bicycle and pedestrian events in the community as well as the network map. There should be coordination between the City website and the W3 website and events calendar to reduce duplication of effort.

Open Streets Event

Open Street Events (also called Summer Streets, Ciclovias, or Play Streets) are periodic street closures (usually on Sundays) that create a park-like experience on the street, encouraging walking, bicycling, dancing, hula hooping, roller skating, and more. The purpose of the event is to promote walking and biking to the general public by providing a car-free street event, an especially effective strategy in neighborhoods without close access to parks. The city should partner with W3 and interested downtown businesses to identify the appropriate roadway corridor and time of year for an open street event. W3 can take the lead on coordination with support from city staff.



7 Implementation

The Whitewater Bicycle and Pedestrian Plan is a 20-year plan that city residents and decision makers can use to guide Whitewater's progress towards becoming a great place to walk and bike. This chapter highlights short-term infrastructure recommendations and associated costs, discusses programmatic actions that should be implemented first and provides a suggested timeframe for various actions recommended in previous chapters. Table 7-1 provides a summary of key recommended Plan actions and priority projects, along with implementation timeframes, and notes about likely implementing agencies.

Table 7-1: Recommended Programs and Projects Implementation Summary

Task	Short (0 - 4Years)	Medium (5- 10 Years)	Long (10+ Years)	Implementers
Encouragement Program Recommendations				
Safe Routes To School (SRTS) Program	Year 2 - 3			W3, Whitewater, School District
Whitewater Walking and Biking Map	Year 1			Whitewater
University New Student Orientation	Year 1			W3, UW-Wisconsin Staff
Crosswalk Enforcement Actions and Speeding Enforcement Campaigns	Year 1			Whitewater Police Department
Bicycle/Pedestrian Counts	Year 2 - 3			W3, Whitewater
Bicycle/Pedestrian Coordinator	Year 1			Whitewater
Pedestrian and Bicycle Advisory Committee (PBAC)	Year 1			Whitewater
Professional Development Courses for Engineers and Planners	Year 2 - 3			Whitewater
Annual Report Card	Year 1			Whitewater, W3, BPAC
Walk & Bicycle Friendly Community Designation		X	X	Whitewater, BPAC
Bike/Ped Resources Website	Year 2 - 3			Whitewater, W3, BPAC
Open Streets Event	Year 4			W3, Whitewater
Priority Project Recommendations				
W Main Street Traffic Safety Project	X			Whitewater, WisDOT
Safe Routes to School Projects	X			Various

Task	Short (0 - 4Years)	Medium (5- 10 Years)	Long (10+ Years)	Implementers
South Franklin Street and South Janesville Street	X	X		Whitewater, Walworth County
East Gateway Intersection			X	Whitewater , WisDOT

Infrastructure Project Prioritization

The Whitewater Bicycle and Pedestrian plan provides a comprehensive set of trail and on-street infrastructure recommendations that Whitewater and other project partners can implement, allowing residents and visitors alike to walk and bike more safely and comfortably. The order in which projects in this plan are constructed will depend on many factors including budget and grant availability, community support and various city policies.

While all projects represent important steps for improving Whitewater’s cycling environment, prioritizing projects will allow the City to program limited financial and staff resources in the most strategic fashion. Projects were scored based on the criteria shown in Table 7-2. Points were assigned and then scores for each criterion were weighted, based on input from the steering committee. The outcome of this exercise was then refined based on known existing opportunities (e.g., projects already programmed in the CIP plan) into a coherent, connected cycling network that will grow over time.

Table 7-2: Bicycle Facility Prioritization Criteria

Steering Committee Ranking*	Criterion	Description	Scoring Definitions
1	System Connectivity	To what degree does the project fill a missing gap in the bicycle system?	Projects will receive five points if they fill a gap of less than one-quarter mile and 3 points for gap measuring between one-quarter and one-half mile.
2	Safety and Comfort	How well can the project potentially improve bicycling on routes that will likely be used by children and the elderly,	Projects within one-quarter mile of a school receive 5 points; projects within one-half mile of a school receive 2 points.
3	Provides Access to Community Destinations	Score each project based on its proximity to commercial areas, parks and civic areas. Projects receive a higher score if they are located closer to community destinations.	Projects within one-half mile of a park, school or commercial area receive 5 points; projects within one mile receive 3 points.
4	Roadway Function	Does the street become more complete with a dedicated bicycle facility? Projects are scored based on roadway types. Projects on arterials score higher than projects on local roadways.	Projects will receive 5 points if they are located on state or county highway, 3 points if they are located on a local roadway and 1 point if they are a pathway.

The proposed bikeway system is comprised of about 80 projects which have been organized into three tiers representing the relative project priority and a suggested construction timeframe:

- Short Term (0 – 5 Years)
- Medium Term (5 – 10 Years)
- Long Term (More than 10 Years)

Project prioritization is shown on Map 7-1 through 7-4 and described in Table 7-3: Recommended Bikeway Project Phasing. The City should regularly revisit the project list to schedule near term projects, as there are many factors that can and should affect project implementation, including:

- Any changes to existing grant programs, or creation of new grant or funding programs that affect the type or number of large-budget projects that can be implemented
- Any changes in City policy that could affect how local, state or federal funds can be spent
- Changes to zoning and land use that will affect where and how development occurs in Whitewater
- Changes to staff capacity to manage project implementation
- Community input (e.g., through the Bicycle Advisory Committee)
- Directives (policy or otherwise) from elected officials and other governing bodies
- Interest from partners (i.e., University of Wisconsin Whitewater) in implementing projects that are partially or entirely within their jurisdiction

Table 7-3: Recommended Bikeway Project Phasing

Name	From	To	Facility Type	Length (Mi.)	Priority
STH 89	Willis Ray Rd	STH 12	Bike Lane	0.22	Short
E Cty Line Rd	W Main St	Indian Mound Pkwy	Bike Lane	0.04	Short
Elkhorn Rd	STH 12	STH 12	Bike Lane	0.94	Short
E Main St	W Main St	N Newcomb St	Bike Lane	0.62	Short
E Milwaukee St	S Wisconsin St	E Main St	Bike Lane	0.04	Short
E Milwaukee St	S Esterly St	S Newcomb St	Bike Lane	0.09	Short
N Newcomb St	E Milwaukee St	E Executive Dr	Bike Lane	0.62	Short
W North St	S Franklin St	N Jefferson St	Bike Lane	0.46	Short
S Elizabeth St	S Elizabeth St	W Main St	Bike Lane	0.76	Short
S Wisconsin St	Willis Ray Rd	E Milwaukee St	Bike Lane	1.16	Short
W Main St	Indian Mound Pkwy	S Prince St	Bike Lane	0.71	Short
W Main St	S Prince St	S Franklin St	Bike Lane	0.48	Short
W Walworth St	Indian Mound Pkwy	S Prince St	Bike Lane	0.83	Short
W Whitewater St	S Franklin St	S Fourth St	Bike Lane	0.20	Short
S Dann St	E Clay St	E Main St	Neighborhood Greenway	0.18	Short
W Highland St	S Elizabeth St	S Summit St	Neighborhood Greenway	0.54	Short
N Franklin St	W Main St	W Starin St	Neighborhood Greenway	0.34	Short

BICYCLE AND PEDESTRIAN PLAN

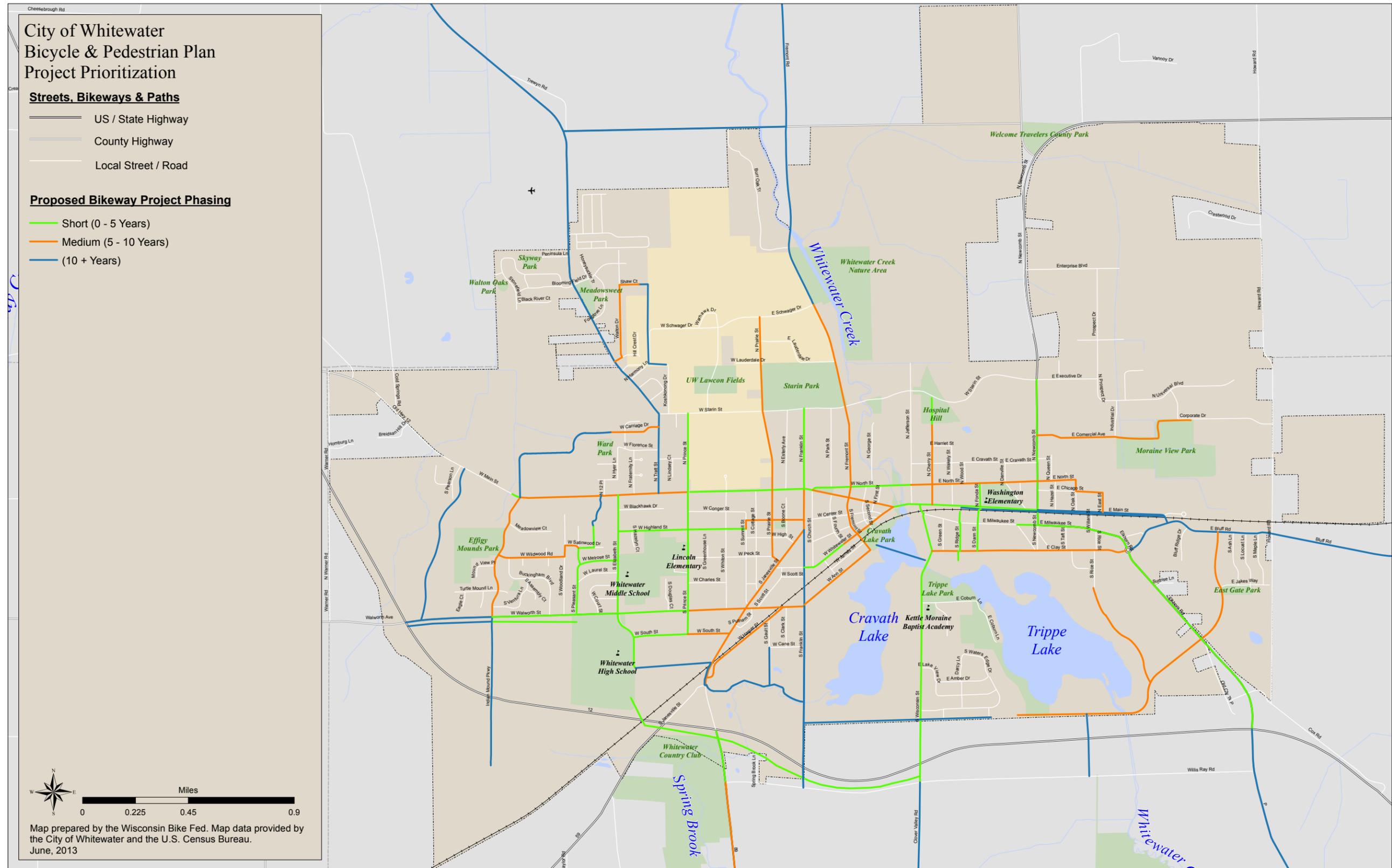
Name	From	To	Facility Type	Length (Mi.)	Priority
S Ridge St	E Clay St	E Main St	Neighborhood Greenway	0.17	Short
S Pleasant St	W Walworth St	S Ardmore Dr	Neighborhood Greenway	0.45	Short
S Prince St	W South St	W Starin St	Neighborhood Greenway	0.94	Short
W South St	S Elizabeth St	Proposed MUP	Neighborhood Greenway	0.11	Short
W Laurel St	S Pleasant St	S Elizabeth St	Neighborhood Greenway	0.18	Short
Proposed MUP	W South St	S Prince St	Off Street Trail	0.12	Short
West Walworth	Indian Mound Pkwy	High school MUP	Off Street Trail	0.36	Short
Proposed MUP	Existing MUP	E Clay Street	Off Street Trail	0.04	Short
Hospital Hill Trail Extension	N Cherry St	Existing MUP	Off Street Trail	0.11	Short
N Fonda St	E Main St	E North St	Shared Lane Marking	0.10	Short
E Milwaukee St	N Newcomb St	E Bluff Rd	Bike Lane	0.41	Medium
Indian Mound Pkwy	W Walworth St	W Main St	Bike Lane	0.54	Medium
N Fremont St	W North St	E Schwager Dr	Bike Lane	0.80	Medium
N Prairie St	W Main St	E Schwager Dr	Bike Lane	0.74	Medium
S Franklin St	S Janesville St	W Main St	Bike Lane	0.96	Medium
W Walworth St	S Prince St	S Franklin St	Bike Lane	0.50	Medium
W Center St	S Franklin St	S Summit St	Neighborhood Greenway	0.25	Medium
E Clay St	S Wisconsin St	Elkhorn Rd	Neighborhood Greenway	0.83	Medium
N Cherry St	E Main St	N Cherry St	Neighborhood Greenway	0.34	Medium
N Oak St	E North St	E Chicago Ave	Neighborhood Greenway	0.41	Medium
W Peck St	S Prairie St	S Janesville St	Neighborhood Greenway	0.04	Medium
S Moraine View Pkwy	E Jakes Way	E Bluff Rd	Neighborhood Greenway	0.24	Medium
S Prairie St	W Peck St	W Main St	Neighborhood Greenway	0.28	Medium
W South St	S Janesville St	S Prince St	Neighborhood Greenway	0.18	Medium
W Summit St	W Highland St	W Center St	Neighborhood Greenway	0.04	Medium
W Ann St	S Franklin St	W Whitewater St	Neighborhood Greenway	0.45	Medium
W Harper St	S Janesville St	W Walworth St	Neighborhood Greenway	0.46	Medium
W Wildwood Rd	Indian Mound Pkwy	S Pleasant St	Neighborhood Greenway	0.39	Medium
Walton Dr	CTH N	Shaw Ct	Neighborhood Greenway	0.43	Medium
Proposed MUP	Industrial Dr	Corporate Dr	Off Street Trail	0.39	Medium

Name	From	To	Facility Type	Length (Mi.)	Priority
STH 89	Willis Ray Rd	Willis Ray Rd	Regional Connection	0.44	Medium
E Commercial Ave	N Newcomb St	Industrial Dr	Shared Lane Marking	0.33	Medium
E North St	N Jefferson St	N Newcomb St	Shared Lane Marking	0.54	Medium
S Fremont St	W Whitewater St	W North St	Shared Lane Marking	0.21	Medium
W Carriage Dr	W Carriage Dr	N Tratt St	Shared Lane Marking	0.21	Medium
W Main St	W Main St	E Main St	Shared Lane Marking	0.35	Medium
Whitewater	Fourth	Main	Shared Lane Marking	0.27	Medium
Proposed MUP	Proposed MUP	S Rice St	Off Street Trail	0.48	Medium
Proposed MUP	Existing MUP	S Moraine View Pkwy	Off Street Trail	1.19	Medium
CTH N	W Main St	Bloomington Dr	Bike Lane	1.00	Long
CTH N	Bloomington Dr	E Schwager Dr	Bike Lane	2.39	Long
E Bluff Rd	Elkhorn Rd	Howard Rd	Bike Lane	0.66	Long
E Main St	N Newcomb St	E Bluff Rd	Bike Lane	0.57	Long
Indian Mound Pkwy	Indian Mound Pkwy	W Walworth St	Bike Lane	0.63	Long
W Walworth St	STH 12	Indian Mound Pkwy	Bike Lane	0.37	Long
S Franklin St	Willis Ray Rd	S Janesville St	Neighborhood Greenway	1.09	Long
Proposed MUP	N Tratt Rd	Existing MUP	Off Street Trail	0.74	Long
Proposed MUP spur	Existing MUP	S Gault Street	Off Street Trail	0.16	Long
Proposed MUP	West Walworth	West Main	Off Street Trail	0.68	Long
Proposed MUP	West Main St	West Carriage Dr	Off Street Trail	0.62	Long
Proposed MUP	South Ardmore Drive	St Patrick's Church Property	Off Street Trail	0.07	Long
Proposed MUP	S Elizabeth St	S Franklin St	Off Street Trail	0.90	Long
Proposed MUP	South Franklin	Existing MUP	Off Street Trail	0.80	Long
Proposed Trail with Rail	S Ridge St	East Main end	Off Street Trail	0.86	Long
Proposed MUP	Shaw Court	Koshkonong Dr	Off Street Trail	0.45	Long
Proposed MUP	STH 12	Indian Mound Pkwy	Off Street Trail	0.36	Long
Proposed MUP	Proposed MUP with underpass	Willis Ray Rd	Off Street Trail	0.26	Long
Proposed MUP	Existing MUP	S Wisconsin St	Off Street Trail	1.36	Long
Bluff Rd	Howard Rd	Regional destination	Regional Connection	0.59	Long
Clover Valley Rd	Willis Ray Rd	Regional destination	Regional Connection	0.38	Long
CTH N	CTH U	Regional destination	Regional Connection	0.86	Long

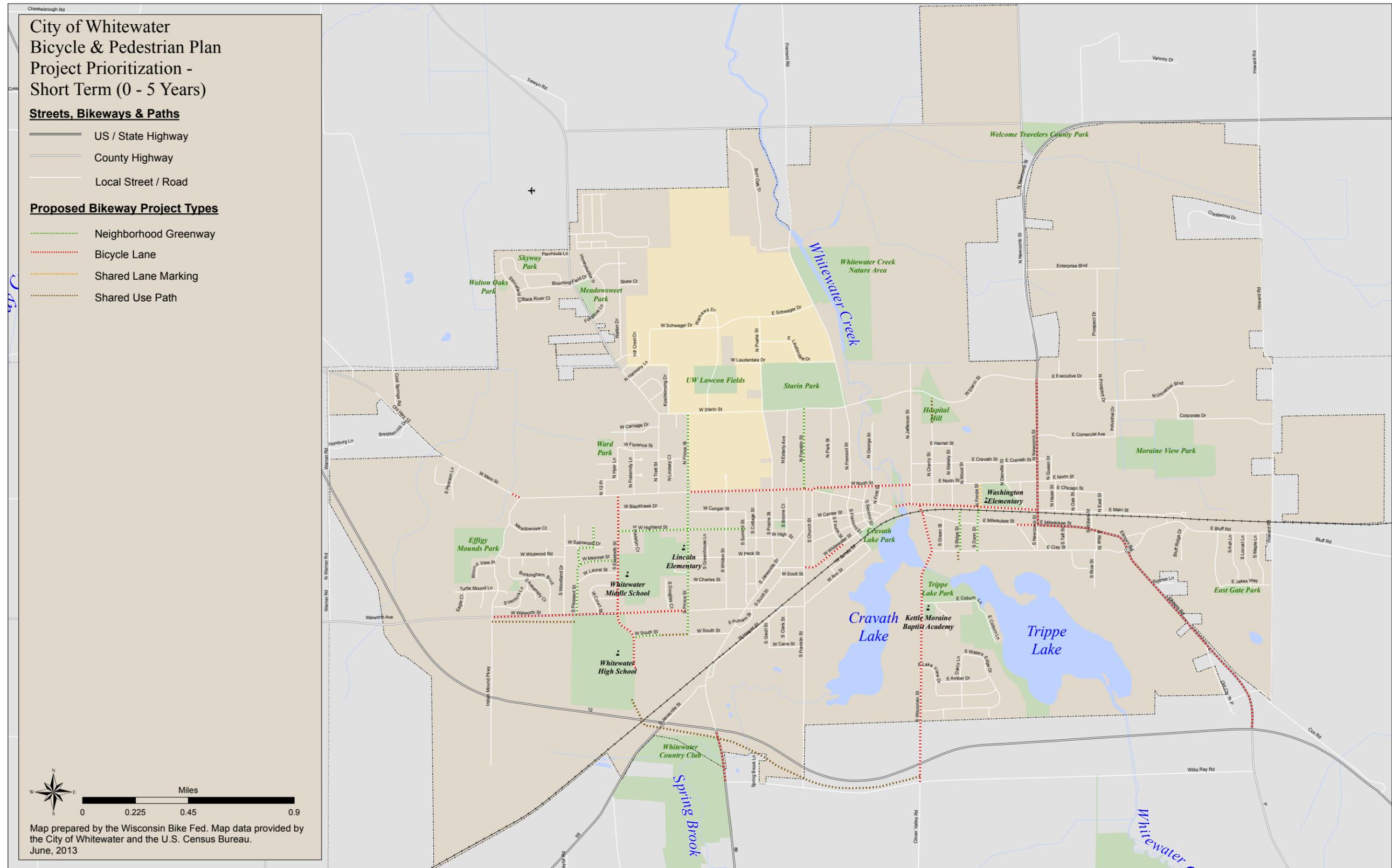
BICYCLE AND PEDESTRIAN PLAN

Name	From	To	Facility Type	Length (Mi.)	Priority
S Franklin St	W Walworth St	Regional destination	Regional Connection	0.77	Long
Freemont Rd	CTH U	Regional destination	Regional Connection	0.56	Long
CTH P	STH 12	Regional destination	Regional Connection	0.62	Long

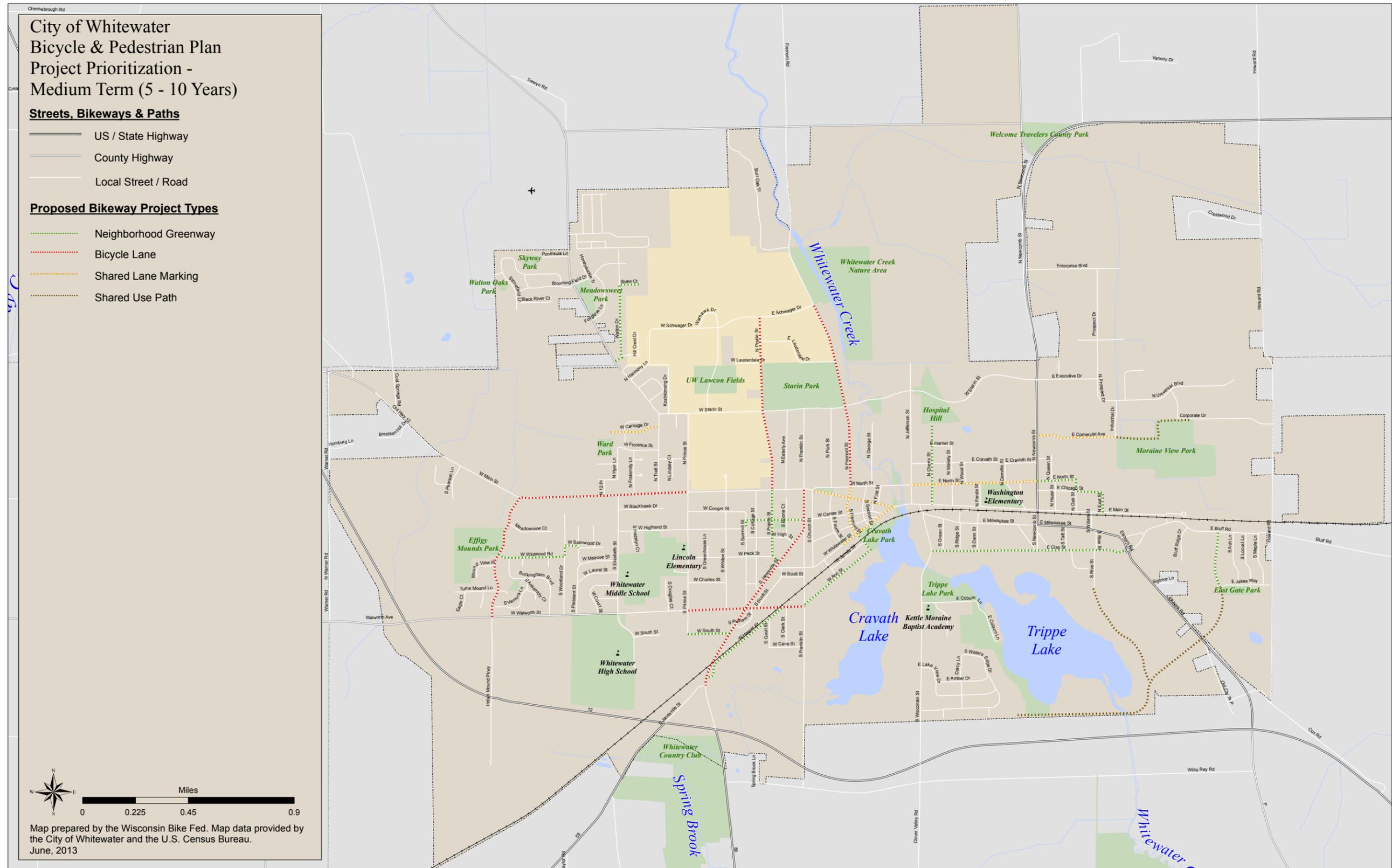
Map 7-1: Project Prioritization: Overview



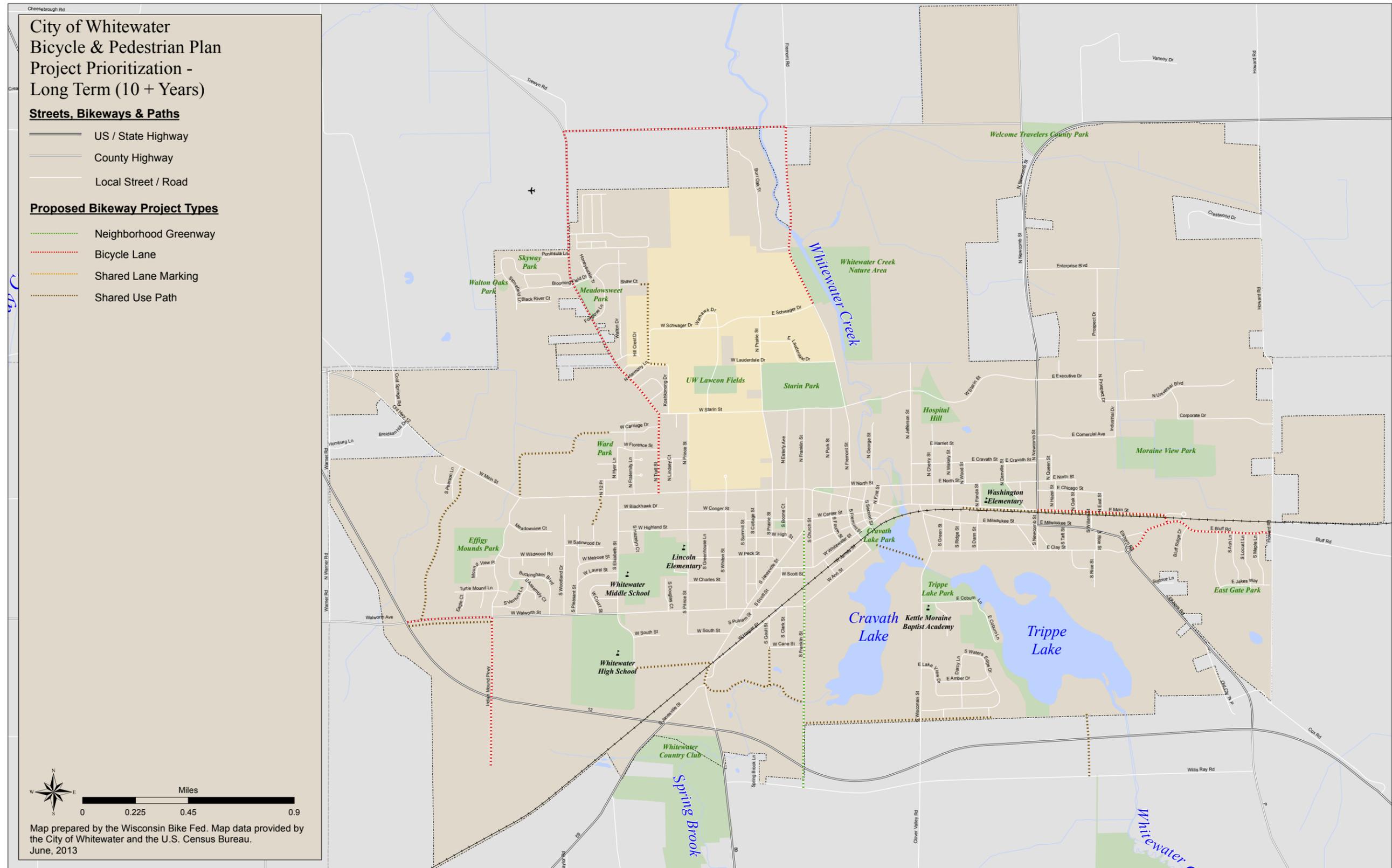
Map 7-2: Project Prioritization: Short Term (0 – 5 Years)



Map 7-3: Project Prioritization: Medium Term (5 – 10 Years)



Map 7-4: Project Prioritization: Long Term (More than 10 Years)

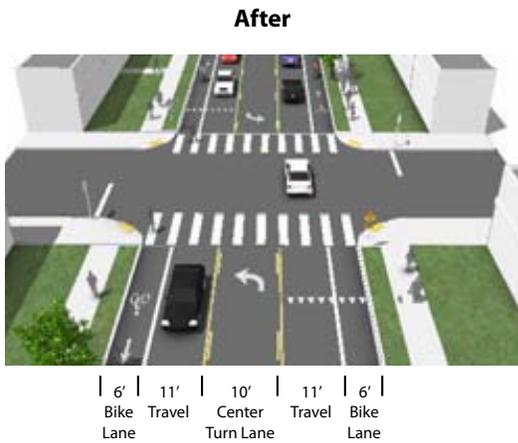


Priority Project Sheets

The following pages provide project description sheets with specific recommendations and maps for three high priority projects, which represent the first stage of Plan implementation. Specific recommendations were based on field visits, high-resolution aerial photos, and discussions with local and regional planning staff and system users. Each map depicts the recommended bikeway or trail under focus, as well as selected nearby connections. Please refer to the larger system maps for each project's context within the overall surrounding bikeway and trail networks.

Appendix F: West Main Street Safety Project provides a more detailed description and needs analysis for improvements on West Main Street, including detailed planning level cost estimates.

Roadway Reconfiguration Cross Section Dimensions:



Description:

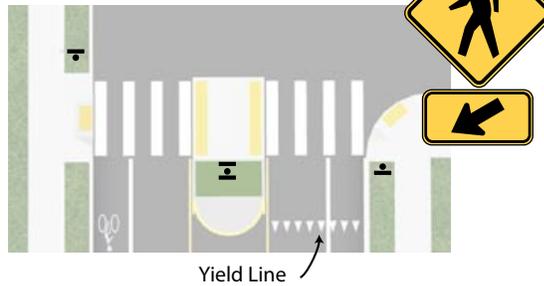
The West Main Street Traffic Safety Project proposes a series of related roadway improvements to reduce excessive speeding, promote smooth traffic flow, and increase safety and mobility for non-motorized transportation. This project proposes the following:

- **Roadway reconfiguration**
Going from 4 lanes to 3 lanes to provide a two-way center turn lane provides dedicated space for turning vehicles, encourages consistent through travel speed and removes the “double threat” at pedestrian crossings.
- **New bicycle lanes**
- **One new mid block pedestrian crossing**
- **Two new median refuge islands**
Median Refuge islands enhance new and existing unsignalized marked pedestrian crossings
- **High Visibility Striping**
Black backing striping will be used to increase the contrast and visibility of roadway markings.

Planning Level Cost Opinion: \$242,000

Typical Signing at Median Refuge Island Crossing:

W11-2,
W16-7p



Pedestrian Crossing Enhancement Locations:

New midblock crossing and median Island on west side of crossing

Relocate crossing to west side of intersection, add median refuge island

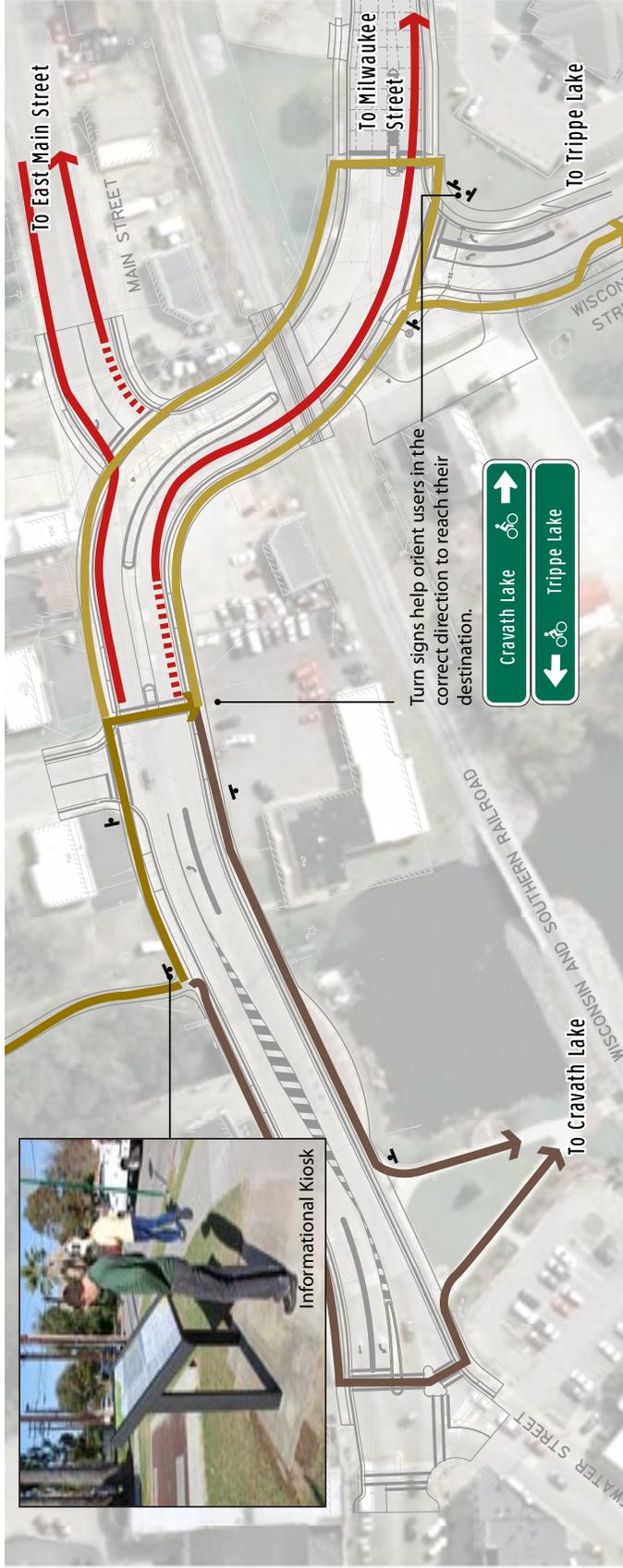
Median refuge island on west side of crossing



Project Sheet: West Main Street Traffic Safety Project

City of Whitewater
Whitewater Bicycle and Pedestrian Plan
Source: Bing Maps
Author: NF
Date: February 2013





Informational Signs: Clear wayfinding and informational signs should direct users onto and off of the path where it joins Main Street. There are many potential routings bicyclists may use to reach destinations, and an informational sign including a map may help users identify the most appropriate route to their destination. Likely routes to the two lakes are described below:

To Cravath Lake: Path users should travel east toward the intersection with Jefferson Street; cross on the marked crosswalk when safe and continue westbound along the south side of Main Street to connect with Cravath lake pathways. Alternatively, users may take the north-side sidewalks to cross at the intersection of Whitewater St.

To Trippe Lake: Path users should cross to the south side of Main Street at the Jefferson street marked crosswalk. Continue along Main street until it becomes Milwaukee Street. Head south on Wisconsin street to connect with the Trippe Lake pathways.

East Gateway Bicycle Circulation

City of Whitewater

Whitewater Bicycle and Pedestrian Plan

Source: Downtown East Gateway: Street Reconstruction Concept, City of Whitewater, 2013.

Author: NE

Date: June 2013

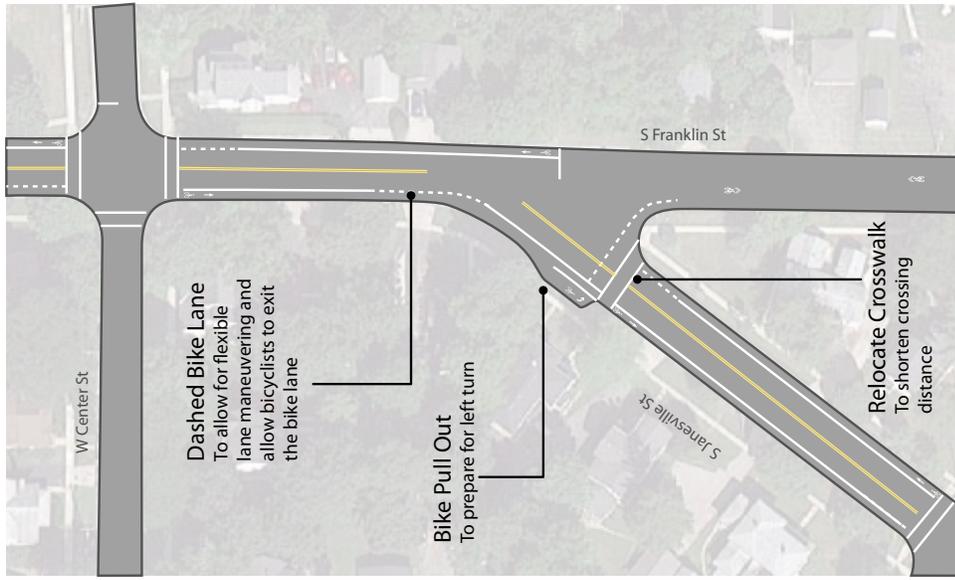
-  Shared-use Path/
Sidewalk Routes
-  Bike Lane Routes



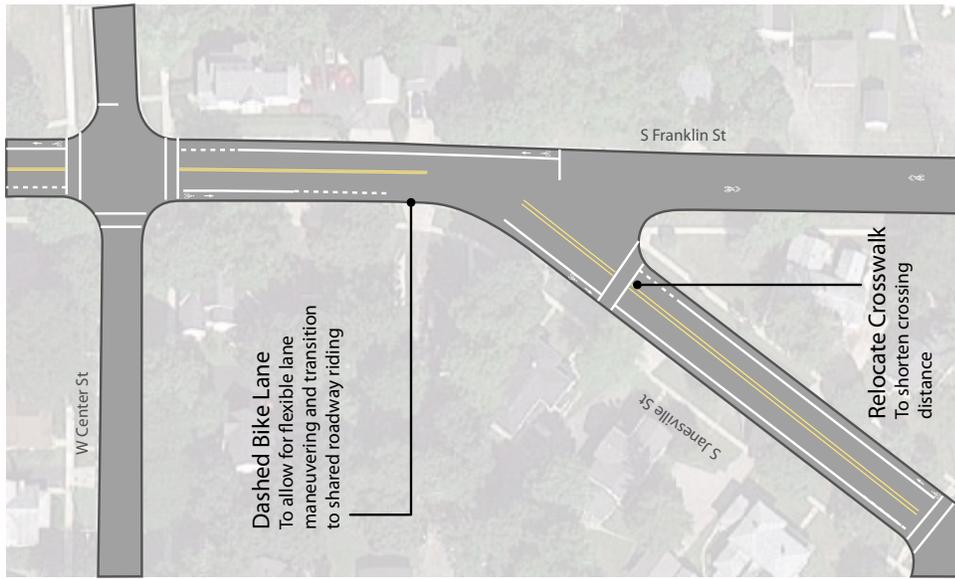
Description:

South Janesville Street intersects with South Franklin Street at an angle from the southwest. Most vehicles traveling south on South Franklin, take the easy right and continue south on South Janesville, most bicyclists however, will wish to cross South Janesville here, and continue south on South Franklin. This plan presents two options to make that movement more comfortable for the bicyclist. In either case, the bicyclist will need to look back at traffic coming from South Franklin, wait for a gap in traffic from behind, then continue south on South Franklin.

Option 2 - Two Stage Turn



Option 1 - Drop Bike Lane



Project Sheet: Intersection of South Franklin Street and South Janesville Street

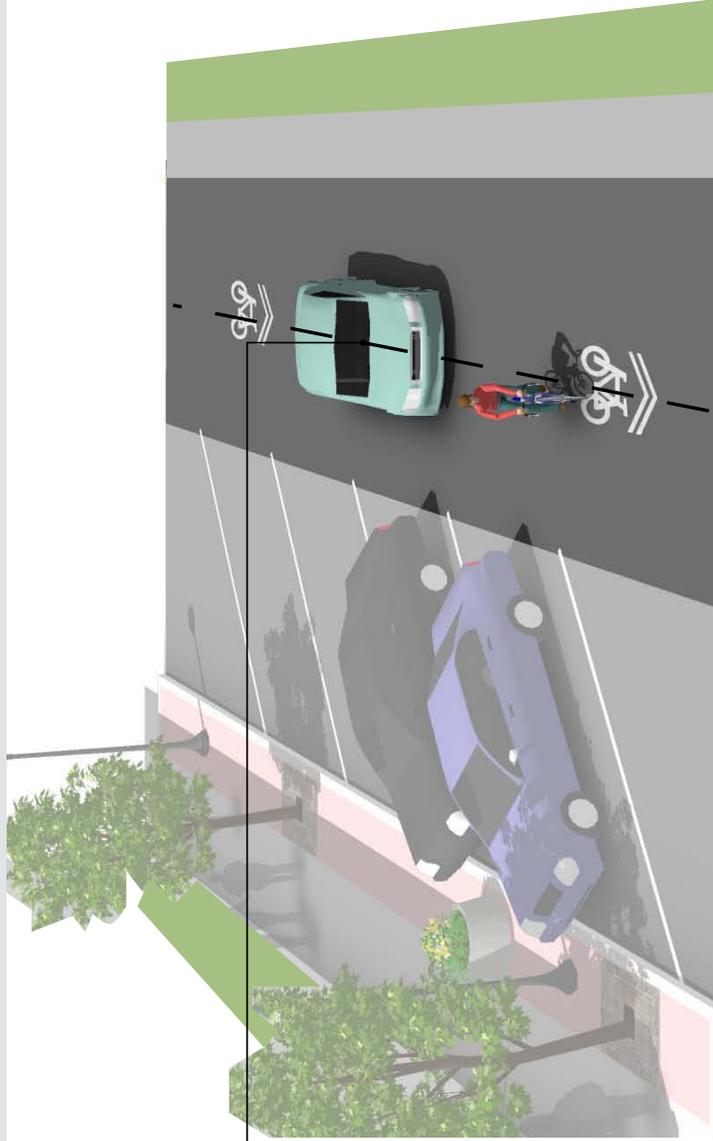
City of Whitewater
 Whitewater Bicycle and Pedestrian Plan
 Author: NF
 Date: December 2012



North Fonda Street is a narrow, one-way street with front-in angled parking. The best bicycle facility on this street is to provide a shared-roadway marked with Shared Lane Markings. This configuration differs from a neighborhood greenway due to a lack of traffic calming, wayfinding, and other enhancements designed to provide a higher level of comfort for a broad spectrum of users.

Conventional front-in diagonal parking is not compatible or recommended with the provision of bike lanes, as drivers backing out of conventional diagonal parking have limited visibility of approaching bicyclists. Under these conditions, shared lane markings should be used to guide bicyclists away from reversing automobiles.

Project Length: 0.1 mi
Short Term (0-10 Years)



Place Shared Lane Markings in the center of the roadway to encourage single-file operation.



North Fonda Shared Lane Markings (E Main St. to E. North St.)

City of Whitewater
 Whitewater Bicycle and Pedestrian Plan

Author: NF
 Date: June 2013



North Franklin St. is a local neighborhood street connecting W Main St. to Starin Park. The best bicycle facility to take advantage of the low-stress setting is a neighborhood greenway.

Neighborhood greenways are low-volume, low-speed streets modified to enhance bicyclist by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow through movements of bicyclists while discouraging similar through-trips by non-local motorized traffic.

Potential design features are illustrated below (not all will be appropriate for North Franklin St):

Project Length: .34 mi
Short Term (0-10 Years)



Signs and Pavement Markings identify the street as a bicycle priority route.

Enhanced Crossings use signals, beacons, and road geometry to increase safety at major intersections.

Partial Closures and other volume management tools limit the number of cars traveling on the bicycle boulevard.

Speed Humps manage driver speed.

Curb Extensions shorten pedestrian crossing distance.

Mini Traffic Circles slow drivers in advance of intersections.



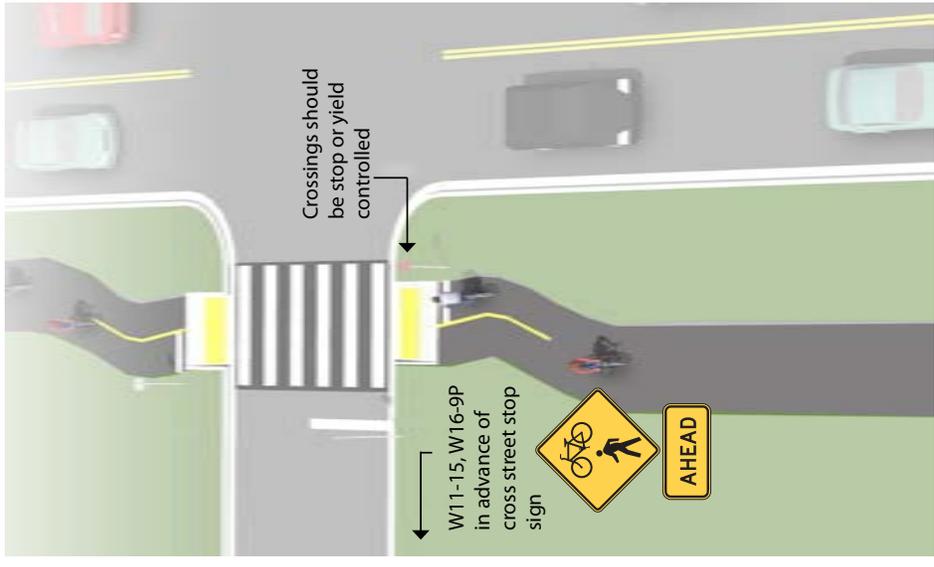
North Franklin Neighborhood Greenway (W Main St. to W Starin St.)

City of Whitewater
 Whitewater Bicycle and Pedestrian Plan



Author: NF
 Date: June 2013

Pay special attention to the entrance/exit of the path as bicyclists may continue to travel on the wrong side of the street.



West Walworth St is a fast street, and extra separation from moving vehicles may improve bicyclist comfort. With relatively no street crossings on the south side of the street, a two-way shared use path is an appropriate bicycle facility at this location. Shared-use paths allow for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users.

This path will connect to an existing path at Whitewater High School and a proposed bike lanes at Indian Mound Parkway.

Key features of shared use paths include:

- Access points from the local road network.
- Directional signs to direct users to and from the path.
- A limited number of at-grade crossings with streets or driveways.
- Terminating the path where it is easily accessible to and from the street system.

Project Length: .36 mi
Short Term (0-10 Years)



West Walworth Street Shared Use Path (Indian Mound Pkwy. to Whitewater High School)

City of Whitewater
Whitewater Bicycle and Pedestrian Plan

Author: NF
Date: June 2013



Cost Estimates

A project cost for each type of on-street bicycle and trail facility is shown in Table 7-4: Cost Assumptions. These cost opinions were developed based on initial planning-level examples of similarly constructed projects and industry averages. These costs are fully burdened estimates provided in 2012 dollars rounded to the nearest thousand and do not include costs for right-of-way acquisition, wayfinding signs or other site-specific costs.

Table 7-4: Cost Assumptions

Facility Type	Cost Per Mile	Annualized On-Going Costs*	Notes
Shared Lane Markings	\$20,000	\$7,000	Assumes SLM marking every 200' each direction, regulatory signage every 400' each direction. May reduce on-going costs by using thermoplastic markings.
Neighborhood Greenways	\$100,000	\$7,000	Assumes an "Average" treatment, including speed humps, median refuge islands, curb extensions and sidewalk curb ramps as needed along the corridor.
Bike Lane	\$36,000	\$29,000	Assumes striping removal and restriping. Bike lane markings every 800' in both directions. May reduce on-going costs by using thermoplastic markings.
Shared-Use Path	\$1,250,000	Varies***	Assumes 12' path. Estimates do not include ROW acquisition costs; costs for potentially required bridges or retaining walls; or costs for amenities including lighting, benches, bicycle parking, interpretive kiosks, etc.

*Costs include engineering (25%), contingency (15%), and design (20%) allowances.

**Annualized costs assume repainting stripes and pavement markings twice per year.

*** Asphalt paths typically require repaving every 7 – 15 years and concrete pathways every 25

Maintenance Costs

On-street bikeways and trails require regular maintenance and repair. On-street bikeways are typically maintained as part of standard roadway maintenance programs, and extra emphasis should be placed on keeping bike lanes and roadway shoulders clear of debris and keeping vegetation overgrowth from blocking visibility or creeping into the roadway.

Funding Sources

Acquiring funding for projects and programs is considerably more likely if it can be leveraged with a variety of local, state, federal and public and private sources. This section identifies potential matching and major funding sources available for bicycle and trail projects and programs. A detailed description of these funding programs is available in Appendix G: Funding Sources.

Moving Ahead for Progress in the Twenty-First Century (MAP-21)

The largest source of federal funding for bicycle and pedestrian projects is the United States Department of Transportation's (US DOT) Federal-Aid Highway Program, which Congress has reauthorized roughly every six years since the passage of the Federal-Aid Road Act of 1916. The latest act, Moving Ahead for Progress in the Twenty-First Century (MAP-21) was enacted in July 2012 as Public Law 112-141.

BICYCLE AND PEDESTRIAN PLAN

MAP-21 authorizes funding for federal surface transportation programs including highways and transit until September 2014. There are a number of programs identified within MAP-21 that are applicable to bicycle and pedestrian projects. These programs include:

- Transportation Alternatives (TAP)
 - Transportation Alternatives
 - Recreational Trails
 - Safe Routes to School
 - Planning, designing, or constructing roadways within the right-of-way of former Interstate routes or divided highways
- Surface Transportation Program (STP)
- Highway Safety Improvement Program (HSIP)
- Congestion Mitigation/Air Quality Program (CMAQ)
- New Freedom Initiative
- Pilot Transit-Oriented Development Planning

Other Federal Grant Programs

- Partnership for Sustainable Communities
- Community Development Block Grants
- Community Transformation Grants
- Land and Water Conservation Fund
- Rivers, Trails, and Conservation Assistance Program

The City of Whitewater should track federal communications and be prepared to respond proactively to announcements of grant availability.

State Funding Sources

The State of Wisconsin has historically funded bicycle and pedestrian projects above and beyond Federal Transportation Enhancement (TE) dollars through two State grant programs: the Bicycle and Pedestrian Funding Program (BFPF) and the Surface Transportation Program – Discretionary (STP-D). Funding levels and cycles for both programs has been somewhat sporadic since the early 1990s. In 2002 the Surface Transportation Program – Discretionary (STP-D) was dismantled, but the Bicycle and Pedestrian Funding Program (BFPF) still exists.

WisDOT Bicycle and Pedestrian Funding Program (BFPF)

The most recent funding cycle of the BFPF in 2010 provided more than half a million dollars for bicycle and pedestrian planning and design throughout the state. Funding through the program is competitive – a

committee ranks projects and makes funding recommendations to the Wisconsin Department of Transportation Secretary.

All BFPF funds have been awarded through FY 2014. Information on the next BFPF funding cycle will be posted on the WisDOT Bicycle and Pedestrian Facilities Program webpage in 2013: <http://www.dot.wisconsin.gov/localgov/aid/bike-ped-facilities.htm>.

State Recreation Grant Programs

The Wisconsin Department of Natural Resources administers several grant programs that may support bicycle and pedestrian facilities that provide a recreational benefit to the state. Grants are due on May 1st of each year. With the exception of the Recreational Trail Aids program, each program below is part of the Knowles-Nelson Stewardship Program, a fund created by the Wisconsin Legislature in 1989 to “preserve valuable natural areas and wildlife habitat, protect water quality and fisheries, and expand opportunities for outdoor recreation.”

- Acquisition & Development of Local Parks
- Friends of State Lands
- Habitat Area
- Recreational Trail Aids (RTA)
- State Trails
- Urban Green Space
- Urban Rivers

Private Foundations

Private foundations are an increasingly important source of funds for bicycle and pedestrian planning and implementation. For example, planners in Ozaukee County successfully secured a \$10,000 grant from the Bikes Belong Coalition and a \$25,000 grant from the Wisconsin Energy Corporation Foundation to partially fund the Ozaukee Interurban Trail.

To read a case study of the Ozaukee Interurban Trail, visit:

<http://www.bicyclinginfo.org/library/details.cfm?id=4154>

For more information on private foundations, including an extensive list of national foundations visit:

<http://www.foundationcenter.org/>

BICYCLE AND PEDESTRIAN PLAN

Table 7-5: Summary of Potential Funding Sources

		Planning Design and/or Construction				
Funding Program		On-Street Pedestrian Facilities	On-Street Bicycle Facilities	Off-Street Shared-Use Paths	Non-Infrastructure Programs	
Federal Sources	MAP-21	Transportation Alternatives (TAP)	✓	✓	✓	✓
		Recreational Trails Program (RTP)			✓	
		Safe Routes to School (SRTS)	✓	✓	✓	✓
		Surface Transportation Program (STP)	✓	✓	✓	
		Highway Safety Improvement Program (HSIP)	✓	✓	✓	✓
		Congestion Mitigation/Air Quality (CMAQ)	✓	✓	✓	✓
		New Freedom Initiative	✓		✓	✓
		Pilot Transit-Oriented Development (TOD)				
		Partnership for Sustainable Communities	✓	✓	✓	
		Community Development Block Grants (CDBG)	✓			✓
		Community Transformation Grants (CTG)	✓	✓	✓	✓
		Land and Water Conservation Fund (LWCF)			✓	✓
		Rivers, Trails, and Conservation Assistance (RTCA)			✓	
		State Sources	DNR	WisDOT Bicycle and Pedestrian Funding Program (BFPF)	✓	✓
Acquisition & Development of Local Parks					✓	
Friends of State Lands					✓	
Habitat Area					✓	
Recreational Trails Aids (RTA)					✓	
State Trails					✓	
Urban Green Space					✓	
Urban Rivers					✓	
Private Foundations		✓	✓	✓	✓	

Appendices

This report references detailed appendix items for additional data and support of Plan recommendations. The following appendices are available:

Appendix A: Best Practices Review of Vision, Goals and Objectives

Appendix B: Plan and Policy Review

Appendix C: Demand Benefits Model

Appendix D: Bicycle and Pedestrian Design Guidelines

Appendix E: Safe Routes to School Audits

Appendix F: West Main Street Safety Project

Appendix G: Funding Sources

The appendices to this plan may be viewed at:

City of Whitewater Parks and Recreation Department

<http://www.whitewater-wi.gov/departments/recreation>

312 W Whitewater Street

Whitewater, WI 53190



UW-Whitewater Photo

Appendices for the City of Whitewater Bicycle and Pedestrian Plan

June 2013

DRAFT

PREPARED BY:
Alta Planning + Design
Madison, WI / Portland, OR
(503) 230-9862



**WISCONSIN
BIKE FED**

Appendix A: Best Practices Review of Vision, Goals and Objectives

The Vision, Goals, and Objectives of the Whitewater Bicycle and Pedestrian Plan are the principles that will guide the development and implementation of the plan for years to come. Goals and objectives direct the way the public improvements are made, where resources are allocated, how programs are operated, and how City priorities are determined.

This section provides a ‘best practices’ review of goals formulated by the state of Wisconsin and other cities comparable to Whitewater. The intent is to assist Whitewater and the Steering Committee in understanding common elements of Visions, Goals and Objectives and to facilitate initial discussions around these topics.

Please note that different cities and plans use terms such as “goal” and “objective” in different ways. For example, many goals stated in some cities’ plans are highly quantitative and fit this paper’s description of an “objective”. This discrepancy should not be allowed to distract from the intent to demonstrate which subjects are being prioritized and how they are being framed.

Wisconsin Vision, Goals, and Objectives

A collection of goals and objectives from the bicycle and pedestrian plans of Wisconsin DOT, surrounding counties and the previous Whitewater Comprehensive Bikeway plan are listed in the following table. In the Wisconsin bicycle and pedestrian planning documents, objectives are designed to support the overall plan goals, though they are not structured around individual goal statements. Instead, they are structured around the four-E’s of transportation safety: engineering (and planning), education, enforcement and encouragement.

Plan, Vision	Goals, Objectives
<p>Wisconsin State Bicycle Transportation Plan 2020 (1998)</p> <p>“To establish bicycling as a viable, convenient and safe transportation choice throughout Wisconsin.”</p>	<p>Goals</p> <ul style="list-style-type: none"> • Increase levels of bicycling throughout Wisconsin, doubling the number of trips made by bicycles by the year 2010. • Reduce crashes involving bicyclists and motor vehicles by at least 10% by the year 2020. <p>Objectives</p> <ul style="list-style-type: none"> • Objective 1 - Plan and design new and improved transportation facilities to accommodate bicyclists and encourage their use. • Objective 2 - Expand and improve a statewide network of safe and convenient routes for bicycle transportation and touring, including safe and convenient access to and through the state’s urban areas. • Objective 3 - Provide consistent safety messages and training to all roadway users by expanding the range of education activities through driver licensing and training, bicycle safety

	<p>education, increasing understanding of traffic laws, and provision of public service information.</p> <ul style="list-style-type: none"> • Objective 4 - Improve the enforcement of laws to prevent dangerous and illegal behavior by motorists and bicyclists. • Objective 5 - Encourage more trips by bicycles by promoting the acceptance and usefulness of this transportation mode.
<p>Wisconsin Pedestrian Policy Plan 2020 (2002)</p> <p>“To establish pedestrian travel as a viable, convenient, and safe transportation choice throughout Wisconsin.”</p>	<p>Goals</p> <ul style="list-style-type: none"> • Increase the number and improve the quality of walking trips in Wisconsin. • Reduce the number of pedestrian crashes and fatalities. • Increase the availability of pedestrian planning and design guidance and other general information for state, local officials and citizens. <p>Objectives</p> <ul style="list-style-type: none"> • Objective 1.0: State Trunk Highways Working in partnership with local governments and other interested stakeholders, WisDOT will increase accommodations for pedestrian travel to the extent practicable along and across State Trunk Highways (STHs) • Objective 2.0: Engineering and Planning Working in partnership with local governments and other interested stakeholders, WisDOT will plan, design and promote new transportation facilities, where appropriate, and retrofit existing facilities, where appropriate, to accommodate and encourage pedestrian use. • Objective 3.0: Education Working in partnership with local governments and other interested stakeholders, WisDOT will expand the range of education activities, such as driver licensing and training, technical workshops on planning and design of facilities, pedestrian safety education and provision of public service training to all roadway users. • Objective 4.0: Enforcement Working in partnership with local governments and other interested stakeholders, WisDOT will work to improve the enforcement of laws to prevent dangerous and illegal behavior by motorists, pedestrians, and bicyclists. • Objective 5.0: Encouragement Working in partnership with local governments and other stakeholders, WisDOT will encourage more trips that pedestrian by promoting the acceptance and usefulness of walking and through the promotion of pedestrian safety efforts.

<p>2010 Jefferson County Bicycle Plan (2010)</p> <p>a. CONNECTIONS AND LINKAGES: We will have a well-connected bicycle transportation system that links a variety of communities and activity generators (e.g. parks, schools, employment centers, restaurants, downtowns, shopping areas) together into a cohesive and safe transportation system.</p> <p>b. TRANSPORTATION ALTERNATIVES: We will have a multi-modal transportation system (bicycling, walking and other forms of transportation) as part of a desirable and livable Jefferson County region for our residents and visitors.</p> <p>c. HEALTHY AND ACTIVE LIFESTYLES: We will have bicycling facilities that support healthy and active lifestyles.</p> <p>d. SMALL TOWN LIVING: We will have bicycle facilities that support and enrich our small town lifestyle.</p> <p>e. ECONOMIC DEVELOPMENT: We will have bicycle facilities that will help grow our existing businesses, contribute to our tourism industry and provide a competitive edge for attracting top talent and companies.</p> <p>f. ENVIRONMENT: We will have well connected and safe bicycle facilities enabling residents to replace automobile trips with bicycle trips while experiencing the natural resources and scenic beauty of Jefferson County.</p>	<p>Goals/Objectives</p> <ul style="list-style-type: none"> • Develop a well-connected trail system that links a variety of facilities together into a cohesive transportation system. • Increase the utilization, availability, and demand for funding to improve bicycle and pedestrian facilities. • Design roads to be compatible with surrounding uses and be pedestrian, bicycle and transit friendly. • Reduce the number and severity of vehicular crashes with particular emphasis on reducing vehicle-bicycle and vehicle-pedestrian conflicts and crashes. • Supplement facilities improvements with adequate education, encouragement, and enforcement programs. • Enhance intergovernmental cooperation and coordination for improving multimodal transportation. • Develop shared-use transportation standards to include in development review processes used by local communities when reviewing new developments. • Enhance the livability of Jefferson County by improving transportation variety throughout the region. • Increase the numbers of commuters who live within urbanized areas that bicycle to work. • Increase the number of commuters who walk to work. • Continue to monitor progress toward implementing this plan and increasing mode share for non-motorized transportation.
<p>City of Whitewater Comprehensive Bikeway Plan (2000)</p>	<p>Goals</p> <ul style="list-style-type: none"> • “To develop a safe, convenient and effective bikeway system that promotes bicycle travel as a viable transportation model connects work, shopping, parks and schools with residential areas; and enhances recreational opportunities.” <p>Objectives</p> <ul style="list-style-type: none"> • To identify bicycle routes between important destination within the City (e.g., University campus, parks, downtown, schools, business park, West Main Street commercial area). • To provide design standards for recommended bike

	<p>facilities.</p> <ul style="list-style-type: none"> • To provide detailed recommendations for an off-road or multi-use trail system along Whitewater Creek and looping around the City to increase recreational opportunities for both residents and visitors. • To mitigate parking space demand and traffic problems in and around the University by promoting and implementing bikeway facilities which connect the campus internally and to nearby residential and commercial areas. • To bring together bikeway recommendations from previous plans and studies into one planning document • To survey available funding sources for future implementation of bikeway improvements including, but not limited to, new off-road routes, signage and marking, and route promotion.
--	---

Best Practices Review of Vision, Goals and Objectives

A collection of goals and objectives from the bicycle and pedestrian plans of comparable cities around the country is listed in the following table.

City	Goals, Objectives
Philomath, OR	<ul style="list-style-type: none"> • Link the bicycle and pedestrian routes to key land uses and activity centers • Link the bicycle and pedestrian routes to the recreational bicycle and pedestrian network • Provide well-designed, visible, safe and convenient route access points and street crossings • Increase the route’s potential to function as a meaningful transportation alternative by providing shorter trip lengths between key destinations.
La Grande, OR	<ul style="list-style-type: none"> • Provide a comfortable environment for bicyclists and pedestrians by enhancing safety • Develop plans that reflect community interests • Provide a plan with implementable solutions • Alleviate congestion and improve air quality by reducing vehicle-miles of travel on State Highways and local streets • Develop plans that reflect community interests
Ada County, ID	<ul style="list-style-type: none"> • Encourage cycling • Promote bicycle safety and increased bicycling through education and encouragement activities

APPENDIX A: BEST PRACTICES REVIEW OF VISION, GOALS AND OBJECTIVES

	<ul style="list-style-type: none"> • Expand the network and support facilities • Implement the Roadways to Bikeways Recommended Bikeway Network to encourage increased use of the bicycle for transportation • Provide for bicycle support facilities
<p>Davis, CA</p>	<ul style="list-style-type: none"> • Planning for bicycles in new developments • Provide bike lanes along all arterial and collector streets. Provide separated bike paths adjacent to arterial and collector streets only where justified, with full consideration of potential safety problems this type of facility can create. • Ensure that bicycle routing is an integral part of street design so that lanes and pathways form an integrated network • Consider bicycle-operating characteristics in the design of bikeways, intersections and traffic control systems • Provide adequate bike parking. • Design bike routes as integral parts of new greenways, open space areas and "greenstreets" to complete and expand the existing bikeway system • Plan bikeways to provide attractive, shaded linkages between destinations
<p>Madison, WI</p>	<ul style="list-style-type: none"> • Consider the needs of all bicyclists when planning and designing bicycle facilities • Accommodate bicyclists on roadways by providing appropriate on-street bicycle facilities • Create and improve continuous bicycle through routes on local connector streets that provide alternatives to arterial roadways. • Eliminate bicycling barriers and hazards • Utilize opportunities for providing multi-use paths when planning parks and other linear corridors
<p>Ft. Collins, CO</p>	<ul style="list-style-type: none"> • Continue and improve maintenance of Priority Commuter Routes. • Improve signal detection loops. • Examine innovative bicycle traffic solutions such as bike boxes and bike boulevards. • Bridge the gap of understanding between bicyclists and local enforcement agencies by providing current and consistent information. • Coordinate training sessions to ensure knowledge on current local, regional, and national bicycle policies and ordinances. • Establish enforcement techniques for handling special events and protests. • Explore the creation of a Share the Road Safety Class. • Establish "sting" operations in coordination with local enforcement agencies to address bicycle theft and traffic-law

BICYCLE AND PEDESTRIAN PLAN

- evasion by bicyclists.
- Consider the implementation of cyclovias (car-free events).

Appendix B: Plan and Policy Review

Summary of Existing Plans and Policies

This section describes background plans and policy documents relevant to the Whitewater Bicycle and Pedestrian Plan. The text summarizes previous and on-going planning efforts affecting biking and walking in Whitewater. The summary identifies issues that may impact the findings and ultimate recommendations of this project. The review focuses on plans and studies prepared by the Wisconsin Department of Transportation (WisDOT), as well as relevant information from the City of Whitewater and Jefferson County.

The following plans were reviewed for this analysis.

Statewide Planning Documents

- Administrative Code Trans 75: BIKEWAYS AND SIDEWALKS IN HIGHWAY PROJECTS (2009)
- Wisconsin State Bicycle Transportation Plan 2020 (1998)
- Wisconsin Pedestrian Policy Plan 2020 (2002)
- Wisconsin Department of Transportation Guide for Path/Street Crossings (2011)
- Developing a Model for Reducing Bicycle/Motor Vehicle Crashes (2006)
- Wisconsin Bicycle Planning Guidance (2003)
- Wisconsin Bicycle Facility Design Handbook (2004)
- Wisconsin Guide to Pedestrian Best Practices (2010)

County Planning Documents

- 2010 Jefferson County Bicycle Plan (2010)

City of Whitewater Planning Documents

- City of Whitewater Comprehensive Bikeway Plan (2000)
- City of Whitewater 2009 Comprehensive Plan Community Survey (2009)

Statewide Documents

Administrative Code Trans 75: BIKEWAYS AND SIDEWALKS IN HIGHWAY PROJECTS (2009)

Wisconsin's Pedestrian and Bicycle Accommodations law addressing complete streets was codified in 2009 and codified as State statute SS 84.01(35) and later into administrative rule as Transportation 75 (Trans-75). The rule aims to “ensure that bikeways and pedestrian ways are established in all new highway construction and reconstruction projects funded in whole or in part from state funds of federal funds.” Exceptions to the law include the following circumstances:

BICYCLE AND PEDESTRIAN PLAN

- Cyclists and pedestrians are prohibited by law from using the highway.
- The cost of establishing a bikeway or pedestrian way is disproportionate to the probable use of the bikeway or pedestrian way (specifically defined as 20 percent of the total project cost), however, the highway project will spend up to 20 percent of the project costs on establishing bicycle and pedestrian facilities.
- A facility would have excessive negative impacts in a constrained environment, defined as:
 - Reduction of a terrace width to less than 3 feet for more than 50 percent of the total project length.
 - Eliminating structures, improvements or landscaping would dramatically reduce the aesthetic or functionality of the area.
 - A loss or degradation of natural resources, historical or archaeological sites.
- There is an absence of need as indicated by sparse population, traffic volumes or other factors, defined as:
 - Sidewalk – May be omitted in an outlying district defined as “territory near or contiguous to a community where within any 1,000 feet along the highway the buildings average more than 200 feet apart.” Sidewalks may also be omitted in an outlying district or rural area unless land use plans indicate significant development within 10 years.
 - Bikeway – Bikeways may be omitted in an outlying district or rural area unless land use plans indicate significant development within 10 years. A bikeway may be omitted in an outlying district or rural area that will have less than 750 ADT in the design year and:
 - 2-way bicycle traffic volume is or is expected to be less than 25 per day during peak travel days.
 - The highway is not identified in any government bike transportation plan.
 - The highway does not provide a connection of 1 mile or less between any existing and planned routes.
 - The highway does not provide a connection of 1 mile or less between an existing bikeway and the nearest local road
- Community refuses to accept maintenance responsibility (with the exception of the National Highway System)

While Trans-75 does consider the need for snow storage, disproportionate project costs and areas of low potential use it places a strong emphasis on the need for roadways to serve all users. Trans-75 is applicable to all state and federally owned and operated roadways. State bicycle and pedestrian coordinators for each region are available to help act as a resources for the planning, design and construction process.

Wisconsin State Bicycle Transportation Plan 2020 (1998)

This plan provides guidance on the state-owned and state-supported transportation systems in the state of Wisconsin. Policies are divided into *urban* and *intercity* (rural) geographies. Policies from both categories will apply to the City of Whitewater.

Urban:

- “Bicycle provisions on urban arterial streets (i.e., wide curb lanes, bicycle lanes or paved shoulders) should be made in accordance with Metropolitan Planning Organization (MPO) and community bicycle plans.”
- “On Urban State Trunk Highways, where suitable accommodations for bicyclists now exist, new highway improvements will be planned to continue an acceptable level of service and safety for bicyclists.”
- “WisDOT will cooperate with local jurisdictions to help develop "stand alone" bikeway projects, including bicycle path facilities, when they are consistent with an approved plan and provide important bicycle transportation improvements.”
- “Safe crossings should be maintained or created when bikeways and streets intersect highways. Crossing controls or grade separations should be considered where there are inadequate gaps in traffic for safe bicycle path crossing.”
- “Intersection design should consider the needs of bicyclists. All intersections should be wide enough for safe bicyclist crossing;”

Rural:

- On all higher-volume rural roadways (generally with motor vehicle volumes exceeding 1,000 per day), paved shoulders should be provided.
- On higher-volume roadways with a moderate number of bicyclists currently using or anticipated to use the roadway, wider paved shoulders should be provided.
- On lower-volume roadways generally no special improvements are necessary to accommodate bicyclists.
- Multi-use paths should be considered when 1) bicyclists cannot be safely accommodated with on-street facilities; or, 2) an opportunity exists to improve the transportation aspects of bicycling by locating a rural bicycle path within an abandoned rail corridor, utility corridor, or river grade.

Wisconsin Pedestrian Policy Plan 2020 (2002)

The Policy Plan encourages local governments, MPOs and Regional Planning Commissions (RPCs) to provide increased attention to meeting pedestrian needs on roadways in their areas. This Guide is WisDOT’s primary method to help these and other interested groups.

Key WisDOT actions include:

- WisDOT will review all state trunk highway projects for pedestrian needs using scoping criteria and guidelines.
- WisDOT supports stand-alone sidewalk projects through such programs as the Transportation Enhancement Program for sidewalk retrofit projects to fill in gaps.

BICYCLE AND PEDESTRIAN PLAN

- WisDOT commits to minimizing the “barrier effect” to walking. This is sometimes posed by state trunk highways or by joining local sidewalks to state trunk highway sidewalks. Particular attention will be paid to needs near high traffic generators such as schools and commercial areas

Wisconsin Department of Transportation Guide for Path/Street Crossings (2011)

This document prepared by WisDOT identifies and clarifies intersection right-of-way rules at the intersection of bicycle multi-use paths with streets and highways. The document differentiates between bicyclists using a crosswalk along a path facility and those using a crosswalk at a traditional intersection. Generally:

- Bicyclists should obey traffic controls as they encounter them on the path, and proceed through crossings in a manner that is consistent with the safe use of the crosswalk by pedestrians.
- Drivers must yield to pedestrians and bicyclists in the crosswalk, and do everything they can to keep from hitting a pedestrian or bicyclists even if they have failed to meet their obligations.

Bicycle crash Analysis for Wisconsin Using a Crash Typing Tool (PBCAT) and Geographic Information System (GIS). (2006)

This document is a WisDOT research project discussing a method and results of evaluating the relationship between road and intersection conditions and incidences of bicycle crashes, to support safety improvements and countermeasure design to be included in future plans and projects. Key findings include:

- Crashes between bicyclists and motorists in the State of Wisconsin continue to decrease in an annual basis
- Four of the top five crash types indicated that the motorist made the critical error that contributed to the crash
- There were far more urban crashes than rural crashes (94% compared to 6%),
- The majority of crashes occurred at intersections (66% compared to 34%)
- There was a high frequency of sidewalk/crosswalk-type crashes (28% of all crashes)
- Crash rates were lower on wider roadways for both local roads and state highways
- While urban streets had a much higher crash rate, rural highways had a much higher rate of fatalities

Wisconsin Bicycle Planning Guidance (2003)

This document is a reference for Metropolitan Planning Organizations (MPOs) responsible for planning in urbanized areas of Wisconsin. It discusses the importance of bicycling for transportation and outlines and describes the bicycle planning process and content requirements. The focus of these guidelines is on the utilitarian and transportation aspects of bicycling and less on recreational uses.

Wisconsin Bicycle Facility Design Handbook (2004)

This handbook is the primary source for facility design guidance in the state of Wisconsin. It discusses the operating characteristics and needs of bicyclists, and presents the wide range of design options for enhancing

a community's bicycle transportation system. The guide covers basic roadway improvements for shared streets, details for on-street bicycle lanes, and the design of shared-use paths. Shared Lane Markings (SLMs), introduced into the 2009 edition of the FHWA Manual on Uniform Traffic Control Devices and in common use around the country are not included in this guide.

Wisconsin Guide to Pedestrian Best Practices (2010)

The Wisconsin Guide to Pedestrian Best Practices provides detailed design, planning and program information for improving all aspects of the pedestrian environment. The guide serves as a companion document to the Wisconsin Pedestrian Policy Plan 2020 to assist in the implementation of the goals, objectives and actions of the plan and serve as a reference or guidebook for state and local officials.

County Documents

2010 Jefferson County Bicycle Plan (2010)

The Jefferson County Bicycle Plan assesses the existing bicycle routes within Jefferson County communities and addresses route effectiveness, connectivity to key destinations, and safety.

Directly relevant to the City of Whitewater, the plan identifies *Priority Corridors* for bicycle accommodation and *Parks Department Recreational Loops* with connections to Whitewater. Priority Corridors are routes identified as important routes for connecting communities, parks, trails, and other destinations, and were the focus of recommended improvements. Plan elements relevant to Whitewater include:

- The City of Whitewater is identified as a “Point of Interest” within Jefferson County.
- *Parks Department Recreational Loop 11* - Fort Atkinson/Whitewater/Palmyra connects Whitewater to surrounding areas.
- A *Priority Corridor* to Whitewater is identified along Highway 12 (route 89).
- A recommended network for Whitewater is proposed, shown in Figure 1.



Figure 1. Recommended Network map from the 2010 Jefferson County Bicycle Plan

City of Whitewater Documents

City of Whitewater Comprehensive Bikeway Plan (2000)

The Comprehensive Bikeway Plan is a component of the city’s master plan, intended to provide a strategy for designing and implementing a comprehensive bicycle network for Whitewater. The plan includes a comprehensive bikeway plan map of on and off street bicycle routes, and recommended standards for facility design, shown in Figure 2.

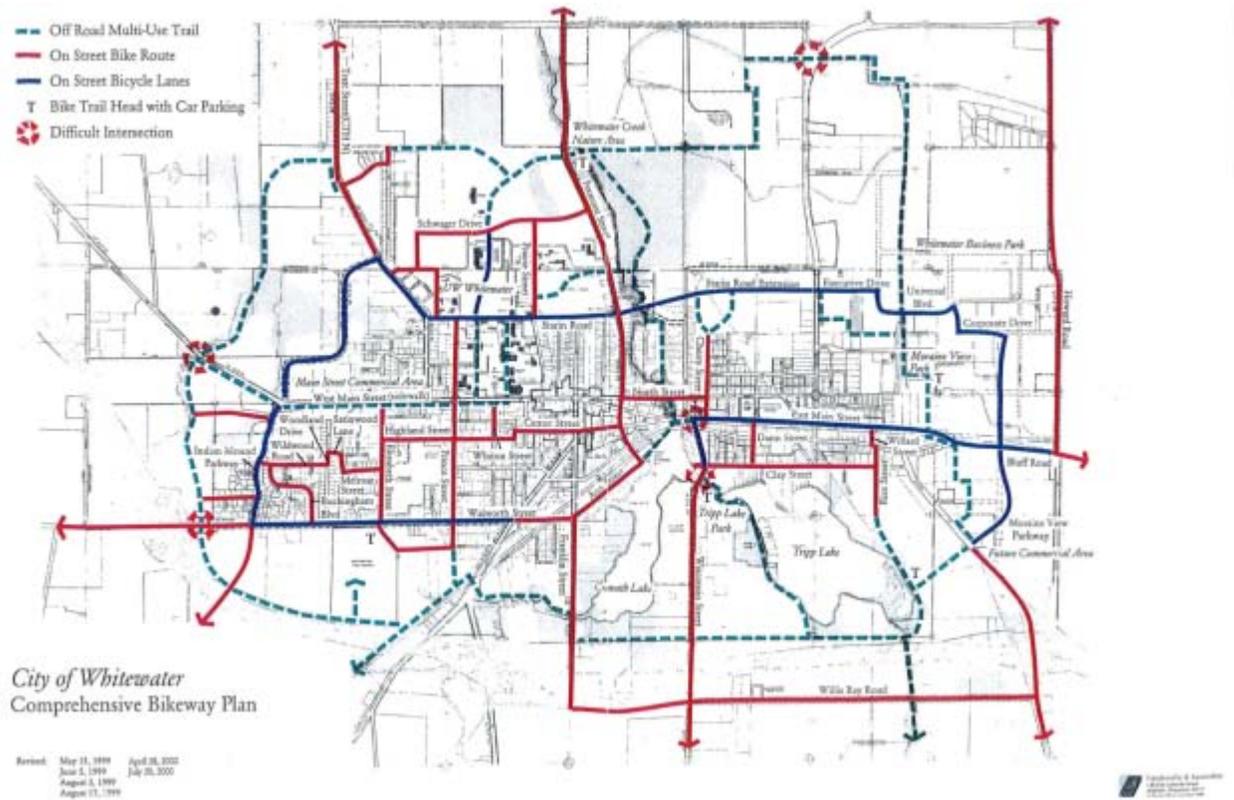


Figure 02. Plan Map from the 2000 City of Whitewater Comprehensive Bikeway Plan

City of Whitewater 2009 Comprehensive Plan Community Survey (2009)

As part of its comprehensive planning process, the City of Whitewater conducted a survey of its residents. The purpose of the survey was to allow residents to participate in the planning process by providing feedback on a number of different items. This report summarizes residents' perceptions of the overall quality of life in Whitewater, their evaluation of facilities, services, and safety in Whitewater, and their preferences for future development in Whitewater. Relevant findings include:

- A large majority of Whitewater residents support the development of off-street bicycle/pedestrian paths (76% in support)
- Over half of Whitewater residents support on-street bike lanes (56% in support)
- Half of Whitewater residents support greenway corridors as part of future residential development (52% in support)
- Only 11% of residents supported "Narrower Streets" as a part of future residential development, with 65% opposed to the design feature

Appendix C: Demand Benefits Model

Introduction

The Demand Benefits model determines the number of walking or bicycling trips that occur in a day. This model uses Census and other national studies to extrapolate the number of bicycling or walking trips taken by populations that traditionally have a higher bicycle/walking mode split than work commuters (such as elementary school and college students). National transportation surveys have also shown that commute trips are only a fraction of total trip an individual takes on a given day (National Household Travel Survey [NHTS], 2009). The model uses the NHTS findings to estimate the number of non-work, non-school trips taken by commuters and provide an estimate of additional utilitarian trips (e.g., trips that are not made for exercise or other types of recreation).

Table 1: Commute Mode Share Data Sources and Assumptions

The benefits portion of this analysis tool uses 2009 NHTS trip length data to estimate the mileage of trips that are replaced by walking and bicycling. The model uses data from the EPA and other respected sources to quantify the air quality and other benefits of reduced vehicle miles traveled (VMT). This appendix identifies the assumptions made in the model and the resulting estimate of the number of current and future bicycling trips in Whitewater.

	Bicycling	Walking	Source
Employed	4.01%	15.60%	2010 ACS
K-12	0.67%	10.57%	NHTS 2009
College	4.01%	15.60%	Assumed same as 2010 ACS "Employed"

Data Used in the Model

Journey-to-work information collected by the U.S. Census Bureau’s *American Communities Survey* (ACS) from the 2010 five-year estimate is the foundation of this analysis. Model variables from the ACS include:

- Total population (14,390 people)
- Employed population (7,365 people)
- School enrollment (1,083 students grade K-12; 4,373 college students)
- Travel-to-work mode split (see Table 1).

The 2009 NHTS provides a substantial national dataset of travel characteristics, particularly for bicycling and walking trips. Data used from this survey include:

- Student mode split, grades K-12
- Ratio of walking and bicycling work trips to non-work, non-social/recreational trips
- Ratio of work trips to social and recreational trips
- Average trip length by trip purpose and mode

Several of these variables provide an indirect method of estimating the number of walking and bicycling trips made for non-work reasons, such as shopping and running errands. NHTS data indicate that for every bicycle work trip, there are slightly more than two utilitarian bicycle trips made. Although these trips cannot be directly attached to a certain group of people (not all utilitarian bicycling trips are made by people who

bicycle to work), these multipliers allow a high percentage of the community’s walking and bicycling activity to be captured in an annual estimate.

The *Safe Routes to School Baseline Data Report* (2010) was used to determine the average distances of school-related walking and bicycling trips.

Disclaimer

As with any modeling projection, the accuracy of the result is dependent on the accuracy of the input data and other assumptions. Effort was made to collect the best data possible for input to the model, but in many cases the use of national data was required where local data was unavailable. Examples of information that could improve the accuracy of this exercise include detailed results of local Safe Routes to Schools parent and student surveys, a regional household travel survey, and a travel survey of college students.

Existing Walking and Bicycling Trips

Table 2 shows the results of the model, which estimates that 2,428 bicycle and 16,765 walking trips occur in Whitewater each day for transportation purposes. The majority are non-work utilitarian trips, which include medical/dental services, shopping/errands, family or personal business, obligations, meals, and other trips.

Table 2. Model Estimate of Current Walking and Bicycling Trips

	Bicycling	Walking	Source
Work Commute Trips			
Work commuters	295	1,149	Employed population multiplied by mode split
Weekday trips	590	2,298	Number of commuters multiplied by two for return trips
K-12 School Trips			
K-12 commuters	7	114	School children population multiplied by mode split
Weekday trips	15	229	Numbers multiplied by two for return trips
College Commute Trips			
College commuters	175	682	College population multiplied by mode split
Weekday trips	350	1,364	College bicyclists multiplied by two for return trips
Utilitarian Trips			
Daily trips (includes Sat/Sun)	1,473	12,874	Adult trips (sum of work and college) multiplied by ratio of utilitarian to work trips (NHTS).
Total Current Daily Trips	2,428	16,765	

Trips made for social or recreational purposes are not included in this model since its underlying goal is estimating the transportation benefits of bicycling and walking. However, it is worth noting that NHTS data show that there are approximately 6.5 social and recreational bicycle trips made for every bicycle commute trip. This means that there are an estimated 15,600 bicycle trips being made in Whitewater every day for purely social and recreational purposes. NHTS data estimate that 5.9 social and recreational walking trips are made for every walking commute trip, which equals an estimated 99,000 pedestrian trips. These social and

recreational trips are not included in the estimates of existing and future bicycling and walking activity, which only take into account non-discretionary trips (e.g., trips to work, the grocery store and medical appointments).

Current Trip Replacement and Reduction in Vehicle Miles Traveled

To estimate the total distance that Whitewater residents travel to work or school by walking and bicycling, the model isolates different walking and bicycling user groups and applies trip distance information by mode based on the 2009 NHTS. The model values shown in Table 3 estimate that in Whitewater about 6 million bicycling and walking trips each year replace approximately 5 million vehicle trips and more than 4 million vehicle-miles traveled.

Table 3: Current Walking and Bicycling Trip Replacement

	Bicycling	Walking	Source
Commute Trips			
Weekday trips reduced	411	1,821	Trips multiplied by the drive-alone trip percentage to determine auto trips replaced by bicycle trips
Weekday miles reduced	1,456	1,220	Number of vehicle trips reduced multiplied by average bicycle/walking work trip length (NHTS 2009)
School Trips			
Weekday trips reduced	9	152	Trips multiplied by drive alone trip percentage to determine auto trips replaced by bicycle/walking trips
Weekday miles reduced	9	70	Number of vehicle trips reduced multiplied by average trip length to/from school (SRTS 2010)
College Trips			
Weekday trips reduced	244	1,081	Trips multiplied by drive alone trip percentage to determine auto trips replaced by bicycle/walking trips
Weekday miles reduced	361	606	Number of vehicle trips reduced multiplied by average school/daycare/religious trip length (NHTS 2009) for bicycling/walking modes
Utilitarian Trips			
Daily trips reduced (includes Sat/Sun)	1,026	10,204	Trips multiplied by drive alone trip percentage to determine auto trips replaced by bicycle/walking trips
Daily miles reduced (includes Sat/Sun)	1,943	6,803	Number of vehicle trips reduced multiplied by average utilitarian trip length (NHTS 2009) for bicycling/walking modes
Yearly Results			
Yearly trips by mode	763,251	5,613,427	6,376,678
Yearly vehicle trips replaced by mode	531,619	4,443,586	4,975,205
Yearly vehicle miles replaced by mode	1,161,899	2,935,304	4,097,203

Current Benefits

To the extent that bicycling and walking trips replace single-occupancy vehicle trips, they reduce emissions and have tangible economic impacts by reducing traffic congestion, crashes, and maintenance costs. These benefits are shown in Table 4. Annual household transportation savings alone is estimated at \$280 per person.

Table 4: Annual Benefits of Current Bicycling and Walking Trips in Whitewater

	Bicycling	Walking	Source
Yearly vehicle miles reduced	1,161,899	2,935,304	
Air Quality Benefits			
Reduced Hydrocarbons (pounds/year)	3,484	8,801	EPA, 2005 ¹³
Reduced Particulate Matter (pounds/year)	26	65	EPA, 2005
Reduced Nitrous Oxides (pounds/year)	2,433	6,148	EPA, 2005
Reduced Carbon Monoxide (pounds/year)	31,763	80,243	EPA, 2005
Reduced Carbon Dioxide (pounds/year)	31,763	80,243	EPA, 2005
Economic Benefits of Air Quality			
Particulate Matter	\$2,173	\$5,490	NHTSA, 2011 ¹⁴
Nitrous Oxides	\$4,867	\$12,295	NHTSA, 2011
Carbon Dioxide	\$16,206	\$40,941	U.S. Government
Reduced External Costs of Vehicle Travel			
Traffic Congestion	\$51,124	\$129,153	AAA, 2008 ¹⁵
Vehicle Crashes	\$267,237	\$675,120	AAA, 2008
Roadway Maintenance Costs	\$162,666	\$410,942	Kitamura, R., Zhao, H., and Gubby, A. R., 1989 ¹⁶
Household Transportation Savings			
Reduction in HH transportation spending	\$2,667,704	\$11,962,633	IRS operational standard mileage rates for 2010 ¹⁷
Total	\$5,286,938	\$23,707,915	

¹³ From EPA report 420-F-05-022 "Emission Facts: Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks." 2005.

¹⁴ NHTSA Corporate Average Fuel Economy for MY 2011 Passenger Cars and Light Trucks, Table VIII-5 (<http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.d0b5a45b55b5bfe582f57529cdba046a0/>).

¹⁵ Crashes vs. Congestion – What’s the Cost to Society? <http://www.aaanewsroom.net/Assets/Files/20083591910.CrashesVsCongestionFullRe>

¹⁶ Kitamura, R., Zhao, H., and Gubby, A. R. (1989). *Development of a Pavement Maintenance Cost Allocation Model*. Institute of Transportation Studies – University of California, Davis (http://pubs.its.ucdavis.edu/publication_detail.php?id=19). \$0.08/mile (1989), adjusted to 2010 dollars using the Bureau of Labor Statistics Inflation Calculator (http://www.bls.gov/data/inflation_calculator.htm).

¹⁷ <http://www.irs.gov/newsroom/article/0,,id-216048,00.html>

Future Walking and Bicycling Trips

Estimating future benefits requires additional assumptions regarding Whitewater’s future population and anticipated commuting patterns in 2025, the timeframe for this planning effort. Future population predictions determined in *A Multi-Jurisdictional Comprehensive Plan for Walworth County: 2035* were used in this model. Table 5 shows the demographics used in the future analysis.

Table5: Projected 2025 Demographics

	Number	Percent of 2025 Population	Source
Population	16,295	100.0%	A Multi-Jurisdictional Comprehensive Plan for Walworth County: 2035. The 2025 population estimate assumes a 1.83% annual growth
Employed population	8,237	51.1%	Assumes same percentage of population is employed
School population, K-12	1,2268	7.5%	Assumes same percent as from ACS 2009 estimate
College student population	4,952	30.4%	Assumes same as 2009 ACS estimate

Table 6 shows projected 2025 bicycling and walking trips for two assumed bicycle mode share scenarios. The first scenario assumes a 6% bicycle mode share and the second assumes an 8% mode share. For simplicity, these mode shares were assumed to apply for all trip types (commuting, utilitarian, school, etc.). Walking mode share was assumed to remain consistent based on an assessment of existing conditions, opportunities and constraints.

BICYCLE AND PEDESTRIAN PLAN

Table 6: Future (2025) Bicycling and Walking Trips

	Bicycling		Walking	Source
	6% Share	8% Share		
Commute Trips				
Work commuters	500	666	1,299	Employed population multiplied by mode split
Weekday trips	999	1,332	2,598	Number of commuters multiplied by two for return trips
School Trips				
K-12 commuters	74	98	130	School children population multiplied by mode split
Weekday trips	147	196	259	Numbers multiplied by two for return trips
College Trips				
College commuters	297	396	772	College population multiplied by mode split
Weekday trips	594	792	1,545	College bicyclists multiplied by two for return trips
Utilitarian Trips				
Daily trips	2,496	3,328	14,564	Adult trips (sum of work and college) multiplied by ratio of utilitarian to work trips (NHTS).
Total Future Weekday Trips	4,236	5,648	18,966	

The important factor to consider with these future assumptions is not the accuracy of the mode share percentages, but the benefits that would accrue to Whitewater *if* those numbers are reached. As more cities across the country track changes in bikeway mileage over time and participate in annual bicycle counts, more data will be available to better understand and refine future mode share predictive measures.

Future Trip Replacement

The same trip replacement factors used for the existing analysis were applied to the numbers in Table 6 in order to generate estimates of bicycling and walking trip replacement for the 2025 scenario. Table 7 shows that a 6% bicycle mode share scenario would result in more than seven million annual walking and bicycling trips, which will reduce vehicle trips by about 5.9 million and vehicle-miles traveled by about 5.3 million. An 8% bicycle mode share would result in an estimated 8.1 million annual walking and bicycling trips, along with reductions of 6.3 million vehicle trips and more than million 3.1 vehicle-miles traveled.

Future Benefits

Table 8 shows the air quality and economic benefits of the future projected walking and bicycling trips in Whitewater. For the 6% bicycle mode share assumption, annual household transportation savings are estimated to accrue at a rate of \$322 per person cost savings. An 8% bicycle mode share would result in an estimated \$366 per person savings.

Table 7: 2025 Walking and Bicycling Trip Replacement

	Bicycling		Walking	Source
	6% Share	8% Share		
Commute Trips				
Weekday trips reduced	711	969	2,059	Trips multiplied by the drive-alone trip percentage to determine auto trips replaced by bicycle and walking trips
Weekday miles reduced	2,517	3,429	1,380	Number of vehicle trips reduced multiplied by average bicycle/walking work trip length (NHTS 2009)
School Trips				
Weekday trips reduced	93	127	172	Trips multiplied by drive alone trip percentage to determine auto trips replaced by bicycle/walking trips
Weekday miles reduced	71	97	61	Number of vehicle trips reduced multiplied by average trip length to/from school (SRTS 2010)
College Trips				
Weekday trips reduced	423	576	1,225	Trips multiplied by drive alone trip percentage to determine auto trips replaced by bicycle/walking trips
Weekday miles reduced	626	853	686	Number of vehicle trips reduced multiplied by average school/daycare/religious trip length (NHTS 2009) for bicycling/walking modes
Utilitarian Trips				
Daily trips reduced (includes Sat/Sun)	1,776	2,420	11,543	Trips multiplied by drive alone trip percentage to determine auto trips replaced by bicycle/walking trips
Daily miles reduced (includes Sat/Sun)	3,363	4,581	7,696	Number of vehicle trips reduced multiplied by average utilitarian trip length (NHTS 2009) for bicycling/walking modes
Yearly Results				Total at 6% bicycle mode share (at 8%)
Yearly trips by mode	1,317,317	1,756,423	6,350,161	7,667,479 (8,106,584)
Yearly vehicle trips replaced by mode	935,206	1,274,049	5,026,779	5,961,985 (6,300,827)
Yearly vehicle miles replaced by mode	2,021,473	2,753,890	3,316,920	5,338,392 (6,070,810)

BICYCLE AND PEDESTRIAN PLAN

Table 8: Benefits of Future Bicycling and Walking Trips in Whitewater

	Bicycling		Walking	Source
	6% Share	8% Share		
Yearly vehicle miles reduced	2,021,473	2,753,890	3,316,920	
Air Quality Benefits				
Reduced Hydrocarbons (pounds/year)	6,061	8,257	9,945	EPA, 2005 ¹⁸
Reduced Particulate Matter (pounds/year)	45	61	74	EPA, 2005
Reduced Nitrous Oxides (pounds/year)	4,234	5,768	6,947	EPA, 2005
Reduced Carbon Monoxide (pounds/year)	55,262	75,284	90,676	EPA, 2005
Reduced Carbon Dioxide (pounds/year)	1,644,480	2,240,306	2,698,333	EPA, 2005
Economic Benefits of Air Quality				
Particulate Matter	\$3,781	\$5,151	\$6,204	NHTSA, 2011 ¹⁹
Nitrous Oxides	\$8,438	\$11,535	\$13,894	NHTSA, 2011
Carbon Dioxide	\$28,195	\$38,411	\$2,698,333	U.S. Government
Reduced External Costs of Vehicle Travel				
Traffic Congestion	\$88,945	\$121,171	\$6,204	AAA, 2008 ²⁰
Vehicle Crashes	\$464,939	\$633,395	\$13,894	AAA, 2008
Roadway Maintenance Costs	\$283,006	\$385,545	\$42,264	Kitamura, R., Zhao, H., and Gubby, A. R., 1989 ²¹
Household Transportation Savings				
Reduction in HH transportation spending	\$1,111,810	\$1,514,640	\$1,824,306	IRS operational standard mileage rates for 2010 ²²
Total	\$1,989,143	\$2,709,847	\$3,263,872	

¹⁸ From EPA report 420-F-05-022 "Emission Facts: Average Annual Emissions and Fuel Consumption for Gasoline-Fueled Passenger Cars and Light Trucks." 2005.

¹⁹ NHTSA Corporate Average Fuel Economy for MY 2011 Passenger Cars and Light Trucks, Table VIII-5 (<http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.d0b5a45b55bfbe582f57529cdba046a0/>).

²⁰ Crashes vs. Congestion – What’s the Cost to Society?" <http://www.aaanewsroom.net/Assets/Files/20083591910.CrashesVsCongestionFullRe>

²¹ Kitamura, R., Zhao, H., and Gubby, A. R. (1989). *Development of a Pavement Maintenance Cost Allocation Model*. Institute of Transportation Studies – University of California, Davis (http://pubs.its.ucdavis.edu/publication_detail.php?id=19). \$0.08/mile (1989), adjusted to 2010 dollars using the Bureau of Labor Statistics Inflation Calculator (http://www.bls.gov/data/inflation_calculator.htm).

²² <http://www.irs.gov/newsroom/article/0,,id=216048,00.html>

Difficult-to-Quantify Benefits of Bicycling and Walking

Bicycling is a low-cost and effective means of transportation and is non-polluting, energy-efficient, versatile, healthy, and fun. Bicycles offer low-cost mobility to the non-driving public. Bicycling as a means of transportation has been growing in popularity as many communities work to create more balanced transportation systems and individuals seek to be healthier. In addition, more people are willing to bicycle more frequently if better bicycle facilities are provided.²³

In addition to the tangible economic benefits estimated above, bicycling has many other benefits that are challenging to quantify, but which have been studied by some communities and organizations. The League of American Bicyclists reported that bicycling makes up \$133 billion of the U.S. economy, funding 1.1 million jobs.²⁴ The League also estimates bicycle-related trips generate another \$47 billion in tourism activity. Many communities have enjoyed a high return on their investment in bicycling. For example, the Outer Banks of North Carolina spent \$6.7 million to improve local bicycle facilities, and reaped the benefit of \$60 million of annual economic activity associated with bicycling.²⁵ Multiple studies show that bikeable neighborhoods are more livable and attractive, increasing home values²⁶, and resulting in both increased wealth for individuals and additional property tax revenue for the community.

Bike lanes can improve retail business directly by drawing customers and indirectly by supporting the regional economy. Patrons who bike to local stores have been found to spend more money to visit local businesses than patrons who drive.²⁷ Other studies show that bikeable and walkable communities attract the young creative class,²⁸ which can help cities and counties gain a competitive edge and diversify economic base. By replacing short car trips, bicycling can help middle-class families defray rising transportation costs. Families that drive less spend 10 percent of their income on transportation, compared to 19 percent for households with heavy car use,²⁹ freeing additional income for local goods and services.

Bicycling can also improve quality of life. Since bicycling is among the most popular forms of recreational activity in the U.S.³⁰, when bicycling is available as a daily mode of transportation, substantial health benefits

²³ Pucher, J., Dill, J. and Handy, S. (2010). *Infrastructure, programs, and policies to increase bicycling: An international review*. Preventative Medicine 50:S106-S125.

²⁴ Flusche, Darren for the League of American Bicyclists. (2009). *The Economic Benefits of Bicycle Infrastructure Investments*.

²⁵ N.C. Department of Transportation, Division of Bicycle and Pedestrian Transportation. (). *The Economic Impact of Investments in Bicycle Facilities*. [atfiles.org/files/pdf/NCbikeinvest.pdf](http://files.org/files/pdf/NCbikeinvest.pdf)

²⁶ Cortright, Joe for CEOs for Cities. (2009). *Walking the Walk: How Walkability Raises Home Values in U.S. Cities*.

²⁷ The Clean Air Partnership. (2009). *Bike Lanes, On-Street Parking and Business: A Study of Bloor Street in Toronto's Annex Neighborhood*.

²⁸ Cortright, Joe for CEOs for Cities. (2007). *Portland's Green Dividend*.

²⁹ Center for Neighborhood Technology. (2005). *Driven to Spend: Pumping Dollars out of Our Households and Communities*.

³⁰ Almost 80 million people walking and 36 million people bicycling for recreation or exercise nationally, and 27.3 percent of the population over 16 bicycling at least once over the summer. (National Sporting Goods Association survey, 2003)

BICYCLE AND PEDESTRIAN PLAN

result. The health benefit of bicycling for exercise can reduce the cost of spending on health care by as much as \$514 a year, which provides a financial incentive to businesses that provide health coverage to their employees.³¹

Safety concerns are another reason to improve bicycling conditions. Although the incidence of crashes involving bicycles may be low, concerns about safety have historically been the single greatest reason people do not commute by bicycle, as captured in polls as early as 1991.³² A Safe Routes to School survey in 2004 similarly found that 30 percent of parents consider traffic-related danger to be a barrier to allowing their children to walk or bike to school. Addressing those concerns for bicyclists through physical and program improvements is another major objective of the Whitewater Bicycle and Pedestrian Plan. Improving bicyclist safety can also be accomplished by increasing the number of people who bike.

³¹ Feifei, W., McDonald, T., Champagne, L.J., and Edington, D.W. (2004). *Relationship of Body Mass Index and Physical Activity to Health Care Costs Among Employees*. *Journal of Occupational and Environmental Medicine*. 46(5):428-436

³² Lou Harris Poll (2001)

Appendix D: Bicycle and Pedestrian Design Guidelines

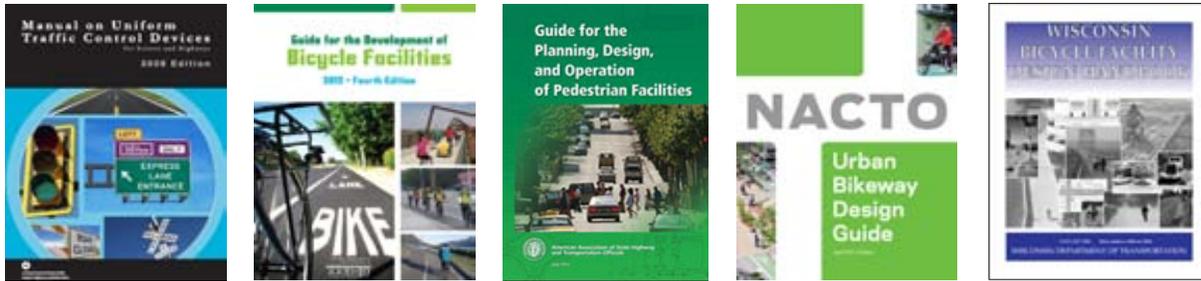
This appendix is intended to assist the City of Whitewater in the selection and design of bicycle and pedestrian facilities. The following guidance pulls together best practices by facility type from public agencies and municipalities nationwide. Within this appendix, treatments are covered within a single sheet tabular format relaying important design information and discussion, example photos, schematics (if applicable), and existing summary guidance from current or upcoming draft standards. Existing standards are referenced throughout and should be the first source of information when seeking to implement any of the treatments featured here.

Guiding Principles

The following are guiding principles for these bicycle and pedestrian design guidelines:

- **The walking and bicycling environment should be safe.** All bicycling and walking routes should be physically safe and perceived as safe by all users. Safe means minimal conflicts with external factors, such as noise, vehicular traffic and protruding architectural elements. Safe also means routes are clear and well marked with appropriate pavement markings and directional signage.
- **The pedestrian and bicycle network should be accessible.** Sidewalks, shared use paths, bike routes and crosswalks should permit the mobility of residents of all ages and abilities. The pedestrian and bicycle network should employ principles of universal design. Bicyclists have a range of skill levels, and facilities should be designed with a goal of providing for inexperienced/recreational bicyclists (especially children and seniors) to the greatest extent possible.
- **Pedestrian and bicycle network improvements should be economical.** Pedestrian and bicycle improvements should achieve the maximum benefit for their cost, including initial cost and maintenance cost, as well as a reduced reliance on more expensive modes of transportation. Where possible, improvements in the right-of-way should stimulate, reinforce and connect with adjacent private improvements.
- **The pedestrian and bicycle network should connect to places people want to go.** The pedestrian and bicycle network should provide continuous direct routes and convenient connections between destinations such as homes, schools, shopping areas, public services, recreational opportunities and transit. A complete network of on-street bicycling facilities should connect seamlessly to existing and proposed shared use paths to complete recreational and commuting routes.
- **The walking and bicycling environment should be clear and easy to use.** Sidewalks, shared use paths and crossings should allow all people to easily find a direct route to a destination with minimal delays, regardless of whether these persons have mobility, sensory, or cognitive disability impairments. All roads are legal for the use of pedestrians and bicyclists (except freeways, from which each is prohibited unless a separate facility on that right of way is provided). This means that most streets are bicycle facilities and should be designed, marked and maintained accordingly.
- **The walking and bicycling environment should be attractive and enhance community livability.** Good design should integrate with and support the development of complementary uses and should encourage preservation and construction of art, landscaping and other items that add value to communities. These components might include open spaces such as plazas, courtyards and squares, and amenities like street furniture, banners, art, plantings and special paving. These along with historical elements and cultural references, should promote a sense of place. Public activities should be encouraged and the municipal code should permit commercial activities such as dining, vending and advertising when they do not interfere with safety and accessibility.
- **Design guidelines are flexible and should be applied using professional judgment.** This document references specific national guidelines for bicycle and pedestrian facility design, as well as a number of design treatments not specifically covered under current guidelines. Statutory and regulatory guidance may change. For this reason, the guidance and recommendations in this document function to complement other resources considered during a design process, and in all cases sound engineering judgment should be used.

National Standards and Guidelines



The Federal Highway Administration’s **Manual on Uniform Traffic Control Devices** (MUTCD) defines the standards used by road managers nationwide to install and maintain traffic control devices on all public streets, highways, bikeways, and private roads open to public traffic. The MUTCD is the primary source for guidance on lane striping requirements, signal warrants, and recommended signage and pavement markings.

Bikeway treatments not explicitly covered by the MUTCD are often subject to experiments, interpretations and official rulings by the FHWA. The **MUTCD Official Rulings** is a resource that allows website visitors to obtain information about these supplementary materials. Copies of various documents (such as incoming request letters, response letters from the FHWA, progress reports, and final reports) are available on this website.¹

American Association of State Highway and Transportation Officials (AASHTO) **Guide for the Development of Bicycle Facilities**, updated in June 2012 provides guidance on dimensions, use, and layout of specific bicycle facilities. The standards and guidelines presented by AASHTO provide basic information, such as minimum sidewalk widths, bicycle lane dimensions, detailed striping requirements and recommended signage and pavement markings.

The National Association of City Transportation Officials’ (NACTO) 2012 **Urban Bikeway Design Guide**² is the newest publication of nationally recognized bikeway design standards, and offers guidance on the current state of the practice designs. The NACTO Urban Bikeway Design Guide is based on current practices in the best cycling cities in the world. The intent of the guide is to offer substantive guidance for cities seeking to improve bicycle transportation in places where competing demands for the use of the right of way present unique challenges. All of the NACTO Urban Bikeway Design Guide treatments are in use internationally and in many cities around the US.

Offering similar guidance for pedestrian design, the 2004 AASHTO **Guide for the Planning, Design and Operation of Pedestrian Facilities** provides comprehensive guidance on planning and designing for people on foot.

Meeting the requirements of the Americans with Disabilities Act (ADA) is an important part of any bicycle and pedestrian facility project. The United States Access Board’s proposed **Public Rights-of-Way Accessibility Guidelines**³ (PROWAG) and the **2010 ADA Standards for Accessible Design**⁴ (2010 Standards) contain standards and guidance for the construction of accessible facilities. This includes requirements for sidewalk curb ramps, slope requirements, and pedestrian railings along stairs.

Some of these treatments are not directly referenced in the current versions of the AASHTO Guide or the MUTCD, although many of the elements of these treatments are found within these documents. In all cases, engineering judgment is recommended to ensure that the application makes sense for the context of each treatment, given the many complexities of urban streets.

Local Standards

The **Wisconsin Bicycle Facility Design Handbook** is the primary source for facility design guidance in the state of Wisconsin. It discusses the operating characteristics and needs of bicyclists, and presents the wide range of design options for enhancing a community’s bicycle transportation system. The guide covers basic roadway improvements for shared streets, details for on-street bicycle lanes, and the design of shared use paths.

The **Trans 75** administrative rule aims to “ensure that bikeways and pedestrian ways are established in all new highway construction and reconstruction projects funded in whole or in part from state funds or federal funds.”

1 *MUTCD Official Rulings. FHWA. <http://mutcd.fhwa.dot.gov/orsearch.asp>*

2 *<http://nacto.org/cities-for-cycling/design-guide/>*

3 *<http://www.access-board.gov/prowag/>*

4 *http://www.ada.gov/2010ADASTandards_index.htm*

Design Needs of Pedestrians

Types of Pedestrians

Pedestrians have a variety of characteristics and the transportation network should accommodate a variety of needs, abilities, and possible impairments. Age is one major factor that affects pedestrians' physical characteristics, walking speed, and environmental perception. Children have low eye height and walk at slower speeds than adults. They also perceive the environment differently at various stages of their cognitive development. Older adults walk more slowly and may require assistive devices for walking stability, sight, and hearing. The table below summarizes common pedestrian characteristics for various age groups.

The MUTCD recommends a normal walking speed of three and a half feet per second when calculating the pedestrian clearance interval at traffic signals. The walking speed can drop to three feet per second for areas with older populations and persons with mobility impairments. While the type and degree of mobility impairment varies greatly across the population, the transportation system should accommodate these users to the greatest reasonable extent.

Pedestrian Characteristics by Age

Age	Characteristics
0-4	Learning to walk Requires constant adult supervision Developing peripheral vision and depth perception
5-8	Increasing independence, but still requires supervision Poor depth perception
9-13	Susceptible to "dart out" intersection dash Poor judgment Sense of invulnerability
14-18	Improved awareness of traffic environment Poor judgment
19-40	Active, fully aware of traffic environment
41-65	Slowing of reflexes
65+	Difficulty crossing street Vision loss Difficulty hearing vehicles approaching from behind

Source: AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities (July 2004), Exhibit 2-1.

Sidewalks

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel that is separated from vehicle traffic. Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped planting strip area. Sidewalks are a common application in both urban and suburban environments.

Attributes of well-designed sidewalks include the following:

Accessibility: A network of sidewalks should be accessible to all users.

Adequate width: Two people should be able to walk side-by-side and pass a third comfortably. Different walking speeds should be possible. In areas of intense pedestrian use, sidewalks should accommodate the high volume of walkers.

Safety: Design features of the sidewalk should allow pedestrians to have a sense of security and predictability. Sidewalk users should not feel they are at risk due to the presence of adjacent traffic.

Continuity: Walking routes should be obvious and should not require pedestrians to travel out of their way unnecessarily.

Landscaping: Plantings and street trees should contribute to the overall psychological and visual comfort of sidewalk users, and be designed in a manner that contributes to the safety of people.

Drainage: Sidewalks should be well graded to minimize standing water.

Social space: There should be places for standing, visiting, and sitting. The sidewalk area should be a place where adults and children can safely participate in public life.

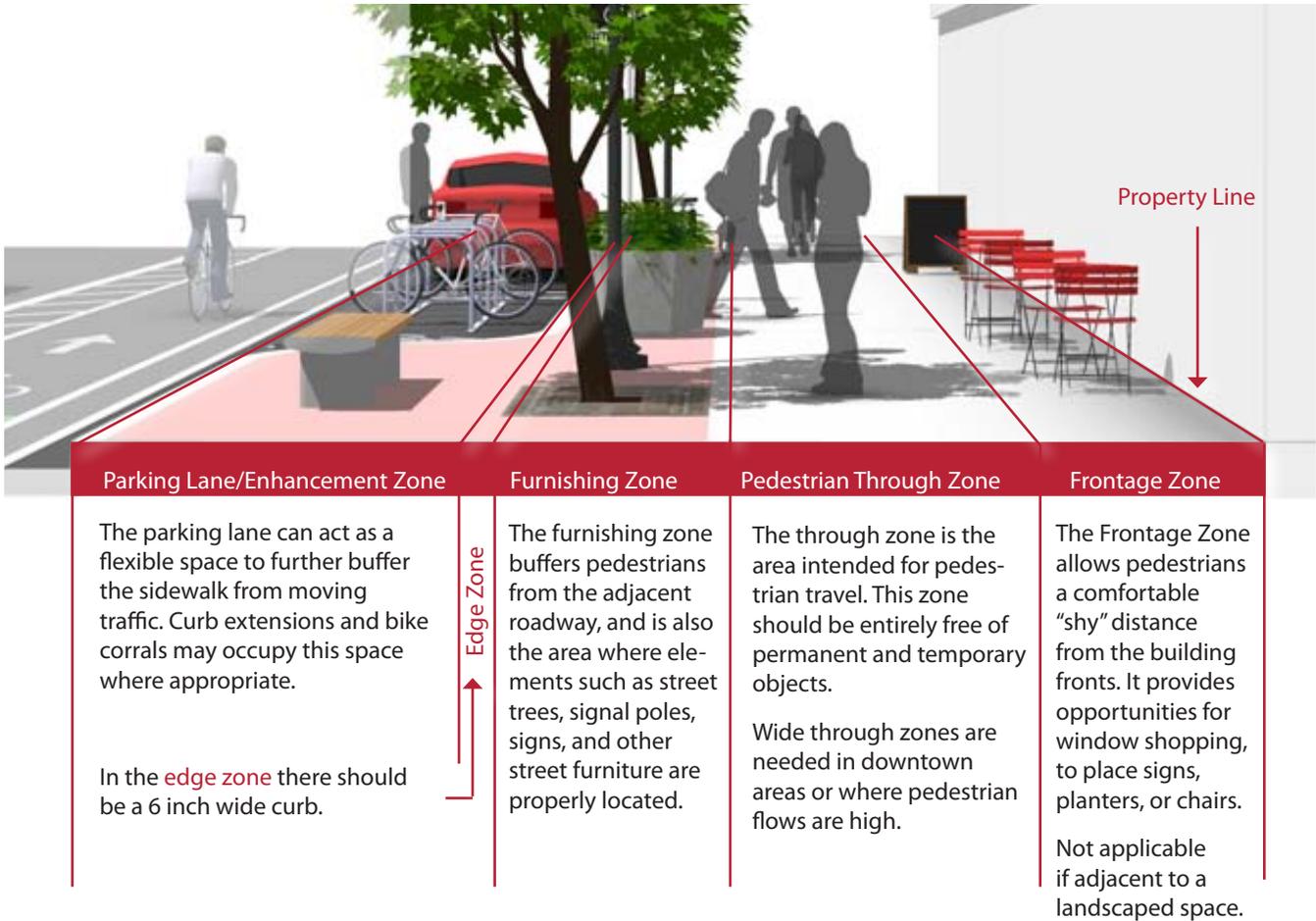
Quality of place: Sidewalks should contribute to the character of neighborhoods and business districts.



Zones in the Sidewalk Corridor

Description

Sidewalks are the most fundamental element of the walking network, as they provide an area for pedestrian travel separated from vehicle traffic. A variety of considerations are important in sidewalk design. Providing adequate and accessible facilities can lead to increased numbers of people walking, improved safety, and the creation of social space.



Discussion

Sidewalks should be more than areas to travel; they should provide places for people to interact. There should be places for standing, visiting, and sitting. Sidewalks should contribute to the character of neighborhoods and business districts, strengthen their identity, and be an area where adults and children can safely participate in public life.

Additional References and Guidelines

- USDOJ. (2010). ADA Standards for Accessible Design.
- United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).
- AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.

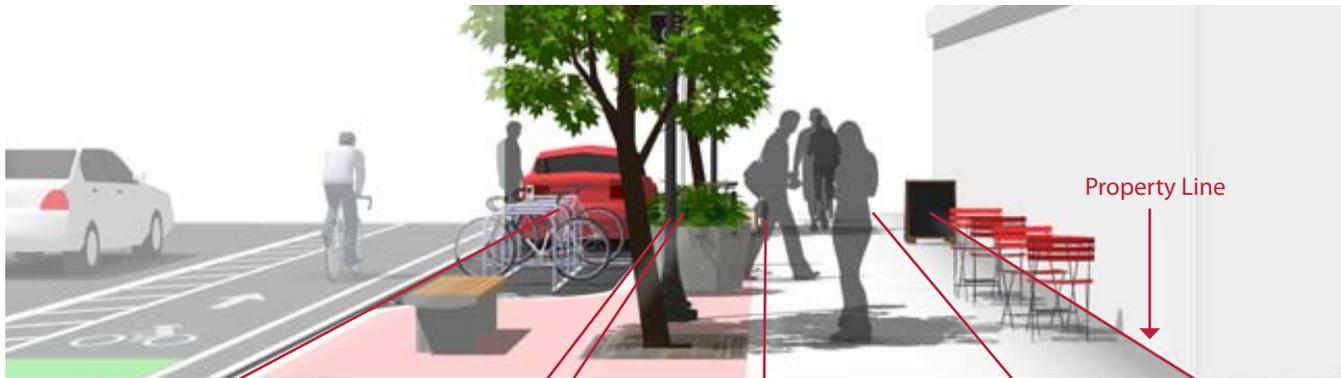
Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped space. Colored, patterned, or stamped concrete can add distinctive visual appeal.

Sidewalk Widths

Description

The width and design of sidewalks will vary depending on street context, functional classification, and pedestrian demand. Below are preferred widths of each sidewalk zone according to general street type. Standardizing sidewalk guidelines for different areas of the city, dependent on the above listed factors, ensures a minimum level of quality for all sidewalks.



Street Classification	Parking Lane/Enhancement Zone	Furnishing Zone	Pedestrian Through Zone	Frontage Zone	Total
Local Streets	Varies	2 - 5 feet	5 - 6 feet	N/A	7 - 11 feet
Commercial Areas	Varies	4 - 6 feet	6 - 12 feet	2.5 - 10 feet	11 - 28 feet
Arterials and Collectors	Varies	2 - 6 feet	5 - 8 feet	2.5 - 5 feet	9 - 19 feet

↑
Areas that have significant accumulations of snow during the winter may prefer a wider furnishing zone for snow storage.

↑
Six feet enables two pedestrians (including wheelchair users) to walk side-by-side, or to pass each other comfortably

Discussion

It is important to provide adequate width along a sidewalk corridor. Two people should be able to walk side-by-side and pass a third comfortably. In areas of high demand, sidewalks should contain adequate width to accommodate the high volumes and different walking speeds of pedestrians. The City of Whitewater sidewalk ordinance requires sidewalks of 5 ft.

Additional References and Guidelines

- USDOJ. (2010). ADA Standards for Accessible Design.
- United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).
- AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.

Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped terrace. Surfaces must be firm, stable, and slip resistant. Colored, patterned, or stamped concrete can add distinctive visual appeal.

Sidewalk Obstructions and Driveway Ramps

Description

Obstructions to pedestrian travel in the sidewalk corridor typically include driveway ramps, curb ramps, sign posts, utility and signal poles, mailboxes, fire hydrants and street furniture.

Guidance

Reducing the number of accesses reduces the need for special provisions. This strategy should be pursued first.

Obstructions should be placed between the sidewalk and the roadway to create a buffer for increased pedestrian comfort.

Dipping the entire sidewalk at the driveway approaches keeps the cross-slope at a constant grade. This is the least-preferred driveway option.

Where constraints preclude a planter strip, wrapping the sidewalk around the driveway allows the sidewalk to still remain level.

When sidewalks abut hedges, fences, or buildings, an additional two feet of lateral clearance should be added to provide appropriate shy distance.



Planter strips allow sidewalks to remain level, with the driveway grade change occurring within the planter strip.

Angled on-street parking should not be used on streets with curb-tight sidewalks, as vehicles will overhang into the pedestrian space.

Discussion

Driveways are a common sidewalk obstruction, especially for wheelchair users. When constraints only allow curb-tight sidewalks, dipping the entire sidewalk at the driveway approaches keeps the cross-slope at a constant grade. However, this may be uncomfortable for pedestrians and could create drainage problems behind the sidewalk.

Additional References and Guidelines

USDOJ. (2010). ADA Standards for Accessible Design.
 United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).
 AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.

Materials and Maintenance

Sidewalks are typically constructed out of concrete and are separated from the roadway by a curb or gutter and sometimes a landscaped space. Surfaces must be firm, stable, and slip resistant.

Pedestrians at Intersections

Attributes of pedestrian-friendly intersection design include:

Clear Space: Corners should be clear of obstructions. They should also have enough room for curb ramps, for transit stops where appropriate, and for street conversations where pedestrians might congregate.

Visibility: It is critical that pedestrians on the corner have a good view of vehicle travel lanes and that motorists in the travel lanes can easily see waiting pedestrians.

Legibility: Symbols, markings, and signs used at corners should clearly indicate what actions the pedestrian should take.

Accessibility: All corner features, such as curb ramps, landings, call buttons, signs, symbols, markings, and textures, should meet accessibility standards and follow universal design principles.

Separation from Traffic: Corner design and construction should be effective in discouraging turning vehicles from driving over the pedestrian area. Crossing distances should be minimized.

Lighting: Adequate lighting is an important aspect of visibility, legibility, and accessibility.

These attributes will vary with context but should be considered in all design processes. For example, suburban and rural intersections may have limited or no signing. However, legibility regarding appropriate pedestrian movements should still be taken into account during design.



Marked Crosswalks

Description

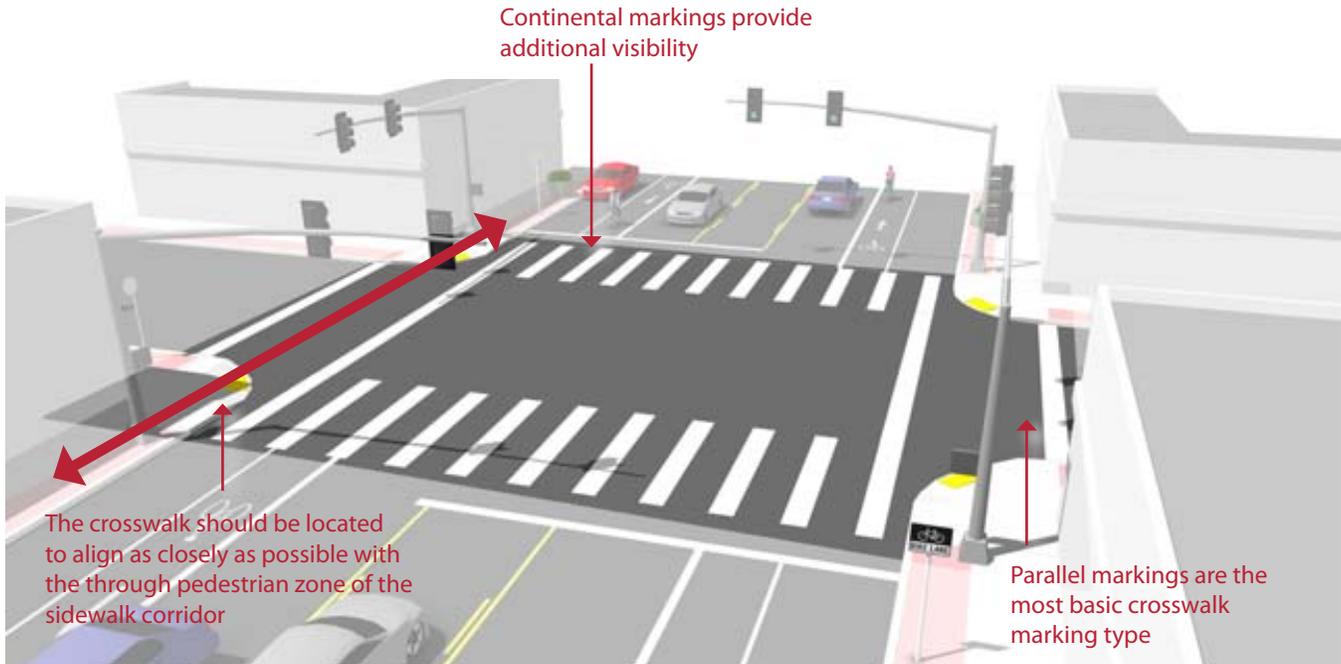
A marked crosswalk signals to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer especially on multi-lane roadways.

At mid-block locations, crosswalks can be marked where there is a demand for crossing and there are no nearby marked crosswalks.

Guidance

At signalized intersections, all crosswalks should be marked. At un-signalized intersections, crosswalks may be marked under the following conditions:

- At crossings of higher-volume streets.
- At a complex intersection, to orient pedestrians in finding their way across.
- At an offset intersection, to show pedestrians the shortest route across traffic with the least exposure to vehicular traffic and traffic conflicts.
- At locations as deemed appropriate by the Director of Public Works.



Discussion

Continental crosswalk markings should be used at crossings with high pedestrian use or where vulnerable pedestrians are expected, including: school crossings, across arterial streets for pedestrian-only signals, at mid-block crosswalks, and at intersections where there is expected high pedestrian use and the crossing is not controlled by signals or stop signs.

Additional References and Guidelines

FHWA. (2009). Manual on Uniform Traffic Control Devices. (3B.18)
 AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.
 FHWA. (2005). Safety Effects of Marked vs. Unmarked Crosswalks at Uncontrolled Locations.
 FHWA. (2010). Crosswalk Marking Field Visibility Study.

Materials and Maintenance

Because the effectiveness of marked crossings depends entirely on their visibility, maintaining marked crossings should be a high priority. Epoxy and properly applied thermoplastic markings offer increased durability than conventional paint.

Median Refuge Islands

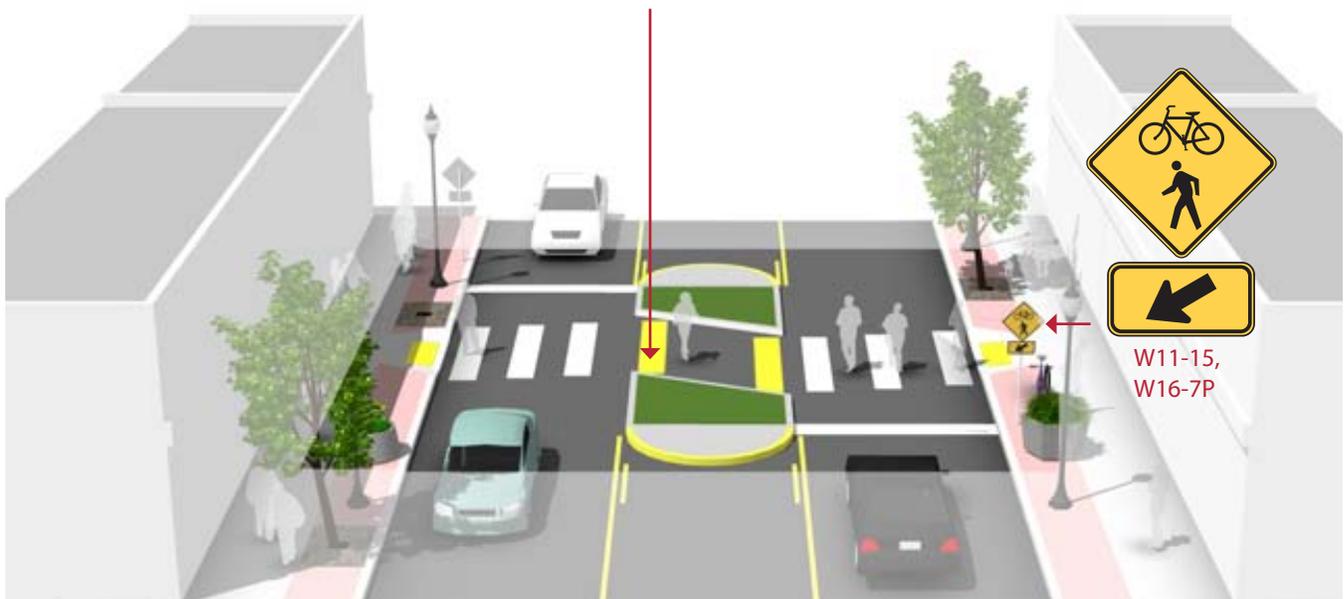
Description

Median refuge islands are located at the mid-point of a marked crossing and help improve pedestrian safety by allowing pedestrians to cross one direction of traffic at a time. Refuge islands minimize pedestrian exposure by shortening crossing distance and increasing the number of available gaps for crossing.

Guidance

- Can be applied on any roadway with a left turn center lane or median that is at least 6' wide.
- Appropriate at all crosswalks, signalized or unsignalized.
- The refuge island must be accessible, preferably with an at-grade passage through the island rather than ramps and landings.
- The island should be at least 6' wide between travel lanes (to accommodate bikes with trailers and wheelchair users) and at least 20' long.
- On streets with speeds higher than 25 mph there should also be double centerline marking, reflectors, and "KEEP RIGHT" signage.

Cut through median islands are preferred over curb ramps, to better accommodate bicyclists.



Discussion

If a refuge island is landscaped, the landscaping should not compromise the visibility of pedestrians crossing in the crosswalk. Shrubs and ground plantings should be no higher than 1 ft 6 in.

On multi-lane roadways, consider configuration with active warning beacons for improved yielding compliance.

Additional References and Guidelines

- FHWA. (2009). Manual on Uniform Traffic Control Devices.
- AASHTO. (2004). Guide for the Planning, Design, and Operation of Pedestrian Facilities.
- NACTO. (2012). Urban Bikeway Design Guide.

Materials and Maintenance

Refuge islands may collect road debris and may require somewhat frequent maintenance. Refuge islands should be visible to snow plow crews and should be kept free of snow berms that block access.

ADA Compliant Curb Ramps

Description

Curb ramps are the design elements that allow all users to make the transition from the street to the sidewalk. There are a number of factors to be considered in the design and placement of curb ramps at corners. Properly designed curb ramps ensure that the sidewalk is accessible from the roadway. A sidewalk without a curb ramp can be useless to someone in a wheelchair, forcing them back to a driveway and out into the street for access.

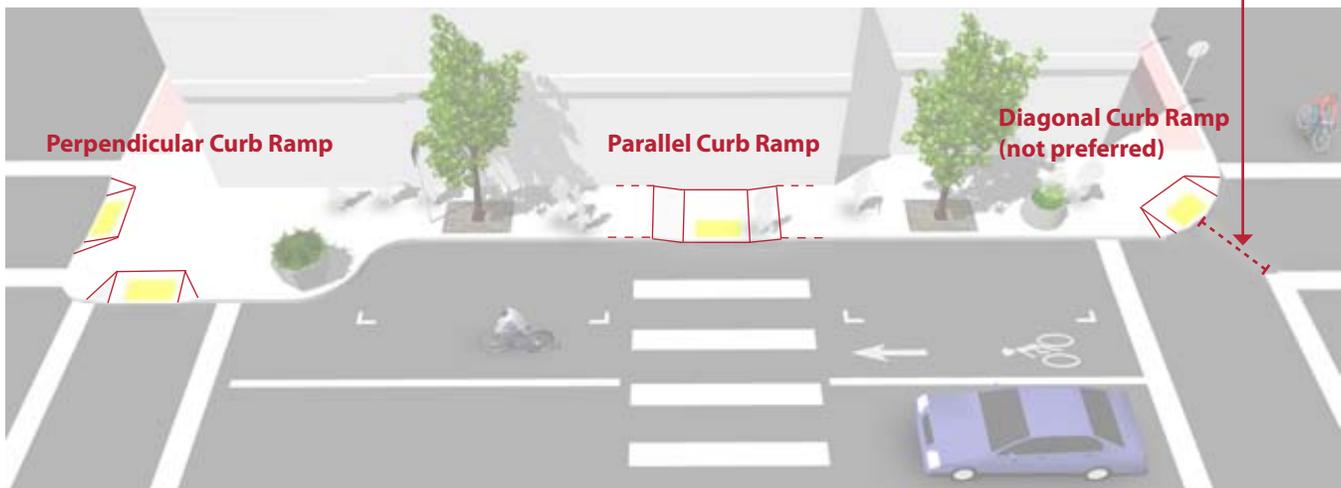
Although diagonal curb ramps might save money, they create potential safety and mobility problems for pedestrians, including reduced maneuverability and increased interaction with turning vehicles, particularly in areas with high traffic volumes. Diagonal curb ramp configurations are the least preferred of all options.

Guidance

- The landing at the top of a ramp shall be at least 4 feet long and at least the same width as the ramp itself.
- The ramp shall slope no more than 1:12, with a maximum cross slope of 2.0%.
- If the ramp runs directly into a crosswalk, the landing at the bottom will be in the roadway.
- If the ramp lands on a dropped landing within the sidewalk or corner area where someone in a wheelchair may have to change direction, the landing must be a minimum of 5'-0" long and at least as wide as the ramp, although a width of 5'-0" is preferred.

Curb ramps shall be located so that they do not project into vehicular traffic lanes, parking spaces, or parking access aisles. Three configurations are illustrated below.

Diagonal ramps shall include a clear space of at least 48" within the crosswalk for user maneuverability



Crosswalk spacing not to scale. For illustration purposes only.

Discussion

The edge of an ADA compliant curb ramp may be marked with a tactile warning device (also known as truncated domes) to alert people with visual impairments to changes in the pedestrian environment. Contrast between the raised tactile device and the surrounding infrastructure is important so that the change is readily evident. These devices are most effective when adjacent to smooth pavement so the difference is easily detected. The devices should provide color contrast so partially sighted people can see them.

Additional References and Guidelines

United States Access Board. (2002). Accessibility Guidelines for Buildings and Facilities.
 United States Access Board. (2007). Public Rights-of-Way Accessibility Guidelines (PROWAG).
 USDOJ. (2010). ADA Standards for Accessible Design.

Materials and Maintenance

It is critical that the interface between a curb ramp and the street be maintained adequately. Asphalt street sections can develop potholes at the foot of the ramp, which can catch the front wheels of a wheelchair.

Roadway Crossings

Crossing beacons and signals facilitate crossings of roadways for pedestrians and bicyclists. Beacons make crossing intersections safer by clarifying when to enter an intersection and by alerting motorists to the presence of pedestrians and bicyclists.

Flashing amber warning beacons can be utilized at unsignalized intersection crossings. Push buttons, signage, and pavement markings may be used to highlight these facilities for pedestrians, bicyclists and motorists.

Determining which type of signal or beacon to use for a particular intersection depends on a variety of factors. These include speed limits, traffic volumes, and the anticipated levels of pedestrian and bicycle crossing traffic.

An intersection with crossing beacons may reduce stress and delays for a crossing users, and discourage illegal and unsafe crossing maneuvers.



This Section Includes:

- Active Warning Beacons
- Hybrid Beacon for Mid-Block Crossing

Active Warning Beacons

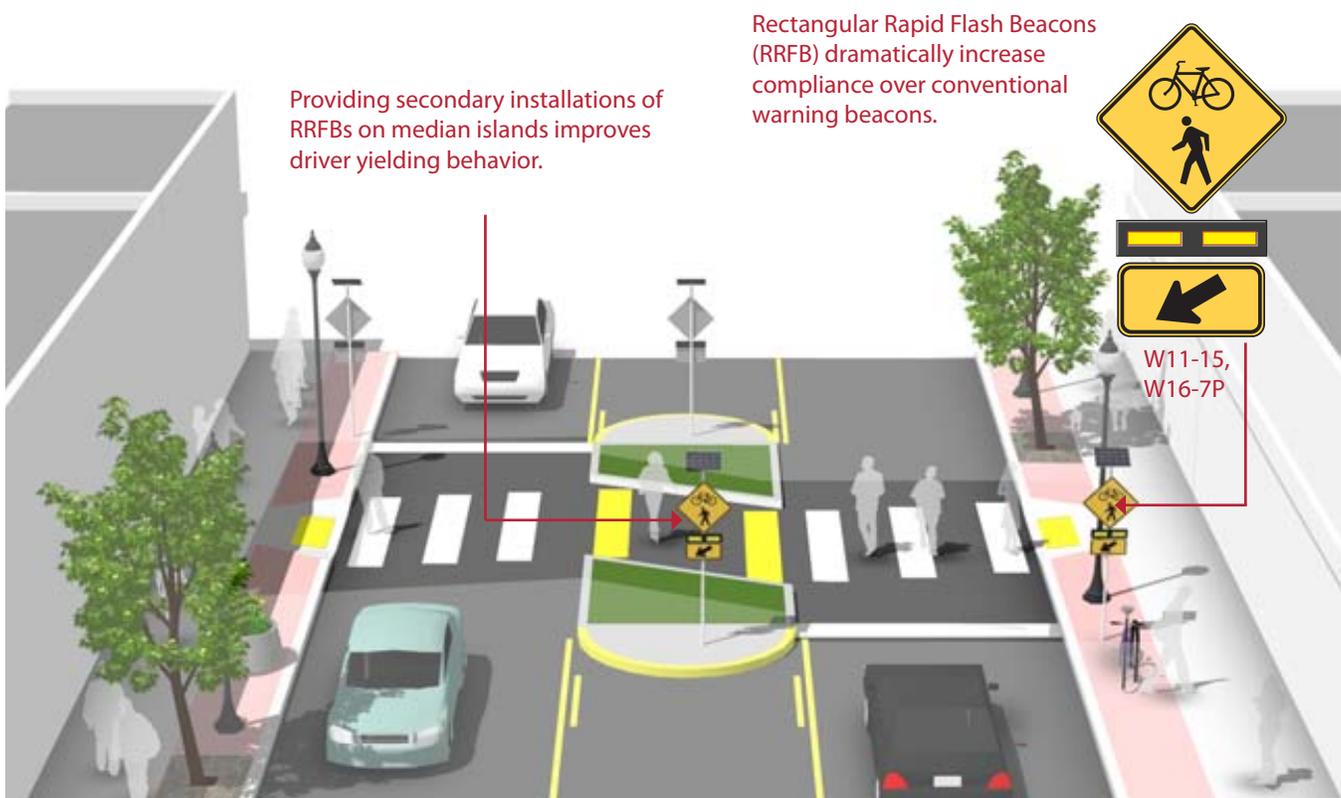
Description

Active warning beacons are user actuated illuminated devices designed to increase motor vehicle yielding compliance at crossings of multi lane or high volume roadways.

Types of active warning beacons include conventional circular yellow flashing beacons, in-roadway warning lights, or Rectangular Rapid Flash Beacons (RRFB).

Guidance

- Warning beacons shall not be used at crosswalks controlled by YIELD signs, STOP signs, or traffic signals.
- Warning beacons shall initiate operation based on pedestrian or bicyclist actuation and shall cease operation at a predetermined time after actuation or, with passive detection, after the pedestrian or bicyclist clears the crosswalk.



Discussion

Rectangular rapid flash beacons have the most increased compliance of all the warning beacon enhancement options.

A study of the effectiveness of going from a no-beacon arrangement to a two-beacon RRFB installation increased yielding from 18 percent to 81 percent. A four-beacon arrangement raised compliance to 88 percent. Additional studies over long term installations show little to no decrease in yielding behavior over time.

Additional References and Guidelines

NACTO. (2012). Urban Bikeway Design Guide.
 FHWA. (2009). Manual on Uniform Traffic Control Devices.
 FHWA. (2008). MUTCD - Interim Approval for Optional Use of Rectangular Rapid Flashing Beacons (IA-11)

Materials and Maintenance

Depending on power supply, maintenance can be minimal. If solar power is used, RRFBs should run for years without issue.

Hybrid Beacon for Mid-Block Crossing

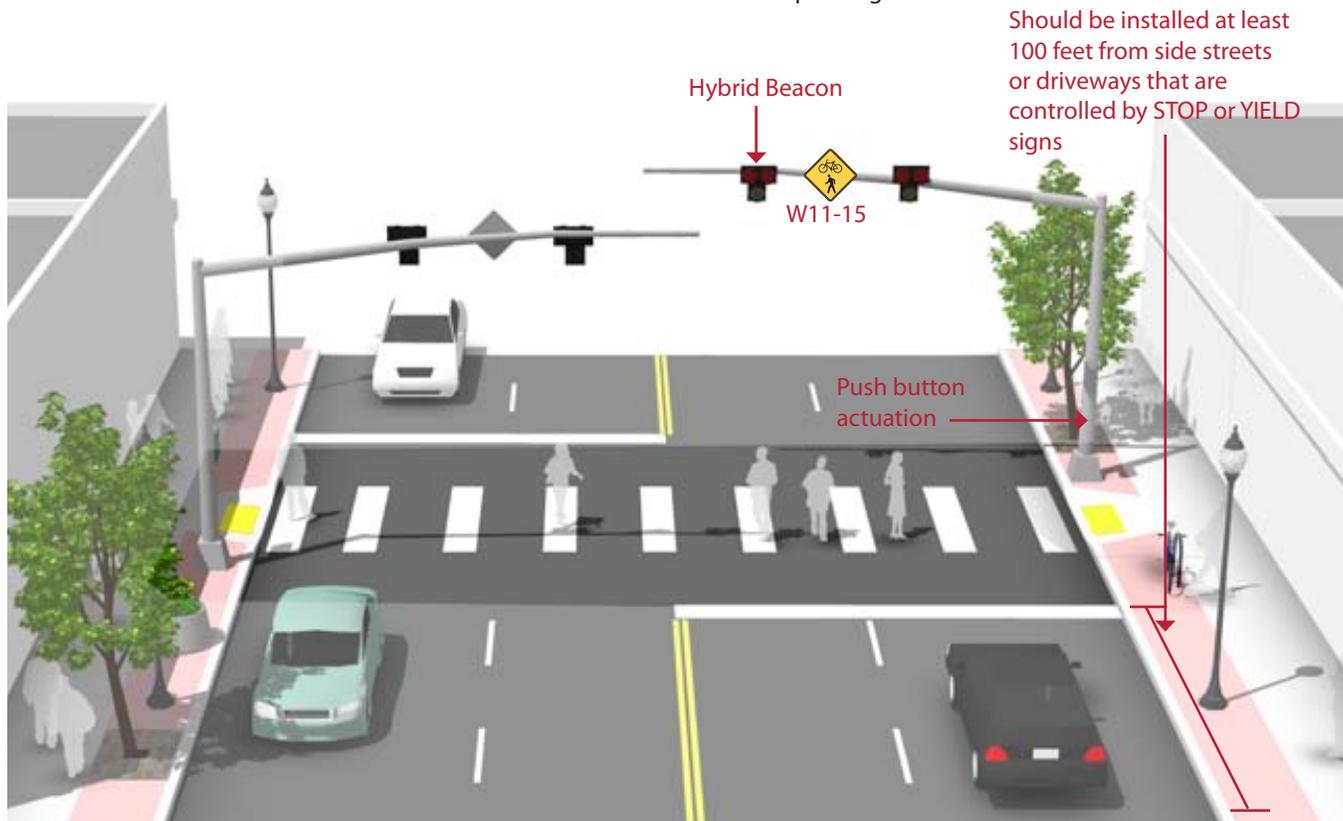
Description

Hybrid beacons are used to improve non-motorized crossings of major streets. A hybrid beacon consists of a signal-head with two red lenses over a single yellow lens on the major street, and a pedestrian signal head for the crosswalk

Guidance

Hybrid beacons may be installed without meeting traffic signal control warrants if roadway speed and volumes are excessive for comfortable pedestrian crossings.

- If installed within a signal system, signal engineers should evaluate the need for the hybrid signal to be coordinated with other signals.
- Parking and other sight obstructions should be prohibited for at least 100 feet in advance of and at least 20 feet beyond the marked crosswalk to provide adequate sight distance.



Discussion

Hybrid beacon signals are normally activated by push buttons, but may also be triggered by infrared, microwave or video detectors. The maximum delay for activation of the signal should be two minutes, with minimum crossing times determined by the width of the street.

Each crossing, regardless of traffic speed or volume, requires additional review by a registered engineer to identify sight lines, potential impacts on traffic progression, timing with adjacent signals, capacity, and safety.

Additional References and Guidelines

FHWA. (2009). Manual on Uniform Traffic Control Devices.
 NACTO. (2012). Urban Bikeway Design Guide.

Materials and Maintenance

Hybrid beacons are subject to the same maintenance needs and requirements as standard traffic signals. Signing and striping need to be maintained to help users understand any unfamiliar traffic control.

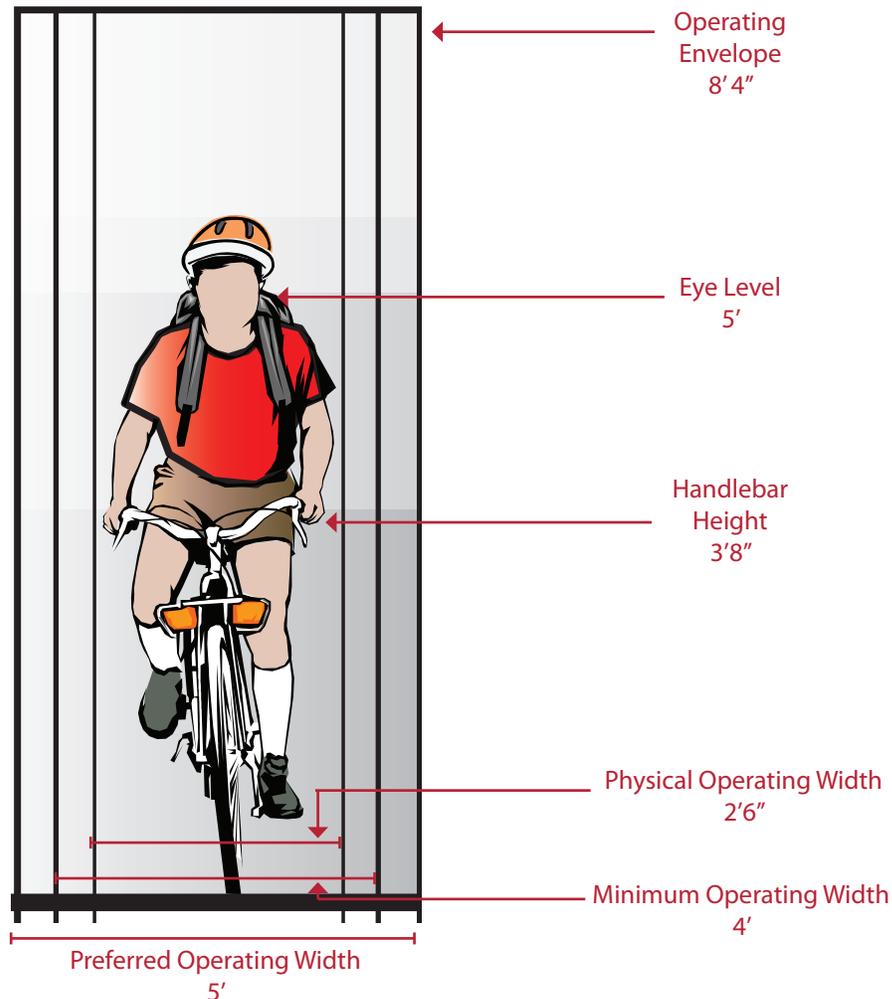
Design Needs of Bicyclists

The purpose of this section is to provide the facility designer with an understanding of how bicyclists operate and how their bicycle influences that operation. Bicyclists, by nature, are much more affected by poor facility design, construction and maintenance practices than motor vehicle drivers. Bicyclists lack the protection from the elements and roadway hazards provided by an automobile's structure and safety features. By understanding the unique characteristics and needs of bicyclists, a facility designer can provide quality facilities and minimize user risk.

Bicycle as a Design Vehicle

Similar to motor vehicles, bicyclists and their bicycles exist in a variety of sizes and configurations. These variations occur in the types of vehicle (such as a conventional bicycle, a recumbent bicycle or a tricycle), and behavioral characteristics (such as the comfort level of the bicyclist). The design of a bikeway should consider reasonably expected bicycle types on the facility and utilize the appropriate dimensions.

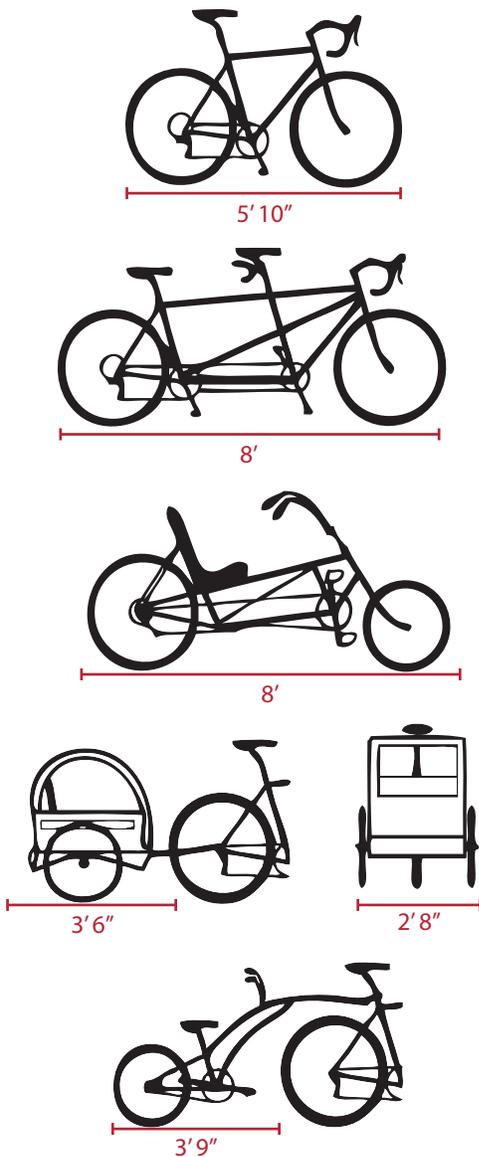
The figure below illustrates the operating space and physical dimensions of a typical adult bicyclist, which are the basis for typical facility design. Bicyclists require clear space to operate within a facility. This is why the minimum operating width is greater than the physical dimensions of the bicyclist. Bicyclists prefer five feet or more operating width, although four feet may be minimally acceptable.



Standard Bicycle Rider Dimensions

Source: AASHTO Guide for the Development of Bicycle Facilities, 3rd Edition

In addition to the design dimensions of a typical bicycle, there are many other commonly used pedal-driven cycles and accessories to consider when planning and designing bicycle facilities. The most common types include tandem bicycles, recumbent bicycles, and trailer accessories. The figure and table below summarize the typical dimensions for bicycle types.



Bicycle as Design Vehicle - Typical Dimensions

Source: AASHTO Guide for the Development of Bicycle Facilities, 3rd Edition *AASHTO does not provide typical dimensions for tricycles.

Design Speed Expectations

The expected speed that different types of bicyclists can maintain under various conditions also influences the design of facilities such as shared use paths. The table to the right provides typical bicyclist speeds for a variety of conditions.

Bicycle as Design Vehicle - Typical Dimensions

Bicycle Type	Feature	Typical Dimensions
Upright Adult Bicyclist	Physical width	2 ft 6 in
	Operating width (Minimum)	4 ft
	Operating width (Preferred)	5 ft
	Physical length	5 ft 10 in
	Physical height of handlebars	3 ft 8 in
	Operating height	8 ft 4 in
	Eye height	5 ft
	Vertical clearance to obstructions (tunnel height, lighting, etc)	10 ft
Recumbent Bicyclist	Approximate center of gravity	2 ft 9 in - 3 ft 4 in
	Physical length	8 ft
Tandem Bicyclist	Eye height	3 ft 10 in
	Physical length	8 ft
Bicyclist with child trailer	Physical length	10 ft
	Physical width	2 ft 8 in

Bicycle as Design Vehicle - Design Speed Expectations

Bicycle Type	Feature	Typical Speed
Upright Adult Bicyclist	Paved level surfacing	15 mph
	Crossing Intersections	10 mph
	Downhill	30 mph
	Uphill	5 -12 mph
Recumbent Bicyclist	Paved level surfacing	18 mph

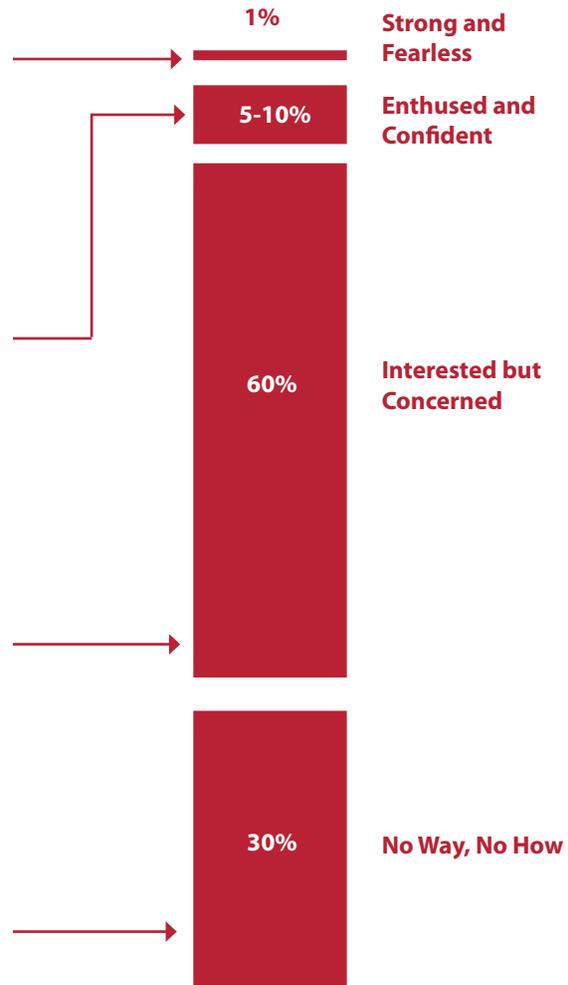
*Tandem bicycles and bicyclists with trailers have typical speeds equal to or less than upright adult bicyclists.

Types of Bicyclists

It is important to consider bicyclists of all skill levels when creating a non-motorized plan or project. Bicyclist skill level greatly influences expected speeds and behavior, both in separated bikeways and on shared roadways. Bicycle infrastructure should accommodate as many user types as possible, with decisions for separate or parallel facilities based on providing a comfortable experience for the greatest number of people.

The bicycle planning and engineering professions currently use several systems to classify the population, which can assist in understanding the characteristics and infrastructure preferences of different bicyclists. The most conventional framework classifies the “design cyclist” as *Advanced, Basic, or Child*¹. A more detailed understanding of the US population as a whole is illustrated in the figure below. Developed by planners in Portland, OR² and supported by data collected nationally since 2005, this classification provides the following alternative categories to address varying attitudes towards bicycling in the US:

- **Strong and Fearless** (approximately 1% of population) – Characterized by bicyclists that will typically ride anywhere regardless of roadway conditions or weather. These bicyclists can ride faster than other user types, prefer direct routes and will typically choose roadway connections -- even if shared with vehicles -- over separate bicycle facilities such as shared use paths.
- **Enthusied and Confident** (5-10% of population) - This user group encompasses bicyclists who are fairly comfortable riding on all types of bikeways but usually choose low traffic streets or shared use paths when available. These bicyclists may deviate from a more direct route in favor of a preferred facility type. This group includes all kinds of bicyclists such as commuters, recreationalists, racers and utilitarian bicyclists.
- **Interested but Concerned** (approximately 60% of population) – This user type comprises the bulk of the cycling population and represents bicyclists who typically only ride a bicycle on low traffic streets or shared use trails under favorable weather conditions. These bicyclists perceive significant barriers to their increased use of cycling, specifically traffic and other safety issues. These people may become “Enthusied & Confident” with encouragement, education and experience.
- **No Way, No How** (approximately 30% of population) – Persons in this category are not bicyclists, and perceive severe safety issues with riding in traffic. Some people in this group may eventually become more regular cyclists with time and education. A significant portion of these people will not ride a bicycle under any circumstances.



Typical Distribution of Bicyclist Types

1 *Selecting Roadway Design Treatments to Accommodate Bicycles. (1994). Publication No. FHWA-RD-92-073*
 2 *Four Types of Cyclists. (2009). Roger Geller, City of Portland Bureau of Transportation. <http://www.portlandonline.com/transportation/index.cfm?&a=237507>*

Facility Classification

Description

Consistent with bicycle facility classifications throughout the nation, these Bicycle Facility Design Guidelines identify the following classes of facilities by degree of separation from motor vehicle traffic.

Shared Roadways are bikeways where bicyclists and cars operate within the same travel lane, either side by side or in single file depending on roadway configuration. The most basic type of bikeway is a signed shared roadway. This facility provides continuity with other bicycle facilities (usually bike lanes), or designates preferred routes through high-demand corridors.



Shared Roadways may also be designated by pavement markings, signage and other treatments including directional signage, traffic diverters, chicanes, chokers and /or other traffic calming devices to reduce vehicle speeds or volumes.



Separated Bikeways, such as bike lanes, use signage and striping to delineate the right-of-way assigned to bicyclists and motorists. Bike lanes encourage predictable movements by both bicyclists and motorists.



Cycle Tracks are exclusive bike facilities that combine the user experience of a separated path with the on-street infrastructure of conventional bike lanes.



Shared use Paths are facilities separated from roadways for use by bicyclists and pedestrians.



Shared Roadways

On shared roadways, bicyclists and motor vehicles use the same roadway space. These facilities are typically used on roads with low speeds and traffic volumes, however they can be used on higher volume roads with wide outside lanes or shoulders. A motor vehicle driver will usually have to cross over into the adjacent travel lane to pass a bicyclist, unless a wide outside lane or shoulder is provided.

Neighborhood Greenways

Neighborhood greenways are a special class of shared roadways designed for a broad spectrum of bicyclists. They are low-volume local streets where motorists and bicyclists share the same travel lane. Treatments for neighborhood greenways are selected as necessary to create appropriate automobile volumes and speeds, and to provide safe crossing opportunities of busy streets.



Marked Shared Roadway

Description

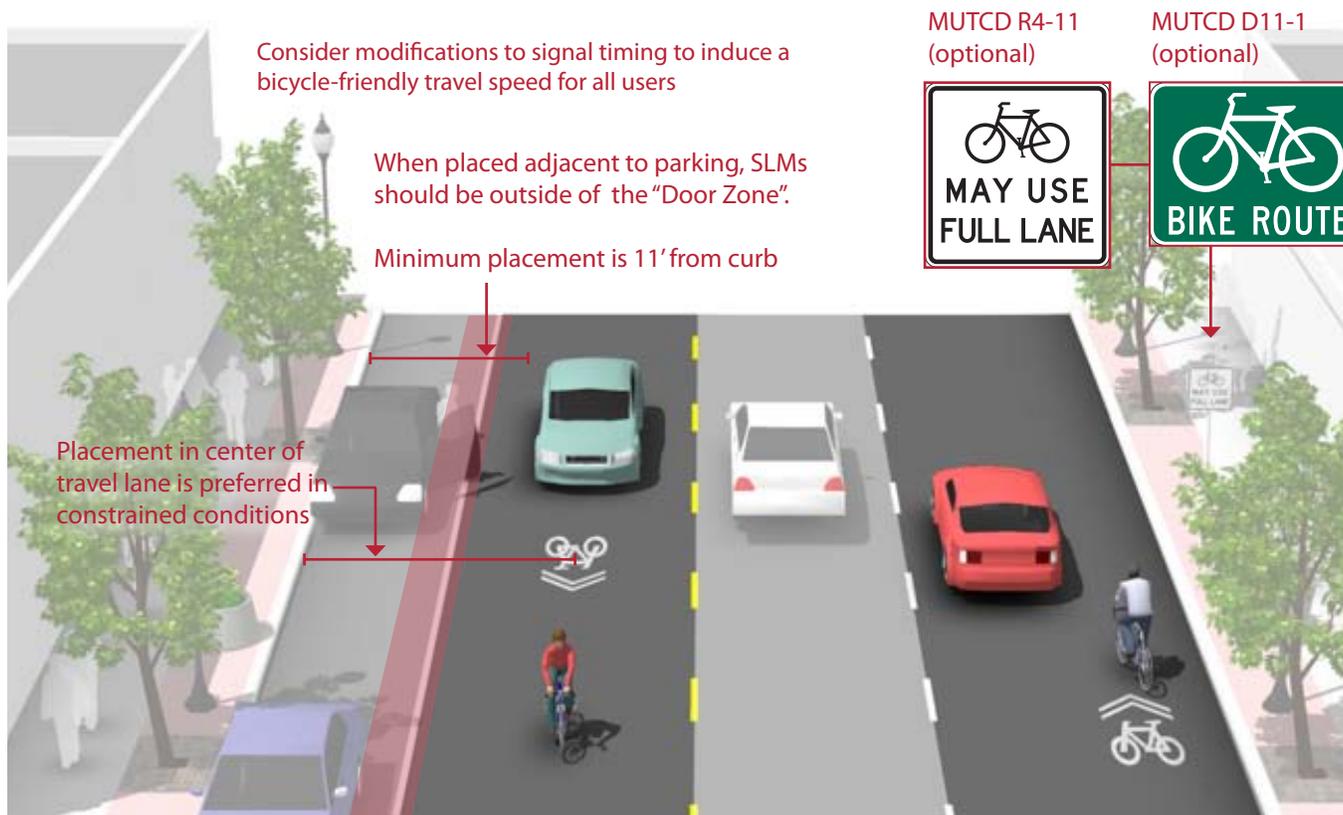
A marked shared roadway is a general purpose travel lane marked with shared lane markings (SLM) used to encourage bicycle travel and proper positioning within the lane.

In constrained conditions, the SLMs are placed in the middle of the lane to discourage unsafe passing by motor vehicles. On a wide outside lane, the SLMs can be used to promote bicycle travel to the right of motor vehicles.

In all conditions, SLMs should be placed outside of the door zone of parked cars.

Guidance

- In constrained conditions, preferred placement is in the center of the travel lane to minimize wear and promote single file travel.
- Minimum placement of SLM marking centerline is 11 feet from edge of curb where on-street parking is present, 4 feet from edge of curb with no parking. If parking lane is wider than 7.5 feet, the SLM should be moved further out accordingly.



Discussion

Bike Lanes should be considered on roadways with outside travel lanes wider than 15 feet, or where other lane narrowing or removal strategies may provide adequate road space. SLMs shall not be used on shoulders, in designated Bike Lanes, or to designate Bicycle Detection at signalized intersections. (MUTCD 9C.07)

Additional References and Guidelines

AASHTO. (2012). Guide for the Development of Bicycle Facilities.
 FHWA. (2009). Manual on Uniform Traffic Control Devices.
 NACTO. (2012). Urban Bikeway Design Guide.

Materials and Maintenance

Placing SLMs between vehicle tire tracks will increase the life of the markings and minimize the long-term cost of the treatment.

Neighborhood Greenway

Description

Neighborhood greenways are low-volume, low-speed streets modified to enhance bicyclist comfort by using treatments such as signage, pavement markings, traffic calming and/or traffic reduction, and intersection modifications. These treatments allow through movements of bicyclists while discouraging similar through-trips by non-local motorized traffic.

Guidance

- Signs and pavement markings are the minimum treatments necessary to designate a street as a neighborhood greenway.
- Neighborhood greenways should have a maximum posted speed of 25 mph. Use traffic calming to maintain an 85th percentile speed below 22 mph.
- Implement volume control treatments based on the context of the neighborhood greenway, using engineering judgment. Target motor vehicle volumes range from 1,000 to 3,000 vehicles per day.
- Intersection crossings should be designed to enhance safety and minimize delay for bicyclists.

Signs and Pavement Markings identify the street as a bicycle priority route.



Enhanced Crossings use signals, beacons, and road geometry to increase safety at major intersections.

Partial Closures and other volume management tools limit the number of cars traveling on the neighborhood greenway.

Speed Humps manage driver speed.

Bump Outs shorten pedestrian crossing distance.

Mini Traffic Circles slow drivers in advance of intersections.



Discussion

Neighborhood greenway retrofits to local streets are typically located on streets without existing signalized accommodation at crossings of collector and arterial roadways. Without treatments for bicyclists, these intersections can become major barriers along the neighborhood greenway and compromise safety.

Traffic calming can deter motorists from driving on a street. Anticipate and monitor vehicle volumes on adjacent streets to determine whether traffic calming results in inappropriate volumes. Traffic calming can be implemented on a trial basis.

Additional References and Guidelines

Alta Planning + Design and IBPI. (2009). Bicycle Boulevard Planning and Design Handbook.
 BikeSafe. (No Date). Bicycle countermeasure selection system.
 Ewing, Reid. (1999). Traffic Calming: State of the Practice.
 Ewing, Reid and Brown, Steven. (2009). U.S. Traffic Calming Manual.

Materials and Maintenance

Vegetation should be regularly trimmed to maintain visibility and attractiveness.

Separated Bikeways

Designated exclusively for bicycle travel, separated bikeways are segregated from vehicle travel lanes by striping, and can include pavement stencils and other treatments. Separated bikeways are most appropriate on arterial and collector streets where higher traffic volumes and speeds warrant greater separation.

Separated bikeways can increase safety and promote proper riding by:

- Defining road space for bicyclists and motorists, reducing the possibility that motorists will stray into the bicyclists' path.
- Discouraging bicyclists from riding on the sidewalk.
- Reducing the incidence of wrong way riding.
- Reminding motorists that bicyclists have a right to the road.



Bicycle Lanes

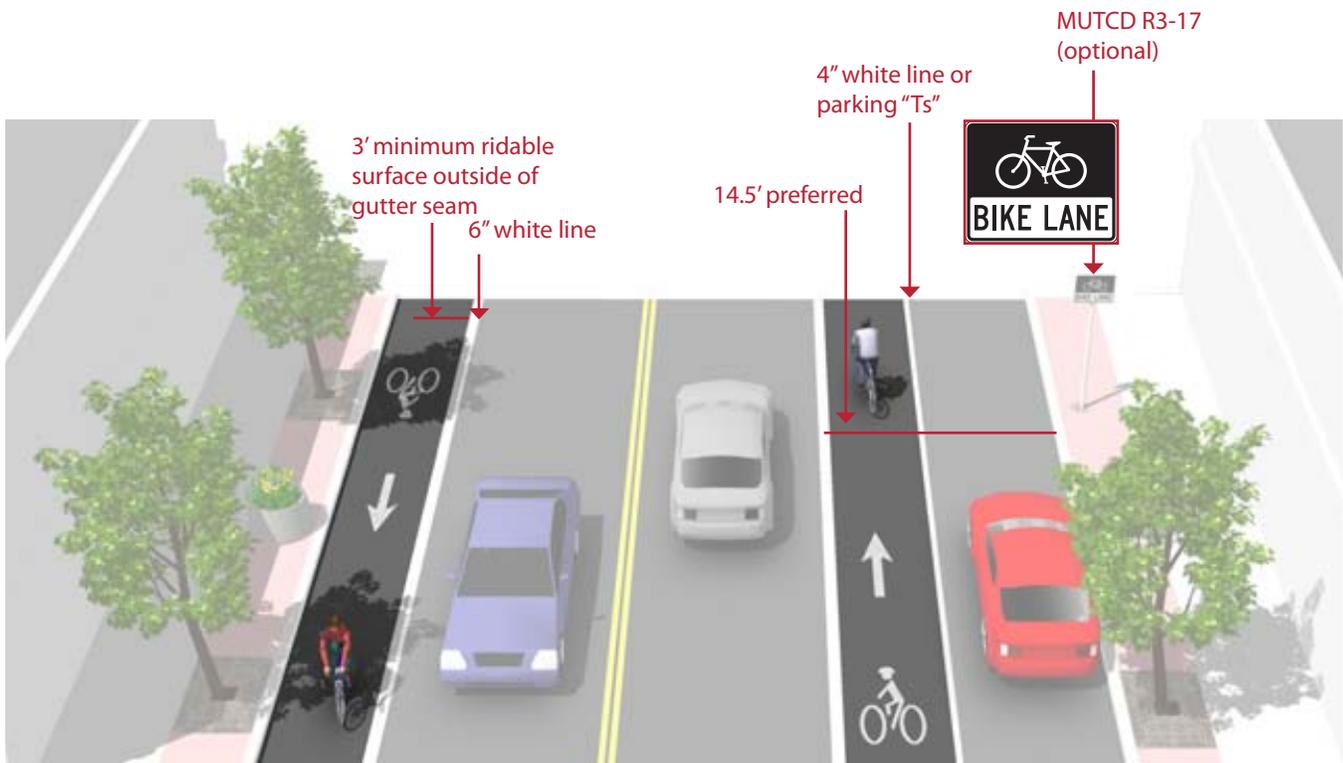
Description

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

Many bicyclists, particularly less experienced riders, are more comfortable riding on a busy street if it has a striped and signed bikeway than if they are expected to share a lane with vehicles.

Guidance

- 4 foot minimum when no curb and gutter is present.
- 5 foot minimum when adjacent to curb and gutter or 4 feet more than the gutter pan width.
- 14.5 foot preferred from curb face to edge of bike lane. (12 foot minimum).
- 7 foot maximum width for use adjacent to arterials with high travel speeds. Greater widths may encourage motor vehicle use of bike lane.



Discussion

Wider bicycle lanes are desirable in certain situations such as on higher speed arterials (45 mph+) where use of a wider bicycle lane would increase separation between passing vehicles and bicyclists. Appropriate signing and stenciling is important with wide bicycle lanes to ensure motorists do not mistake the lane for a vehicle lane or parking lane. Consider Buffered Bicycle Lanes when further separation is desired.

Additional References and Guidelines

AASHTO. (2012). Guide for the Development of Bicycle Facilities.
 FHWA. (2009). Manual on Uniform Traffic Control Devices.
 NACTO. (2012). Urban Bikeway Design Guide.
 WisDOT. (2009). Wisconsin Bicycle Facility Design Handbook.

Materials and Maintenance

Paint can wear more quickly in high traffic areas or in winter climates. Bicycle lanes should be cleared of snow through routine snow removal operations.

Buffered Bike Lanes

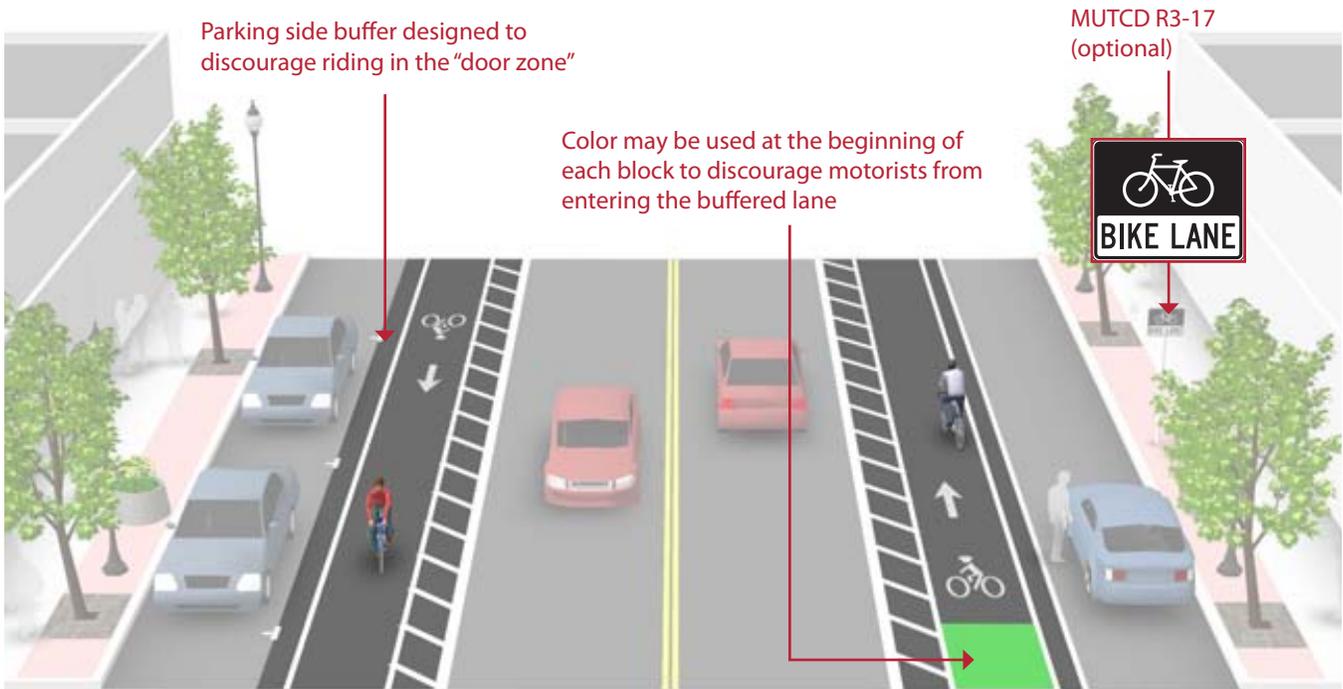
Description

Buffered bike lanes are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane. Buffered bike lanes are allowed as per MUTCD guidelines for buffered preferential lanes (section 3D-01).

Buffered bike lanes are designed to increase the space between the bike lane and the travel lane or parked cars. This treatment is appropriate for bike lanes on roadways with high motor vehicle traffic volumes and speed, adjacent to parking lanes, or a high volume of truck or oversized vehicle traffic.

Guidance

- Where bicyclist volumes are high or where bicyclist speed differentials are significant, the desired bicycle travel area width is 7 feet.
- Buffers should be at least 2 feet wide. If 3 feet or wider, mark with diagonal or chevron hatching. For clarity at driveways or minor street crossings, consider a dotted line for the inside buffer boundary where cars are expected to cross.



Discussion

Frequency of right turns by motor vehicles at major intersections should determine whether continuous or truncated buffer striping should be used approaching the intersection. Commonly configured as a buffer between the bicycle lane and motor vehicle travel lane, a parking side buffer may also be provided to help bicyclists avoid the 'door zone' of parked cars.

Additional References and Guidelines

AASHTO. (2012). Guide for the Development of Bicycle Facilities.
 FHWA. (2009). Manual on Uniform Traffic Control Devices. (3D-01)
 NACTO. (2012). Urban Bikeway Design Guide.

Materials and Maintenance

Paint can wear more quickly in high traffic areas or in winter climates. Bicycle lanes should be cleared of snow through routine snow removal operations.

Cycle Tracks

Description

A cycle track is an exclusive bike facility that combines the user experience of a separated path with the on-street infrastructure of a conventional bike lane. A cycle track is physically separated from motor traffic and distinct from the sidewalk. Cycle tracks have different forms but all share common elements—they provide space that is intended to be exclusively or primarily used by bicycles, and are separated from motor vehicle travel lanes, parking lanes, and sidewalks.

Raised cycle tracks may be at the level of the adjacent sidewalk or set at an intermediate level between the roadway and sidewalk to separate the cycle track from the pedestrian area.

Guidance

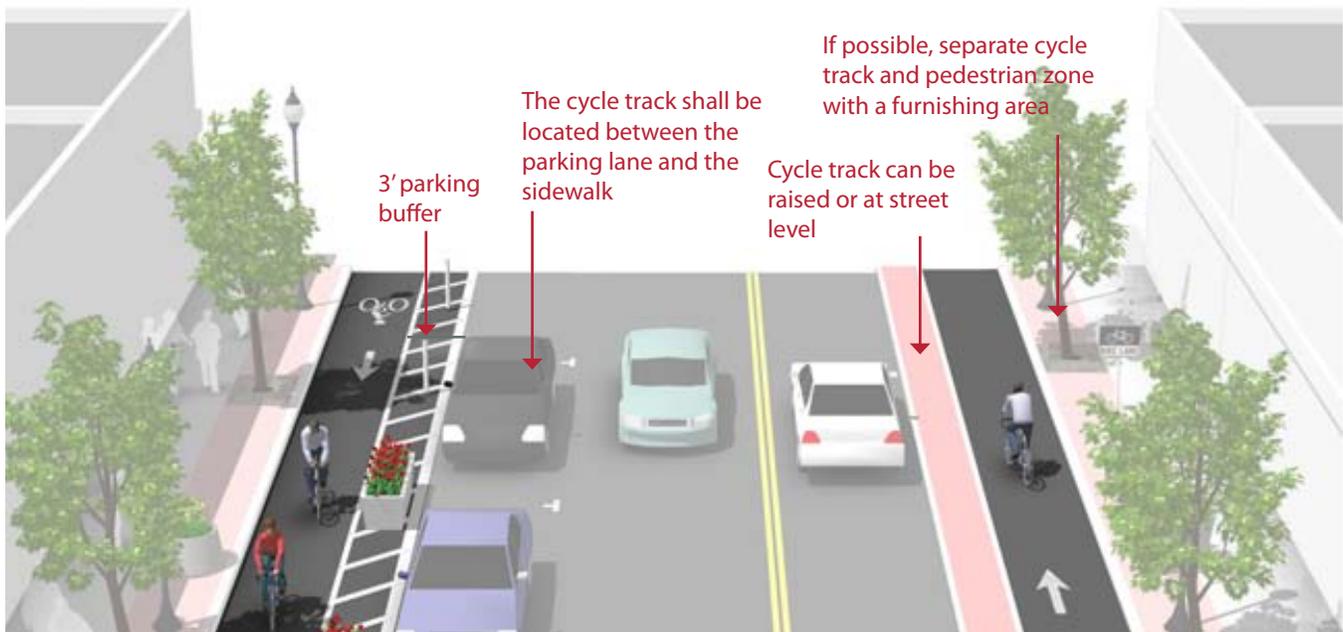
Cycle tracks should ideally be placed along streets with long blocks and few driveways or mid-block access points for motor vehicles.

One-Way Cycle Tracks

- 7 foot recommended minimum to allow passing. 5 foot minimum width in constrained locations.

Two-Way Cycle Tracks

- Cycle tracks located on one-way streets have fewer potential conflict areas than those on two-way streets.
- 12 foot recommended minimum for two-way facility. 8 foot minimum in constrained locations



Discussion

Special consideration should be given at transit stops to manage bicycle and pedestrian interactions. Driveways and minor street crossings are unique challenges to cycle track design. Parking should be prohibited within 30 feet of the intersection to improve visibility. Color, yield markings and "Yield to Bikes" signage should be used to identify the conflict area and make it clear that the cycle track has priority over entering and exiting traffic. If configured as a raised cycle track, the crossing should be raised so that the sidewalk and cycle track maintain their elevation through the crossing.

Additional References and Guidelines

NACTO. (2012). Urban Bikeway Design Guide.

Materials and Maintenance

In cities with winter climates, barrier separated and raised cycle tracks may require special equipment for snow removal.

Separated Bikeways at Intersections

Intersections are junctions at which different modes of transportation meet and facilities overlap. An intersection facilitates the interchange between bicyclists, motorists, pedestrians and other modes in order to advance traffic flow in a safe and efficient manner. Designs for intersections with bicycle facilities should reduce conflict between bicyclists (and other vulnerable road users) and vehicles by heightening the level of visibility, denoting clear right-of-way and facilitating eye contact and awareness with other modes. Intersection treatments can improve both queuing and merging maneuvers for bicyclists, and are often coordinated with timed or specialized signals.

The configuration of a safe intersection for bicyclists may include elements such as color, signage, medians, signal detection and pavement markings. Intersection design should take into consideration existing and anticipated bicyclist, pedestrian and motorist movements. In all cases, the degree of mixing or separation between bicyclists and other modes is intended to reduce the risk of crashes and increase bicyclist comfort. The level of treatment required for bicyclists at an intersection will depend on the bicycle facility type used, whether bicycle facilities are intersecting, and the adjacent street function and land use.



Bike Lanes at Right Turn Only Lanes

Description

The appropriate treatment at right-turn lanes is to place the bike lane between the right-turn lane and the right-most through lane or, where right-of-way is insufficient, to use a shared bike lane/turn lane.

The design (right) illustrates a bike lane pocket, with signage indicating that motorists should yield to bicyclists through the conflict area.

Guidance

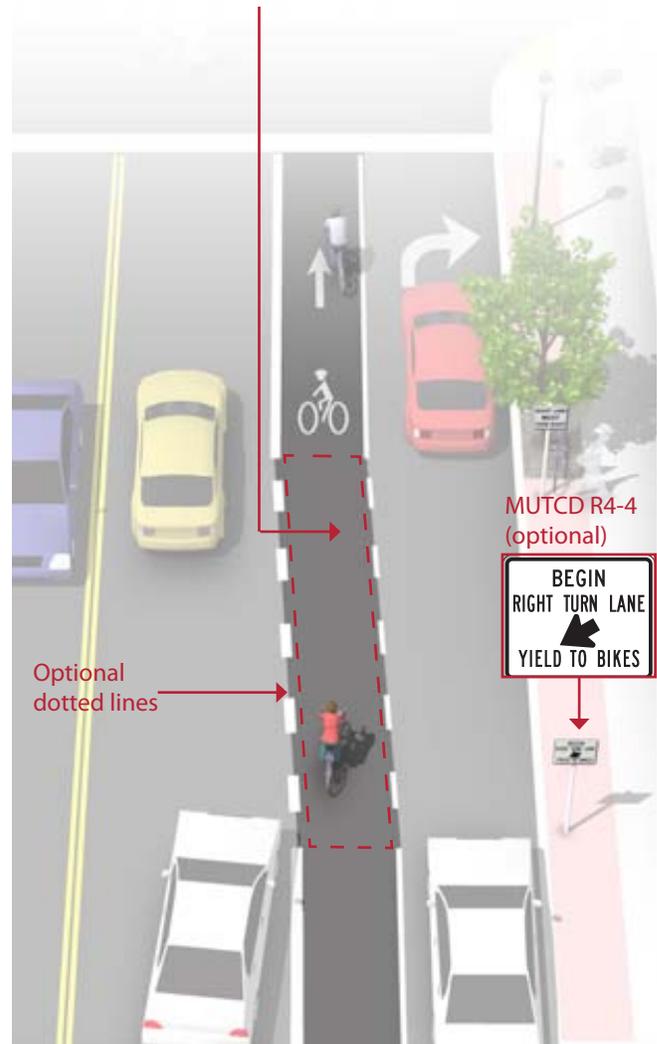
At auxiliary right turn only lanes (add lane):

- Continue existing bike lane width; standard width of 5 to 6 feet or 4 feet in constrained locations.
- Use signage to indicate that motorists should yield to bicyclists through the conflict area.
- Consider using colored conflict areas to promote visibility of the mixing zone.

Where a through lane becomes a right turn only lane:

- Do not define a dotted line merging path for bicyclists.
- Drop the bicycle lane in advance of the merge area.
- Use shared lane markings to indicate shared use of the lane in the merging zone.

Colored pavement may be used in the weaving area to increase visibility and awareness of potential conflict



Discussion

For other potential approaches to providing accommodations for bicyclists at intersections with turn lanes, please see Combined Bike Lane/Turn Lane.

Additional References and Guidelines

AASHTO. (2012). Guide for the Development of Bicycle Facilities.
 FHWA. (2009). Manual on Uniform Traffic Control Devices.
 NACTO. (2012). Urban Bikeway Design Guide.
 WisDOT. (2009). Wisconsin Bicycle Facility Design Handbook.

Materials and Maintenance

Because the effectiveness of markings depends entirely on their visibility, maintaining markings should be a high priority.

Combined Bike Lane / Turn Lane

Description

The combined bicycle/right turn lane places a standard-width bike lane on the left half of a dedicated right turn lane. A dotted line delineates bicyclist positioning within the shared lane.

Bicyclists and automobiles should travel in-line within the combined lane, and not attempt unsafe side-by-side operation.

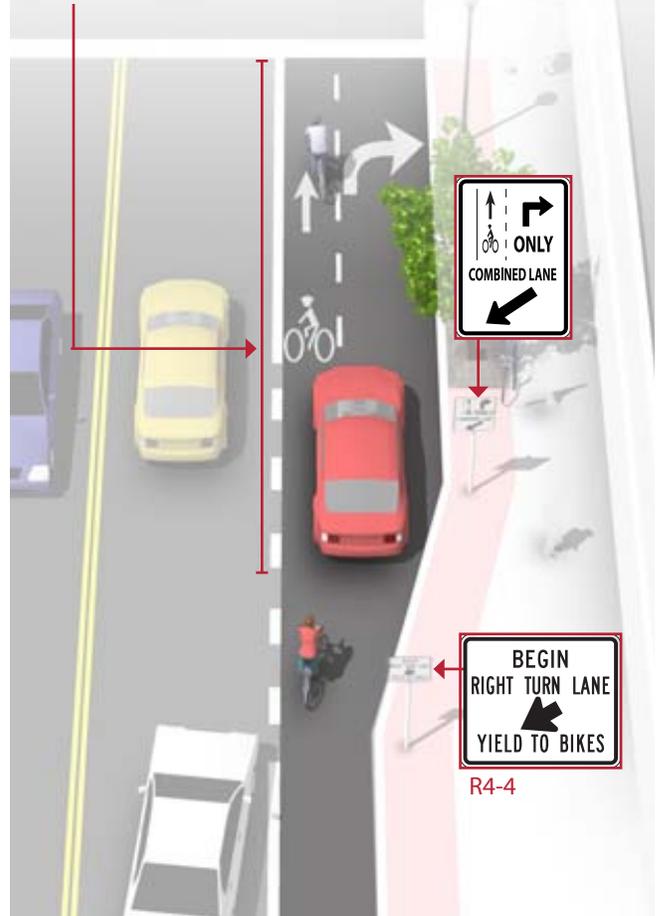
This treatment is recommended at intersections lacking sufficient space to accommodate both a standard through bike lane and right turn lane.

Guidance

- Maximum shared turn lane width is 13 feet; narrower is preferable.
- Bike Lane pocket should have a minimum width of 4 feet with 5 feet preferred.
- A dotted 4 inch line and bicycle lane marking should be used to clarify bicyclist positioning within the combined lane, without excluding cars from the suggested bicycle area.
- A "Right Turn Only" sign with an "Except Bicycles" plaque may be needed to make it legal for through bicyclists to use a right turn lane.

Combined lanes are designed for in-line operation of bicyclists and automobiles. The lane should be narrow to discourage unsafe side-by-side operation.

Short length turn pockets encourage slower motor vehicle speeds



Discussion

Case studies cited by the Pedestrian and Bicycle Information Center indicate that this treatment works best on streets with lower posted speeds (30 MPH or less) and with lower traffic volumes (10,000 ADT or less). May not be appropriate for high-speed arterials or intersections with long right turn lanes. May not be appropriate for intersections with large percentages of right-turning heavy vehicles.

Additional References and Guidelines

NACTO. (2012). Urban Bikeway Design Guide. This treatment is currently slated for inclusion in the next edition of the AASHTO Guide for the Development of Bicycle Facilities

Materials and Maintenance

Locate markings out of tire tread to minimize wear. Because the effectiveness of markings depends on their visibility, maintaining markings should be a high priority.

Shared use Paths

A shared use path (also known as a greenway or multi-use path) allows for two-way, off-street bicycle use and also may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. These facilities are frequently found in parks, along rivers, beaches, and in greenbelts or utility corridors where there are few conflicts with motorized vehicles. Path facilities can also include amenities such as lighting, signage, and fencing (where appropriate).

Key features of shared use paths include:

- Frequent access points from the local road network.
- Directional signs to direct users to and from the path.
- A limited number of at-grade crossings with streets or driveways.
- Terminating the path where it is easily accessible to and from the street system.
- Separate treads for pedestrians and bicyclists when heavy use is expected.



This Section Includes:

- General Design Practices
- Trails in River and Utility Corridors
- Trails in Abandoned Rail Corridors
- Trails in Existing Active Rail Corridors
- Shared Use Paths Along Roadways

General Design Practices

Description

Shared use paths can provide a desirable facility, particularly for recreation, and users of all skill levels preferring separation from traffic. Bicycle paths should generally provide directional travel opportunities not provided by existing roadways.

Guidance

Width

- 8 feet is the minimum allowed for a two-way bicycle path and is only recommended for low traffic situations and for short lengths.
- 10 feet is recommended in most situations and will be adequate for moderate to heavy use.
- 12 feet is recommended for heavy use situations with high concentrations of multiple users. A separate track (5' minimum) can be provided for pedestrian use.

Lateral Clearance

- A 2 foot or greater shoulder on both sides of the path should be provided to support the pavement edge. This may be covered with topsoil and grass. An additional foot of lateral clearance (total of 3') is required by the MUTCD for the installation of signage or other furnishings.

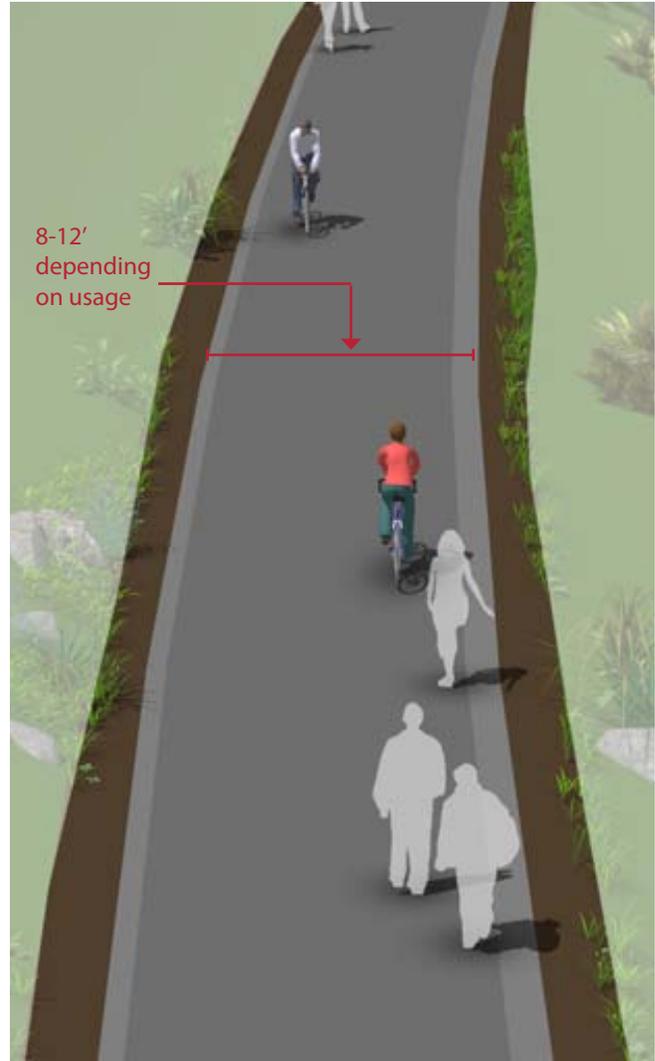
Overhead Clearance

- Clearance to overhead obstructions should be 8 feet minimum, with 10 feet recommended.

Striping

- When striping is required, use a 4 inch dashed yellow centerline stripe with 4 inch solid white edge lines.
- Solid centerlines can be provided on tight or blind corners, and on the approaches to roadway crossings.

Terminate the path where it is easily accessible to and from the street system, preferably at a controlled intersection or at the beginning of a dead-end street.



Discussion

The AASHTO Guide for the Development of Bicycle Facilities generally recommends against the development of shared use paths along roadways. Also known as “sidepaths”, these facilities create a situation where a portion of the bicycle traffic rides against the normal flow of motor vehicle traffic and can result in wrong-way riding when either entering or exiting the path.

Additional References and Guidelines

- AASHTO. (2012). Guide for the Development of Bicycle Facilities.
- FHWA. (2009). Manual on Uniform Traffic Control Devices.
- Flink, C. (1993). Greenways: A Guide To Planning Design And Development.
- WisDOT. (2009). Wisconsin Bicycle Facility Design Handbook.

Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

Shared use Paths in River and Utility Corridors

Description

Utility and waterway corridors often offer excellent shared use path development and bikeway gap closure opportunities. Utility corridors typically include powerline and sewer corridors, while waterway corridors include canals, drainage ditches, rivers, and beaches. These corridors offer excellent transportation and recreation opportunities for bicyclists of all ages and skills.

Guidance

Shared use paths in utility corridors should meet or exceed **general design practices**. If additional width allows, wider paths, and landscaping are desirable.

Access Points

Any access point to the path should be well-defined with appropriate signage designating the pathway as a bicycle facility and prohibiting motor vehicles.

Path Closure

Public access to the shared use path may be prohibited during the following events:

- Canal/flood control channel or other utility maintenance activities
- Inclement weather or the prediction of storm conditions



Discussion

Similar to railroads, public access to flood control channels or canals is undesirable by all parties. Hazardous materials, deep water or swift current, steep, slippery slopes, and debris all constitute risks for public access. Appropriate fencing may be required to keep path users within the designated travel way. Creative design of fencing is encouraged to make the path facility feel welcoming to the user.

Additional References and Guidelines

AASHTO. (2012). Guide for the Development of Bicycle Facilities.
 FHWA. (2009). Manual on Uniform Traffic Control Devices.
 Flink, C. (1993). Greenways: A Guide To Planning Design And Development.

Materials and Maintenance

Asphalt is the most common surface for bicycle paths. The use of concrete for paths has proven to be more durable over the long term. Saw cut concrete joints rather than troweled improve the experience of path users.

Bikeway Signing

The ability to navigate through a city is informed by landmarks, natural features and other visual cues. Signs throughout the city should indicate to bicyclists:

- Direction of travel
- Location of destinations
- Travel time/distance to those destinations

These signs will increase users' comfort and accessibility to the bicycle systems.

Signage can serve both wayfinding and safety purposes including:

- Helping to familiarize users with the bicycle network
- Helping users identify the best routes to destinations
- Helping to address misperceptions about time and distance
- Helping overcome a "barrier to entry" for people who are not frequent bicyclists (e.g., "interested but concerned" bicyclists)

A community-wide bicycle wayfinding signage plan would identify:

- Sign locations
- Sign type – what information should be included and design features
- Destinations to be highlighted on each sign – key destinations for bicyclists
- Approximate distance and travel time to each destination

Bicycle wayfinding signs also visually cue motorists that they are driving along a bicycle route and should use caution. Signs are typically placed at key locations leading to and along bicycle routes, including the intersection of multiple routes. Too many road signs tend to clutter the right-of-way, and it is recommended that these signs be posted at a level most visible to bicyclists rather than per vehicle signage standards.

This section includes:

- Wayfinding Sign Types
- Wayfinding Sign Placement



Wayfinding Sign Types

Description

A bicycle wayfinding system consists of comprehensive signing and/or pavement markings to guide bicyclists to their destinations along preferred bicycle routes. There are three general types of wayfinding signs:

Confirmation Signs

Indicate to bicyclists that they are on a designated bikeway. Make motorists aware of the bicycle route.

Can include destinations and distance/time. Do not include arrows.



Turn Signs

Indicate where a bikeway turns from one street onto another street. Can be used with pavement markings.

Include destinations and arrows.



Decisions Signs

Mark the junction of two or more bikeways.

Inform bicyclists of the designated bike route to access key destinations.

Destinations and arrows, distances and travel times are optional but recommended.



Discussion

There is no standard color for bicycle wayfinding signage. Section 1A.12 of the MUTCD establishes the general meaning for signage colors. Green is the color used for directional guidance and is the most common color of bicycle wayfinding signage in the US, including those in the MUTCD.

Additional References and Guidelines

AASHTO. (2012). Guide for the Development of Bicycle Facilities.
FHWA. (2009). Manual on Uniform Traffic Control Devices.
NACTO. (2012). Urban Bikeway Design Guide.

Materials and Maintenance

Maintenance needs for bicycle wayfinding signs are similar to other signs and will need periodic replacement due to wear.

Wayfinding Sign Placement

Confirmation Signs

Every ¼ to ½ mile on off-street facilities and every 2 to 3 blocks along on-street bicycle facilities, unless another type of sign is used (e.g., within 150 ft of a turn or decision sign). Should be placed soon after turns to confirm destination(s). Pavement markings can also act as confirmation that a bicyclist is on a preferred route.

Turn Signs

Near-side of intersections where bike routes turn (e.g., where the street ceases to be a bicycle route or does not go through). Pavement markings can also indicate the need to turn to the bicyclist.

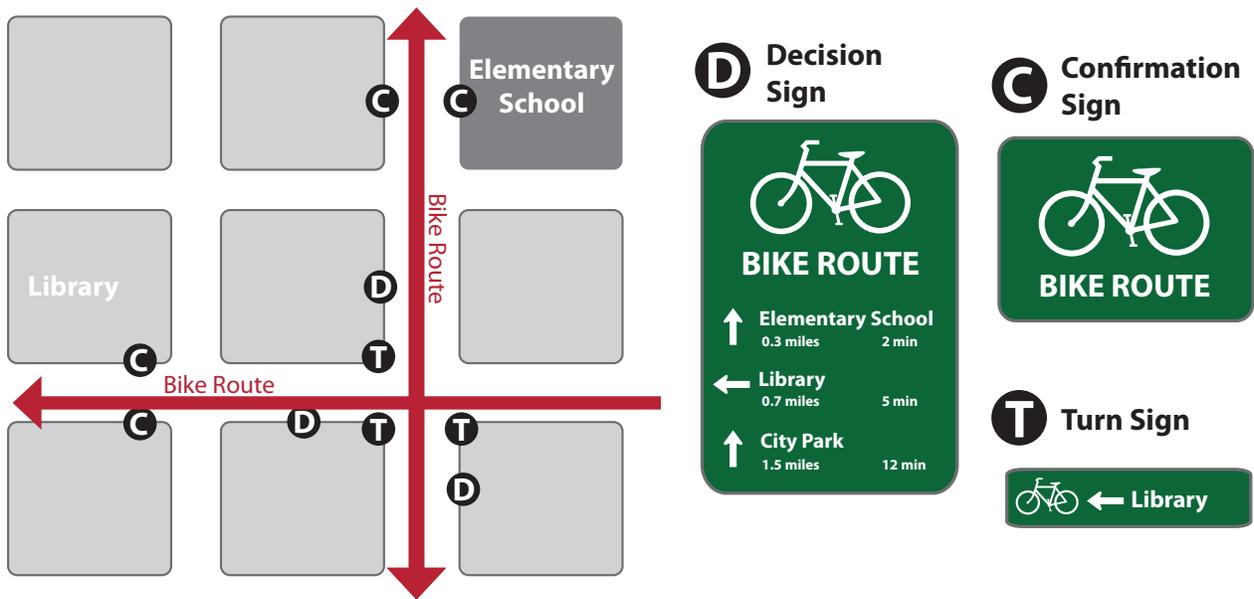
Guidance

Signs are typically placed at decision points along bicycle routes – typically at the intersection of two or more bikeways and at other key locations leading to and along bicycle routes.

Decisions Signs

Near-side of intersections in advance of a junction with another bicycle route.

Along a route to indicate a nearby destination.



Discussion

It can be useful to classify a list of destinations for inclusion on the signs based on their relative importance to users throughout the area. A particular destination's ranking in the hierarchy can be used to determine the physical distance from which the locations are signed. For example, primary destinations (such as the downtown area) may be included on signage up to five miles away. Secondary destinations (such as a transit station) may be included on signage up to two miles away. Tertiary destinations (such as a park) may be included on signage up to one mile away.

Additional References and Guidelines

- AASHTO. (2012). Guide for the Development of Bicycle Facilities.
- FHWA. (2009). Manual on Uniform Traffic Control Devices.
- NACTO. (2012). Urban Bikeway Design Guide.

Materials and Maintenance

Maintenance needs for bicycle wayfinding signs are similar to other signs and will need periodic replacement due to wear.

Appendix E: Safe Routes to School Audits

SRTS Memo for Washington Elementary

Participants: Matt Amundson, Parks and Recreation Director, City of Whitewater

Dean Fischer, Public Works Director, City of Whitewater

Tin Grosinske, Principal, Washington Elementary School

Katy Katzman – PATT President, Washington Elementary School

A condensed SRTS audit was performed on October 16, 2012 at 2pm at Washington Elementary School for the purposes of determining ways to increase the numbers of students who walk and bike to school. A short PowerPoint presentation explained the origins and components of a SRTS program. Following the presentation, attendees observed school dismissal and conducted an assessment of existing conditions on school property.

Existing Policies, Arrival/Dismissal Procedures

Currently, students are dismissed simultaneously, regardless of travel mode. Dismissal occurs at 2:50pm. The walking zone for the elementary school is 2 miles unless hazard boundaries apply. The following describes how each travel mode is accommodated at dismissal time on school property.

1. Walkers/Bikers
 - a. Walkers may leave from any unlocked door. As such, students leave the building from all sides of the school.
 - b. There is one crossing guard posted south of the school on East Main Street, at the intersection of Fonda Street.
 - c. No bikers were observed on the day of the audit.
3. Bus Riders
 - a. Students are brought out the front doors of the school by staff. The buses stack up in front of the school on E. Main Street in a designated area. During arrival/dismissal times, this street frontage is signed for bus use only.
4. Parent pick-up
 - a. Parents may pick up wherever parking is permitted. Currently, this means parents may park in the parking lot located north of the school, the parking area west of the school and stack up on E. Main Street east of the bus loading area as well as on Fonda Street.

There are no formal arrival/dismissal procedures for the school, nor any policies related to walking and biking to school.

Existing Conditions

The school is located in a neighborhood in northeastern Whitewater, north of the active rail line that runs parallel to E. Main Street. The school property is bounded by E. Main St to the south, N. Harris St. to the east, E. North Street to the north, and Fonda Street to the west. There are sidewalks on the east side of Fonda Street, the north side of E. Main Street, and the north side of E. North Street. There are no sidewalks on N. Harris Street. In general, sidewalks are located sporadically throughout the neighborhood.

There is a crossing guard located at the intersection of E. Main Street and Fonda Street, who utilizes the crosswalks across Fonda and E. Main. The crosswalk on E. Main Street facilitates direct access to the pedestrian bridge located over the rail line that connects to Dann Street. This bridge is heavily used but is in a state of disrepair and is most likely, not ADA compliant.

Near the crosswalk on E. Main Street on the north side is an old -style flashing yellow light that is timed to flash during school arrival and dismissal. There is no signage associated with the light at all. Fonda Street is a southbound one-way street that connects E. North and E. Main Streets. Angled parking is available the length of the street on the west side. These spaces are utilized by staff and visitors to the school, as well as by parents.

The parking lot north of the school is also utilized by staff and parents and can accommodate approximately 35 vehicles.

The topography of the area is such that there is a significant grade change from the corner of Fonda and E. North to E. North and N. Harris Streets. This creates obstructed sightlines on E. North. There is a stop sign located on the downhill side of the E. North and Fonda St. intersection but not on the uphill side. There is also a crosswalk located here, on the uphill side.

Audit results

Observations

The audit participants observed dismissal from the front of the school. Bussers were led to their buses by staff. Buses were parked fairly close together but in one case, a student was able to cross over E. Main Street to a parent vehicle, by slipping in between the parked buses. Parents were lined up waiting from the end of the bus staging area on E. Main Street almost all the way to N. Harris Street. Additionally, the back parking lot was full of parents waiting in their cars. There were also parents parked and waiting in the No Parking Zone in front of the school on the south side of E. Main Street.

There is little control over parent pick-up access. Traffic is heavy due to the large number of parent drivers at the school and the crossing guard is in the middle of the mix, responsible for monitoring two crosswalks.

In the back parking lot, students find their parent vehicle individually and as such, vehicles are pulling in and out for the duration of dismissal.

Principal Grosinske is usually outside for dismissal, along with staff in charge of the students who bus. There were a fair number of parents waiting outside of school for their students – either to walk them home or to a car.

Behavior

Students were observed following general pedestrian guidelines for the most part. One student was seen cutting in between the buses to access a parent vehicle on the other side of the road. There were several bicyclists that left the front of the school, where the bike racks are located, and rode away on sidewalks.

As there are no formalized arrival/dismissal procedures, parents may park and pick up their student at multiple locations around the school. The only parents observed ignoring common sense behavior were those parking in the No Parking Zone on the south side of East Main St. By parking there, students have to cross to the side of the street that has no sidewalk to access the vehicles. Drivers were, for the most part, attentive. There is currently more traffic volume on E. Main Street due to road construction on adjacent thoroughfares but that should significantly decrease once construction is completed.

Dismissal as a whole was somewhat chaotic, mostly due to the ability of parents to park in multiple places to pick up their students. Specific areas of concern on school property include the back parking lot and the loading area on Fonda Street. Off of school property, the area of concern is the No Parking zone on the south side of E. Main Street, as parents regularly park there despite the signage and lack of sidewalk. The existing pedestrian bridge is also in need of attention.

Recommendations

Engineering

The following is a list of recommended infrastructure projects.

1. Replacement of the Dann Street Pedestrian Bridge, improvement of access from the bridge to the school
2. Restrict access in back parking lot to Staff only
3. Formalize parent drop off/pick up on Fonda Street, use staff and student safety patrol to assist with loading or unloading the students
4. Consider platooning the parent cars and loading only 5 at a time
5. Replacement of the existing school zone light with a solar powered, flashing speed sign

Encouragement

The following is a list of encouragement strategies that would benefit Washington School.

1. Development of walking school buses
2. Participation in Walk to School Day in October
3. Parent Pledge program, pledging to drive slowly on campus, not use cell phones on campus, turn off their motors while waiting and follow school arrival/dismissal procedures

Enforcement

1. Crosswalk and speed monitoring by local police department
2. Positive ticketing for parents following arrival/dismissal procedures

Education

1. Creation of Arrival/Dismissal procedures and accompanying map, for distribution several times during the school year
2. General information on the benefits of walking and biking to school – on health and the environment
3. Walking school bus trainings
4. Presentation on SRTS at PATT monthly meeting

Next steps

SRTS grant application

Using this memo as a guide, it is suggested that the City of Whitewater, in partnership with the Whitewater Unified School District, apply for Safe Routes to School funding, both for the creation of a district-wide SRTS plan, as well as for infrastructure monies to implement some of the recommendations in this memo. At this time, it is anticipated there will be a SRTS funding cycle for 2013. More information on how to apply can be found at: <http://www.dot.wisconsin.gov/localgov/aid/saferoutes.htm>

Tressie Kamp, the WI SRTS coordinator, can be reached at tressie.kamp@dot.wi.gov; 608 -266-3973

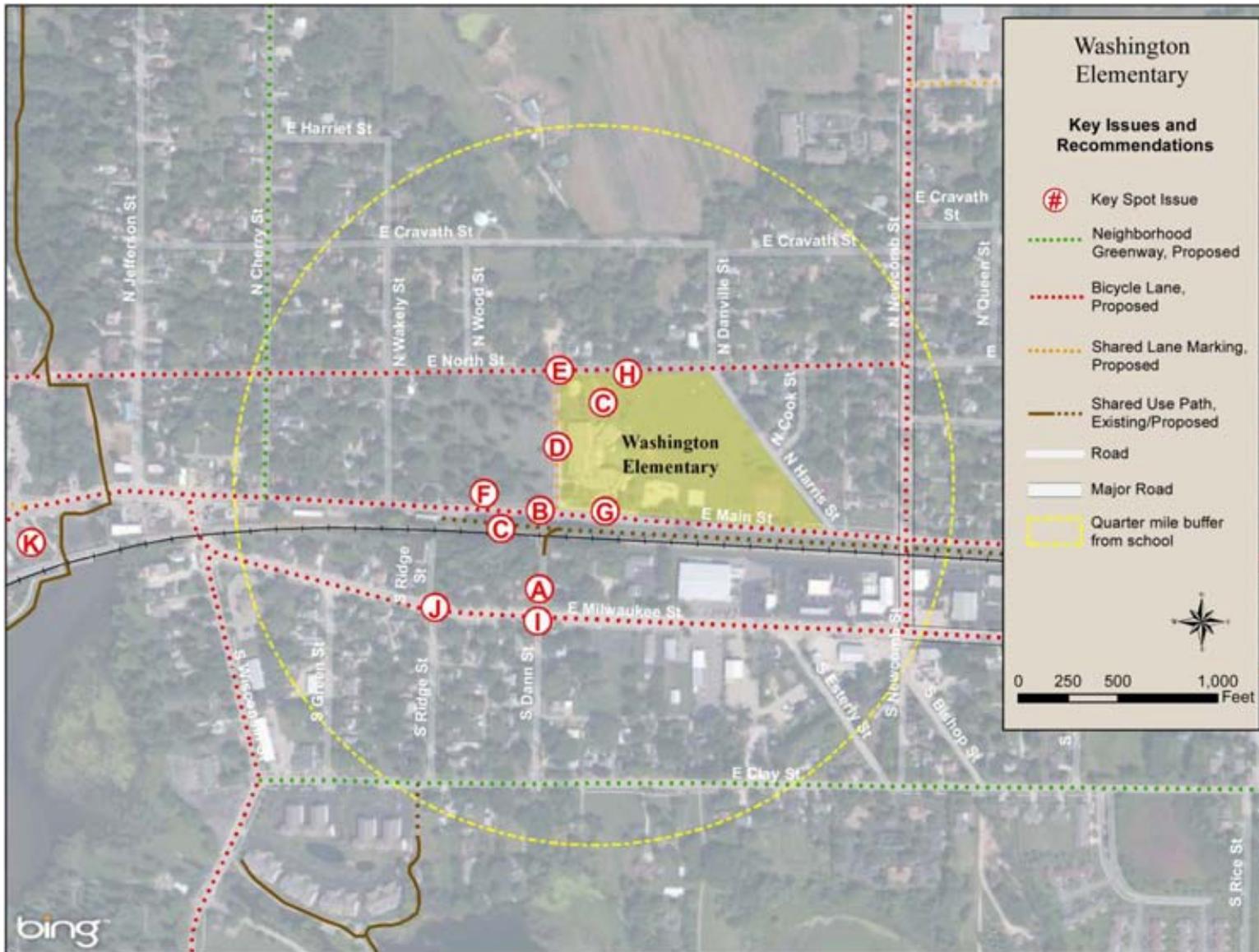
Attached:

Map of Issues and Recommendations

List of Issues and Recommendations

Detailed Recommended Improvements for E Main and Fonda Street

Washington Elementary Map of Issues and Recommendations



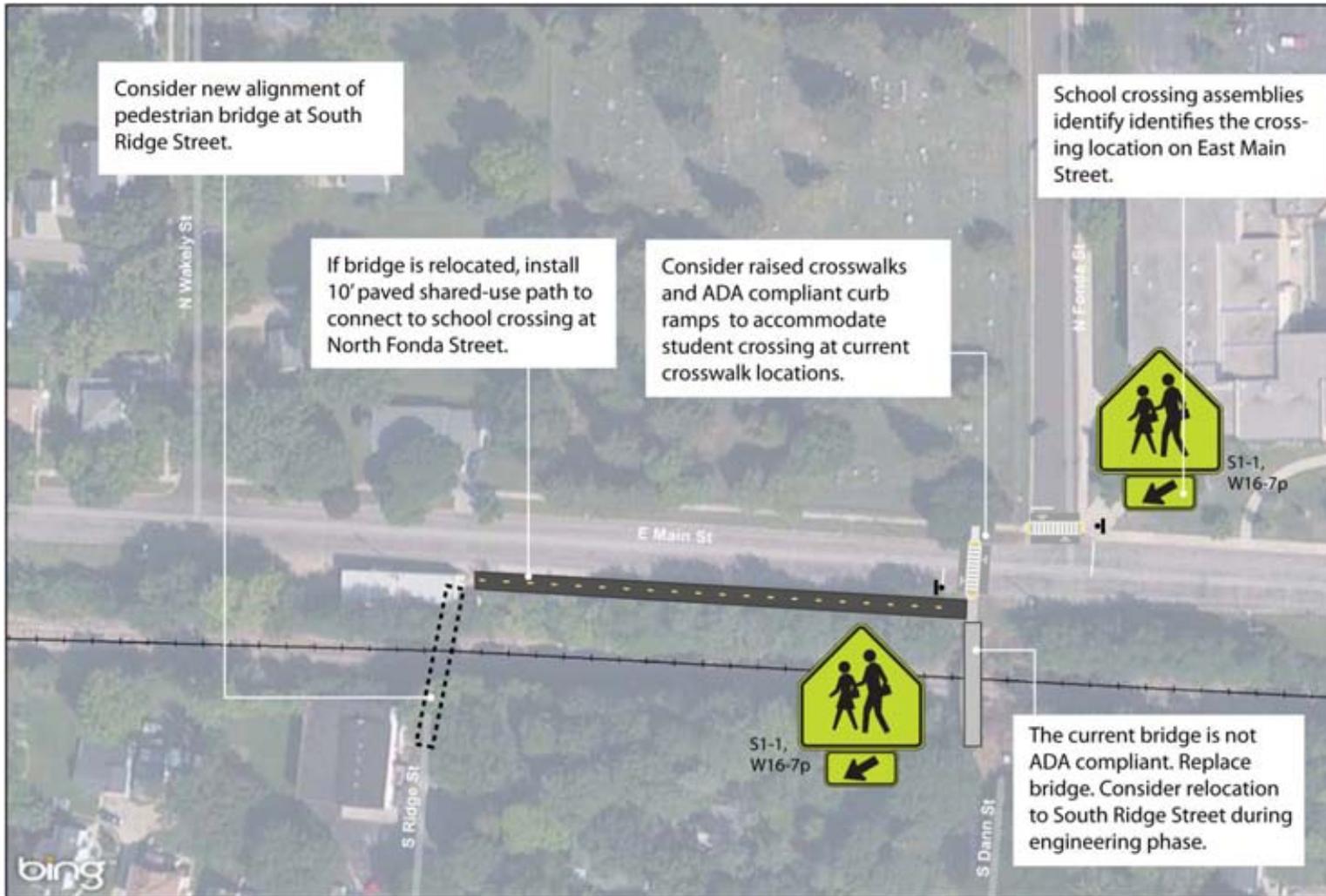
BICYCLE AND PEDESTRIAN PLAN

Washington Elementary List of Issues and Recommendations

Map Key	Location	Issue/Problem	Recommendation
A	Dann Street Pedestrian Bridge	Bridge is old and not ADA compliant, trails/sidewalks leading to the bridge are in rough condition	Replace the bridge, consider moving the location to S Ridge Street, replace the trails and sidewalks leading to the bridge
B	E Main Street crosswalk	Key SRTS crosswalk	Upgrade to a ladder crosswalk and consider its maintenance a high priority
C	Back parking lot	Currently a mix of student drop off and staff parking	Do not allow parents to drop off here
D	Fonda Street	Parent drop off area, congested	Consider loading the cars in platoons and adding student or staff safety patrols
E	Fonda Street and E North Street	Key SRTS crosswalk	Upgrade to a ladder crosswalk and consider its maintenance a high priority
F	E Main Street from Fonda Street to N Harris Street	School zone area	Formalize school zone pavement markings and signing following MUTCD guidance
G	E Main Street near school entrance	Parents dropping off on Main along with the buses	Formalize parent pick up area on Fonda Street, add written policy, and enforce it
H	E North Street from Fonda Street to N Harris Street	Lack of sidewalk on the campus side	Install sidewalks on the campus side of E North Street
I	Dann Street and Milwaukee	Recent pedestrian improvements are an asset to the school	
J	Ridge Street and Milwaukee Street	Recent pedestrian improvements are an asset to the school	
K	Cravath Lake Park parking lot	Parking lot about 3.5 blocks from the school is an asset	Consider a Walking Wednesdays program where students are walked into the campus from here with an adult escort

MUTCD=Manual on Uniform Traffic Control Devices

Washington Elementary Detailed Recommended Improvements for E Main and Fonda Street



SRTS Improvements: Intersection of East Main Street and North Fonda Street

City of Whitewater
Whitewater Bicycle and Pedestrian Plan
Author: NF
Date: March 2013



SRTS Memo for LINCS and Whitewater Middle School

A condensed SRTS audit was performed on October 16, 2012 at 2pm at LINCS for the purposes of determining ways to increase the numbers of students who walk and bike to school. A short PowerPoint presentation explained the origins and components of a SRTS program. Following the presentation, attendees observed school dismissal and conducted an assessment of existing conditions on school property.

Although the meeting was held at LINCS, the SRTS team did an audit for the Middle School campus, located just west of LINCS earlier in the fall. Both schools are discussed in this memo.

Existing Policies, Arrival/Dismissal Procedures

Currently, students are dismissed simultaneously, regardless of travel mode. Dismissal occurs at 2:50pm. The walking zone for the elementary school is 2 miles unless hazard boundaries apply. The following describes how each travel mode is accommodated at dismissal time on school property.

LINCS

1. Walkers/Bikers
 - a. Walkers and bus riders leave from the south door of the school.
 - b. There is one crossing guard posted at the intersection of W Peck Street and S Prince Street.
 - c. Many students walk either south on S Prince Street or east on W Peck Street. In addition, a good portion of the walkers head across the athletic fields located to the west of the school to join their middle school siblings.
 - d. No bikers were observed on the day of the audit, but the school has a bike rack located near the main entrance to the school on the west side of the building.
2. Bus Riders
 - a. Students are brought out the south door of the school accompanied by staff. The buses stack up in the driveway on the south side of the school in a designated area. No private cars are allowed in this driveway. The buses circle around and exit back on to S Prince Street at a drive further south.
3. Parent pick-up
 - a. Parents may pick up wherever parking is permitted. Parents seem to use W Peck Street and walk in to pick up their students or they pull in the northern driveway where the students wait with staff and student safety patrols.
 - b. The official pick up/drop off area for LINCS is the parking lot to the north of school. Student safety patrols and staff monitor students as they access the private cars. The parking lot and the driveway entrance/exit (at S Prince Street) is very congested at arrival and dismissal.

Whitewater Middle School

1. Walkers/Bikers
 - a. Walkers leave from the main door on the west side of the school or from the south door of the school.
 - b. There are no crossing guards posted near the school.

BICYCLE AND PEDESTRIAN PLAN

- c. Many students walk across S Elizabeth Street at various locations into the neighborhoods west of the school.
 - d. Many bikers and walkers came from the high school located on the south side of W Walworth Street. No bikers were observed at the Middle School.
2. Bus Riders
 - a. The busses are stationed at the big parking lot just south of the school across the driveway. A bus is parked across the west end of the driveway (that opens on to S Elizabeth Street) so as to block any private cars from entering the driveway during dismissal.
 3. Parent pick-up
 - a. Parents may pick up wherever parking is permitted. Parents seem to mostly line up along S Elizabeth Street. On the day we observed dismissal, private cars were lined up from W Melrose Street to W Kay Street.
 - b. Some parents parked on the neighborhood streets west of S Elizabeth Street, leading to even more students crossing S Elizabeth Street at various locations. There are no formal arrival/dismissal procedures for either of the schools, nor any policies related to walking and biking to school.

Existing Conditions

The combined school campus is located south of W Highland Street, east of S Elizabeth Street, west of S Prince Street and north of W Walworth Street. The Middle School is located at 401 S Elizabeth Street, on the west side of the campus. LINCS is located at 242 South Prince Street on the east side of the combined campus. The campus is located in the center of residential neighborhoods that stretch from Indian Mound Parkway on the west to S Franklin Street on the east with only on three somewhat busy streets within those boundaries, S Elizabeth, S Prince and S Janesville. The north boundary of the residential neighborhood is W Main Street. The south boundary of the neighborhood is W Walworth Street. Students located within these boundaries should be able to walk or bike to school.

The sidewalk network is generally complete in the neighborhood east of S Elizabeth Street. West of S Elizabeth Street, the sidewalk network is much less complete, with sidewalks only on Indian Parkway and S Buckingham Blvd.

There is a crossing guard located at the intersection of S Prince Street and W Peck Street. The guard is very busy with traffic approaching from three sides and students approaching from all four directions. Parking on W Peck near the intersection of W Peck and S Prince reduces the sight lines for both the crossing guards and the pedestrians.

The campus has a paved path connecting the schools. The path begins at the south west corner of the bus circle drive and continues directly west to the Middle School where it ties into the paved driveway on the west side of the school. The paved path does not have a formal connection (aside from driveways) to either of the schools. In addition to the paved path, there is an informal path that cuts diagonally across the grass athletic field. The informal path is more direct.

S Prince Street provides a direct north/south connection from the UW -Whitewater campus to S Walworth Street, therefore, it sees a lot of college generated traffic. Speeding has been mentioned as an issue on this street by the various school staff interviewed for this memo.

S Elizabeth Street is chaotic at arrival and dismissal with students crossing at various locations and parents/private cars crowding the street in the through lanes and the parking lanes, along with bikers riding to or from the high school.

The parking lot located on W Highland Street just north of the track is a terrific asset to LINCS. With some engineering improvements, parents from LINCS could use this parking lot to drop off and pick up the students, thus avoiding the congestion at the parking lot north of the school. Due to its location just north and west of the parking lot, students and staff could keep an eye on students coming from the W Highland Street parking lot to the school campus.

The LINCS students were observed following general pedestrian guidelines for the most part. The Middle and High School student's behavior on and near S Elizabeth Street however, is another story. The area resembled the UW- Madison Campus between classes, with students crossing streets at any and all locations, bikers on the sidewalk and riding against traffic and cars weaving in and around cars, bikers and pedestrians.

LINCS Recommendations

Engineering

The following is a list of recommended infrastructure projects.

1. Consider the improvements recommended for W Peck Street and S Prince Street to better accommodate the pedestrian traffic
2. Do not allow parking on W Peck Street for the first 50 feet on all three legs of the intersection, enforcement will be necessary at first to gain compliance
3. Formalize paved path to track and from track to parking lot on W Highland Street
4. Formalize paved path between schools including the actual connection to the school buildings
5. Follow MUTCD standards for marking school zone
6. Consider traffic calming measures on S Prince Street

Encouragement

The following is a list of encouragement strategies that would benefit Washington School.

1. Development of walking school buses
2. Participation in Walk to School Day in October
3. Parent Pledge program, pledging to drive slowly on campus, not use cell phones on campus, turn off their motors while waiting and follow school arrival/dismissal procedures

Enforcement

1. Crosswalk and speed monitoring by local police department on S Prince with a focus on enforcement during the school year
2. Positive ticketing for parents following arrival/dismissal procedures

Education

BICYCLE AND PEDESTRIAN PLAN

1. Creation of Arrival/Dismissal procedures and accompanying map
2. General information on the benefits of walking and biking to school – on health and the environment
3. Walking school bus trainings
4. Presentation on SRTS at parent teacher meetings, SRTS table at back to school events
5. Add SRTS Fun Facts to School Newsletter

Next steps

SRTS grant application

Using this memo as a guide, it is suggested that the City of Whitewater, in partnership with the Whitewater Unified School District, apply for Safe Routes to School funding, both for the creation of a district-wide SRTS plan, as well as for infrastructure monies to implement some of the recommendations in this memo.

At this time, it is anticipated there will be a SRTS funding cycle for 2013. More information on how to apply can be found at: <http://www.dot.wisconsin.gov/localgov/aid/saferoutes.htm>

Tressie Kamp, the WI SRTS coordinator, can be reached at tressie.kamp@dot.wi.gov; 608 -266-3973

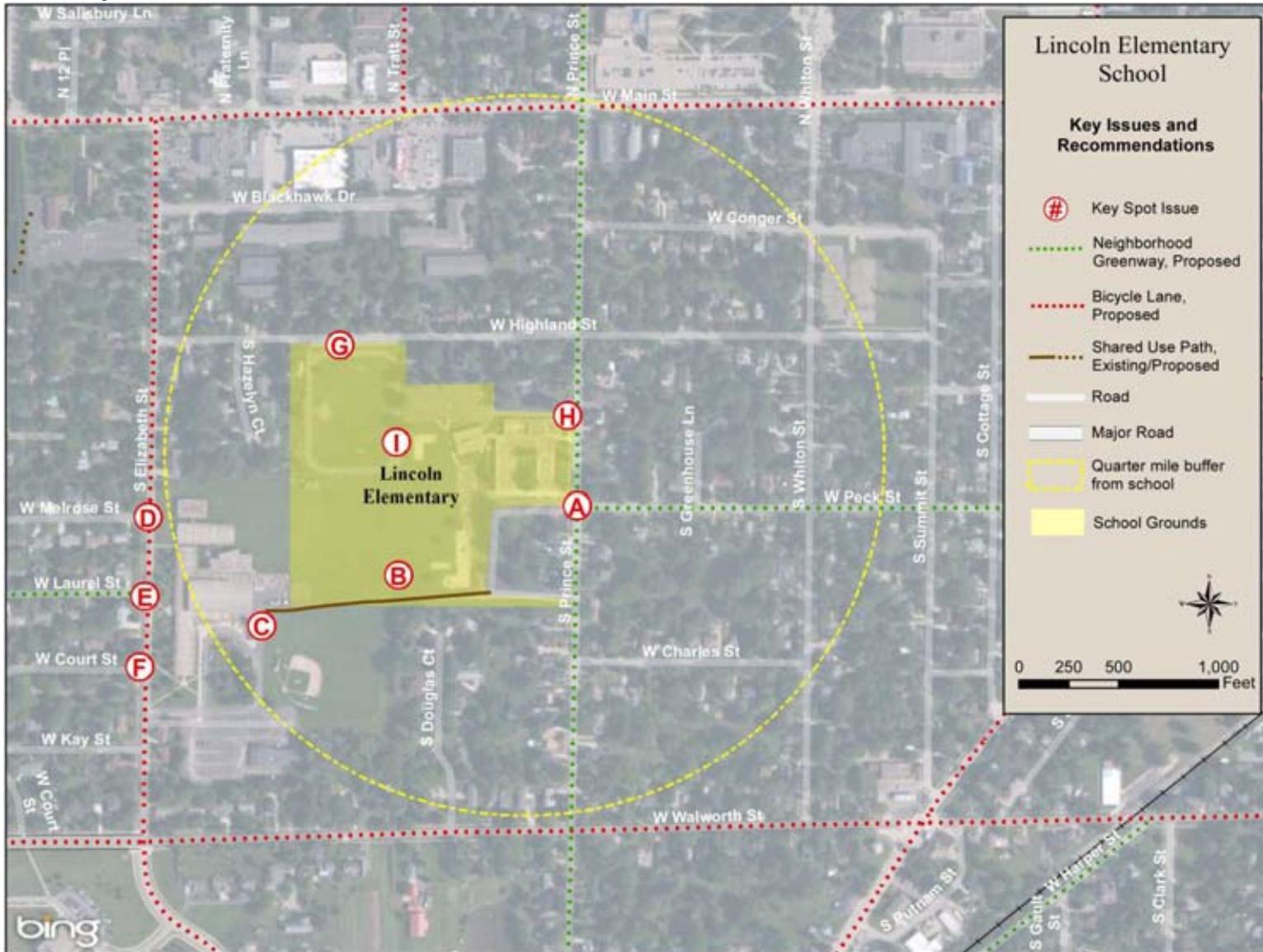
Attached:

Map of Issues and Recommendations

List of Issues and Recommendations

Detailed Recommended Improvements for S Prince and W Peck St

LINCS Map of Issues and Recommendations



BICYCLE AND PEDESTRIAN PLAN

LINCS List of Issues and Recommendations

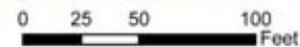
Map Key	Location	Issue/Problem	Recommendation
A	Peck Street and South Prince Street	Congestion at arrival and pick up, skewed crosswalk makes crossing longer, parked cars on Peck and Lincoln cause sight distance issues for the guard	Sign and enforce "no parking" for 50 feet east from the intersection of Peck and Prince, (at least during arrival and pick up hours), consider constructing bump outs on the north east and southeast corners of Peck Street to lessen the crossing distance, add a crosswalk to the east leg of intersection
B	Trail through campus	Paved trail exists on campus but it not a direct route to Middle School	Consider formalizing the dirt trail the students use between campuses to provide a more direct connection
C	Trail connection at Middle School	Paved trail deadends into the parking lot/driveway on the east side of the Middle School building	Install a formal paved path to connect to the school and the sidewalk on S Elizabeth Street
D	S Elizabeth and W Melrose	Due to students crossing into neighborhoods west of here, this is a key SRTS crossing	Install crosswalks and associated pedestrian crossing signs, place location high on the maintenance list
E	S Elizabeth and W Court	Due to students crossing into neighborhoods west of here, this is a key SRTS crossing	Install crosswalks and associated pedestrian crossing signs, place location high on the maintenance list
F	S Elizabeth and W Laurel	Due to students crossing into neighborhoods west of here, this is a key SRTS crossing	Install crosswalks and associated pedestrian crossing signs, place location high on the maintenance list
G	Parking lot on W Highland Street	Due to its location close to the north parking lot and the connection via the running track, this would be an excellent place for remote drop off or pick up	Formalize the connection between the north lot and this lot, train staff to watch from students from this location, encourage parents to consider dropping or picking up their student from here rather than use the north lot
H	School Driveway on north end of campus on S Prince Street	Key location for SRTS	Continue to staff this driveway to help students cross during arrival and dismissal, consider a cross walk and maintain the stop bar/stop sign combination
I	North parking lot	Lot is congested during arrival and dismissal	Consider platooning the cars for drop off and pick up, ask the parents not to idle their motors while waiting in the afternoons, encourage car pooling to decrease the numbers of private cars on campus

LINCS Detailed Recommended Improvements for S Prince and W Peck St



SRTS Improvements: Intersection of South Prince Street and West Peck Street

City of Whitewater
Whitewater Bicycle and Pedestrian Plan
Author: NF
Date: March 2013



Appendix F: West Main Street Safety Project

This appendix discusses the current conditions of a segment of West Main Street from Indian Mound Parkway to Franklin Street, identifies operational and safety issues, and proposes a potential improvement. Additionally, this appendix discusses potential education and enforcement countermeasures to implement in conjunction with roadway improvements. This multi-faceted approach can lead to significant safety improvements and behavior modification that will result in improved corridor function for all roadway users.

Problem Statement

The study area of West Main Street is a 1.2 mile long multimodal corridor serving motor vehicles, transit riders, and non-motorized transportation users. This diverse mix of users and their separate transportation needs has led to real and perceived safety concerns for the community. During outreach events as part of the planning process, community members identified the following concerns:

- **Unsafe pedestrian crossing behavior.** There are complaints about a high incidence of pedestrians crossing outside of marked crosswalks (e.g., midblock crossings) as well as crossing against the traffic signal at marked crosswalks. Pedestrians are also seen crossing at unmarked but legal crossings, though there is a common perception that unless a crosswalk is marked, the crossing is illegal and unsafe. While this perception is not based on the law, it may lead to misunderstanding between road users.³³
- **Perception of excessive speed by motorists.** Community members reported excessive speeding, particularly on the west end of the study area as the land use transitions into a more rural setting. Within the analysis area, West Main Street has a 25 mph speed limit, which is appropriate for urban commercial conditions. Beyond Indian Mound Parkway, the speed limit increases to 35 mph, and outside of the City limits, the speed limit increases again to county highway speeds of 45 mph. West Main Street is also designated as Old Highway 12, which passes through Whitewater and directly connects the downtown district with the rest of Walworth County. Community observations indicate that some drivers travel at county highway speeds before they have fully exited the city and continue at highway speeds as they approach from the west.
- **Lack of facilities for bicycling.** West Main Street currently lacks bicycling facilities, and no alternative route exists for bicyclists to access the many commercial and cultural destinations along the corridor. Currently, bicyclists must operate on-road with automobiles or on the sidewalk with pedestrians. On-street shared roadway operation may be uncomfortable for bicyclists, particularly when paired with excessive speeding. Bicycle operation on sidewalks is also undesirable, due to an increased risk of collision with motor vehicles due to poor visibility, frequency of curb cuts and opposite direction travel, as well as an increase in bicycle-pedestrian interactions
- **History of collisions.** There are general traffic safety concerns on West Main Street. The traffic fatality data available from the National Highway Traffic Safety Administration (NHTSA) indicates

³³ Wisconsin Statute 340.01(10) provides a description of unmarked crosswalks, which exist at each intersection unless signs are posted noting otherwise.

that there were four traffic fatalities in Whitewater between 2008 and 2010. Two of those fatalities were on West Main Street, one involving a pedestrian.³⁴

Existing Conditions

Land Use

Land use adjacent to West Main Street is diverse, with multi-family residential, commercial, institutional and retail uses. The mix of origins and destinations in relatively close proximity increases the demand and potential for pedestrian travel, as well as the demand for pedestrian crossings. The University of Wisconsin – Whitewater Campus (located on the north side of the street) is the single biggest driver of activity along the corridor. A significant amount of student housing is located on the south side of the street.

Automobile Conditions

Speed Limit: The speed limit on this segment of West Main Street is posted at 25 mph. Outside of the area, the speed limit increases incrementally to 45 mph.

Traffic: The City of Whitewater reports Annual Average Daily Traffic (AADT) vehicle volumes of 15,100 cars per day.

Configuration: In this vicinity, West Main Street is a 4-lane undivided highway, with no on-street parking. East of the study area, East Main Street is two lanes, sometimes with parking on one or two sides of the street depending on available curb-to-curb width. To the west of the study area, West Main Street is two lanes, with no on-street parking and a rural cross section.

Pedestrian Conditions

The University of Wisconsin-Whitewater is a primary source of pedestrian activity along the corridor. UW-Whitewater is a major destination for the city and the region, serving 12,034 students.³⁵ The UW-Whitewater campus itself is pedestrian friendly, and students are encouraged to get around by walking and biking.

There are 11 4-way or 3-way intersections along the segment, with an average spacing of 630 feet between intersections as well as frequent driveway cuts. Six of these intersections are signalized; 3 are unsignalized with marked crossings. There are no median refuge islands or curb extensions to shorten or assist pedestrian crossings.

³⁴ NHTSA. State GIS Fatal Traffic Crash Maps. 2010

³⁵ UW-Whitewater Vital Statistics About Student Enrolment, Costs and Campus Resources. <http://www.uww.edu/campus-info/about-uww/vital-statistics>. 2012.

Transit Conditions

The Janesville Milton Whitewater Innovation Express transit line travels along West Main Street as part of its route through Whitewater with service to the University of Wisconsin.³⁶ There are no designated bus stops for this route along West Main Street.

Bicyclist Conditions

As part of the Whitewater Bicycle and Pedestrian Plan, West Main Street is identified as a future bikeway with a bicycle lane. Whitewater does not have an official bike route map, but the Whitewater Tourism Department identifies West Main Street as part of the Turtle Valley bike loop.

Proposed Solution: Roadway Reconfiguration (4 Lane – 3 Lane Conversion), and Enhanced Pedestrian Crossings

Reconfiguring West Main Street from the current four lane undivided street to a three lane street with a two-way-center-turn-lane (TWCTL) is a promising solution that addresses many of the concerns identified by City of Whitewater community members. Communities across the country have completed similar conversions with great success.

The proposed improvements would result in reconfiguration of 1.2 miles of roadway. The new cross section would include a single motor vehicle travel lane in each direction, 6-foot wide bicycle lanes in each direction as well as a dedicated two-way center turn lane. Potential benefits and impacts are identified below and illustrated on the attached project sheet.

Roadway Reconfiguration

Benefits

The Federal Highway Administration (FHWA) classifies a 4-lane to 3-lane roadway reconfiguration as a Proven Safety Countermeasure, and identifies the following safety and operational benefits for vehicles, pedestrians and bicyclists:³⁷

- Decreasing vehicle travel lanes for pedestrians to cross, therefore reducing the multiple-threat crash (when one vehicle stops for a pedestrian in a travel lane on a multi-lane road, but the motorist in the next lane does not, resulting in a crash) for pedestrians,
- Providing room for a pedestrian crossing island,
- Improving safety for bicyclists when bike lanes are added (such lanes also create a buffer space between pedestrians and vehicles),
- Providing the opportunity for on-street parking (also a buffer between pedestrians and vehicles),
- Reducing rear-end and side-swipe crashes, and
- Improving speed limit compliance and decreasing crash severity when crashes do occur.

³⁶ <http://www.uww.edu/adminaffairs/parking/jtsbrochure.pdf>

³⁷ http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_013.htm

Potential Impacts

While road reconfigurations are not guaranteed to function appropriately on every street, recent experience and analysis has shown that roadways with Average Daily Traffic (ADT) of 20,000 or less are good candidates for further evaluation. Roads with 15,000 ADT or less have demonstrated safety and operations benefits, as above.³⁸

West Main Street is a primary route from downtown to the outside of the city, and transitions between the different city areas must be carefully considered for impacts to safety, access and traffic flow. This is particularly important at the key intersections of Franklin Street and Indian Mound Parkway, where a level of service analysis could be conducted to see if additional lanes would be required.

Refuge Islands

Median refuge islands are proposed for each of the existing unsignalized marked crosswalks to limit pedestrian exposure to motor vehicle traffic during a crossing. To reduce the distance between marked crossings along the roadway, one new mid-block crossing with a refuge island is proposed east of Indian Mound Parkway. Like the roadway reconfiguration, crossing islands and median refuge islands are proven FHWA Safety Countermeasures.³⁹

Benefits

Refuge islands can:

- Reduce pedestrian crashes by up to 46% and motor vehicle crashes by up to 39%
- May decrease motor vehicle delays by more than 30%
- Provide pedestrians a safe place to stop at the mid-point of the roadway before crossing the remaining distance
- Enhance the visibility of pedestrian crossings, particularly at unsignalized crossing points.
- Reduce the speed of vehicles approaching pedestrian crossings
- May be used for access management for vehicles (allowing only right-in/right-out turning movements)

Potential Impacts

If designed and implemented incorrectly, benefits of refuge islands may not be fully realized and potential safety risks may be created. Careful engineering review and relevant studies should be undertaken prior to roadway reconfiguration.

³⁸ http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_013.htm

³⁹ http://safety.fhwa.dot.gov/provencountermeasures/fhwa_sa_12_011.htm

Cost Opinion

Based on conceptual design, the planning level cost opinion for roadway reconfiguration, including three small pedestrian refuge islands, is \$256,000.

This estimate are based on a planning-level understanding of the components, rather than on a detailed design. American Society for Testing and Materials (ASTM) Standard E2620 defines Order of Magnitude as being cost estimates accurate to within plus 50% or minus 30%. This broad range is appropriate given the level of uncertainty in the design at this point in the process. Many factors can affect final construction costs, including:

- Final construction phasing
- Selected alignment
- Revisions to the design as required by local, state and federal permitting agencies
- Additional requirements imposed by property owners as a condition of granting property rights (e.g., fencing, vegetated buffers, etc.)
- Fluctuations in commodity prices during the design and permitting processes
- Selected construction materials
- Type and quantity of amenities (e.g., benches, lighting, bike racks, etc.)
- Extent of landscaping desired
- Availability of donated materials and volunteer labor
- Property Acquisition (excluded from estimates shown here.)

As the project progress through preliminary, semi-final and final design phases, expected construction costs become more accurate.

W Main Street Traffic Safety Project – Planning Level Cost Estimate					
Item Description	Unit	Qty	Unit Cost	Cost	Notes
Striping Removal	LF	25,340	\$0.50	\$50,680	Removal of double yellow centerline and dashed lane lines
Restriping: Center Turn lane solid yellow	LF	12,670	\$1.00	\$12,670	2 lines
Restriping: Center Turn lane dashed yellow	LF	12,670	\$0.75	\$9,503	2 lines
Restriping: 6" Bike lane line	LF	12,670	\$1.50	\$19,005	2 lines
Bike lane symbol (paint)	EA	20	\$75.00	\$1,500	
Pedestrian refuge island, small (1100 sf)	EA	3	\$12,000.00	\$36,000	At each existing and proposed unsignalized marked crossing
New/relocated crossing striping	EA	3	\$120.00	\$360	
ADA ramps for new/relocated crossings	EA	3	\$2,500.00	\$7,500	
ADA Detectable warnings			\$650.00		
Access sidewalk extensions for new midblock crossing	SF	192	\$8.00	\$1,536	
Regulatory signs for pedestrian refuge islands	EA	12	\$300.00	\$3,600	

BICYCLE AND PEDESTRIAN PLAN

Estimated Direct Cost		\$142,354
Contingency	25%	\$35,589
Engineering / Design	20%	\$28,471
Construction / Overhead / Mobilization	15%	\$21,353
Project Administration	10%	\$14,235
Estimated Construction Costs (70% burden)		\$242,002

Recommended Education, Encouragement and Evaluation Activities

While improving infrastructure is critical, the importance of encouragement, education, enforcement, and evaluation programs should not be underestimated. These efforts can teach local residents about new and improved facilities, provide the tools they need to integrate walking into their daily activities, and provide positive reinforcement for walking. In essence, the new and enhanced programs market the idea of walking to local residents and encourage a shift to walking and bicycling as transportation options. This relationship has been explored and documented in a comparison of bicycle mode shift in Chicago and Salt Lake City.⁴⁰

Community members and City staff have observed and documented both motor vehicle speeding and unsafe crossing behaviors along West Main Street. Supportive programmatic measures should be implemented in conjunction with infrastructure improvements. Recommended actions are detailed in Chapter 6:

Recommended Programs.

and include targeted crosswalk and speeding enforcement. These activities should be conducted in September, around the time of new student orientation. The University should be engaged as a project partner who can help with traffic safety campaigns.

Conclusion

Current traffic volumes on West Main Street are likely to support a successful 4 lane to 3 lane conversion. This volume is well within the FHWA’s recommended range for further evaluation.

The reconfiguration is likely to create widespread benefit for all users of the roadway for safety, mobility and access, and could be an instrumental piece of implementing the *Whitewater Bicycle and Pedestrian Plan*.

Conducting outreach, education, and evaluation with this roadway reconfiguration will increase community awareness and understanding of the proposed change. The outreach should include the opportunity to address opposition or skepticism from the community based on concerns about increased traffic congestion.

⁴⁰ Douma, F., Cleaveland, F. *The Impact of Bicycling Facilities on Commute Mode Share*. 2008 Minnesota DOT.

Appendix G: Funding Sources

Moving Ahead for Progress in the Twenty-First Century (MAP-21)

The largest source of federal funding for bicycle and pedestrian projects is the United States Department of Transportation's (US DOT) Federal-Aid Highway Program, which Congress has reauthorized roughly every six years since the passage of the Federal-Aid Road Act of 1916. The latest act, Moving Ahead for Progress in the Twenty-First Century (MAP-21) was enacted in July 2012 as Public Law 112-141. The Act replaces the Safe, Accountable, Flexible, Efficient Transportation Equity Act – a Legacy for Users (SAFETEA-LU), which was valid from August 2005 - June 2012.

MAP-21 authorizes funding for federal surface transportation programs including highways and transit until September 2014. There are a number of programs identified within MAP-21 that are applicable to bicycle and pedestrian projects. These programs are discussed below.

More information: <http://www.fhwa.dot.gov/map21/summaryinfo.cfm>

Transportation Alternatives (TAP)

Transportation Alternatives (TAP) is a new funding source under MAP-21 that consolidates three former SAFETEA-LU programs: Transportation Enhancements (TE), Safe Routes to School (SRTS), and the Recreational Trails Program (RTP). These funds may be used for a variety of pedestrian, bicycle, and streetscape projects including sidewalks, bikeways, shared-use paths, school safety, and rail-trails. TAP funds may also be used for selected education and encouragement programming such as Safe Routes to School. The Wisconsin Department of Transportation (WisDOT) has allocated roughly 2/3rds of TE funds to bicycle and pedestrian projects since the passage of the Intermodal Surface Transportation Efficiency Act (ISTEA) in 1991.

Unless the Governor of a given state chooses to opt out of Recreational Trails Program funds, \$85 million in dedicated funds for recreational trails continues to be provided nationally as a subset of TAP⁴¹. Governor Scott Walker chose to opt in, which means that Wisconsin will receive \$2,167,754 in RTP funds per year through FY2014.

Eligible Projects for TAP include:

- **Transportation Alternatives** as defined by Section 1103 (a)(29). This category includes the construction, planning, and design of a range of bicycle and pedestrian infrastructure including “on-road and off-road trail facilities for pedestrians, bicyclists, and other non-motorized forms of transportation, including sidewalks, bicycle infrastructure, pedestrian and bicycle signals, traffic calming techniques, lighting and other safety-related infrastructure, and transportation projects to achieve compliance with the Americans with Disabilities Act of 1990.” Infrastructure projects and systems that provide “Safe Routes for Non-Drivers” is a new eligible activity. For the complete list of eligible activities, visit:

http://www.fhwa.dot.gov/environment/transportation_enhancements/legislation/map21.cfm

⁴¹ See: <http://www.fhwa.dot.gov/map21/funding.cfm>

BICYCLE AND PEDESTRIAN PLAN

- **Recreational Trails.** TAP funds may be used to develop and maintain recreational trails and trail-related facilities for both non-motorized and motorized recreational trail uses. Examples of trail uses include hiking, bicycling, in-line skating, equestrian use, and other non-motorized and motorized uses. These funds are available for both paved and unpaved trails, but may not be used to improve roads for general passenger vehicle use or to provide shoulders or sidewalks along roads.

Recreational Trails Program funds may be used for:

- Maintenance and restoration of existing trails
- Purchase and lease of trail construction and maintenance equipment
- Construction of new trails, including unpaved trails
- Acquisition or easements of property for trails
- State administrative costs related to this program (limited to seven percent of a State's funds)
- Operation of educational programs to promote safety and environmental protection related to trails (limited to five percent of a State's funds)
- **Safe Routes to School.** Safe Routes to School activities are eligible for the Transportation Alternatives Program. Both infrastructure and non-infrastructure projects are eligible, and the program elements described in SAFETEA-LU are still in effect. The purpose of the Safe Routes to Schools eligibility is to promote safe, healthy alternatives to riding the bus or being driven to school. All projects must be within two miles of primary or middle schools (K-8).

Eligible projects may include:

- *Engineering improvements.* These physical improvements are designed to reduce potential bicycle and pedestrian conflicts with motor vehicles. Eligible improvements include sidewalk improvements, traffic calming/speed reduction, pedestrian and bicycle crossing improvements, on-street bicycle facilities, off-street bicycle and pedestrian facilities, and secure bicycle parking facilities.
- *Education and Encouragement Efforts.* These programs are designed to teach children safe bicycling and walking skills while educating them about the health benefits and environmental impacts. Projects and programs may include creation, distribution and implementation of educational materials; safety based field trips; interactive bicycle/pedestrian safety video games; and promotional events and activities (e.g., assemblies, bicycle rodeos, walking school buses).
- *Enforcement Efforts.* These programs aim to ensure that traffic laws near schools are obeyed. Law enforcement activities apply to cyclists, pedestrians and motor vehicles alike. Projects may include development of a crossing guard program, enforcement equipment, photo enforcement, and pedestrian targeted enforcement operations.

- **Planning, designing, or constructing roadways within the right-of-way of former Interstate routes or divided highways.** As of mid-December 2012, detailed guidance from the Federal Highway Administration on this new eligible activity was not available.

Average annual funds available through TAP over the life of MAP-21 equal \$814 million nationally, which is based on a two percent set-aside of total MAP-21 authorizations. Projected apportionments for Wisconsin total \$18.7 million for FY 2013 and \$18.9 million for FY 2014. Note that state DOTs may elect to transfer up to fifty percent of TAP funds to other highway programs, so these amounts represent the maximum potential funding.

The City of Whitewater is eligible to compete for TAP funds through two separate competitive grant programs administered by WisDOT:

- MAP-21 requires WisDOT to allocate a set amount of TAP funding to rural communities in Wisconsin. These funds are distributed through a competitive grant program that is not open to government agencies located in urban areas containing 200,000 or more residents.
- Remaining TAP funds (those monies not re-directed to other highway programs) are disbursed through a separate competitive grant program also administered by WisDOT. Local governments, school districts, tribal governments, and public lands agencies are permitted to compete for these funds.

Interim guidance released by the Federal Highway Administration clarifies that the Transportation Alternatives Program does not establish specific standards or procedures for the competitive grant process, but indicates that the USDOT plans to develop best practices for consideration: “DOT will publish a model Request for Proposal or Notice of Funds Available that States and MPOs may use at their discretion.” For more information, see: <http://www.fhwa.dot.gov/map21/guidance/guidetap.cfm>.

As of this writing additional information regarding WisDOT’s plans for administering the grant programs is not available publicly. As WisDOT completes its review of potential programming changes due to MAP-21, further information should become available at: <http://www.dot.wisconsin.gov/localgov/aid/bike-ped-facilities.htm>.

Surface Transportation Program (STP)

The Surface Transportation Program (STP) provides states with flexible funds which may be used for a variety of highway, road, bridge, and transit projects. A wide variety of bicycle and pedestrian improvements are eligible, including on-street bicycle facilities, off-street trails, sidewalks, crosswalks, bicycle and pedestrian signals, parking, and other ancillary facilities. Modification of sidewalks to comply with the requirements of the Americans with Disabilities Act (ADA) is also an eligible activity. Unlike most highway projects, STP-funded bicycle and pedestrian facilities may be located on local and collector roads that are not part of the Federal-aid Highway System. The United States Code Title 23, Chapter 1 defines the Federal-aid Highway system as “a highway eligible for assistance under this chapter other than a highway classified as a

BICYCLE AND PEDESTRIAN PLAN

local road or rural minor collector.” Fifty percent of each state’s STP funds are suballocated geographically by population; the remaining fifty percent may be spent in any area of the state.

Highway Safety Improvement Program (HSIP)

MAP-21 doubled the amount of funding available through the Highway Safety Improvement Program (HSIP) relative to SAFETEA-LU. HSIP provides \$2.4 billion nationally for projects and programs that help communities achieve significant reductions in traffic fatalities and serious injuries on all public roads, bikeways, and walkways. MAP-21 requires each state to formulate a state safety plan, produced in consultation with non-motorized transportation representatives, in order to receive HSIP funds. Eligible projects will be evaluated on anticipated cost-effectiveness of reducing serious injuries and fatalities.

MAP-21 preserves the Railway-Highway Crossings Program within HSIP but discontinues the High-Risk Rural roads set-aside *unless* safety statistics demonstrate that fatalities are increasing on these roads. Bicycle and pedestrian safety improvements, enforcement activities, traffic calming projects, and crossing treatments for non-motorized users in school zones are eligible for these funds. WisDOT estimates that it will receive an average of \$47.1 million annually for this program through the lifetime of MAP-21.⁴²

Congestion Mitigation/Air Quality Program (CMAQ)

The Congestion Mitigation/Air Quality Improvement Program (CMAQ) provides funding for projects and programs in air quality non-attainment and maintenance areas for ozone, carbon monoxide, and particulate matter which reduce transportation related emissions. States with no nonattainment areas may use their CMAQ funds for any CMAQ or STP eligible project. These federal dollars can be used to build bicycle and pedestrian facilities that reduce travel by automobile. Purely recreational facilities generally are not eligible.

Between 1993-2011 the CMAQ program provided \$53 million to 78 projects in 11 southeastern counties in Wisconsin non-attainment areas.⁴³ For current information on designated non-attainment and maintenance zones, including a map of affected counties, please visit the Environmental Protection Agency’s (EPA) website: <http://www.epa.gov/oaqps001/greenbk/mapnmpoll.html>

New Freedom Initiative

MAP-21 continues a formula grant program that provides capital and operating costs to provide transportation services and facility improvements that exceed those required by the Americans with Disabilities Act. Examples of pedestrian/accessibility projects funded in other communities through the New Freedom Initiative include installing Accessible Pedestrian Signals (APS), enhancing transit stops to improve accessibility, and establishing a mobility coordinator position.

More information: <http://www.hhs.gov/newfreedom/>

⁴² <http://www.fhwa.dot.gov/map21/funding.cfm>

⁴³ <http://www.dot.wisconsin.gov/localgov/docs/te-1993-2004.pdf>

Pilot Transit-Oriented Development Planning

MAP-21 establishes a new pilot program to promote planning for Transit-Oriented Development. At the time of writing the details of this program are not fully clear, although the bill text states that the Secretary of Transportation may make grants available for the planning of projects that seek to “facilitate multimodal connectivity and accessibility,” and “increase access to transit hubs for pedestrian and bicycle traffic.”

The City of Whitewater should track federal communications and be prepared to respond proactively to announcements of grant availability.

Partnership for Sustainable Communities

Founded in 2009, the Partnership for Sustainable Communities is a joint project of the EPA, the U.S. Department of Housing and Urban Development (HUD), and USDOT. The partnership aims to “improve access to affordable housing, more transportation options, and lower transportation costs while protecting the environment in communities nationwide.” The Partnership is based on five Livability Principles, one of which explicitly addresses the need for bicycle and pedestrian infrastructure:

Provide more transportation choices: Develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation’s dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health.

The Partnership is not a formal agency with a regular annual grant program. Nevertheless, it is an important effort that has already led to some new grant opportunities (including both TIGER I and TIGER II grants). The City of Whitewater should track Partnership communications and be prepared to respond proactively to announcements of new grant programs. Initiatives that speak to multiple livability goals are more likely to score well than initiatives that are narrowly limited in scope to bicycle and pedestrian efforts.

More information: <http://www.sustainablecommunities.gov/grants.html>

Community Development Block Grants

The Community Development Block Grants (CDBG) program provides money for streetscape revitalization, which may be largely comprised of pedestrian improvements. Federal CDBG grantees may use the funds for real property, public facility improvements, and planning. Pedestrian and Bicycle Master Plan projects that enhance accessibility are a good fit for this funding source. CDBG funds could also be used to write an ADA Transition Plan for the city or support design and construction of projects.

More information: www.hud.gov/cdbg

Community Transformation Grants

Community Transformation Grants administered through the Center for Disease Control support community-level efforts to reduce chronic diseases such as heart disease, cancer, stroke, and diabetes. Active transportation infrastructure projects and programs that promote healthy lifestyles are a good fit for this program, particularly if the benefits of such improvements accrue to population groups experiencing the greatest burden of chronic disease.

More info: <http://www.cdc.gov/communitytransformation/>

Land and Water Conservation Fund

The Land and Water Conservation Fund (LWCF) provides grants for planning and acquiring outdoor recreation areas and facilities, including trails. Funds can be used for right-of-way acquisition and construction. The program is administered by the Wisconsin Department of Natural Resources as a grant program. Any Pedestrian and Bicycle Master Plan projects located in future parks could benefit from planning and land acquisition funding through the LWCF. Trail corridor acquisition can be funded with LWCF grants as well.

More info: <http://dnr.wi.gov/Aid/LWCF.html> and <http://www.nps.gov/lwcf/>

Rivers, Trails, and Conservation Assistance Program

The Rivers, Trails, and Conservation Assistance Program (RTCA) is a National Parks Service (NPS) program providing technical assistance via direct NPS staff involvement to establish and restore greenways, rivers, trails, watersheds and open space. The RTCA program provides only for planning assistance—there are no implementation monies available. Projects are prioritized for assistance based on criteria including conserving significant community resources, fostering cooperation between agencies, serving a large number of users, encouraging public involvement in planning and implementation, and focusing on lasting accomplishments. This program may benefit trail development in the City of Whitewater indirectly through technical assistance, particularly for community organizations, but should not be considered a future capital funding source.

More info: <http://www.nps.gov/pwro/rtca/who-we-are.htm>

Additional Federal Funding

The landscape of federal funding opportunities for bicycle and pedestrian programs and projects is always changing. A number of Federal agencies, including the Bureau of Land Management, the Department of Health and Human Services, the Department of Energy, and the Environmental Protection Agency have offered grant programs amenable to bicycle and pedestrian planning and implementation, and may do so again in the future. For up-to-date information about grant programs through all federal agencies, see <http://www.grants.gov/>

State Funding Sources

The State of Wisconsin has historically funded bicycle and pedestrian projects above and beyond Federal Transportation Enhancement (TE) dollars through two State grant programs: the Bicycle and Pedestrian Funding Program (BFPF) and the Surface Transportation Program – Discretionary (STP-D). Funding levels and cycles for both programs has been somewhat sporadic since the early 1990's. In 2002 the Surface Transportation Program – Discretionary (STP-D) was dismantled, but the Bicycle and Pedestrian Funding Program (BFPF) still exists.

WisDOT Bicycle and Pedestrian Funding Program (BFPF)

The most recent funding cycle of the BFPF in 2010 provided more than half a million dollars for bicycle and pedestrian planning and design throughout the state. Funding through the program is competitive – a

committee ranks projects and makes funding recommendations to the Wisconsin Department of Transportation Secretary.

All BPFPP funds have been awarded through FY 2014. Information on the next BPFPP funding cycle will be posted on the WisDOT Bicycle and Pedestrian Facilities Program web page in 2013:

<http://www.dot.wisconsin.gov/localgov/aid/bike-ped-facilities.htm>. Eligibility, schedule and application requirements from the most recent BPFPP funding cycle are described below as a reference. Please note that as of January 2013 this program is undergoing review by WisDOT and that future eligibilities, grant cycle schedule, and required elements may change as a result of this process.

Eligibility

- Funds are available for both planning and construction, including:
 - Planning projects costing \$50,000 or more
 - Construction projects costing \$200,000 or more
- No funding cap, but WisDOT's ability to fund projects over \$1 million is "very limited", according to the BPFPP application guidelines (See: <http://www.dot.wisconsin.gov/localgov/docs/smip-sample.pdf>)
- Statutory language specifically excludes pedestrian-only facilities, such as sidewalks and streetscaping projects
- Local governments with taxing authority and Indian Tribal Nations may apply for funding
- The project must be usable when completed - not staged so that additional money is necessary to make it a useful project

Application Cycle

- Applications are typically accepted every other year (even numbered years most common)
- Two to three years of funding is made available to projects for the three to four fiscal years following the calendar year in which projects are selected. (For example, in 2010 projects are developed for FY 2011-2014 funding.)
- In the past, WisDOT has reviewed BPFPP and Transportation Enhancements (TE) applications simultaneously due to similarities in program objectives and eligibility criteria. WisDOT may choose to coordinate BPFPP and Transportation Alternatives (TAP) application in a similar fashion.

Required Elements

- Project Summary and Description
- Sponsor and Contact Information
- Prioritization (if requesting funds for more than one project in an urbanized area)
- Project Costs and Dates
- A realistic estimate of how many people will use the proposed facility on an annual basis
- Project benefits (transportation system improvements, preservation of state historic, environmental and scenic resources, and/or promotion of economic development, tourism, or safety)

BICYCLE AND PEDESTRIAN PLAN

- Narrative response to set of detailed questions:
 - Construction projects:
 - Location, length, width, surface materials, connections to existing or planned facilities
 - Relationship to bicycle or pedestrian plan (if applicable)
 - Summary of bicycle and pedestrian plans developed over the past five years
 - Summary of programs in the community designed to encourage walking and bicycling
 - Historic related projects:
 - Documentation from National and/or State Register of Historic Places, locally adopted landmarks ordinance, and/or Wisconsin Historical Society.
 - Description of historic significance
 - Photograph(s) of historic elements
 - Landscaping/streetscape applications
 - Describe how improvements will promote walking and bicycling

A sample BFPF application can be found here: <http://www.dot.state.wi.us/localgov/aid/bike-ped-facilities.htm>

For more information on the history of bicycle and pedestrian funding in Wisconsin, including a list of WisDOT-funded projects from state and federal sources, see:

<http://www.dot.wisconsin.gov/localgov/aid/bike-ped-funding.htm>

State Recreation Grant Programs

The Wisconsin Department of Natural Resources administers several grant programs that may support bicycle and pedestrian facilities that provide a recreational benefit to the state. With the exception of the Recreational Trail Aids program, each of the programs below are part of the Knowles-Nelson Stewardship Program, a fund created by the Wisconsin Legislature in 1989 to “preserve valuable natural areas and wildlife habitat, protect water quality and fisheries, and expand opportunities for outdoor recreation.”

Acquisition & Development of Local Parks

Eligibility and Purpose: Helps to buy land or easements and develop or renovate local park and recreation area facilities for nature-based outdoor recreation purposes including trails. Applicants compete for funds on a regional basis.

Friends of State Lands

Eligibility and Purpose: Grants from this program help improve facilities, build new recreation projects, and restore habitat on state properties.

Habitat Area

Eligibility and Purpose: Protects and restores important wildlife habitat in Wisconsin in order to expand opportunities for wildlife-based recreation such as hunting, trapping, hiking, bird watching, fishing, nature appreciation and wildlife viewing.

Recreational Trail Aids (RTA)

Eligibility and Purpose: Municipal governments and incorporated organizations are eligible to receive reimbursement for development and maintenance of recreational trails and trail-related facilities for both motorized and non-motorized recreational trail uses. Eligible sponsors may be reimbursed for up to 50 percent of the total project costs. This program may be used in conjunction with the state snowmobile or ATV programs and Stewardship development projects.

- Maximum grant amount: \$45,000 (\$200,000 every third calendar year)
- Match requirement: 50 percent
- Contact: Tim Parsons, 608-267-9385
- Deadline: May 1

State Trails

Eligibility and purpose: Applications for grants under this subprogram must be for properties identified as part of the State Trail system. It is possible for sponsors to nominate additional trails for state trail designation. The Streambank Protection Program, a sub-program of the State Trails program, protects water quality and fish habitat in Wisconsin by establishing buffers along high-priority waterways.

Urban Green Space

Eligibility and Purpose: These grants help buy land or easements in urban areas to preserve the scenic and ecological values of natural open spaces for nature-based outdoor recreation, including non-commercial gardening.

Urban Rivers

Eligibility and Purpose: These grants help buy land on rivers flowing through urban or urbanizing areas to preserve or restore the scenic and environmental values of riverways for nature-based outdoor recreation.

For more information see: <http://dnr.wi.gov/Aid/Grants.html#tabx4>

Private Foundations

Private foundations are an increasingly important source of funds for bicycle and pedestrian planning and implementation. For example, planners in Ozaukee County successfully secured a \$10,000 grant from the Bikes Belong Coalition and a \$25,000 grant from the Wisconsin Energy Corporation Foundation to partially fund the Ozaukee Interurban Trail.

To read a case study of the Ozaukee Interurban Trail, visit:

<http://www.bicyclinginfo.org/library/details.cfm?id=4154>

BICYCLE AND PEDESTRIAN PLAN

For more information on private foundations, including an extensive list of national foundations visit:

<http://www.foundationcenter.org/>

Recommended Next Steps

In order to realize construction of the greatest portion of the bicycle and pedestrian network, the following actions are recommended:

- Track federal communications and be prepared to respond proactively to announcements of grant availability.
- Identify local funding sources for capital and non-infrastructure bicycle, pedestrian and Safe Routes to School projects.
- Review identified high priority projects against the summary of potential funding sources in Table 1 (below) to find potential complementary matches.
- Work with partners such as health advocacy agencies to develop grant proposals for facility design and construction.
- Work with partners such as health advocacy or safety agencies to identify and apply for support from nontraditional funding sources for capital and non-infrastructure projects.
- Consider identifying a dedicated funding source in the annual city budget (e.g., a dedicated portion of general fund dollars).
- Review the list of currently programmed roadway capital improvements and maintenance projects to identify opportunities for construction of pedestrian and bicycle facilities as an incidental element of these larger ongoing projects.

Table 1: Summary of Potential Funding Sources

		Planning Design and/or Construction				
		Funding Program	On-Street Pedestrian Facilities	On-Street Bicycle Facilities	Off-Street Shared-use Paths	Non-Infrastructure Programs
Federal Sources	MAP-21	Transportation Alternatives (TAP)	✓	✓	✓	✓
		Recreational Trails Program (RTP)			✓	
		Safe Routes to School (SRTS)	✓	✓	✓	✓
		Surface Transportation Program (STP)	✓	✓	✓	
		Highway Safety Improvement Program (HSIP)	✓	✓	✓	✓
		Congestion Mitigation/Air Quality (CMAQ)	✓	✓	✓	✓
		New Freedom Initiative	✓		✓	✓
		Pilot Transit-Oriented Development (TOD)				
		Partnership for Sustainable Communities	✓	✓	✓	
		Community Development Block Grants (CDBG)	✓			✓
		Community Transformation Grants (CTG)	✓	✓	✓	✓
		Land and Water Conservation Fund (LWCF)			✓	✓
		Rivers, Trails, and Conservation Assistance (RTCA)			✓	
		State Sources	DNR	WisDOT Bicycle and Pedestrian Funding Program (BPPF)	✓	✓
Acquisition & Development of Local Parks					✓	
Friends of State Lands					✓	
Habitat Area					✓	
Recreational Trails Aids (RTA)					✓	
State Trails					✓	
Urban Green Space					✓	
Urban Rivers					✓	

Bicycle & Pedestrian CIP Improvements

Year	Park	Project	Cost	
2014	Waters Edge Path Ext to WHS	Shared Use Path	CIP	
2014	East Gate Project	Shared Use Path & Markings	CIP	
2014	Bike/Ped Signage program		CIP	
2014	W Main Road Diet Phase I	S Prince to S Franklin (.48 miles)	\$0.00	Ann
2014	S Ardmore Street Extension	Shared Use Path (.07 miles)	\$14,000.00	
2015	Indian Mound Parkway	W Walworth to W Main (.54 miles)	\$10,800.00	
2015	W Walworth Street	Indian Mound to S Prince (.83 miles)	\$16,600.00	
2015	W Walworth Street	STH 12 to Indian Mound (.37 miles)	\$7,400.00	
2015	S Elizabeth Street	S Elizabeth to W Main (.76 miles)	\$15,200.00	
2015	W Walworth Street	S Prince to S Franklin (.5 miles)	\$10,000.00	
2015	E Clay Street Connector Path	Shared Use Path (.05 miles)	\$9,000.00	
2016	N Fremont Street	W North to E Schwager (.8 miles)	\$16,000.00	
2016	Shaw Court Ext Path	Shared Use Path (.45 miles)	\$80,784.00	
2016	N Newcomb Street	E Milwaukee to E Executive (.62 miles)	\$12,400.00	
2016	E Bluff Road	Elkhorn to Howard (.66 miles)	\$13,200.00	
2016	S Wisconsin Street	Willis Ray to E Milwaukee (1.16 miles)	\$23,200.00	
2016	W Main Road Diet Phase II	Indian Mound to S Prince (.71 miles)	\$0.00	Ann
2017	Tratt Street	W Main to Bloomingfield (1.1 miles)	\$22,000.00	
2017	E Milwaukee Street	E Main to S Newcomb (.53 miles)	State Project	
2017	E Milwaukee Street	N Newcomb to E Bluff (.41 miles)	State Project	
2018	Indian Mound Parkway	Indian Mound to W Walworth (.63 miles)	\$12,600.00	
2018	E North Street	S Franklin to N Newcomb (.99 miles)	\$19,800.00	
2018	Dann Street Bridge Replacement	Shared Use Path	\$935,000.00	
2019	Elkhorn Road Resurfacing	Bike Lane Markings	State Project	
2019	E County Line Road	N McMillen to Indian Mound (1.99 miles)	\$39,800.00	
2019	STH 89	Willis Ray to STH 12 (.22 miles)	\$4,400.00	
2020	South Franklin/East Gate Path/S Ric	Shared Use Path (2.48 miles)	\$0.00	Ann