



**COMPLETE STREETS POLICY AND
PEDESTRIAN AND BICYCLE PLAN**

**Adopted
December 2017**

ACKNOWLEDGEMENTS

This plan could not have been completed without the valuable input of hundreds of Winona stakeholders. Community members and government employees gave the planning team unique insight into the walking and bicycling environment of the city: their priorities for improvement, where they want to walk and ride bicycles, how existing infrastructure should be improved, and their ideas for how the city can work to create improved walkway and bikeway networks.

In addition to the public's input received through surveys, as well as at community workshops and listening sessions, the time and energy of the Active Transportation Steering Committee was particularly appreciated:

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The Toole Design Group Consultant Team assisted the City with the engagement process and provided pedestrian and bicycle transportation expertise.

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CHAPTER 1: INTRODUCTION AND EXECUTIVE SUMMARY

Winona is full of opportunities for walking and bicycling. The community is known as a compact city with an easy terrain (below the bluffs) traveling by foot or on wheels. Its destinations are also within reasonable distance, making walking and bicycling the easy choice for nearly 10% of residents who already commute to work and school. Across the region, Winona is known for its stunning scenery, drawing tourists to walk around the Lake Park Path and ride mountain bikes through the bluff trails.

Winona is on the eve of becoming one of the most pedestrian and bicycle friendly communities in the region. With its existing walkways and bikeways, a grid street system, and a high density of schools, parks, and local businesses, the basic multimodal transportation network and land use framework is in place. Walking and bicycling is valued because it supports economic and tourism growth. The community understands how walking and bicycling attracts and retains residents, tourists, and students. There is care from those in the community who prioritize safety and education for everyone.

But this Complete Streets Policy and Pedestrian and Bicycle Plan (the Plan) came about because there was not a clear vision for how the community could take walking and bicycling to the next level. Like other peer communities, Winona has experienced problems with walking and bicycling. People oftentimes feel uncomfortable walking across busy streets, bicycle riders are sometimes crowded out of bicycle facilities by parked vehicles, and many walkways remain impassable in the winter months. Unfortunately, the community also experiences occasional fatalities and incapacitating injuries through collisions between people driving, and those walking and bicycling.

WHAT DOES THIS PLAN INTEND TO ACCOMPLISH AND NOT ACCOMPLISH?

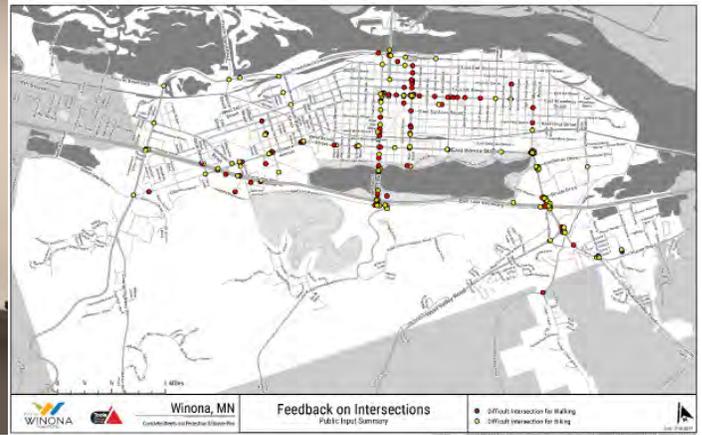
This plan and policy is intended to formalize the process of considering bicycle and pedestrian improvements for Winona road projects. The Plan is intended to provide guidance on appropriate enhancements to particular roadways and intersections. While the Plan includes many concept designs, it is acknowledged that projects as-built rarely match concepts due to timing, budgets, and overall feasibility. The Policy is intended as a process ultimately completed by the city's engineering department to put the plan into action as appropriate. The process is intended to include a short report identifying reasons why bicycle and pedestrian improvements are either included or not included in road projects. Accordingly, the Plan and Policy do not commit the city to specific projects. Rather, the Plan gives guidance, and the Policy asks the city to formally consider bicycle and pedestrian facilities for future road projects.

COMMUNITY ENGAGEMENT

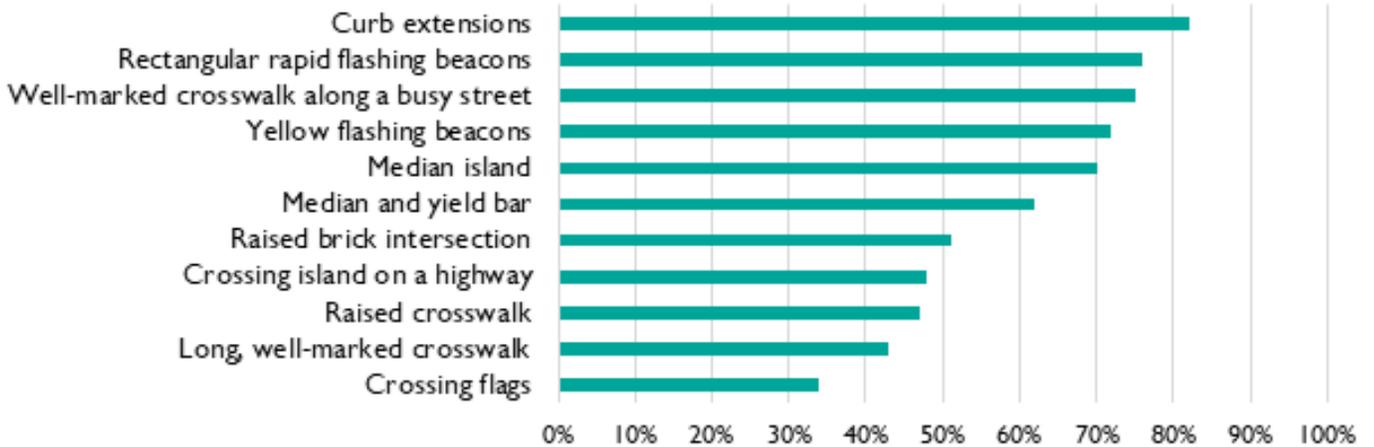
Chapter 2 of the Plan begins with a summary of community engagement results. Community workshops, listening sessions, and online surveys and maps were at the core of the planning approach, with input gathered from approximately 400 participant interactions. Planners wanted to first understand the issues the community sees around walking and bicycling, so that the Plan could be developed around their ideas and concerns. After listening to residents, maps, charts, and narratives were developed to summarize the common themes we heard from the community. Their viewpoints are explained further in Appendix A.

PLANNING FRAMEWORK

Past plans contain a wealth of information about, and support for, walking and bicycling. Chapter 3 covers previous plans where walking



Percentage of Respondents who rated pedestrian environment 'Very Comfortable' or 'Comfortable'



and bicycling have been addressed, such as Winona’s Comprehensive Plan, Winona State University’s Campus Plan, and walking and bicycling plans from MnDOT. Information has been categorized into two categories: 1) goals and 2) recommended bicycle routes. Under the first category, important goals about walking and bicycling are listed, such as:

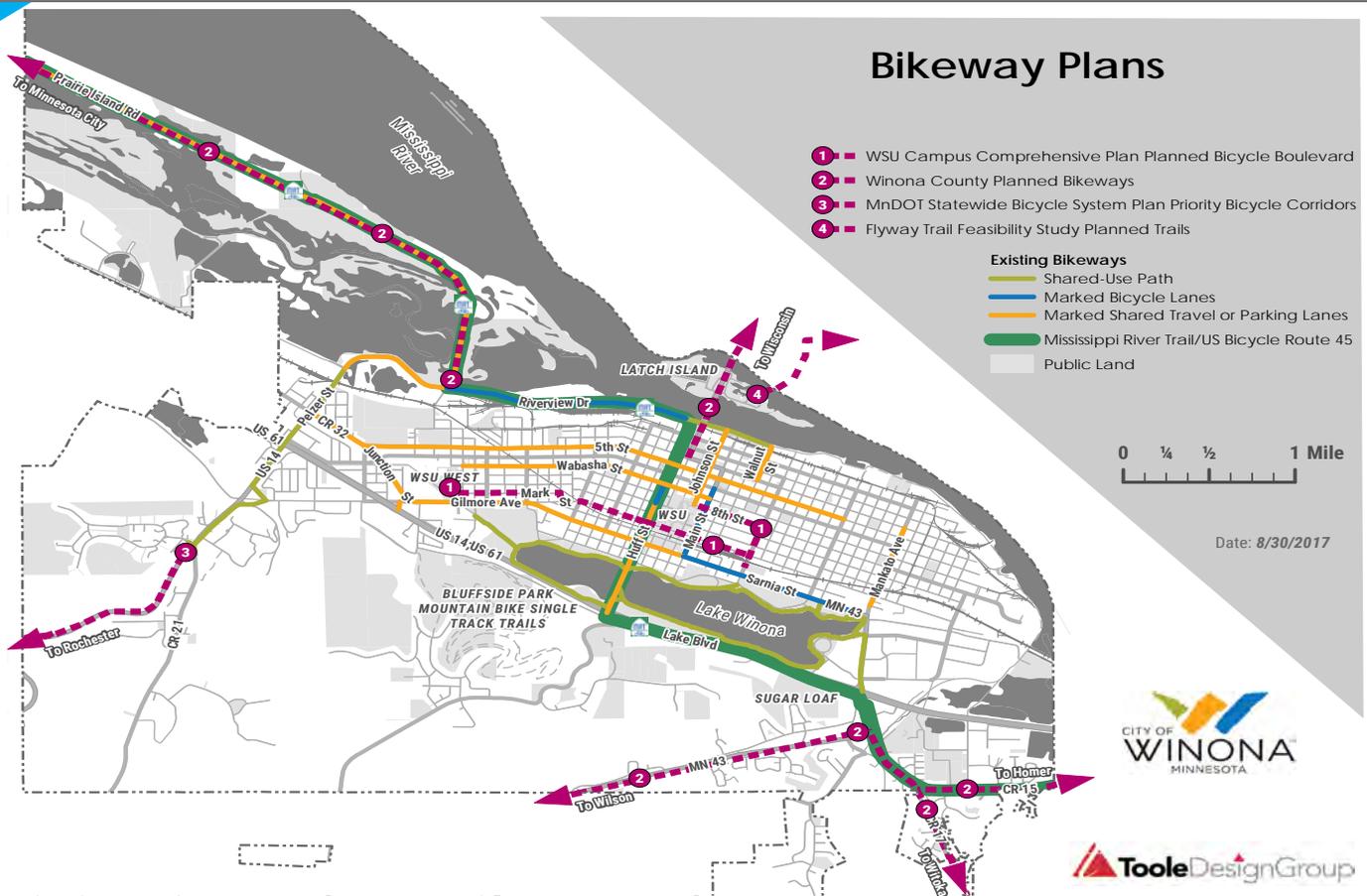
“Establish a multi-modal transportation system that enhances mobility and economic development.” – Winona County Comprehensive Plan (2014)

“Give priority to infrastructure improvements that increase the number of people walking and bicycling, and decrease the number of people driving alone.” – MnDOT Statewide Multimodal Plan (2016)

Under the second “recommended bicycle routes” category, corridors from these plans are compiled into one “Bikeway Plans” map that was used as a base for proposing Winona’s bicycle network.

COMPLETE STREETS

A central component of the Plan is a Complete Streets Policy (the Policy) for the City of Winona. Chapter 4 explains that MnDOT and many of Winona’s peer cities in the Upper Midwest have already adopted Complete Streets policies. Based upon feedback from the Active Transportation Steering Committee, a Complete Streets policy for the City of Winona is recommended. The goal of the Policy is to develop a vision and high-level procedures for



building walking and bicycling networks along with Winona’s driving, freight, and public transit networks.

Bicycle, pedestrian, and transit improvements shall be included in all road projects, except under one or more of the following conditions, listed below and in Chapter 4:

1. Public transit is not existing or planned along a project corridor;
2. A bikeway is not existing or planned for a project corridor (per the City’s future bikeway network map);
3. Freight vehicles are not existing or planned on a project corridor (per the City’s truck route map)
4. Routine maintenance of the transportation network does not change the roadway geometry, lane widths, lane uses, or crosswalk locations, including mowing, sweeping, joint repair, and pavement patching (documentation is not required for this exception);
5. A traveled road, street, shared-use path, or walkway prohibits use by specific users (such as an interstate prohibiting pedestrians, or a shared-use path prohibit motor vehicles) in which case an effort shall be made to accommodate those specified users elsewhere within the transportation network, including on facilities that are parallel to or cross the affected traveled way
6. The project is too expensive compared to the need, probable use, or original scope of the project
7. There is a reasonable and equivalent project parallel to and in close proximity to the road, street, shared-use or sidewalk that is already programmed to provide facilities exempted from the project at hand.

OTHER POLICY RECOMMENDATIONS

In addition to the Complete Streets policy, other policy recommendations are presented in

Chapter 5, based upon input from community engagement. These include:

- Improving accessibility for people with disabilities
- Inventorying walkway locations
- Updating the maintenance plan for walkways
- Developing a crash evaluation program
- Amending minimum parking regulations

schools, employers, businesses, neighborhoods, and key tourist attractions.

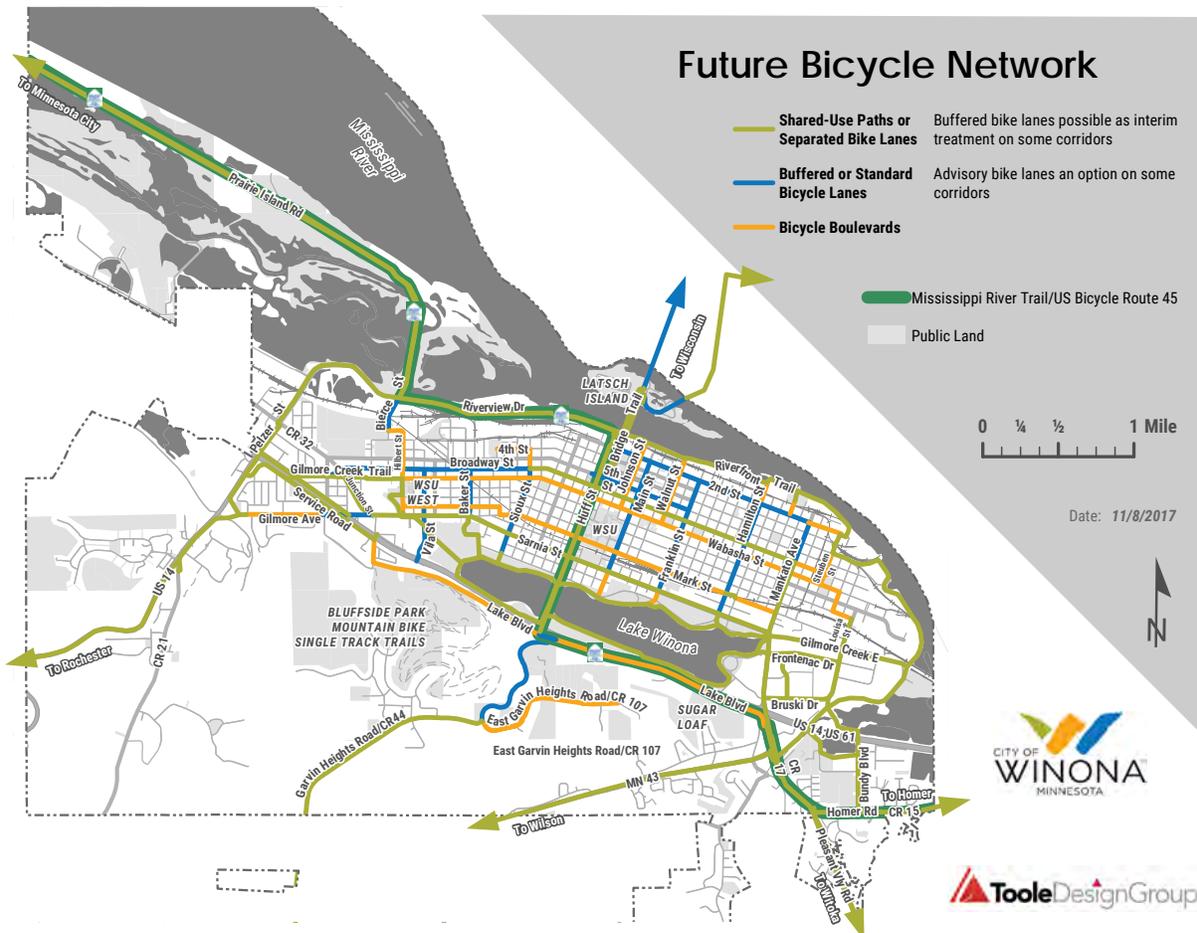
Funding strategies for bicycle network implementation originate from the local, county, and federal levels, and include both private and public sources. Implementing bicycle facilities in coordination with city, county, and state road construction programs results in greater cost efficiencies. Planning level cost estimates for each recommended bicycle facility, as well as a phasing plan for the future bicycle network, were developed and are provided in a detailed spreadsheet in Chapter 6.

BIKEWAY NETWORK IMPLEMENTATION

The benefits of a fully built bicycle network are summarized in Chapter 6, and include economic development, increased transportation options, and additional greenway corridors for the community. Winona residents are primarily concerned with comfort and safety, and prefer separated bicycle facilities on busier streets. The future bicycle network is spaced at approximate 1/2 mile increments, and connects the city's

ENGINEERING RECOMMENDATIONS FOR FUTURE PROJECTS

Using the City's Capital Improvement Program and MnDOT's road construction program as a guide, engineering recommendations were developed in Chapter 7 for upcoming projects. Aerial views of several intersections, and cross



Chapter 1

section views of several mid-block locations, illustrate how engineers can design Winona's streets to make improvements supported by this Plan's community engagement process.

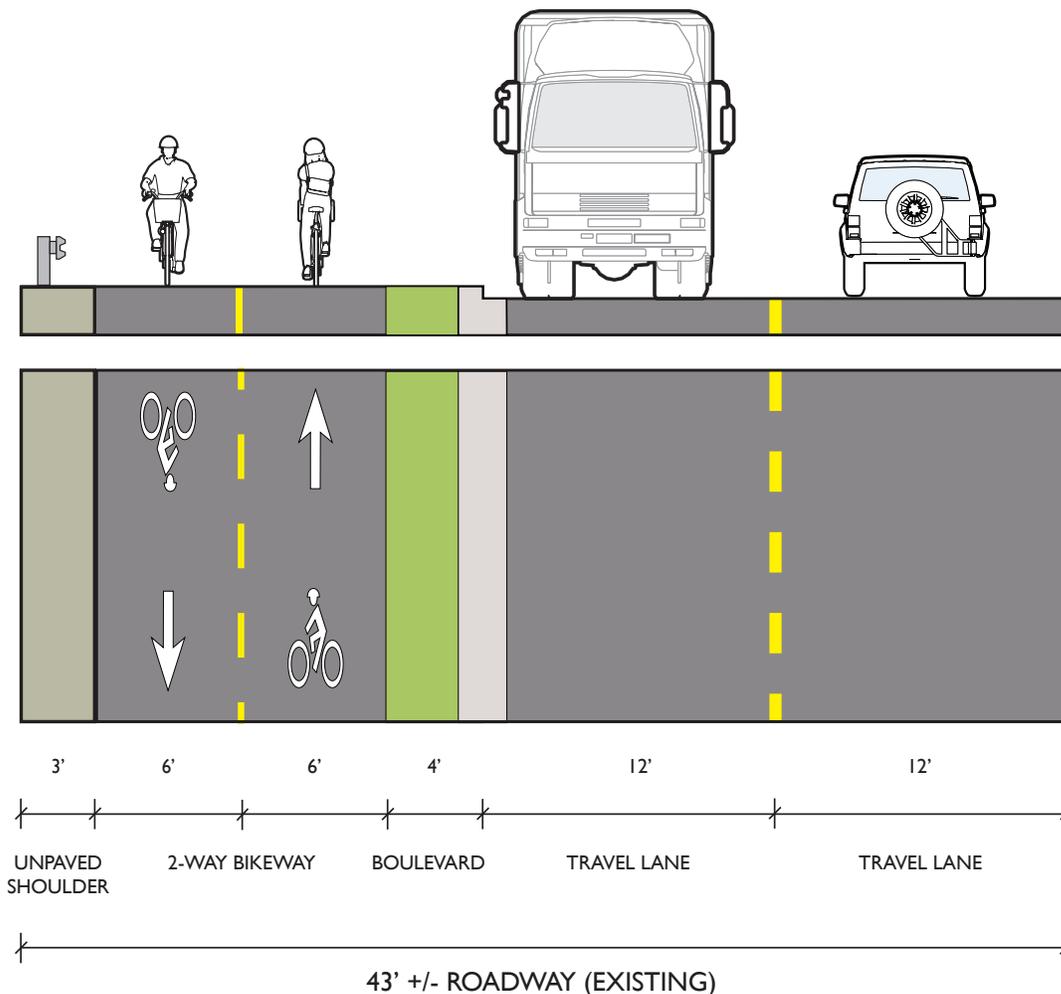
FACILITY TYPES FOR COMPLETE STREETS

Chapter 8 contains a thorough glossary of pedestrian and bicycle facility types. The community can use this information as a toolbox to build out the walking and bicycling networks. The benefits and design considerations of each type are listed, along with illustrative photographs. The chapter ends with a discussion of how to improve walking and bicycling access in parking lots.

CONCLUSION

The policy is intended as a process ultimately completed by the City's Engineering Department to put the plan into action as appropriate. The process is intended to be a short report identifying reasons why bicycle and pedestrian improvements are either included or not included in road projects.

This Plan positions Winona to make improvements to the walking and bicycling networks, building off the success the community has already achieved at integrating these modes of travel into the transportation network.



Riverview Drive (Prairie Island Road to 2nd Street) Looking East

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CHAPTER 2: COMMUNITY ENGAGEMENT

The Winona Complete Streets and Pedestrian and Bicycle Plan (Plan) was guided by input from Winona residents and stakeholders in two phases:

1. Phase One – June/July 2017, to engage the community before a draft of the Plan was written.
2. Phase Two – anticipated for October/November 2017, to engage the community after a first draft of the Plan is published.

During the first phase, 360 participant interactions took place. Participants represented a wide range of walking and bicycling habits and offered three common themes:

1. Integrate Winona’s community values into transportation
2. Improve walking and bicycling design options
3. Address priority areas in the walking and bicycling network

HOW DID WE ENGAGE WINONA COMMUNITY MEMBERS?

The Winona Complete Streets and Pedestrian and Bicycle Master Plan is intended to reflect the vision and goals of the community as a whole, not just those who explicitly identify as a “pedestrian” or “bicyclist.” By uncovering the issues and ideas from community members with indirect interest in walking and bicycling, the plan recommendations better reflect universal Winona values and priorities. Making engagement easy, tailored, inviting, and fun helped reach residents who cared about walking and bicycling, but who would have otherwise been less vocal on this topic. The following strategies were used to engage community members (for more detail, see Appendix A Community Engagement Report).

- Listening Sessions: 30 people engaged in listening sessions targeted to Winona residents and leaders.
- Community Workshops: Approximately 75 participants shared their bicycling habits, mapped priority intersections, bicycle routes, rated facility types at community workshops at the Winona Public Library, Winona Health, and the Winona Farmers Market.
- Online Surveys: Over 230 people used the online survey to share their walking and bicycling habits, rate facility types, and rank top issues for Winona.
- Online Interactive Map: 24 people shared their priority intersections for walking and bicycling, and their top routes for bicycling.



A city staff member helps a child fill out a walking and bicycling survey at the Winona Public Library on June 27, 2017

WHO DID WE HEAR FROM?

Participants in the on-line survey were asked to self-identify their race, age, and gender, as well as some simple questions about their bicycling habits and street crossing habits. This helped the project team to get a sense of who was being reached in the community, and what their daily bicycling and pedestrian habits are like.

How often do you ride a bicycle in the warmer months?

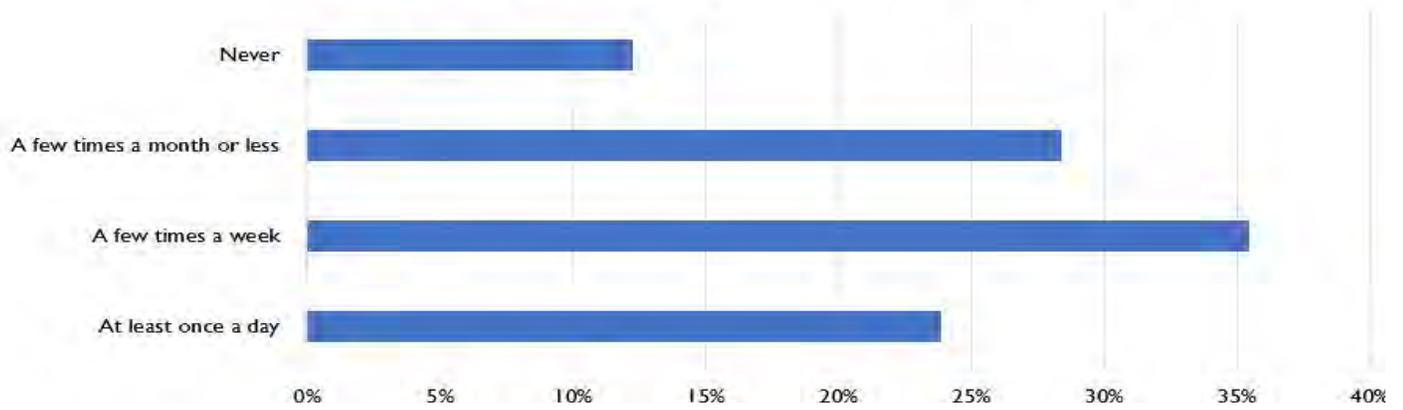


Figure 1: Bicycling habits of participants from the online survey in June-July 2017.

How often do you cross a street or road as a pedestrian?

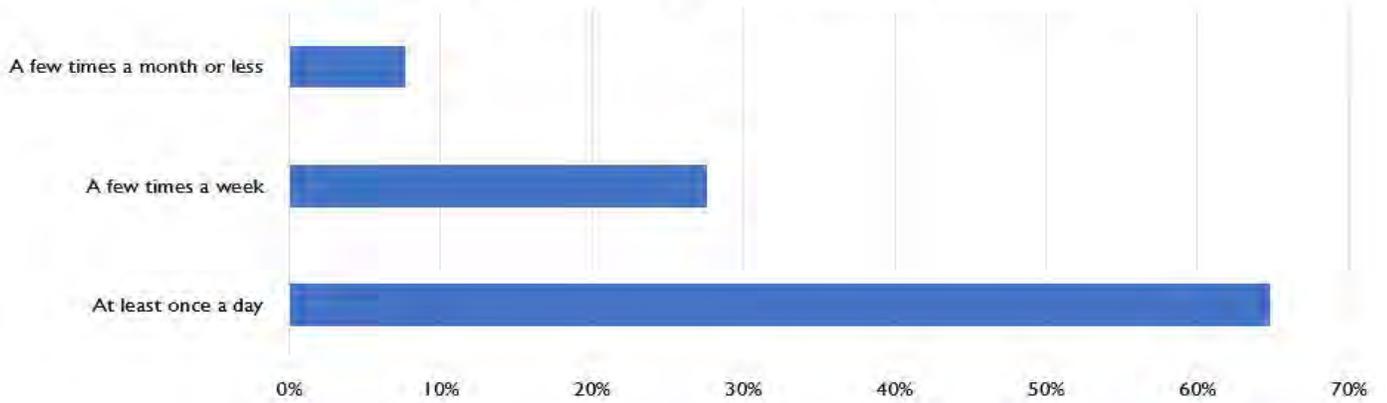


Figure 2: Street crossing habits of participants from the online survey in June-July 2017.

Would you describe yourself as...

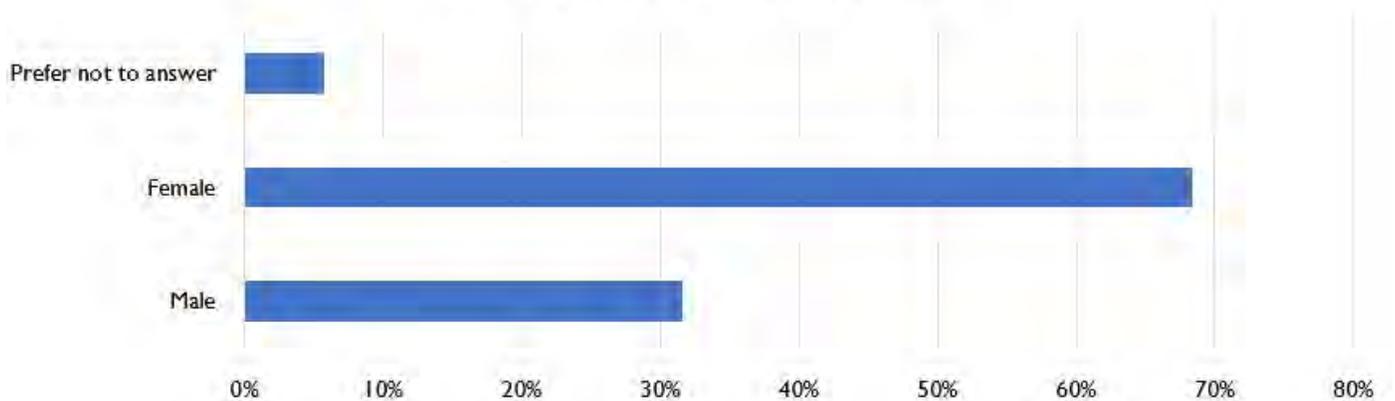


Figure 3: Gender of participants from the online survey in June-July 2017.

What is your age?

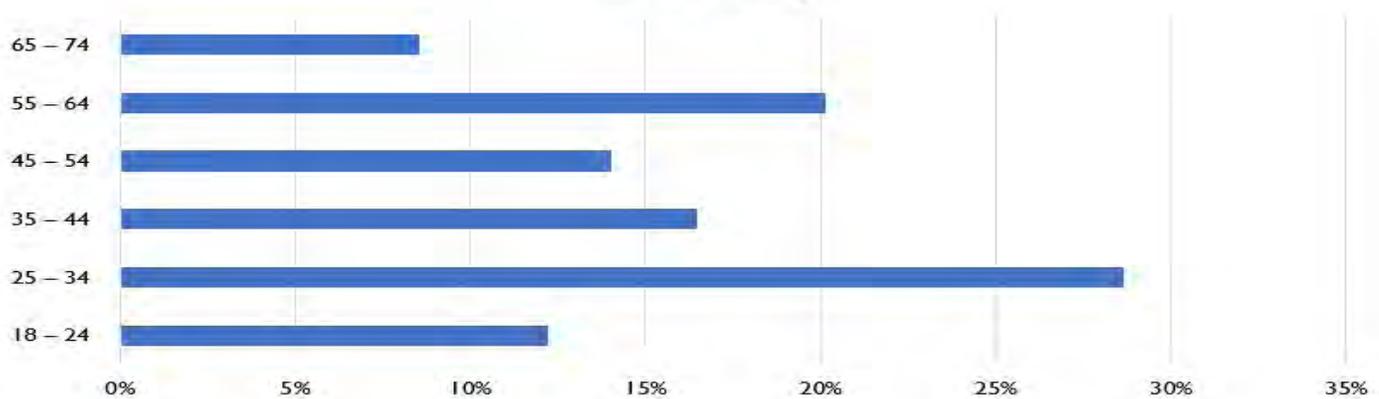


Figure 4: Age of participants from the online survey in June-July 2017.

WHAT DID WE LEARN?

Key findings were discovered from the open conversations conducted in June as well as frequent responses from surveys and workshops. The key findings are addressed in subsequent chapters, which include recommendations for responding to community priorities. The key findings are:

- The community has many values that relate to transportation, including a diverse array of residents with multimodal transportation needs, a need to connect the entire community to the city’s historic and vital downtown, education about how to use the transportation network, economic development for tourists and residents, safety prioritized above short travel times, and a priority on pedestrians that can be addressed in this Plan.

- There is a demand for improved pedestrian and bicycle infrastructure.
- Implementation of changes and greater momentum for walking and bicycling are needed.

Survey respondents told the project team that curb extensions were their most comfortable type of pedestrian facility, and curb-level, separated bicycle lanes were most comfortable for bicycle riding (see the charts on the following page).

Item	Overall Rank	Rank Distribution	Score	No. of Rankings
Improve safety	1		599	159
Minimize travel times for automobile traffic	2		383	152
Minimize cost	3		305	151
Maximize automobile traffic volumes	4		259	151

■ Lowest Rank ■ Highest Rank

This chart illustrates safety as a high priority for survey respondents, who were asked to prioritize these items for consideration when rebuilding streets in Winona.

Percentage of Respondents who rated pedestrian environment 'Very Comfortable' or 'Comfortable'

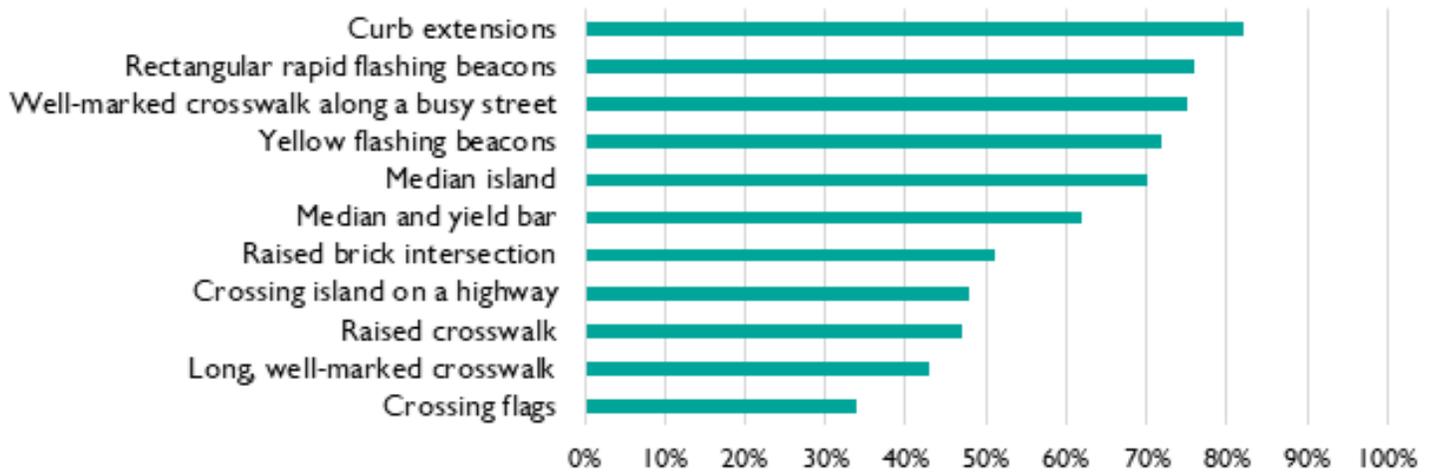


Figure 5 Summary graph of percentage of respondents who rated each pedestrian environment as 'Very Comfortable' or 'Comfortable'.

Percentage of Respondents who rated bicycle facility 'Very Comfortable' or 'Comfortable'

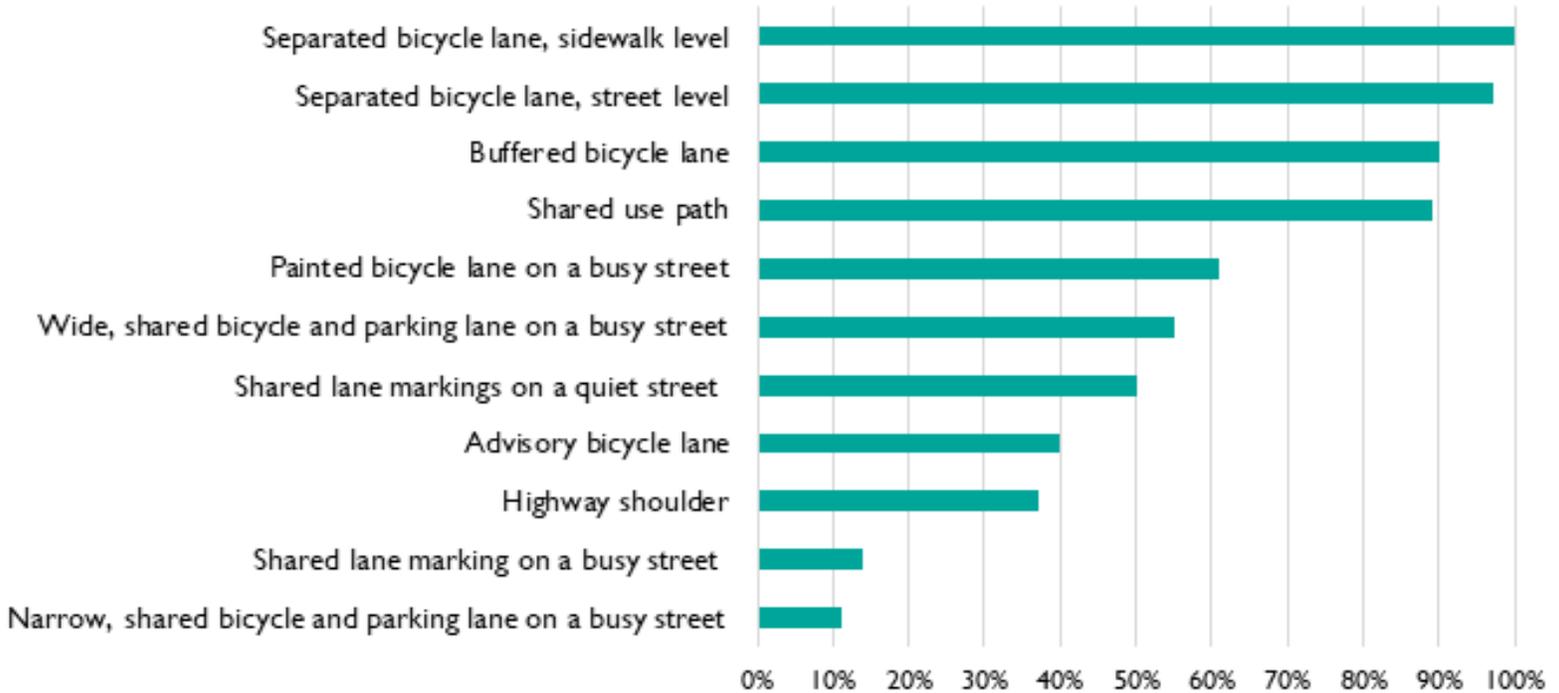


Figure 6 Summary graph of percentage of respondents who rated each bicycle facility as 'Very Comfortable' or 'Comfortable'.



CHAPTER 3: PLANNING FRAMEWORK

Winona's Complete Streets Policy (Policy) and Pedestrian and Bicycle Plan (the Plan) is framed by adopted plans of the City of Winona and its partner agencies. While the development of the Plan is led by the City of Winona, many other governmental planning units are integral to the city's transportation network. This includes Winona State University, Winona County, the Minnesota Department of Transportation (MnDOT), and neighboring Buffalo County, Wisconsin. In addition to Winona's plans, each agency's past planning efforts were reviewed to provide context for the Plan.

"Green pedestrian and bike trails connect Levee Park, the downtown, Winona's cultural landmarks, college and university campuses, Lake Winona, and ultimately link to the bluffland residential and recreational areas and regional trails ... Pedestrian traffic is accommodated on wide sidewalks [in] Winona's historic downtown."
– Source: City of Winona Comprehensive Plan

CITY OF WINONA COMPREHENSIVE PLAN (2007)

The source of most non-motorized policies and projects in Winona is the City's Comprehensive Plan, adopted in 2007. This plan sets a goal to reduce dependence on private vehicles and encourage walking and bicycling. Specific policy statements related to non-motorized transportation include:

- Implement a citywide wayfinding system for the pedestrian and bicycle networks, connecting people to major landmarks and destinations.
- Expand the sidewalk and crosswalk network to provide access throughout the city, including in newly constructed neighborhoods.
- Improve pedestrian connections between Winona's auto-oriented commercial areas and adjacent neighborhoods.
- Support pedestrian-oriented design in downtown, with less emphasis on parking requirements.
- Promote wintertime use of recreational parks and trails.
- Incorporate traffic calming into street construction projects, and build streets to a width that does not encourage excessive speeds.
- Promote the use of "Yield" signs at uncontrolled intersections.
- Establish a complete and regionally connected trail network along waterways, linear wooded areas, and former railroad beds:
 - Interconnecting major parks, neighborhoods, and schools,

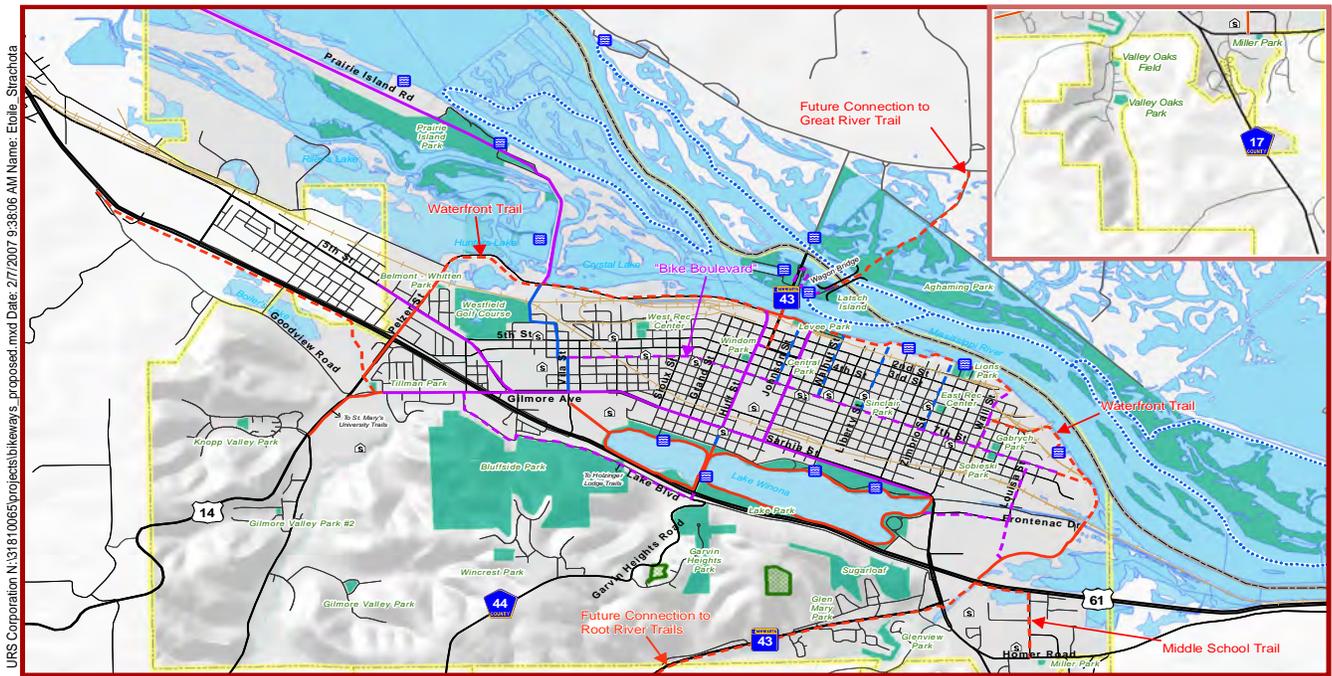


Figure 6

Future Trails and Bikeways Plan

June 2007



- | | | |
|---------------|--------------------------------|--------------------------------|
| Legend | Existing Trails | Proposed Trails |
| Water Access | Multi-Purpose Trail | Multi-Purpose Trail |
| Park | Bicycle Lane / Shared Shoulder | Bicycle Lane / Shared Shoulder |
| Open Space | Signed Bicycle Route | Signed Bicycle Route |
| School | | Water Trail |



Data Sources: City of Winona, MnDOT, ESRI, URS



Figure 6 The 2007 Future Trails and Bikeways Plan illustrated existing and proposed bikeways, both off-street and on-street.

- o Connecting to the Root River Trail and the Great River Trail in Wisconsin, and
- o Establishing a riverfront trail along industrial areas (where approximately 50% of trail easements have already been acquired), while avoiding conflicts with port and dockage facilities.

A component of the 2007 Comprehensive Plan was the Future Trails and Bikeways Plan map, shown in Figure 1. The map illustrates existing and proposed bikeways classified into three facility types: multi-purpose trails, bicycle lanes/shared shoulders, and signed bicycle routes. Major recommendations include a waterfront trail, middle school trail, connections to the Root River and Great River Trails, and a bicycle boulevard on Wabasha Street.

WSU CAMPUS COMPREHENSIVE PLAN (2010)

Winona State University's Campus Comprehensive Plan, adopted in 2010, establishes priorities for walking and bicycling infrastructure improvements. Some require coordination with the City of Winona and MnDOT. For walking, the plan prioritizes better crossings for Main Street/TH 43 (managed by MnDOT) and Huff Street (managed by the City) between Wabasha and Mark Streets, using bump outs and pedestrian warning signs.

For bicycling, the plan proposes bicycle boulevard routes connecting the Main Campus with:

- West Campus (via Mark Street)
- The East Lake Apartments on Franklin Avenue (via Mark Street and Franklin Avenue)
- Wabasha Recreation Center and Wabasha Hall (via Washington Street, Sanborn Street, and Lafayette Street)

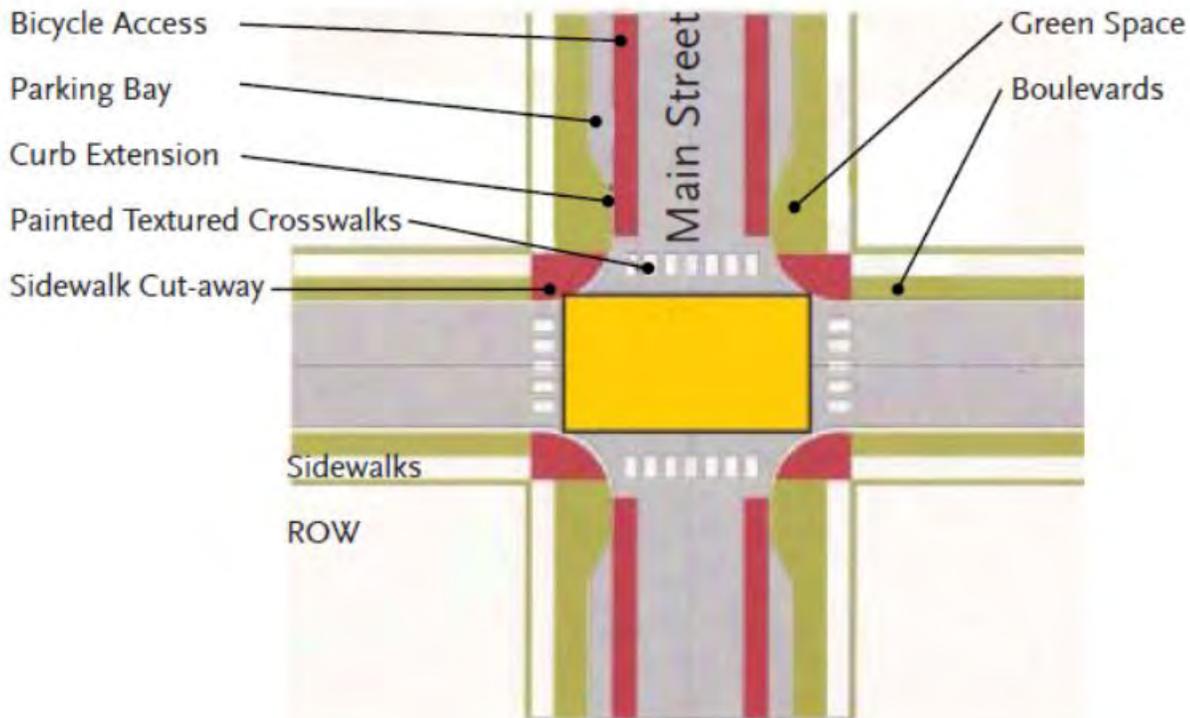


Figure 2 A conceptual engineering layout for Main Street near the WSU campus, showing bicycle lanes and bumpouts on Main Street. Credit: WSU Campus Comprehensive Plan

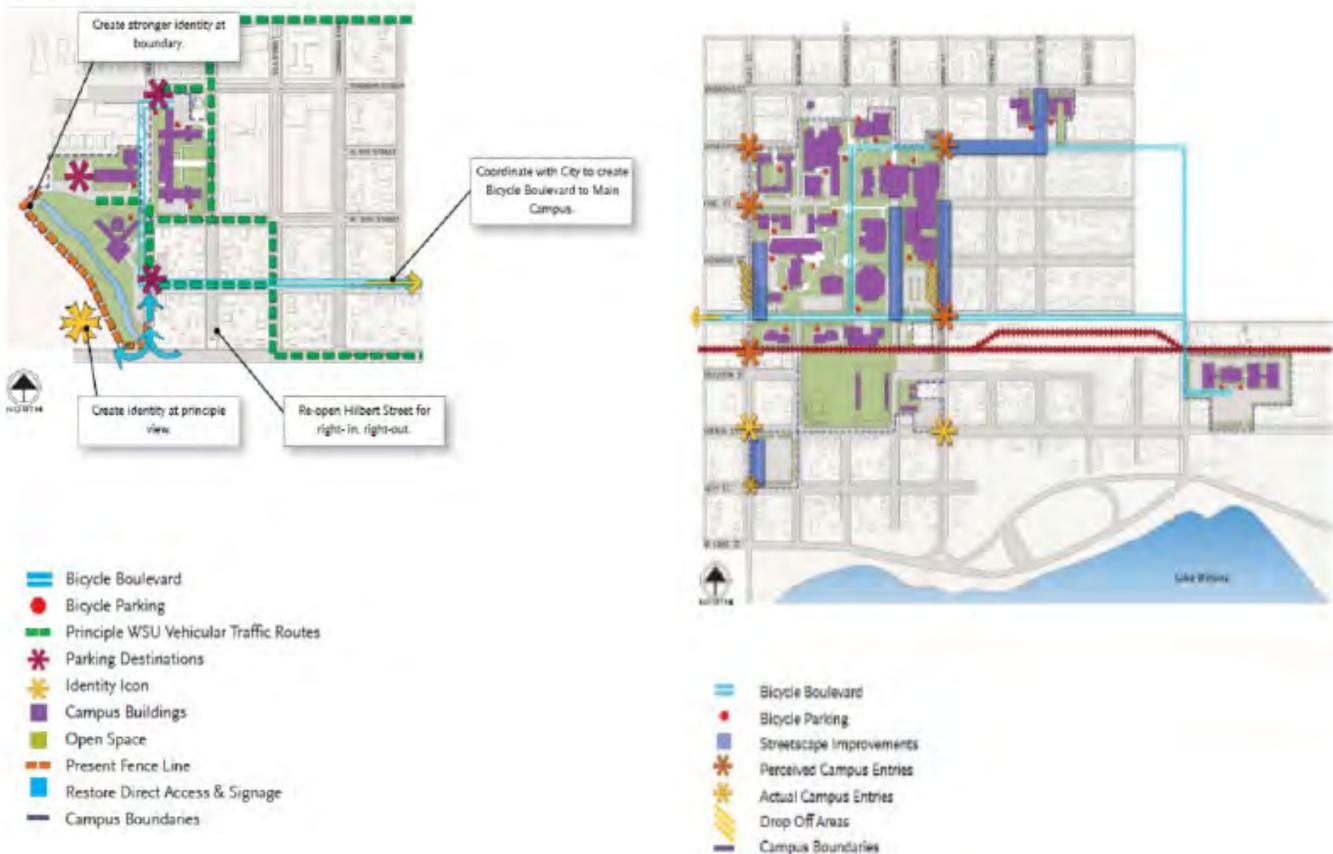


Figure 3 Bicycle boulevards are proposed to connect buildings on Winona State University's main and west campuses, along City-managed streets. Credit: WSU Campus Comprehensive Plan

WINONA COUNTY TRAIL PLAN (2013)

Winona County's Trail Plan was adopted by the County Board of Commissioners in 2013, setting a vision for five bicycle routes connecting Winona with the following neighboring communities:

1. Wisconsin (planned as a future trail on the Highway 43 Interstate Bridge)
2. Minnesota City (utilizing existing shoulders on Prairie Island Road)
3. Wilson (planned as a future trail on Highway 43)
4. Witoka (planned as a future trail and shoulders on Homer Road and Pleasant Valley Road/County Road 17)
5. Homer (planned as future shoulders on Homer Road/County Road 15)

WINONA COUNTY COMPREHENSIVE PLAN (2014)

The Winona County Comprehensive Plan, adopted in 2014, has a broad goal to establish a multi-modal transportation system (including people walking and bicycling) that enhances mobility and economic development.

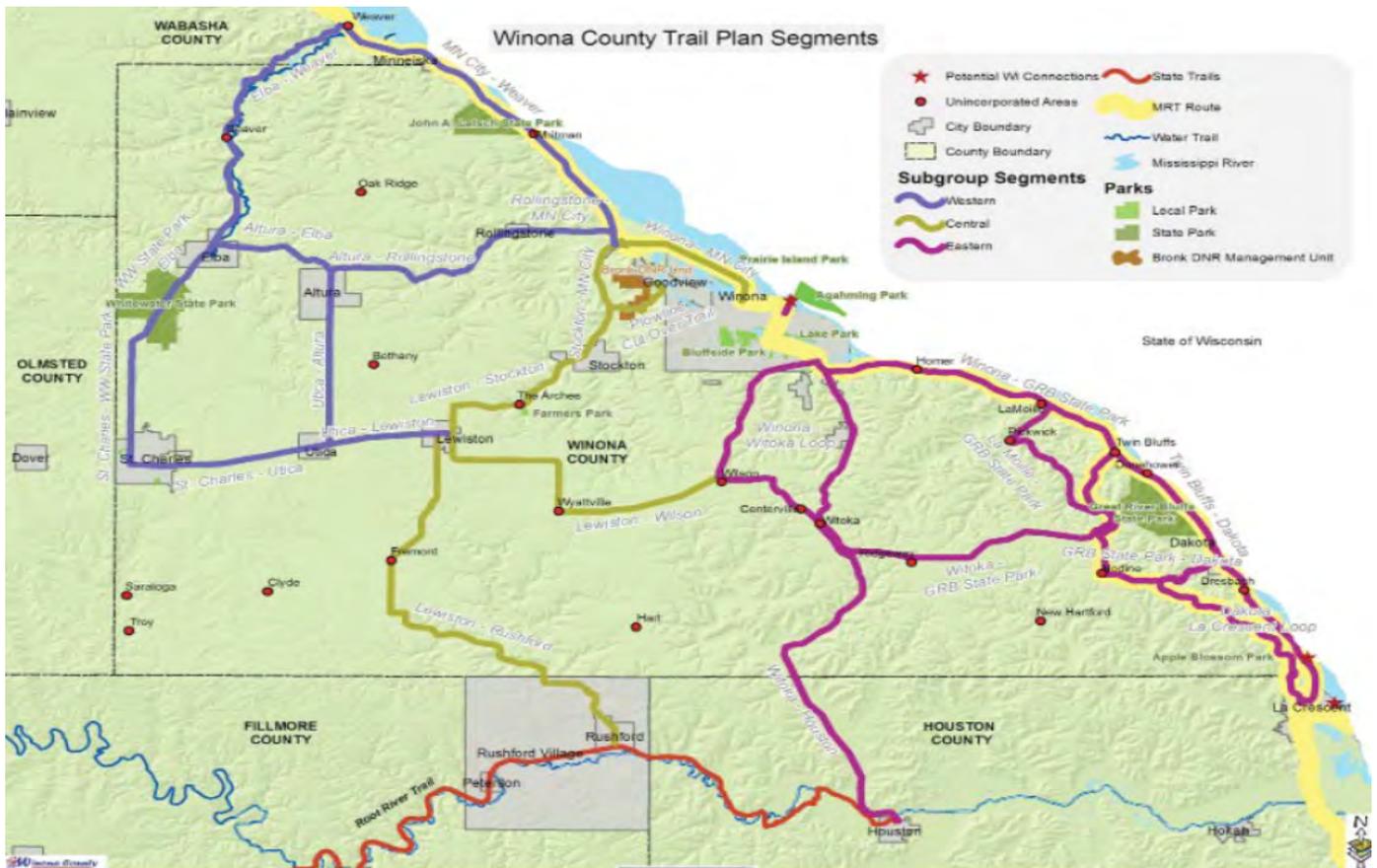


Figure 4 Planned bicycle routes across Winona County illustrate how Winona will be connected in the future to neighboring communities, as well as the Root River Trail in Fillmore and Houston Counties. Credit: Winona County Trail Plan

MNDOT STATEWIDE MULTIMODAL PLAN (2016)

MnDOT has three transportation plans relating to walking and bicycling. The first is the overarching Statewide Multimodal Transportation Plan. This 20-year plan, most recently updated in January 2017, sets goals for walking and bicycling within Minnesota's transportation network, including state, county, and city roads, trails, and walkways. These goals include:

- Reducing pedestrian and bicycle fatalities and serious injuries in collisions with motor vehicles (over the past ten years, non-motorized collisions remained stagnant, while overall fatalities and serious injuries declined).
- Increasing the percentage of ADA compliant, state-owned sidewalk miles to 100%.
- Considering a complete streets approach on all state highway projects, acknowledging that this "may reduce the speed and volume of vehicle traffic by using traffic calming strategies and encouraging mode shift away from driving alone."
- Making transportation decisions that reduce greenhouse gas emissions.
- Giving priority to infrastructure improvements that increase the number of people walking and bicycling, and decrease the number of people driving alone.
- Measuring improvements to the walking and bicycling networks on the state highway system.

MINNESOTA WALKS (2016)

In 2016, MnDOT and the Minnesota Department of Health completed Minnesota Walks, a companion plan to the Statewide Multimodal Transportation Plan, which details how to make walking a safe, convenient, and desirable form of transportation. Minnesota Walks is a tool for state and local partners, and the plan lists strategies including:

- Establishing a hierarchy of modal planning that prioritizes walking.
- Identifying priority networks for walking.

- Enacting snow removal practices that treat walkways and roadways equally, with operations led by city crews (examples include Richfield and Roseville, MN).
- Maintaining sidewalks at no additional cost to adjacent land owners.
- Compiling data for a sidewalk inventory, accessible pedestrian signals, annual ADA improvements, and crashes with motor vehicles.
- Testing creative traffic calming methods to slow down the speed of traffic on streets.

MNDOT STATEWIDE BICYCLE SYSTEM PLAN (2016)

Also in 2016, MnDOT completed a second companion to the Statewide Multimodal Transportation Plan, the Statewide Bicycle System Plan. This plan sets a goal to develop both local and long-distance state bicycle routes, with the finding that while the public values long-distance state routes, they value local bicycle travel more. Strategies include:

- Investing statewide bikeway infrastructure allocations at 70% for the local level and 30% for long-distance state level.
- Working with local partners to identify specific routes on state highways, local roads, and shared use paths.
- Continuing to support efforts to allow cities flexibility in choosing designs that support bicycling, through MnDOT's state aid system.
- Building bicycle facilities that have sufficient separation from motor vehicle traffic (i.e. shoulders do not provide sufficient separation, but shared use paths do).



Figure 5 A demonstration project in Alexandria, MN (population 14,000) connecting downtown to the Central Lakes Trail, which included temporary street markings for bump outs and bicycle lanes, as well as potted trees and plants. Credit: Minnesota Walks



Figure 6 MnDOT's Statewide Bicycle System Plan includes a state priority corridor between Winona and Rochester, and a regional priority corridor between Winona and Houston. Credit: MnDOT Statewide Bicycle System Plan

BUFFALO COUNTY, WI FLYWAY TRAIL FEASIBILITY STUDY (2016)

In 2016, the Buffalo County, WI Land & Trails Trust completed the Flyway Trail Feasibility Study. The goal of the study was to create a low-stress trail experience that connects small towns along the Mississippi River, spurring economic development. A top priority identified in the study is improved connections between Winona and Buffalo County, due to Winona's close proximity and higher population density.

The study identified two bikeway connections to the new Highway 43 Interstate Bridge. The first was bicycle lanes along Wisconsin Highway 54, providing a direct on-road connection between the north end of Highway 43 Bridge and Wisconsin Highway 35. The second was a shared

use path along Old Wisconsin Highway 54 and Highway 35/54, which would connect Winona's Latsch Island to Wisconsin's Great River State Trail. This trail is one component of an already established 100-mile linear trail between the Trempealeau National Wildlife Refuge, La Crosse, and Reedsburg, Wisconsin.

Bikeway plans from the City of Winona's partner agencies have been compiled into a map shown in Figure 8 (opposite). These plans informed the future bikeway network map, shown in the Maps section at the end of the document.



Figure 7 Buffalo County is planning a shared-use path connection between Winona's Latsch Island and Wisconsin's Great River State Trail. Credit: Flyway Trail Feasibility Study

Figure 8 (opposite) Bikeway plans from partner agencies provide context for Winona's future bikeway network

Bikeway Plans

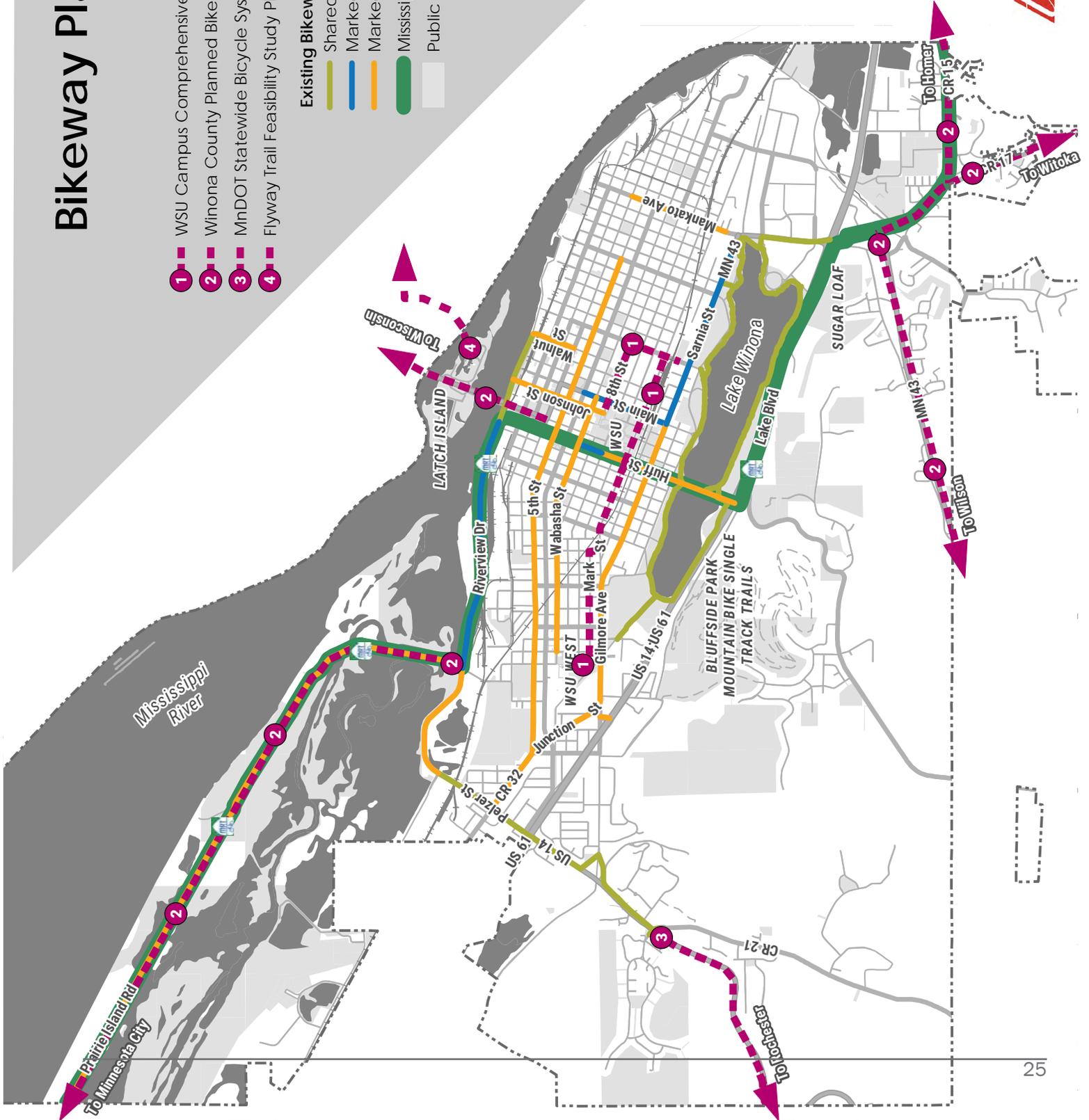
- 1 WSU Campus Comprehensive Plan Planned Bicycle Boulevard
- 2 Winona County Planned Bikeways
- 3 MnDOT Statewide Bicycle System Plan Priority Bicycle Corridors
- 4 Flyway Trail Feasibility Study Planned Trails

Existing Bikeways

- Shared-Use Path
- Marked Bicycle Lanes
- Marked Shared Travel or Parking Lanes
- Mississippi River Trail/US Bicycle Route 45
- Public Land



Date: 8/30/2017



CHAPTER 4: COMPLETE STREETS POLICY

A Complete Streets Policy balances the multi-modal needs of all people traveling, whether they are walking, bicycling, using public transit, driving automobiles, or operating freight vehicles. Throughout the community engagement process, participants shared that current pedestrian and bicycle networks are not fully developed, with large gaps between some of Winona's important destinations. For example, some residents cannot ride a bicycle to work between their homes north of Highway 61 and jobs south of the highway. Others are not able to walk to the downtown Friendship Center in winter, because walkways are not clear of snow and ice.

A Complete Streets Policy (the Policy) guides the community to rebalance the transportation network, so that walking and bicycling trips are not ignored. The Policy in this chapter is clearly defined, establishing a vision and performance measures to track Winona's progress as an emerging, multi-modal community in the Upper Midwest.

PROCESS

The process for developing a Policy began with a review of peer communities. Nearby Rochester and Red Wing, MN adopted policies in 2009 and 2011. MnDOT adopted a policy in 2013. Across the country, over 1,200 policies had been adopted as of 2016, with many policies in place in the Upper Midwest (see Figure 1).

The National Complete Streets Coalition, an organization which promotes the development and implementation of Complete Streets policies, publishes an annual report scoring the best policies across the country. Using their 2015 report which examines each policy according to ten elements, the project team distributed the best version of the ten elements to City and County staff, as well as members of the Active Transportation Steering Committee. Respondents shared what they liked and did not like about each element, and that feedback was used to create a policy tailored to the needs of the community.



"... [A] complete streets approach is not 'all modes on all roads.' It is about considering people who want to use the transportation system today and in the future, and providing transportation choices that address those needs. The complete streets approach emphasizes a network and system approach, ensuring that the transportation system as a whole provides mobility and accessibility for all users."
Credit: MnDOT Complete Streets Policy, 2016

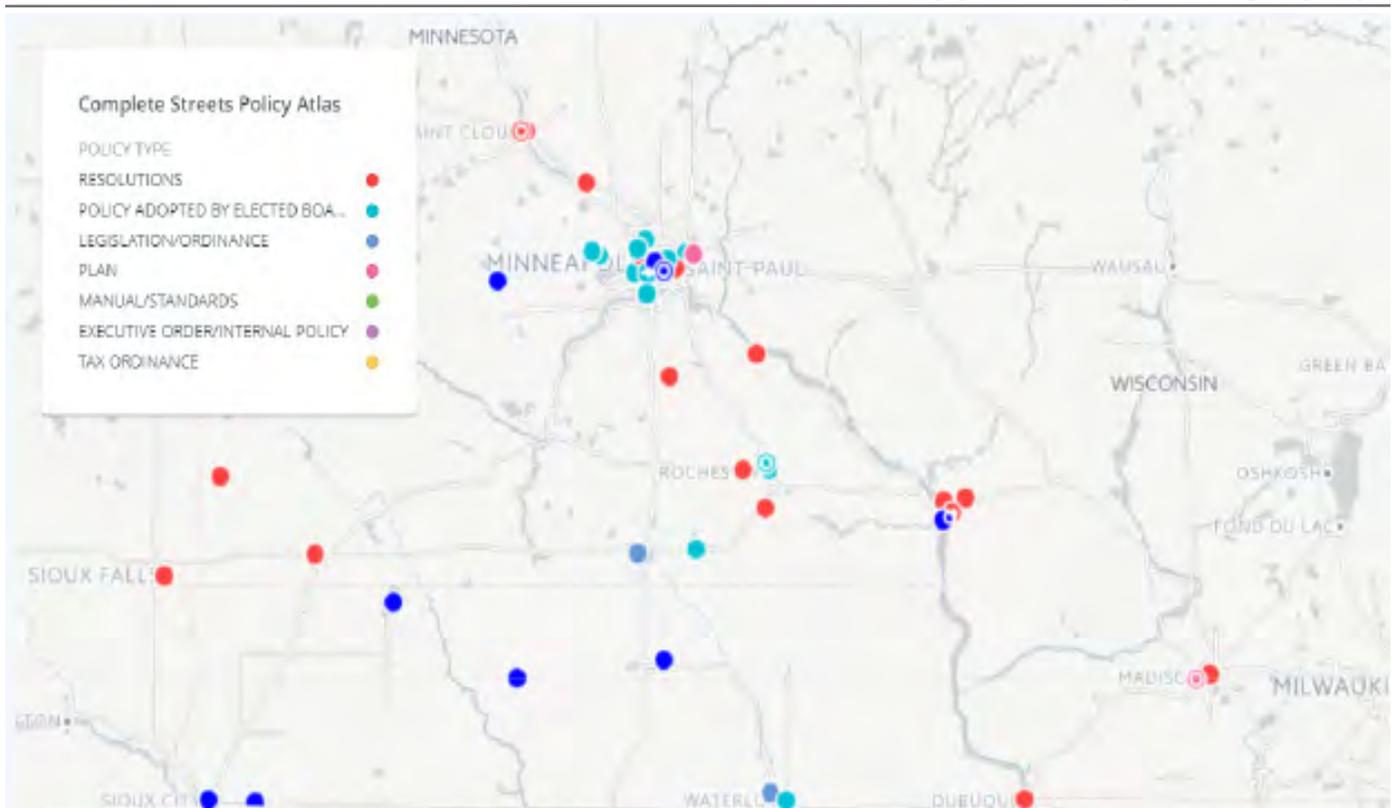


Figure 1 Many communities in the region have adopted Complete Streets policies, including La Crosse, Red Wing, Northfield, Rochester, Austin, and Albert Lea. Credit: National Complete Streets Coalition

RECOMMENDED COMPLETE STREETS POLICY

The Policy is composed of 10 elements:

1. Vision
2. Network
3. All Users and Modes
4. All Projects and Phases
5. Jurisdiction
6. Design
7. Context Sensitivity
8. Performance Measures
9. Implementation
10. Clear, Accountable Exceptions

VISION

Through the Complete Streets Policy (the Policy), the community will have a safe and accessible, well-connected, and visually attractive surface transportation network, supporting a balance between all users walking, bicycling, using

public transit, driving automobiles, and operating emergency and freight vehicles.

NETWORK

The Policy will focus on developing a connected, integrated network that serves all transportation users. Furthermore, modes of transportation will overlap with other modes of transportation (i.e. a bicycle route and a truck route may coexist on the same street).

ALL USERS AND MODES

It is the intent of the community to formalize the planning, design, operation, and maintenance of the transportation network so that it is safe for users of all ages, abilities, and income levels. This includes children, seniors, immigrants, people with disabilities, and vulnerable users who are more at risk for serious injury or death when

involved in a motor-vehicle related collision (i.e. people walking or bicycling).

ALL PROJECTS AND PHASES

The City of Winona will apply this Policy to all street projects which involve new construction, reconstruction, retrofit, resurfacing, rehabilitation, and change in the allocation of pavement space on an existing street.

JURISDICTION

The Policy will apply to all public and private street design, construction, and retrofit projects managed and implemented by the City of Winona, initiated after the Policy adoption.

The City will seek opportunities to work with other agencies with jurisdiction of roadways within Winona's city limits, including Winona County and the Minnesota Department of Transportation (MnDOT). The City will continue to work with Winona County and MnDOT to implement designs on Municipal State Aid (MSA) and County State Aide Highway (CSAH) routes which increase safety for all users.

DESIGN

The City shall follow accepted or adopted design standards and use the best and latest design standards and guidelines. Guidelines and standards will originate from the American Association of State Highway and Transportation Officials (AASHTO), the Federal Highway Administration (FHWA), the Institute of Transportation Engineers (ITE), MnDOT, the National Association of City Transportation Officials (NACTO), and the U.S. Access Board. A flexible, innovative, and balanced approach that follows will be pursued, provided that a comparable level of safety for all users can be achieved.

CONTEXT SENSITIVITY

The Complete Streets Policy includes the development and implementation of projects in a context-sensitive manner in which project implementation is sensitive to the community's physical, economic, cultural, and social setting. This context-sensitive approach to process and design includes a range of goals that give significant consideration to stakeholder and community values. It includes goals related to an improved quality of life with greater participation of those affected in order to gain project consensus. The overall goal of this approach is to preserve and enhance scenic, aesthetic, historical, and environmental resources while improving or maintaining safety, mobility, economic, and infrastructure conditions.

PERFORMANCE MEASURES

The City shall measure the success of this Policy using, but not being limited to, the following performance measures:

- A. Number of crashes
- B. Injury types and fatalities by transportation mode
- C. Miles of walkways and bikeways
- D. On-time arrivals for Winona Transit Service
- E. Number of students who walk or bike to school
- F. Pedestrian and bicyclist counts at key locations
- G. Number of resident commuters traveling by walking, bicycling, public transit, carpooling, and driving alone, according to the US Census Bureau
- H. % of city that is within ½ mile of a shared-use path, protected bicycle facility, or other low stress bicycle facility (such as a bicycle boulevard)
- I. Citizen and business surveys of satisfaction with the transportation network
- J. Number of bicycle friendly businesses and universities recognized by the League of American Bicyclists

The Winona Planning and Zoning and Engineering Departments will present a biannual report to the City Council showing progress made in implementing this Policy. The biannual report will include the annual increase or decrease for each performance measure compared to the previous years, and will be posted online.

IMPLEMENTATION

Implementation of the Complete Streets Policy will be carried out cooperatively among all departments in the City of Winona across multiple jurisdictions, and to the greatest extent possible, among private developers and county, state, and federal agencies. Implementation will include affected property owners, residents, and users, as well as advocacy groups in the community.

The Engineering Department will serve as the technical review agency for all Complete Streets projects. This department will forward the project documentation and plans to all applicable City departments for comment during the review process. Ultimately, many projects will require a vote by the Winona City Council.

The City will make the Complete Streets practices a routine part of everyday operations, and will approach every transportation project and program as an opportunity to improve the transportation network for all users. The City will review, revise, or develop proposed revisions to planning documents, zoning codes, subdivision regulations, laws, procedures, rules, regulations, guidelines, policies, and programs as necessary and feasible.

The City will maintain a comprehensive inventory of pedestrian and bicycle infrastructure and will prioritize projects to eliminate gaps in the walkway and bikeway networks. The City will consider the comprehensive plan's goals for transportation

projects and programs, as well as the Winona Intermodal Study (2002), the Traffic Circulation and Parking Plan (1997), and other relevant plans, such as the downtown streetscape plans, pedestrian and bicycle plan, and others or their latest updated version.

The City will evaluate projects in the Capital Improvement Program to encourage implementation of the Complete Streets Policy. The City will incorporate the Complete Streets Policy into the City of Winona's Comprehensive Plan and other plans. The City will train pertinent City staff on the content of the Complete Streets Policy and best practices for implementing the Policy. The City will utilize inter-department coordination to promote the most responsible and efficient use of resources for activities within the transportation network. The City will seek out appropriate sources of funding and grants for implementation of the Complete Streets Policy.

CLEAR, ACCOUNTABLE EXCEPTIONS

The following exceptions to this program, including for private projects, must be approved by the Engineering Department or Winona City Council and be documented with supporting data that indicates the basis for the decision. Such documentation shall be publicly available. Exceptions which may be made by the Engineering Department

Exceptions may be considered for approval when:

1. Public transit is not existing or planned along a project corridor;
2. A bikeway is not existing or planned for a project corridor (per the City's future bikeway network map);
3. Freight vehicles are not existing or planned on a project corridor (per the City's truck route map)
4. Routine maintenance of the transportation network does not change the roadway

Chapter 4

geometry, lane widths, lane uses, or crosswalk locations, including mowing, sweeping, joint repair, and pavement patching (documentation is not required for this exception);

Exceptions which must be approved by City Council:

1. A traveled road, street, shared-use path, or walkway prohibits use by specific users (such as an interstate prohibiting pedestrians, or a shared-use path prohibit motor vehicles) in which case an effort shall be made to accommodate those specified users elsewhere within the transportation network, including on facilities that are parallel to or cross the affected traveled way
2. The project is too expensive compared to the need, probable use, or original scope of the project
3. There is a reasonable and equivalent project parallel to and in close proximity to the road, street, shared-use path, or sidewalk that is already programmed to provide facilities exempted from the project at hand.



Figure 1 Four-foot sidewalks, such as this one on Orrin Street, are routinely widened during construction projects to meet current ADA design standards.

CHAPTER 5: POLICY RECOMMENDATIONS

Based on a review of City policies and practices affecting the walking and bicycling environment, this section identifies strategies that will increase the prevalence of walking and bicycling in Winona. These strategies alter existing policies which currently function as ordinances, protocols, and/or standard operating procedures. Strategies include improving accessibility for people with disabilities, creating a procedure for reporting crashes, altering minimum parking requirements, inventorying walkway data, and writing a maintenance plan for walkways.

STRATEGY 1: IMPROVE ACCESSIBILITY FOR PEOPLE WITH DISABILITIES

People with disabilities who use the public right-of-way are protected from discrimination under the Americans with Disabilities Act (ADA), enacted by the federal government in 1990. This civil rights law requires that new walkways (which include sub-components like sidewalks, curb ramps, crosswalks, and shared use paths) be accessible to people with disabilities. Existing facilities are also required to be upgraded when a construction project occurs.

The need for ADA-accessible walkways grows with age. According to the US Census Bureau, one in five Americans has a physical, mental, or cognitive disability, rising in prevalence as people age, from 8% in youth under 15 to 70% in adults 80 and over. During the community engagement process, planners heard that seniors and people with mental disabilities sometimes have difficulty traversing Winona's walkway network. Winona's efforts to become a dementia friendly community are also closely aligned with the need to improve accessibility for people with disabilities.

The City has already made ADA accessibility a priority. ADA improvements are routinely

implemented during street construction projects. The City also runs a zone inspection program that examines sidewalks and curb ramps on a 12-year cycle (see Strategy 3).

Action 1a: Complete an ADA Transition Plan

Municipalities with more than 50 employees (like the City of Winona) are required by federal law to complete an ADA Transition Plan. Such plans designate an employee as an ADA Coordinator, create a grievance procedure, document existing conditions, and establish a course of action. Actions typically include methods to make facilities accessible, a schedule for improvements, and a plan for integrating changes into existing transportation funding programs. Peer cities also document sidewalk cross slopes, pinch points, trip hazards, overhead obstructions, sidewalk conditions, and curb ramp conditions.

The City's Engineering Department is already in the process of developing an ADA Transition Plan. An ADA Transition Plan is complemented by other strategies including an inventory of the location of walkways (see Strategy 2) and a maintenance plan for walkways (see Strategy 3).

Action 1b: Adopt PROWAG as the City's preferred design guidelines

Requirements for ADA in the public right-of-way (i.e. streets, sidewalks, and trails) are proposed by the US Access Board, the federal agency that promotes equality for people with disabilities. In 2011, the Board published the draft Public Right of Way Accessibility Guidelines (PROWAG) for public comment. While PROWAG is not yet an enforceable standard (since the US Access Board has not finalized the guidelines), it is today's model code. Some agencies have adopted PROWAG as a set of design guidelines. This Plan recommends that City of Winona follow suit, adopting PROWAG as the City's preferred design guidelines.

STRATEGY 2: INVENTORY WALKWAY LOCATIONS

Currently the City of Winona does not have a database of walkways. With sidewalks on both sides of most streets (currently 120 miles), it is likely that nearly 200 miles of walkways exist. The majority of intersections also have four crossings, whether they are marked or unmarked. This network represents a sizable asset for the community. The walkway network is one that most residents rely upon, whether for the beginning and end of a driving, transit, or bicycling trip, or as the primary mode of travel. In coordination with an ADA Transition Plan (see Strategy 1), the City should complete an inventory of walkway locations, so that staff can estimate the necessary resources and schedule to create and maintain year-round access throughout the community.

In Columbus, Ohio, a walkway inventory was completed using aerial photography. Sidewalks and crosswalks were drawn along the city's streets. This fine-grained analysis enabled the community to prioritize walkway improvement projects at a neighborhood level (see Figure 2). This type of inventory can then be translated into a city-wide map, which shows where walkways are missing. In Minneapolis, planners illustrated which streets do not have walkways on one or both sides of the street (see Figure 3). In Richfield, MN, engineers completed an inventory of the community's walkways, distinguishing between concrete and asphalt surfaces (see Figure 4).

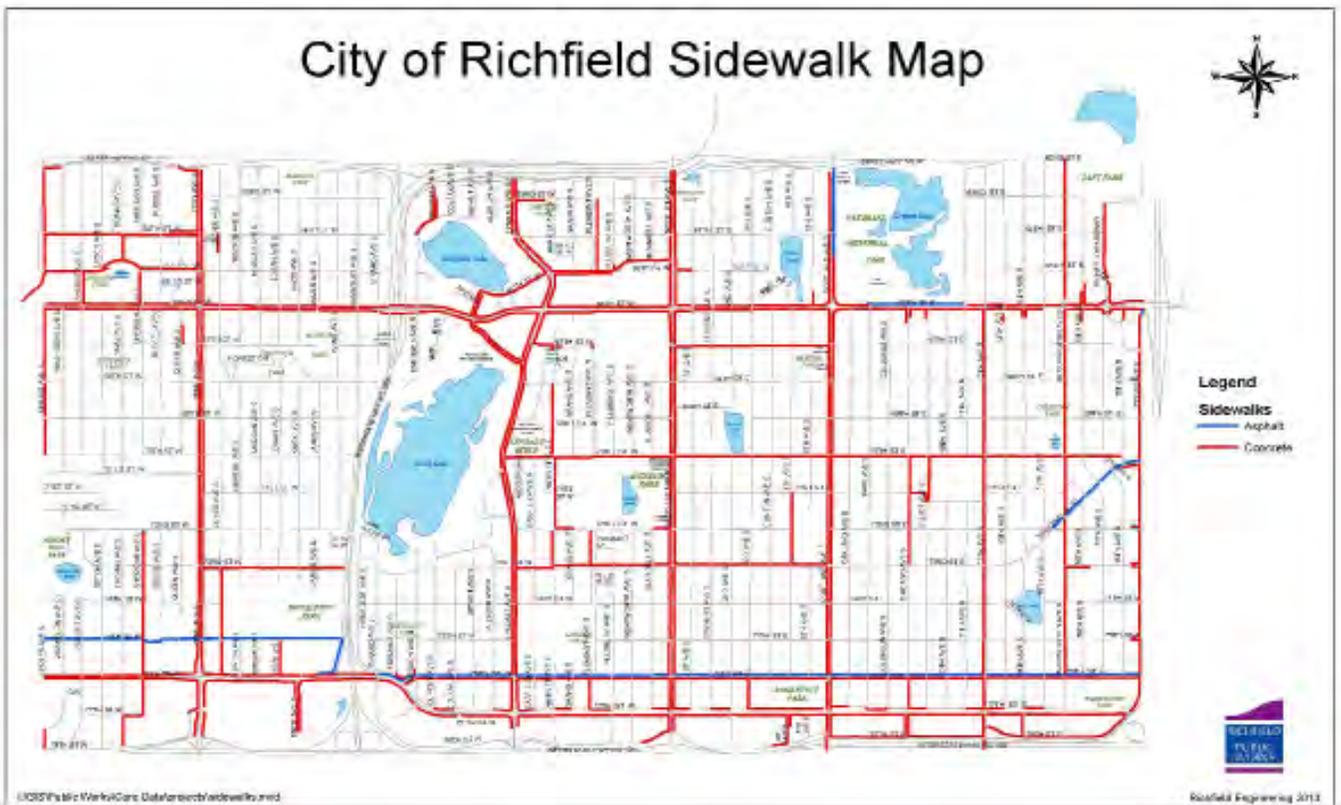


Figure 2 An aerial photograph (top) was used to complete a sidewalk inventory (bottom), categorizing sidewalks and crosswalks. Credit: Mid-Ohio Regional Planning Commission

Figure 3 (opposite, top) A walkway inventory in Columbus, OH illustrates the extent of the pedestrian network at the neighborhood level. Credit: Mid-Ohio Regional Planning Commission

Figure 4 (opposite, bottom) Sidewalks in Richfield, MN are categorized by concrete and asphalt surface types. Credit: City of Richfield, MN

OTHER POLICY RECOMMENDATIONS



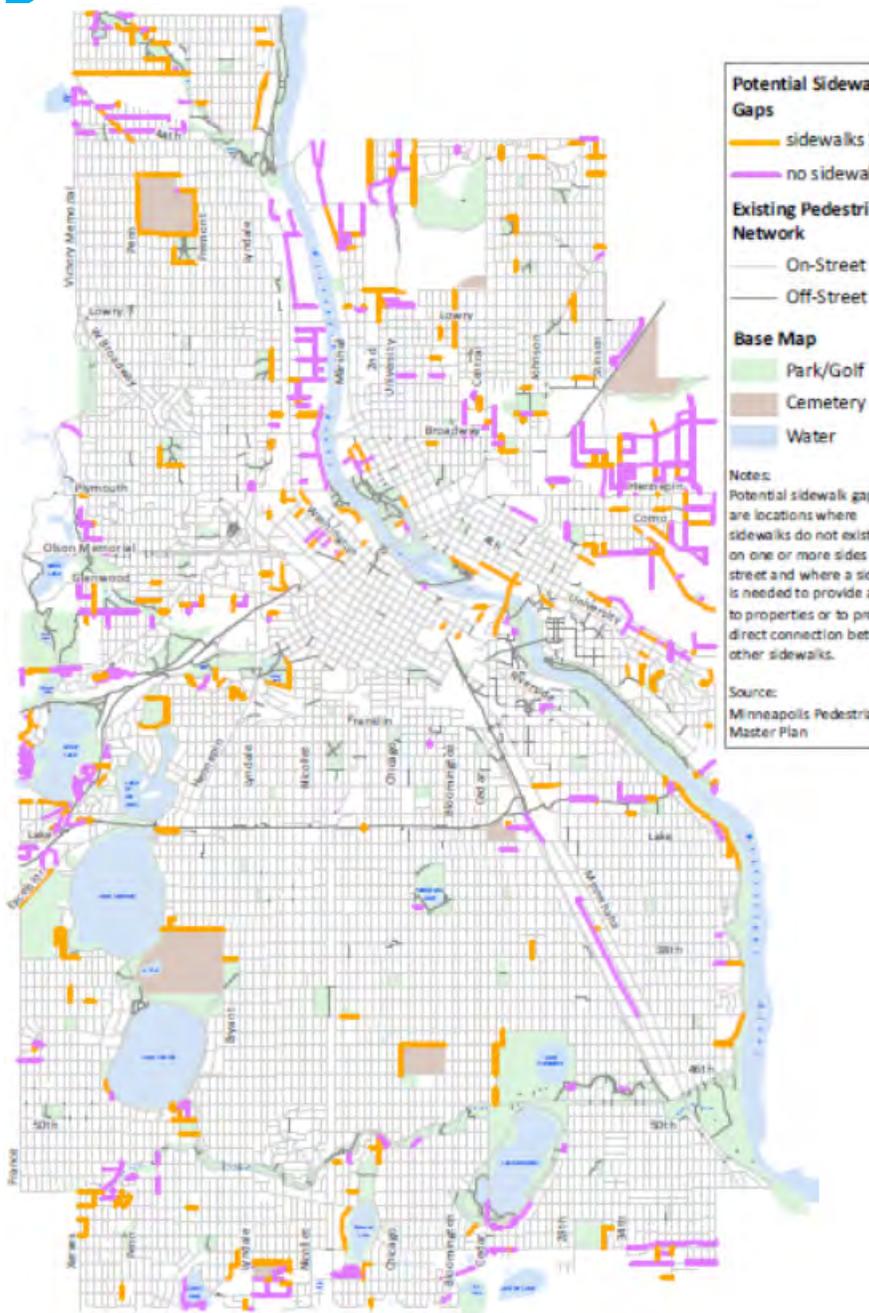


Figure 5 Potential walkway gaps in Minneapolis are categorized into streets with a sidewalk on one side of the street, and those with no sidewalks

STRATEGY 3: UPDATE THE MAINTENANCE PLAN FOR WALKWAYS

Maintenance of Winona’s walkways was ranked as a high priority by survey respondents during the community engagement process. Of the twelve walking conditions that respondents were asked to rank on a scale of excellence, crosswalk marking maintenance, smoothness of sidewalks, and winter maintenance of walkways were respectfully ranked #8, #9, and

#10 (#1 being most excellent and #12 being least excellent). This illustrates the need for and increased focus on walkway maintenance. Maintenance responsibility of walkways in Winona is shared between private property owners, the City of Winona, Winona County, and MnDOT. It is a broad topic, and includes multiple facets of the network including concrete sidewalks, asphalt paths, curb ramps, crosswalks, and stoplights. Maintenance activities on walkways include snow removal, surface maintenance, painting, and removal of

obstructions. Walkways funding varies, coming from a mixture of general funds, assessments to property owners, and personal financing from property owners.

To address this complex topic, the existing maintenance plan for walkways will be updated. This plan, which can serve as a component of the forthcoming ADA Transition Plan, will improve year-round accessibility, reduce liability for the city and property owners, and serve as a tool for programming future repairs.

Action 3a: Include crossing surfaces in walkway inspections.

Currently crossing surfaces are not included in the City’s walkway inspection program. The maintenance plan should consider how crossing surfaces can be incorporated into this program, in order to look at walkways as integrated network of sidewalks, curb ramps, and crossings.

In instances where crossing surfaces need repair, maintenance activities will likely include filling potholes, repairing joints, and grinding heaved pavement. In some instances, inspection of crossing surfaces may lead to resurfacing repairs, which require adjacent curb ramp repairs, per the US Department of Justice.

City departments in charge of clearing snow and ice from walkways, such as Park Maintenance and Building Maintenance, will serve as partners to the Public Works Department, to increase the community’s focus on crossing surface maintenance.

Action 3b: Phase in a city-wide, city-led walkway snow and ice clearing program

Snow and ice clearing on the walkway network is addressed differently than snow clearing on the street network. Like sidewalk replacements, individual property owners are responsible through ordinance for financing snow and ice clearing from adjacent sidewalks.

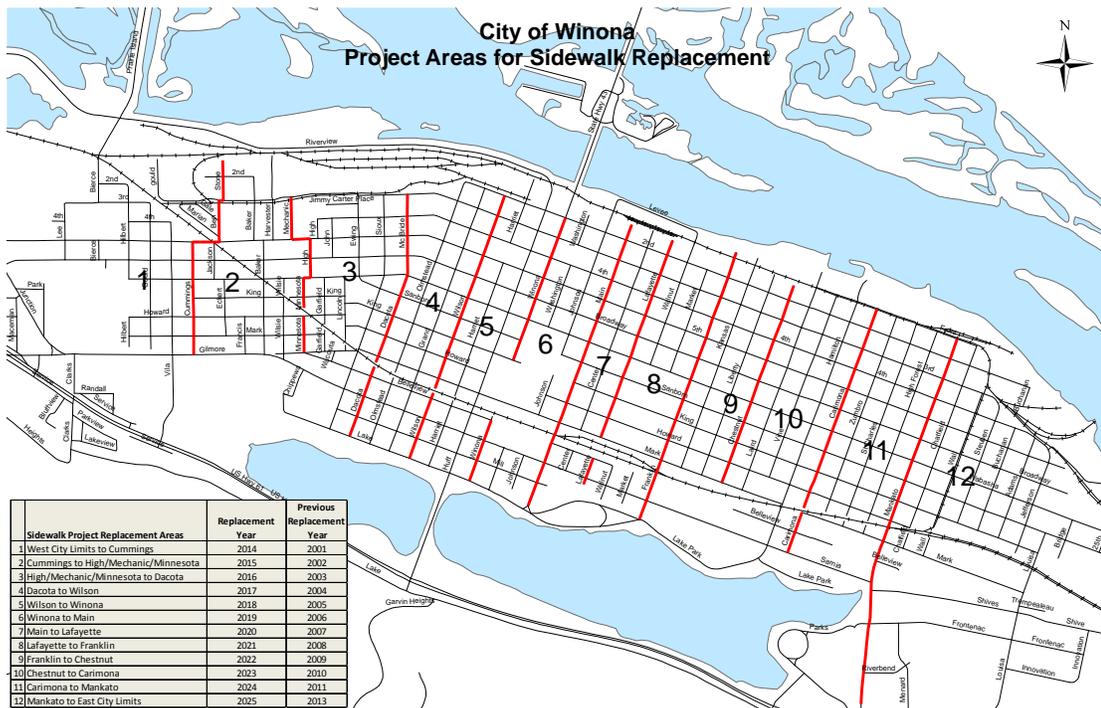


Figure 6 Sidewalk surfaces and curb ramps in Winona are currently inspected on a 12-year rotating basis, with inspection taking place in one zone per year.

This results in City crews being responsible for snow clearing everywhere else, including crosswalks, curb ramps, medians, pedestrian crossing islands, shared use paths, railroad crossings, and other public property parcels. Responsibility for snow and ice clearing along MnDOT and Winona County roads is routinely passed on to the City of Winona and adjacent property owners.

This blend of responsibility results in confusion about who is responsible for various segments of the walkway network, leading to inconsistent snow and ice clearing. People with disabilities are especially affected, with Winona's senior residents representing the largest proportion of people who cannot use the walkway network during snow and ice cover.

Guidance from the FHWA and US Access Board says that communities should have procedures in place that ensures walkways are only temporarily closed due to snow and ice. In this vein, some northern, winter cities conduct city-led, city-wide, walkway snow and ice clearing operations, using public or contractor crews. Examples include Richfield, MN (population 36,000), Roseville, MN (population 36,000), Burlington, VT (population 42,000), Rochester, NY, (population 209,000), Montreal, Quebec (population 1.74 million), and Vaughn, Ontario (population 312,000).

Other winter communities have prioritized some walkway routes for publicly funded operations, while the remaining walkway network remains the responsibility of property owners. For example, the City of Bangor, ME (population 32,000) plows almost 60 miles of walkways which connect schools and businesses, leaving the remainder of the network unplowed. Similarly, the City of Duluth (population 86,000) plows 100 miles of walkways connecting schools, high pedestrian traffic areas, public transit routes, mid-level pedestrian traffic areas, and park facilities (in order of priority – see Figure 8).

An updated maintenance plan should develop a phased approach for Winona, first inventorying walkway routes that are already cleared by Park Maintenance and Building Maintenance Department crews. Then a priority list of criteria should be generated, followed by a draft and final priority network for sidewalk clearing. Funding and a communications strategy should also be identified.

Figure 7 (opposite, top) Sidewalk snow clearing machines operated by public crews work in tandem, after a snowfall in Montreal, Quebec.

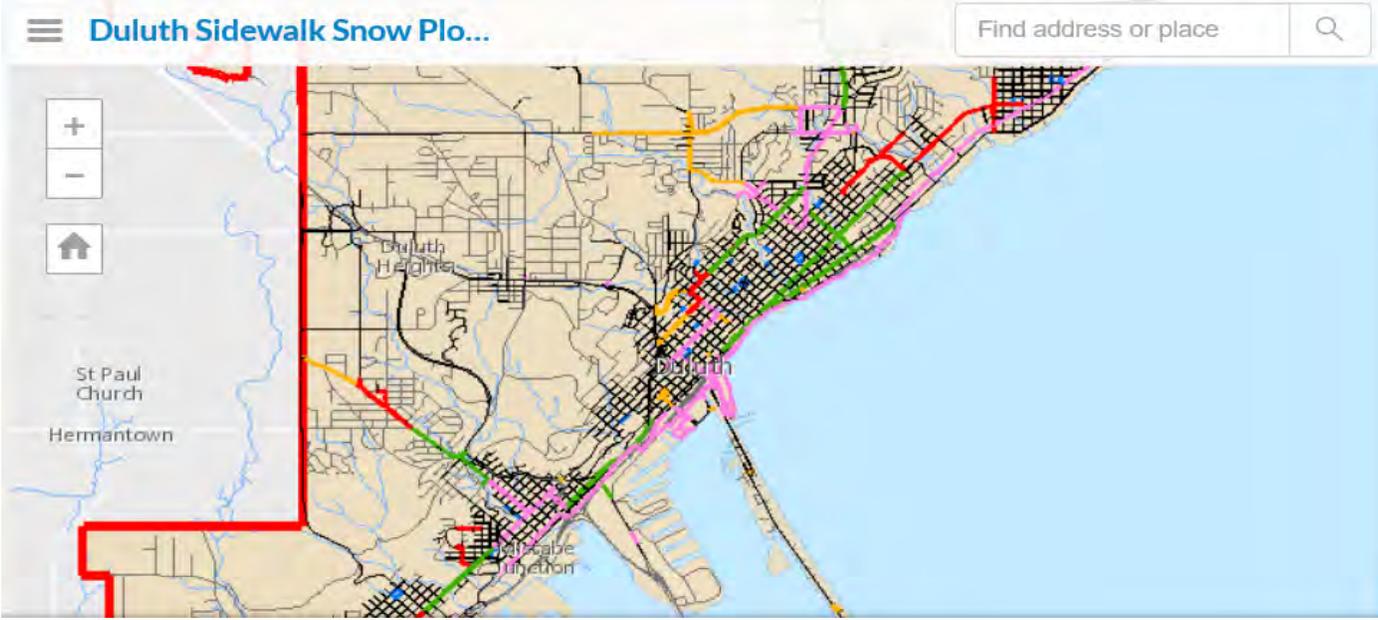
Figure 8 (opposite, bottom) Duluth publishes an online map showing which sidewalks are cleared by City crews.



DULUTH SIDEWALK SNOW REMOVAL PRIORITY ROUTES

Sidewalks are an important part of Duluth's transit system. The City of Duluth is responsible for clearing sidewalks that abutt the road.

 Safe Routes	 High Pedestrian Traffic Areas	 Transit Routes
 Medium Pedestrian Traffic Areas	 Park Properties	 Residential Areas



STRATEGY 4: DEVELOP A CRASH EVALUATION PROGRAM

According to the Minnesota Department of Public Safety, an average of 35 pedestrians died annually in Minnesota between 2006 and 2015, because of a crash with a motor vehicle. An average of eight bicyclists were killed annually during this same period. These fatalities make up 10% of all traffic-related fatalities in the state, and MnDOT is committed to eliminating these fatalities through its Towards Zero Deaths program. With approximately 50% of pedestrian fatalities occurring on municipal streets, the City of Winona has an important role to play. Safety was the top priority by residents during the public engagement process.

Currently the Winona Police Department files a crash report when it receives a report of a collision between a motor vehicle and a pedestrian or a bicycle. These reports are then filed with the Minnesota Department of Public Safety. MnDOT operates a crash mapping analysis tool, which summarizes these reported crashes. From this data, it is possible to gain an understanding of crashes affecting pedestrians and bicyclists in Winona. The following three maps show crashes are concentrated in the core of the city, involve several fatalities and incapacitating injuries, and are located along busy streets.

In 2015, the City of Winona commissioned a safety study for Broadway, Huff, and Main Streets, and found that Broadway Street had an above average rate of pedestrian/ bicyclist fatalities and incapacitating injuries. This resulted in a recommendation to reduce Broadway from four to three lanes, thereby slowing traffic and reducing perpendicular crossing distances.

Many cities expand safety studies for pedestrian and bicycle crashes to a citywide scale. For example, the City of Davis, California recently

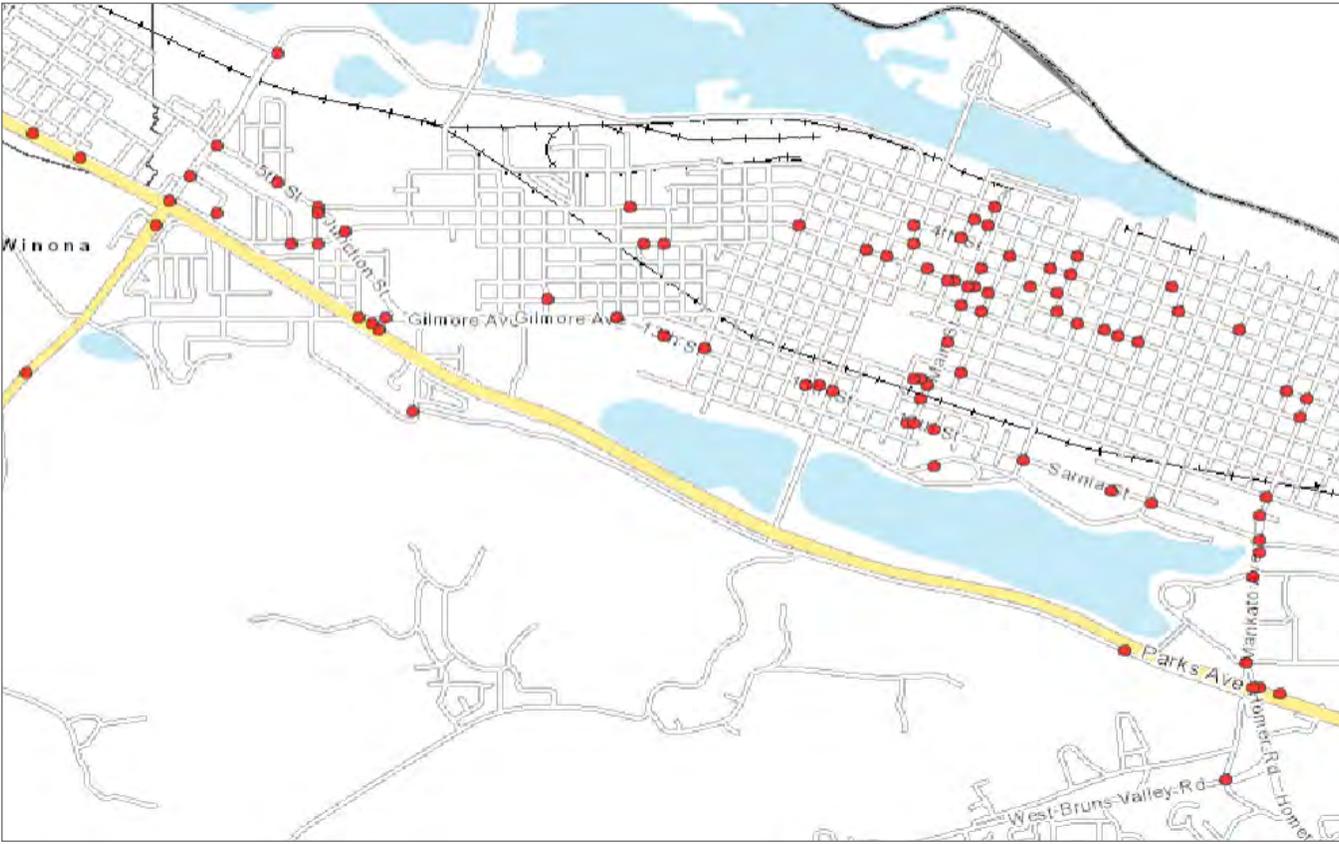
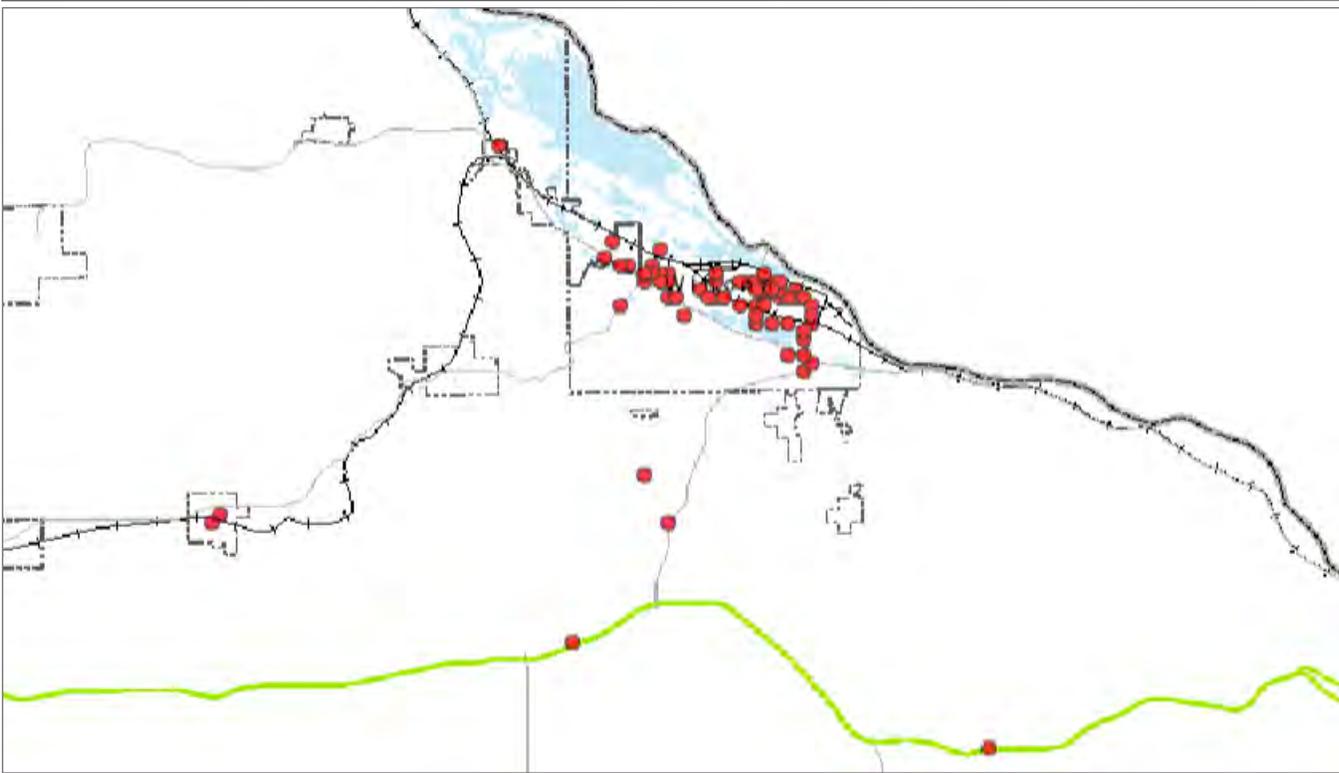
published a report that identified crash trends based on year, month, and location.

The City of Winona, along with its partners at Winona County and MnDOT, should develop a regular crash evaluation program for pedestrians and bicyclists. Crash types should be categorized, such as head-on, side-swipe, rear-end, and perpendicular. Analysis may also include lighting conditions, traffic control signs/ signals, demographics, and pedestrian/bicycle/ motor vehicle volumes. Like the Broadway Street study, analysis should be used to inform infrastructure design, as well as educational messages for the community.

Figure 9 (opposite, top) There were 121 crashes in Winona County involving motorists and pedestrians/bicyclists between 2006 and 2015. The majority of these occurred within the core area of the Winona city limits. Credit: MnDOT Crash Mapping Analysis Tool

Figure 10 (opposite, bottom) While pedestrian and bicycle crashes are spread throughout the core of the city, they are more prevalent on Winona's busiest streets, such as Mankato Avenue, Sarnia Street, Broadway Street, and Main Street. Credit: MnDOT Crash Mapping Analysis Tool

OTHER POLICY RECOMMENDATIONS



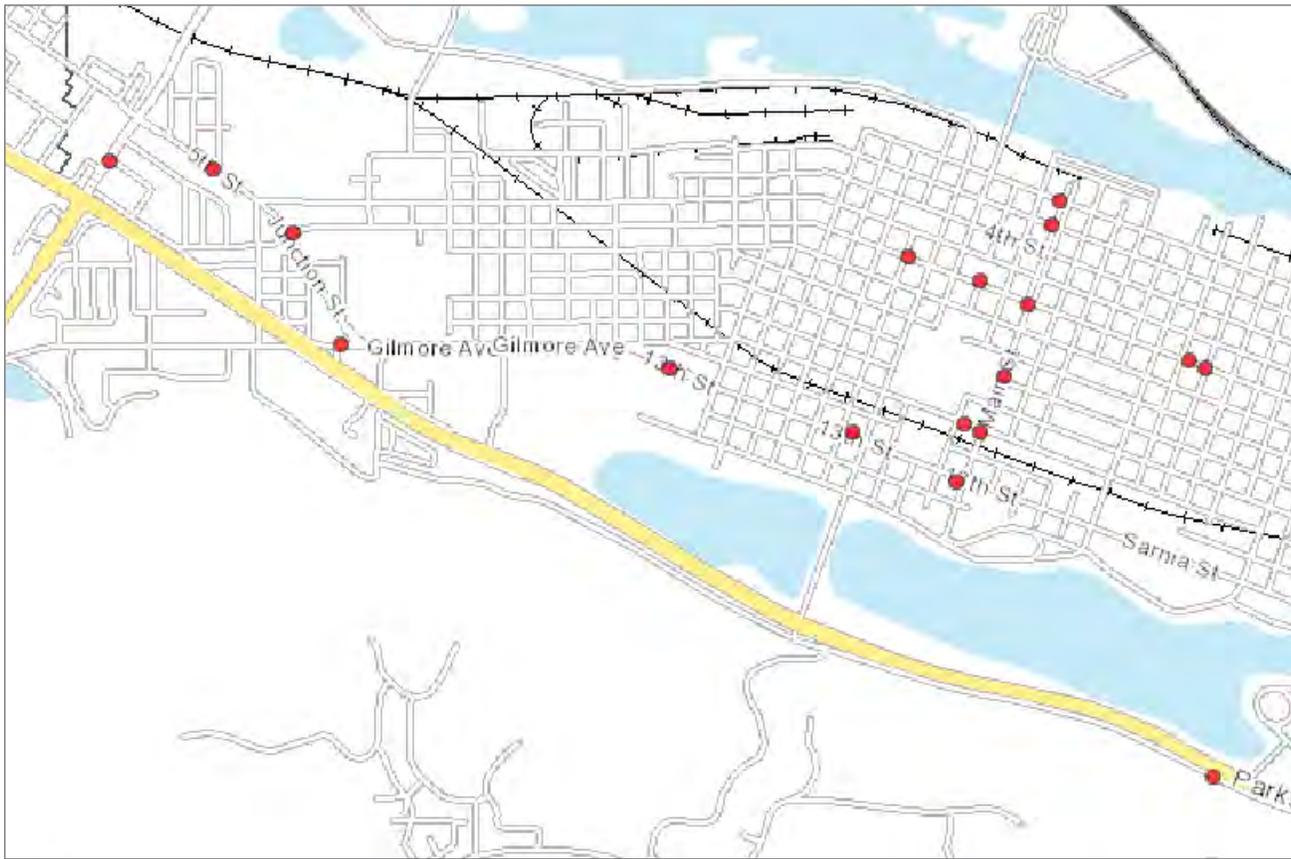


Figure 11 Twenty-three pedestrian/bicyclist fatalities and incapacitating injuries occurred between 2006 and 2015, and were concentrated along MN State Highway 43, Junction Street/Gilmore Avenue/13th Street, and Broadway Street. Credit: MnDOT Crash Mapping Analysis Tool

STRATEGY 5: AMEND MINIMUM PARKING REGULATIONS

Winona's current parking regulations require that a minimum number of off-street parking spaces be provided for new and remodeled buildings, based upon the use of the building. These regulations should be amended so that a minimum number of bicycle parking spaces are also required. Bicycle parking can be short-term (for customers and visitors) or long-term (for employees and residents). The Association of Pedestrian and Bicycle Professionals has published a Bicycle Parking Guidelines document (see Figures 12 and 13), which recommends minimum bicycle parking spaces for North American cities with a bicycle mode share of 1% to 5% of resident-commuters (Winona's current bicycle mode share is 1.5%).

In addition, some cities allow building developers to substitute bicycle parking spaces for automobile parking spaces. For example, Minneapolis allows developers of multiple-family dwellings to reduce the off-street parking requirement by one space per unit, if a long-term bicycle parking shelter is installed. Winona should adopt a similar reduction policy which more strongly incentivizes bicycle parking. The substitution of bicycle parking for motor vehicle parking encourages more dense development that reinforces active transportation options for the City. In addition, bike parking takes up significantly less space than motor vehicle parking, freeing up 210 to 300 square feet of developable land, on average, per motor vehicle space converted to bicycle parking.

Civic: Cultural/Recreational

Type of Activity	Long-term Bicycle Parking Requirement	Short-term Bicycle Parking Requirement
Non-assembly cultural (library, government buildings, etc.)	1 space for each 10 employees. Minimum requirement is 2 spaces.	1 space for each 10,000 s.f. of floor area. Minimum requirement is 2 spaces.
Assembly (Church, theaters, stadiums, parks, beaches, etc.)	1 space for each 20 employees. Minimum requirement is 2 spaces.	Spaces for 2% of maximum expected daily attendance.
Health care/hospitals	1 space for each 20 employees or one space for each 70,000 s.f. of floor area, whichever is greater. Minimum is 2 spaces.	1 space for each 20,000 s.f. of floor area. Minimum is 2 spaces.
Education		
a) Public, parochial, and private day-care centers for 15 or more children	1 space for each 20 employees. Minimum is 2 spaces.	1 space for each 20 students of planned capacity. Minimum is 2 spaces.
b) Public parochial, and private nursery schools, kindergartens, and elementary schools (1-3)	1 space for each 10 employees. Minimum requirement is 2 spaces.	1 space for each 20 students of planned capacity. Minimum requirement is 2 spaces.
c) Public parochial, and elementary (4-6), junior high and high schools	1 space for each 10 employees plus 1 space for each 20 students of planned capacity. Minimum requirement is 2 spaces.	1 space for each 20 students of planned capacity. Minimum requirement is 2 spaces.
d) Colleges and universities	1 space for each 10 employees plus 1 space for each 10 students of planned capacity; or 1 space for each 20,000 s.f. of floor area, whichever is greater.	1 space for each 10 students of planned capacity. Minimum requirement is 2 spaces.
Rail/bus terminals and stations/airports	Spaces for 5% of projected a.m. peak period daily ridership.	Spaces for 1.5% of a.m. peak period daily ridership.

*Figure 12 Minimum recommended bicycle parking requirements for residential and civic buildings.
Credit: Association of Pedestrian and Bicycle Professionals*

Commercial

Commercial Activity	Long-term Bicycle Parking Requirement	Short-term Bicycle Parking Requirement
Retail		
General food sales or groceries	1 space for each 12,000 s.f. of floor area. Minimum requirement is 2 spaces.	1 space for each 2,000 s.f. of floor area. Minimum requirement is 2 spaces.
General retail	1 space for each 12,000 s.f. of floor area. Minimum requirement is 2 spaces.	1 space for each 5,000 s.f. of floor area. Minimum requirement is 2 spaces.
Office		
	1 space for each 10,000 s.f. of floor area. Minimum requirement is 2 spaces.	1 space for each 20,000 s.f. of floor area. Minimum requirement is 2 spaces.
Auto Related		
Automotive sales, rental, and delivery Automotive servicing Automotive repair and cleaning	1 space for each 12,000 s.f. of floor area. Minimum requirement is 2 spaces.	1 space for each 20,000 s.f. of floor area. Minimum requirement is 2 spaces.
Off-street parking lots and garages available to the general public either without charge or on a fee basis	1 space for each 20 automobile spaces. Minimum requirement is 2 spaces. Unattended surface parking lots excepted.	Minimum of 6 spaces or 1 per 20 auto spaces. Unattended surface parking lots excepted.

Industrial/Manufacturing

Type of Activity	Long-term Bicycle Parking Requirement	Short-term Bicycle Parking Requirement
Manufacturing and production	1 space for each 15,000 s.f. of floor area. Minimum requirement is 2 spaces.	Number of spaces to be prescribed by the Director of City Planning. Consider minimum of 2 spaces at each public building entrance.

Figure 13 Minimum recommended bicycle parking requirements for commercial and industrial buildings. Credit: Association of Pedestrian and Bicycle Professionals



Figure 14 Covered bicycle parking is long-term, and may be used to reduce minimum off-street parking requirements.

CHAPTER 6: FUTURE BICYCLE NETWORK

Connecting bicyclists to destinations, improved safety, increased ridership, greater livability, and social equity are some of the reasons to develop a bicycle network. Residents, students, and visitors want to be able to experience Winona on bicycle for both recreation and transportation purposes. A comprehensive network will ensure that all neighborhoods have convenient access to bikeways. The Future Bicycle Network shown on the next page sets a long-term network development goal for the community.

BENEFITS

There are multiple benefits of shared-use paths and separated bicycle lanes along the Future Bicycle Network, including increased transportation options, greenway corridor development (i.e. the Mississippi River, Gilmore Creek, Burns Valley), and heightened community identity. But one of the most important benefits for Winona would be a significant contribution to its economic development. According to the Rails to Trails Conservancy, trails have the following economic impacts:

- Improved local economies – Bicycling is a larger economic generator than airline travel. Local small businesses receive millions of dollars in trail-related spending, including hotels, bars/restaurants, gas stations, and retail storefronts.
- Increased property values – Several studies have shown the relationship between the establishment of trails and higher adjacent property values.
- More jobs per dollar – The design and construction of trails creates more jobs per dollar than other types of transportation infrastructure construction.
- Positive returns for the federal budget – Because the federal government pays 28% of all health care costs, trail investment through federal grants helps people build needed exercise into daily routines, reducing medical expenditures.

- Greater travel choices – 75% of Americans feel they “have no choice but to drive as much as they do” and 67% “would like more transportation options.”
- Reduced dependence on oil – Transportation makes up 71% of our country’s petroleum use. Switching some short trips to bicycles means less consumption of this fossil fuel resource.

Today’s Lake Park Path is a heavily utilized east-west connection between Winona Senior High School and Winona Health. But it falls short of connecting the city’s most important destinations, including Downtown, Winona State University, and the river bluffs. Parks, K-8 schools, and places of employment also do not have safe and direct access to the existing trail network. And for visitors, trail connections to most local hotels which are heavily concentrated at the intersection of Highway 61 and Mankato Avenue, also fall short.

Completing the Future Bicycle Network will allow trail users to loop around the island along the riverfront, eastern and west segments of Gilmore Creek, and Lake Winona. Huff Street and Broadway Street will be major north-south and east-west connectors in the heart of the city. The destination-rich area near Highway 61 and Mankato Avenue will be well connected, as will shopping areas along Highway 61 between Highway 14 and Gilmore Avenue. Nearly every park and school will have access to safe and direct bicycle infrastructure.

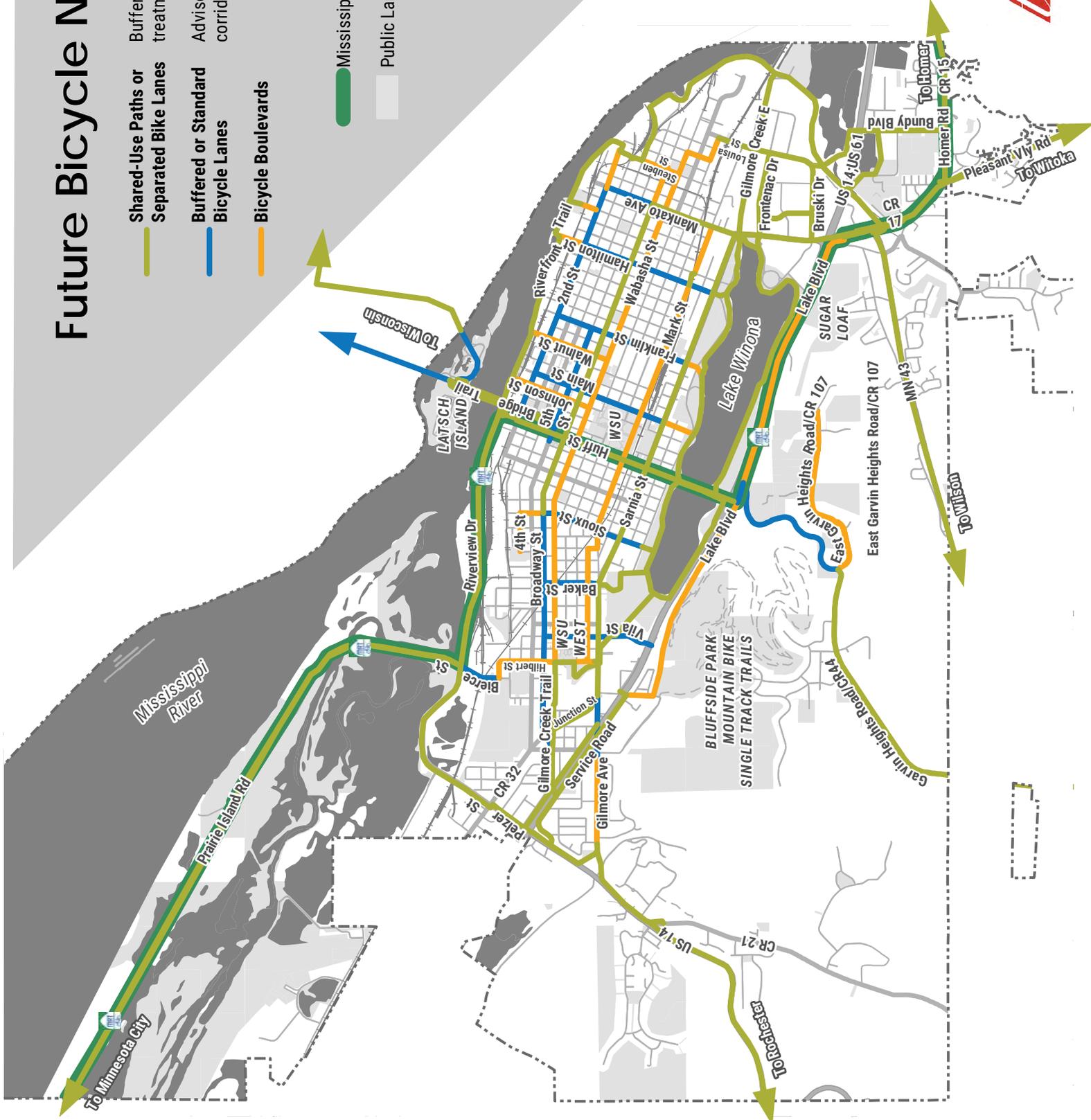
In nearby Decorah, IA, population 8,100, a safe and direct trail loop has been completed around the community. Trout Run Trail connects the town’s top destinations including downtown, Luther College, hotels, city parks, and the state fish hatchery. An \$8.4 million partnership between the city, county, state, businesses, and individual donors financed the trail loop, which went from an idea in 2001 to completion in 2012.

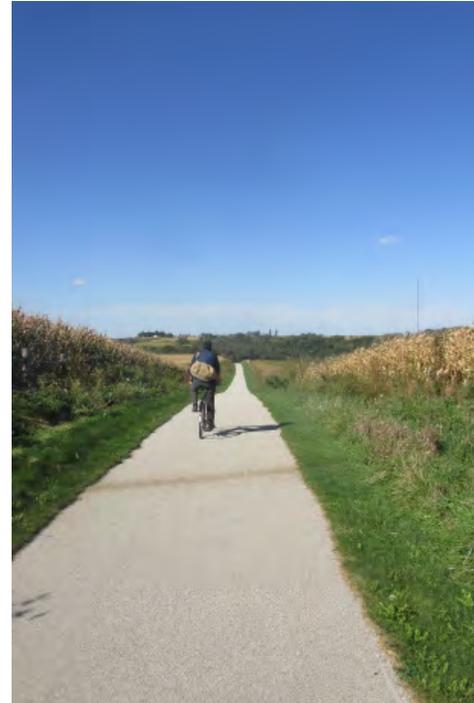
Future Bicycle Network

-  Shared-Use Paths or Separated Bike Lanes
 -  Buffered or Standard Bicycle Lanes
 -  Bicycle Boulevards
 -  Mississippi River Trail/US Bicycle Route 45
- Buffered bike lanes possible as interim treatment on some corridors
- Advisory bike lanes an option on some corridors
- Public Land



Date: 11/8/2017





A donor recognition board along Trout Run Trail catalogs \$1.5 million in local donations which contributed toward the total trail loop price tag of \$8.4 million.

Trout Run Trail runs through the nearby hilly countryside, drawing residents and tourists to a serene and bucolic setting.

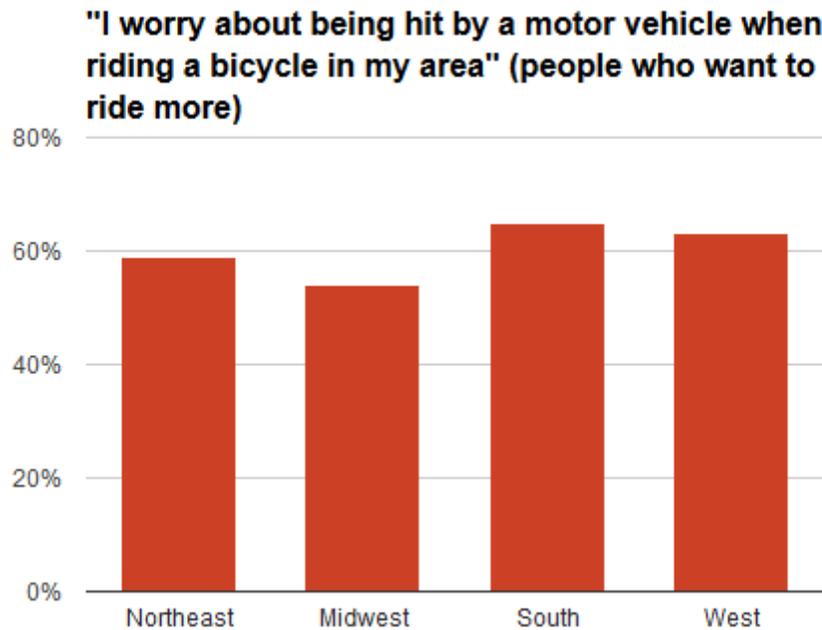
According to a local banker and the president of the non-profit Trails of Winneshiek, Trout Run Trail is intended to draw tourists who historically skipped over Decorah in favor of other nearby destinations. The trail loop is also a draw for new residents who are “free agents,” people who can live wherever they want due to flexible working arrangements. These people choose towns for quality of life, and do not necessarily need or want an office in a large city.

For bicyclists, the primary issue is not necessarily speed but comfort. A wide array of bicyclists – mountain bikers, commuters, fitness bikers, lifestyle riders, road bikers, youth cyclists, and those who ride a bicycle as their primary means of transportation – are typically concerned with comfort or safety. Busy streets usually lead to discomfort, and so for differing reasons are a location that both bicyclists and motorists dislike.

BICYCLE FACILITY TYPES

Traffic engineers often calculate a Level of Service (LOS) for motorists. This is based upon the amount of delay experienced by a driver at intersections along a street, because speed is assumed to be the primary goal of driving. If a motorist experiences few intersection delays the LOS is high, but if congestion is widespread the LOS is low.

In the public engagement process, Winona residents expressed the most support for bicycle facilities which were separate from automobile traffic, in order to alleviate concerns about being hit by a motorist. This is reflected in national polls as well, which show a concern for safety and a preference for physical separation.



A national poll taken in 2014 suggests that over half of people who want to bike more worry about being hit by a motorist. Credit: People for Bikes

People desire this separation between bicycles and automobiles because they visualize the need to bicycle on busy streets, where jobs, restaurants, big-box stores, banks, mom-and-pop shops, and schools are typically located. These roads are also essential for crossing barriers like railroads and highways.

During the public engagement process, Winona bicyclists responded to the question, "Where would you like to ride your bicycle?" by drawing lines on these streets. Because crashes in urbanized areas tend to concentrate on busy thoroughfares, it is important to improve them into safer environments for all users, including bicyclists.

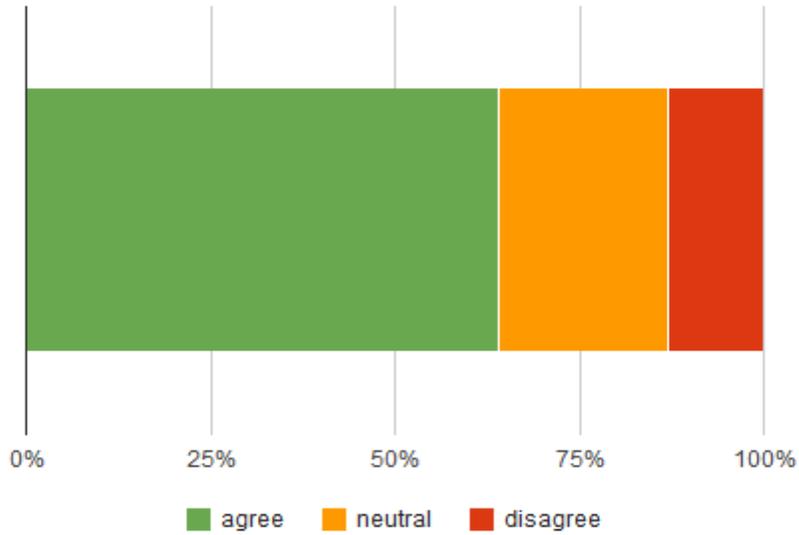
But it is also important to acknowledge that not all streets are made the same – some have less traffic and lower speeds. When these quieter roads are needed to create a regularly spaced network for bicycling, there is less need to build barriers. This greater degree of comfort can be observed by watching the behavior of bicyclists, who tend to ride on sidewalks on busy thoroughfares, but in the road on local, neighborhood streets.

Factors which were used to determine the location and type of each bicycle facility on the Future Bicycle Network are:

- Approximate ½ mile spacing of bike routes, with heavier concentrations near the activity hubs of Downtown, WSU, and Highway 61/ Mankato.
- Direct and safe connections between K-12 schools, large manufacturing employers, big-box businesses, restaurants, residential neighborhoods, Downtown, and WSU.
- Existing automobile traffic volumes.
- Connections to existing and future shared use paths.
- The need for more separation on busier streets, and less separation on quieter streets, as shown in the Bicycle Facility Selection Chart

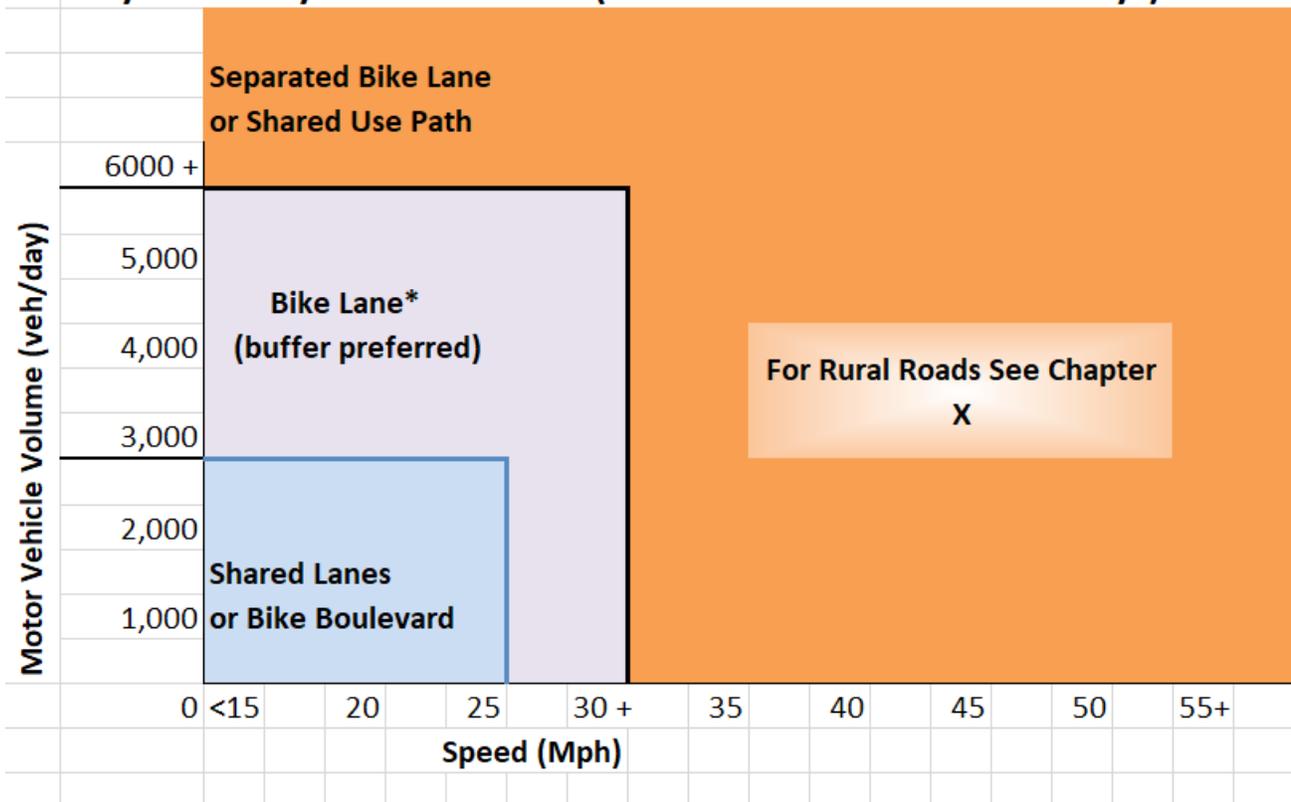
The Future Bicycle Network map is intended for use by planners, engineers, advocates, citizens, and policy makers. The map serves as a guide for the development of the network, identifying desired travel lines based upon the factors previously listed. The legend identifies the preferred facility type which would achieve a low-stress outcome for bicyclists along a particular segment.

"I would be more likely to ride a bicycle if motor vehicles and bicycles were physically separated by a barrier" (people who want to bike more)



The same national poll found that a majority of people would bicycle more if motorists and bicyclists were physically separated. Credit: People for Bikes

Bicycle Facility Selection Chart (Urban and Suburban Roadways)



This chart, currently in draft form for consideration with an updated version of the AASHTO Guide for the Development of Bicycle Facilities, illustrates the facility types which create a lower stress environment for bicyclists, in relation to the amount and speed of automobile traffic. More separation is associated with busier streets, and less separation is paired with quieter streets.

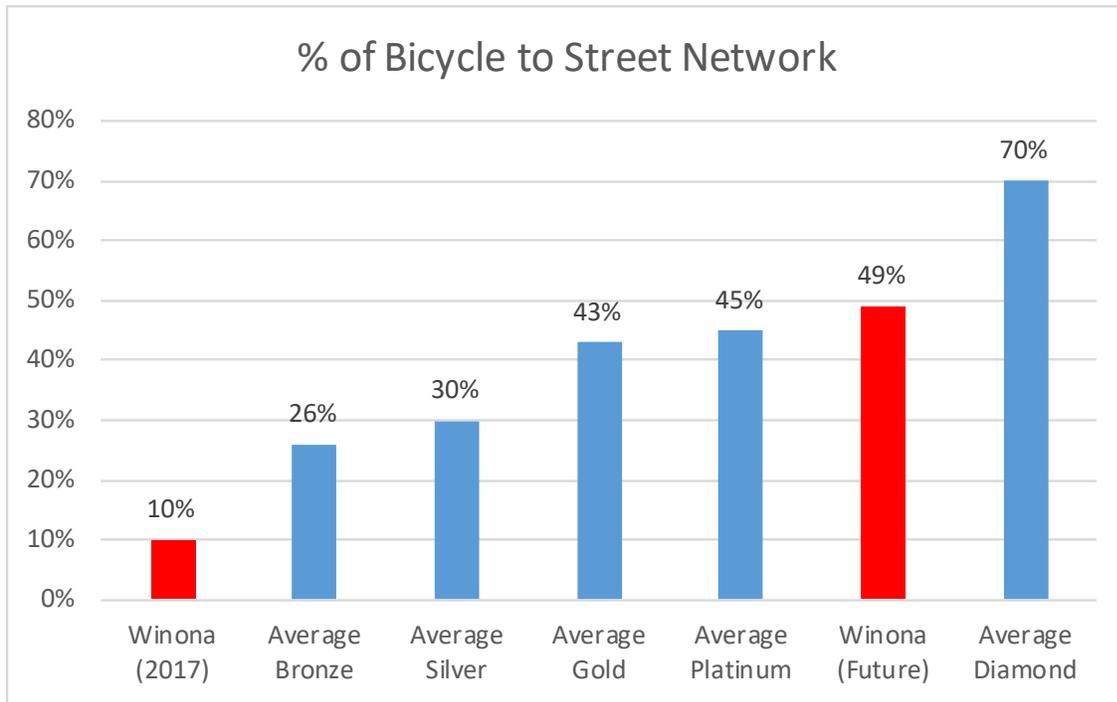
Some segments have facility types which are optional substitutes. These may be used during the design phase in advance of street reconstruction, resurfacing, or chip sealing projects. Opportunities and challenges toward implementing an appropriate bicycle facility should be identified, with substitutions of optional facilities taking place when advantageous.

In rare instances it may be necessary to explore alternative segments along parallel streets due to trade-offs. These typically arise because implementing a low-stress bicycle facility may require an unacceptable LOS for motorists, removal of highly valued on-street parking, or acquisition of prohibitively expensive right-of-way. The integrity of the Future Bicycle Network should be maintained whenever possible, but exceptions to the rule may arise and should be thoroughly researched and documented. The total proposed bikeway network for Winona is 64 miles. Compared to most other small cities under 100,000 in population, the number of miles is slightly below average. However, when comparing the miles of bikeways to the population of these peer communities, Winona is on par, with 24 bikeway miles per 10,000 residents. And when comparing Winona to the geographic area of other communities, Winona is below average, with three bikeway miles per square mile.

Another method for determining the appropriate mileage for the Future Bicycle Network is to compare it relative to the total street network, which is currently 140 miles. The current 14-mile bikeway network (which for this comparison does not include shared bicycle and parking lanes) is 10% of today’s street network. The 69-mile Future Bicycle Network will represent 49% of today’s street network. The League of American Bicyclists uses this statistic as one of the benchmarks for comparing communities to one another, when determining levels of bicycle friendliness. A 49% statistic would place Winona slightly above the level of a platinum community, assuming that this benchmark remains static (which is unlikely as more communities across America become more bicycle friendly).

A goal for the community is to become a leader in the state for bikeway infrastructure. The following sections detail how Winona will increase the network, to position itself at the forefront of its peer cities in Minnesota.

City	Population	Square Miles	Total Bicycle Network Miles (Existing + Planned)	Bikeway Miles per 10,000 population
Grafton, WI	11,500	5	28	24
Brookings, SD	22,900	13	55	24
Winona	27,100	24	69	25
Wausau, WI	39,000	19	116	30
Wauwatosa, WI	46,400	13	120	26
La Crosse, WI	52,100	23	130	25
Bellingham, WA	82,600	32	170	21
Greeley, CO	93,100	30	198	21



FUNDING STRATEGIES

The City of Winona should develop a diverse approach to funding projects on the future bicycle network. Funding for the implementation of the network is likely to come from a variety of sources, and these are likely to vary by project and year. The Rails to Trails Conservancy publishes an exhaustive list of funding sources for bicycle projects, including federal, state, local, and private. Several sources recommended specifically for Winona include the following.

CAPITAL IMPROVEMENT PROGRAM BUDGET

The City has already funded the Lake Park Path through the Capital Improvement Program (CIP), and in order to continue improving walking and bicycling in Winona, the City will need to continue dedicating funding to projects that enhance walking and bicycling. The CIP includes a list of projects, costs, and the year of funding. For active transportation there are two major areas in the current 2017 – 2021 CIP:

- The Parks Department currently has \$75,000 earmarked for planning and construction of a trail segment connecting the Riverfront Trail with the Interstate Bridge Trail in 2019.
- The Engineering Department budget includes overlay and road reconstruction projects. The most efficient and cost-effective way to implement most bicycle network improvements is through existing Engineering Department projects.

FEDERAL GRANT PROGRAMS

Walking and bicycling infrastructure and programming are eligible for some federal grant programs. The US Department of Transportation publishes an exhaustive list of bicycle-related improvements which are eligible for various sources of federal funding. The City is encouraged to seek and apply for these funds, but should consider them only as a partial funding source because grants are generally competitive and limited. Yet federal funding sources can finance large infrastructure projects that the City of Winona may not be able to afford otherwise, so these sources are important to the implementation of the network. Federal funding



The City of Red Wing used a combination of funding sources to complete their community's Riverfront Trail, as well as a trail easement from Red Wing Grain.

often requires a supply of "matching funds" from local agencies, typically 20% of the project's total cost.

One source of federal funding is the Transportation Alternatives Program (TAP). TAP grants fund specific activities that enhance the "intermodal" transportation system and provide safe alternative transportation options. Eligible projects include shared-use paths, on-road bicycle infrastructure, sidewalks, bicycle and pedestrian signals, traffic calming, lighting, and infrastructure upgrades related to ADA. Safe Routes to School projects, programming, and staffing may also be funded through TAP.

The City of Winona may submit TAP applications to the Area Transportation Partnership staffed by MnDOT's District 6 office. Engineering costs and the purchase of right-of-way are not eligible for TAP funding in Minnesota. Letters of intent are due annually on October 31st, and applications must be submitted by January. Eligible costs must be a minimum of \$250,000. Past grants

have gone to municipalities such as St. Charles, Rushford, La Crescent, Red Wing, and Rochester.

The Recreation Trails Program (RTP) is another source of federal funding for walking and bicycling projects, administered through the Minnesota Department of Natural Resources. RTP funds may be used for new construction, land or easement acquisition, educational projects, maintenance, equipment, and trailhead facilities. Grant requests may be a minimum of \$1,000 and a maximum of \$150,000, with a match of 25% required. Past grants have gone to government agencies such as Winona County, Fillmore County, Houston County, the City of Houston, and the City of Northfield. Applications are due annually on February 28th.

CITY OPERATING BUDGET

The operating budget of the City of Winona is already a source of funding for walking and bicycling programs and infrastructure. For example, staff in the Parks, Engineering, and

Chapter 6

Streets Departments design, build, and maintain the existing walkway and bicycle network. Funding for community development, police, port authority, and the visitor's bureau also have direct impacts on the walking and bicycling environment. Each year, the City should consider how the current annual operating budget impacts walking and bicycling, with an eye toward incremental and practical improvements for the future.

WINONA COUNTY

The City of Winona and Winona County have the opportunity to be strong partners in creating a bicycle friendly community. There are many opportunities for coordination and partnership in planning, funding, and implementation of walking and bicycling infrastructure and initiatives. Winona County owns and operates several roadways within the Winona city limits, including four on the future bicycle network (County Road 15 – Homer Road, County Road 17

– Pleasant Valley Road, County Road 32 – Sarnia/Gilmore/Junction Streets, and County Road 44 – Garvin Heights Road/Lake Boulevard). Winona County has also adopted a Comprehensive Plan which includes a goal to establish a bicycle network, as well as a County Trail Plan which aims to establish five walking and bicycling routes within the city limits.

The County and City would be ideal partners to jointly apply for grant opportunities of federal programs. The Winona County Health Department may also be a potential partner for funding walking and bicycling programs and other programmatic initiatives, such as Safe Routes to School, mapping, educational campaigns, and bicycling events. A partnership has already been established through Winona County's Active Living Plan and its Active Living Plan Advisory Committee.



Winona County's roadway network with the city limits already overlaps with the state-designated Mississippi River Trail on County Road 44 (Lake Boulevard).

MINNESOTA SAFE ROUTES TO SCHOOL

In 2012, the Minnesota State Legislature created a state Safe Routes to School program. Non-infrastructure grants are available for bicycle fleets, training, encouragement, and planning activities. Locally, St. Charles schools have received funds for a bicycle fleet, Red Wing schools have received a mini-grant for non-infrastructure activities, and Caledonia has received planning assistance. A solicitation for planning grants is currently open with an application deadline of January 5, 2018. Planning work will position Winona to apply for future infrastructure grant solicitations. Infrastructure grants are available for school site improvements, walking and bicycling facilities, traffic calming, and crossing improvements. An example of a local grant for infrastructure is \$300,000 in walkways along 11th Street and Highway 74 in St. Charles.

STATEWIDE HEALTH IMPROVEMENT PARTNERSHIP (SHIP)

The Minnesota Department of Health administers the Statewide Health Improvement Partnership (SHIP), which creates healthier communities through several strategies, including making walking and bicycling easier. Locally, Winona County has organized under the umbrella Live Well Winona, with a Community Leadership Team, a SHIP Coordinator, and a Winona County Active Living Plan. The City of Winona received a mini-grant in 2016 to install a Bike Fix Station on the Holzinger Trail. This Plan was also partially funded with a grant from SHIP. The Winona County partnership is currently focusing on wayfinding signage, Complete Streets, mini grants, sidewalk connections, demonstration projects, bicycle fleets, and bicycle/pedestrian plan outreach. SHIP is a partner for promoting a community-wide message on the benefits of walking and bicycling.

WINONA STATE UNIVERSITY

Several funding sources may be available through Winona State University (WSU). These could be leveraged to help fund walking and bicycling infrastructure in Winona, particularly routes near or on the campuses of WSU. University funding sources may include alumni donations, capital improvements, or operating funds.

PEOPLE FOR BIKES

People for Bikes is a charitable foundation sponsored by the bicycle industry. The organization runs a community grant program, funding projects such as shared-use paths, mountain bike trails, bicycle parking, and Open Streets events. Grants of \$10,000 are awarded, and must be matched with local funding of at least 50%. Grant cycles occur one to two times annually.

DONATIONS AND CHARITABLE CONTRIBUTIONS

The Winona community has already benefitted from the generosity of many private donors. In other communities of a similar size, donations have contributed funding to bicycle-related projects and programs. The Winona Community Foundation has already given funds to the Winona Area Mountain Bikers to develop trails in Bluffside Park.

A likely strategy is to launch a community giving campaign to match other funds for the construction and maintenance of Winona's Riverfront Trail. Businesses, organizations, foundations, and individuals could be recognized along a future segment of path, through plaques and donor recognition boards.

COST ESTIMATES

This sub-section describes the estimated implementation costs and timeline for bikeway

facilities on the Future Bicycle Network Map, in addition to two planning projects not included on the map.

The most prudent and cost-effective method for implementation is to seek out opportunities related to projects already programmed in the Winona CIP, as well as in the Winona County and MnDOT road construction programs. These include overlay, chip sealing, road reconstruction, and traffic signal replacement projects. This strategy regularly eliminates additional costs for walking and bicycling/bikeway project implementation such as pavement marking eradication, pavement removals, and pedestrian ramp replacements, since they are already included in the CIP project. As future street repair projects are added to these programs, pedestrian and bicycle projects should be coordinated to seek out further efficiencies.

At times, this method will result in a disjointed bikeway network, but it is not unusual for cities to install bikeway networks in this manner, over the course of several decades. The City should communicate a clear message to the public which explains how the bikeway network will

be pieced together over the coming decades, in an effort to use limited resources in a fiscally responsible manner.

Project prioritization was determined using a variety of factors, including opportunity projects, public input, geographic spacing, and funding opportunities. Most projects are split into sub-projects in order to take advantage of street repair opportunities.

Planning-level cost estimates have been developed for each bikeway facility type. Per-mile cost estimates were developed conservatively – in some cases projects will cost less, especially when incorporated into a larger project. Note that updated engineering cost estimates will need to be developed for each project during detailed design.

A summary of the project types estimated are listed below. A more detailed description of the work included in each project type follows. Estimates generally include engineering and crew mobilization costs wherever applicable.

Project Type	Planning Level Cost Estimate, per mile
Advisory Bicycle Lanes	\$16,000
Bicycle Boulevard (1) - Without Traffic Calming	\$117,000
Bicycle Boulevard (2) - With Traffic Calming	\$215,000
Buffered Bicycle Lanes	\$41,000
Corridor Planning Study (1) - Along Existing Street	\$15,000
Corridor Planning Study (2) - Along Independent Trail Alignment	\$13,000
Separated Bicycle Lanes (1) - Temporary Installation	\$55,000
Separated Bicycle Lanes (2) - Permanent Installation	\$1,060,000
Shared Use Path (1)	\$534,000
Shared Use Path (2) - Widen Existing Sidewalk	\$650,000
Shared Use Path (3) - Add Bridge Structure Over Small Waterway	\$593,000 + \$400,000*
Standard Bicycle Lanes	\$22,000
	<i>*per structure, not per mile</i>

Planning level cost estimates for bikeway projects reflect a high-level approximation. Costs may increase or decrease substantially based on future engineering analysis.

Advisory Bicycle Lanes: Includes epoxy bicycle lane markings in both directions with bicycle lane signs, along with green conflict markings at intersections.

Bicycle Boulevard without Traffic Calming: Includes the addition of large epoxy bike symbols along without traffic calming features. Traffic calming features include occasional speed humps and curb extensions. Note that the addition of bike symbols only without addition of traffic calming features will reduce costs significantly.

Bicycle Boulevard with Traffic Calming: Includes the addition of large epoxy bike symbols with traffic calming features. Per mile, includes two curb extensions, two miniature traffic circles, and four speed bumps. Traffic calming features chosen during the design phase may significantly lower or increase the cost per mile.

Buffered Bicycle Lanes: Includes bicycle lane markings as noted with standard bicycle lanes, with the addition of a painted buffer between bicycle lanes and vehicle lanes.

Corridor Planning Study – Along Existing Street: Includes an analysis of existing conditions, a more robust public engagement process, and research and documentation.

Corridor Planning Study – Along Independent Trail Alignment: Includes an analysis of existing conditions, a less robust public engagement process, and research and documentation.
Separated Bicycle Lanes (1) – Temporary Installation: Includes flex posts and pavement markings.

Separated Bicycle Lanes (2) – Permanent Installation: Includes relocation of an existing 6-foot concrete sidewalks with adjacent sidewalk-level, one-way, asphalt bicycle paths. Requires grading, utility adjustment, and traffic control measures.

Shared Use Path (1): Includes 10' wide path with signage and more widespread intersection crossing/curb ramp improvements, along with drainage and landscaping.

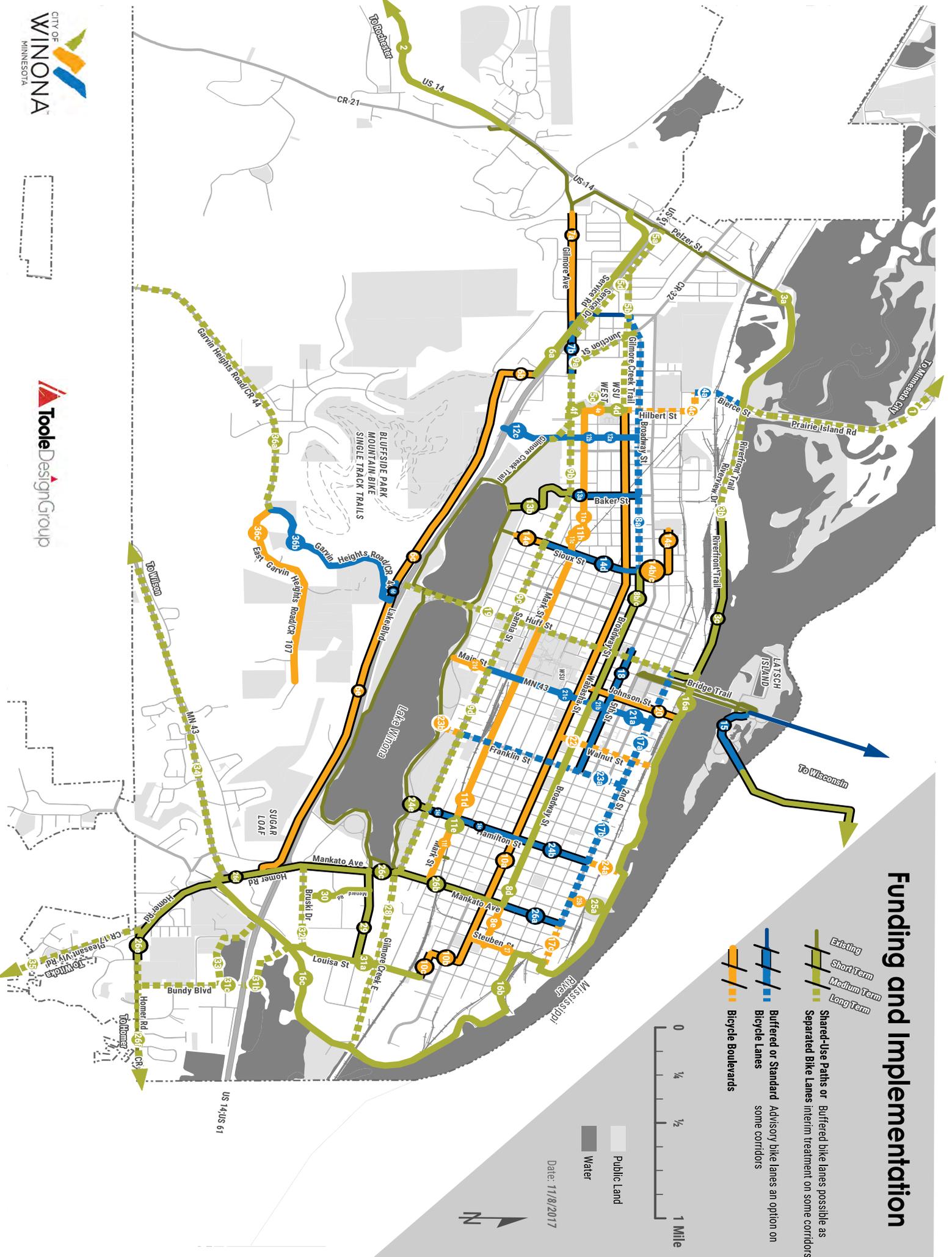
Shared Use Path (2) – Widen Existing Sidewalk: Includes removal of a concrete sidewalk and replacement with a 10' asphalt shared-use path.

Shared Use Path (3) – Add Bridge Structure Over Small Waterway: Unit cost of a bridge over a waterway such as Gilmore Creek.

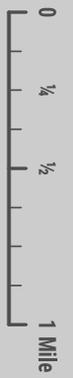
Standard Bicycle Lanes: Includes epoxy bicycle lane markings in both directions with bicycle lane signs, along with green conflict markings at intersections.

Using these planning-level cost estimates, the financial impact of each project was calculated. Cost estimates are based on the length and type of each project.

Funding and Implementation



- Existing
- Short Term
- Medium Term
- Long Term
- Shared-Use Paths or Buffered bike lanes possible as Separated Bike Lanes interim treatment on some corridors
- Buffered or Standard Advisory bike lanes an option on some corridors
- Bicycle Lanes
- Bicycle Boulevards



Date: 11/8/2017

Public Land
Water

Implementation of the Future Bicycle Network*

Project ID	Roadway/Trail Name	Project Extents	Length (mi.)	Bicycle Project Type	Lead Agency (Partner/s)	Phasing*	Opportunity Project - Type	Opportunity Project - Year	Planning Level Cost Estimate	Comments
1	Prairie Island Road	Minnesota City Limits to Riverview Drive	3.8	Shared Use Path (1) ^	City of Winona	Long Term			\$ 2,029,200	A shared use path on the south and west side of the road would have fewer driveway and private property conflicts.
2	US Highway 14	Winona Township Limits to Gilmore Valley Road	1.3	Shared Use Path (1)	MnDOT (City of Winona)	Medium Term	Overlay	2027	\$ 694,200	State priority corridor in the MnDOT Statewide Bicycle System Plan. A shared use path on the north side would avoid guardrails and steep slopes.
3a	Riverview Drive	Theurer Boulevard to Prairie Island Road	0.59	Shared Use Path (1) ^	City of Winona	Medium Term			\$ 315,060	Shared use path on the north side already extends 560' east of Theurer Boulevard. The remainder of this path should continue on the north side.
3b	Riverview Drive	Prairie Island Road to 2nd Street	1.5	Shared Use Path (1) ^	City of Winona	Long Term			\$ 801,000	Long term solution is to vertically curb separate the shared use path. See Chapter 7.
3c	Riverview Drive	MN Marine Art Museum to 2nd Street	0.87	Separated Bicycle Lanes (2)	City of Winona	Short Term	Overlay	2020	\$ 47,850	Shared use path may be installed on the north side using flex posts as a short-term solution.
4a	Prairie Island Road/Bierce Street	Riverview Drive to 2nd Street	0.24	Standard Bicycle Lanes	City of Winona	Long Term			\$ 5,280	Explore parking removal on west side of Bierce Street south of railroad tracks. Prairie Island Road north of railroad tracks may need to be widened. Advisory bicycle lanes are also an option.
4b	2nd Street	Bierce Street to Hilbert Street	0.1	Bicycle Boulevard (1)	City of Winona	Long Term			\$ 11,700	Automobile parking remains.
4c	Hilbert Street	2nd Street to Wabasha Street	0.31	Bicycle Boulevard (2)	City of Winona	Long Term			\$ 66,650	Automobile parking remains.
4d	Hilbert Street	Wabasha Street to Howard Street	0.12	Shared Use Path (2)	Winona State University	Medium Term			\$ 78,000	Current sidewalk is 14' wide and is adequate for shared use. Transitions at either end should be improved to coincide with bicycle boulevard installation. Serves as the Gilmore Creek connector.
4e	Hilbert Street	Howard Street to 200' south of Mark	0.1	Bicycle Boulevard (1)	City of Winona	Medium Term			\$ 11,700	Automobile parking remains.
4f	Hilbert Street	200' south of Mark Street to Sarnia Street	0.02	Shared Use Path (2)	City of Winona	Medium Term			\$ 13,000	Widen 4' path to 10' to accommodate shared use.
5a	Gilmore Creek	Pelzer Street to Service Drive	0.28	Shared Use Path (1)	City of Winona (MnDOT)	Long Term			\$ 149,520	A shared use path on the south side of Kraemer Drive next to Gilmore Creek would highlight this as a greenway connector to points east and south. An upgrade of the existing connector path across Highway 61 at Sunset Drive will connect the neighborhood south of the highway to Gilmore Creek. Use MnDOT's Pedestrian Crossing Facilitation Tech Memo to choose the type of crossing.
5b	Gilmore Creek	Service Drive to Hilbert Street	0.7	Shared Use Path (1)	City of Winona (Benedictine Health System, St. Mary's Church, Cotter School)	Long Term			\$ 373,800	A shared use path on the north side of Gilmore Creek may be located on City of Winona right-of-way. Where the creek runs underground through Cotter school athletic fields, an east-west connection to Hilbert and Wabasha Streets on private, institutional properties is necessary. The connection of this path to Gilmore Creek in project #5c will be achieved with project #4d.
5c	Gilmore Creek	Hilbert Street to Vila Street	0.42	Shared Use Path (1)	City of Winona (Winona State University, Winona County)	Long Term			\$ 224,280	A shared use path on the northeast side of Gilmore Creek will be located on WSU and City of Winona right-of-way. A connection along and across County Road 32 connects these two sections.
5d	Service Drive	Kraemer Drive to Gilmore Avenue	0.44	Shared Use Path (1) ^	City of Winona (MnDOT)	Long Term			\$ 234,960	A shared use path on the north side will serve a high number of destinations.
6a	Service Road	Highway 14 to Clarks Lane	1.04	Shared Use Path (1) ^	City of Winona (MnDOT)	Medium Term			\$ 555,360	A shared use path on the south side will serve a high number of destinations, and match into existing sidewalks fronting Sauer Health Care. At the east end, formalize the informal non-motorized dirt path across Highway 61 to Randall Street as a shared use path. Use MnDOT's Pedestrian Crossing Facilitation Tech Memo to choose the type of crossing.
6b	Clarks Lane	Service Road to Lake Boulevard	0.15	Bicycle Boulevard (2)	City of Winona	Short Term			\$ 32,250	Automobile parking remains.
6c	Lake Boulevard	Clarks Lane to Huff Street	1	Bicycle Boulevard (1)	City of Winona	Short Term			\$ 117,000	
6d	Lake Boulevard (County Rd 44)	Huff Street to Garvin Heights Road	0.09	Standard Bicycle Lanes	Winona County	Short Term			\$ 1,980	Bicycle lanes replace bicycle boulevard because of increase in auto traffic on County Road 44.
6e	Lake Boulevard	Garvin Heights Road to Homer Road	1.6	Bicycle Boulevard (1)	City of Winona	Short Term			\$ 187,200	Parking remains. Explore leaving centerline unpainted or other traffic calming measures to slow auto traffic, especially if auto traffic volumes exceed the desirable threshold of 1,500/day for bicycle boulevards.
7a	Gilmore Avenue	Kerry Drive to Orrin Street	0.53	Bicycle Boulevard (2)	City of Winona	Short Term			\$ 113,950	Parking remains. Explore leaving centerline unpainted or other traffic calming measures to slow auto traffic, especially if auto traffic volumes exceed the desirable threshold of 1,500/day for bicycle boulevards.
7b	Gilmore Avenue	Orrin Street to Junction Street	0.25	Buffered Bicycle Lanes	City of Winona	Short Term			\$ 10,250	Clarify no parking restrictions on both sides of the street, to ensure bicycle lanes remain usable.
8a	Broadway Street	Kraemer Drive to Sioux Street	1.31	Standard Bicycle Lanes	City of Winona	Long Term			\$ 28,820	Explore parking removal on one side of the street.
8b	Broadway Street	Sioux Street to Main Street	0.73	Separated Bicycle Lanes (1)	City of Winona	Short Term	Overlay	201x?	\$ 40,150	Primary impetus for 4-to-3 lane conversion is reduced crashes for motorists. Separated bicycle lanes may be installed at street level using flex posts as a short-term solution.
8c	Broadway Street	Sioux Street to Main Street	0.73	Separated Bicycle Lanes (2) ^	City of Winona	Long Term			\$ 773,800	Separated bicycle lanes may be installed at sidewalk level using curbs as a long-term solution.
8d	Broadway Street	Main Street to Mankato Avenue	1.13	Separated Bicycle Lanes (2) ^	City of Winona	Medium Term			\$ 1,197,800	Separated bicycle lanes may be installed at sidewalk level using curbs as a long-term solution. If a surface maintenance project occurs in advance of a curb-to-curb reconstruction, flex posts may be installed as a short-term solution.
8e	Broadway Street	Mankato Avenue to Steuben Street	0.21	Bicycle Boulevard (2)	City of Winona	Medium Term			\$ 45,150	Automobile parking remains.
9a	Junction Street (County Rd 32)	Broadway Street to Sarnia Street	0.34	Separated Bicycle Lanes (2) ^	Winona County (City of Winona)	Long Term			\$ 360,400	Sidewalks on both sides of the street may be widened to implement separated bicycle lanes. Or, explore parking removal on both sides of the street to place the separated bicycle lanes between existing boulevard trees and auto travel lanes.
9b	Gilmore Avenue/Sarnia Street (County Rd 32)	Junction Street to Sioux Street	0.98	Separated Bicycle Lanes (2) ^	Winona County (City of Winona)	Long Term			\$ 1,038,800	Explore removal of medians to implement separated bicycle lanes. Or, explore parking removal on both sides of the street to place the separated bicycle lanes between existing boulevard trees and auto travel lanes. Between Vila and Baker Streets, there is no median.
9c	Sarnia Street (County Road 32)	Sioux Street to Main Street	0.7	Separated Bicycle Lanes (2) ^	Winona County (City of Winona)	Long Term			\$ 742,000	Narrower section of street (44') and boulevard trees require exploration of parking removal on both sides of the street to place the separated bicycle lanes in the parking lanes.

* Short Term = 2018 to 2024, Medium Term = 2022 to 2030, Long Term = 2027 and beyond

^ If installed with a reconstruction project, the planning level cost estimate will drop due to excavation and landscaping being included in reconstruction.

Implementation of the Future Bicycle Network*

9d	Sarnia Street (MN Hwy 43)	Main Street to Mankato Avenue	1.11	Separated Bicycle Lanes (2) ^	MnDOT (City of Winona)	Long Term			\$ 1,176,600	Narrower section of street (48') and boulevard trees require exploration of parking removal on both sides of the street to place the separated bicycle lanes in the parking lanes. Standard bicycle lanes may be striped without removing parking as a short-term solution.
10a	Wabasha Street	Hilbert Street to Adams Street	3.03	Bicycle Boulevard (2)	City of Winona	Short Term			\$ 651,450	Parking remains. A large number of stop signs in the central section should be reduced through a combination of traffic calming and yield signs.
10b	Adams Street	Wabasha Street to King Street	0.14	Bicycle Boulevard (2)	City of Winona	Short Term			\$ 30,100	Automobile parking remains.
10c	King Street	Adams Street to Louisa Street	0.14	Bicycle Boulevard (2)	City of Winona	Short Term			\$ 30,100	Automobile parking remains.
11a	Mark Street	Hilbert Street to Garfield Street	0.64	Bicycle Boulevard (2)	City of Winona	Medium Term			\$ 137,600	Automobile parking remains.
11b	Garfield Street	Mark Street to Gilmore Avenue	0.06	Bicycle Boulevard (2)	City of Winona	Medium Term			\$ 12,900	Automobile parking remains.
11c	Gilmore Avenue	Garfield Street to Sioux Street	0.11	Bicycle Boulevard (2)	City of Winona	Medium Term			\$ 23,650	1-side parking and 1-way operation remain for automobiles. Allow 2-way traffic for bicycling.
11d	Mark Street	Sioux Street to Hamilton Street	1.48	Bicycle Boulevard (2)	City of Winona	Medium Term			\$ 318,200	Automobile parking remains.
11e	Mark Street	Hamilton Street to Carimona Street	0.08	Shared Use Path (1)	City of Winona (Canadian Pacific Railroad)	Medium Term			\$ 42,720	Explore property ownership and install shared use path adjacent to railroad. May use the existing Carimona Street pedestrian crossing of the railroad. Add bicycle and pedestrian access through median, across Hamilton Street.
11f	Mark Street	Carimona Street to Mankato Avenue	0.28	Bicycle Boulevard (2)	City of Winona	Medium Term			\$ 60,200	Automobile parking remains.
12a	Vila Street	Broadway Street to Howard Street	0.19	Standard Bicycle Lanes	City of Winona	Medium Term			\$ 4,180	Bicycle lanes may be striped by narrowing existing travel and parking lanes (8' parking lanes, 5' bicycle lanes, 11' drive lanes).
12b	Vila Street	Howard Street to Gilmore Avenue	0.13	Standard Bicycle Lanes	City of Winona	Medium Term			\$ 2,860	Explore parking removal on one side of the street, due to 40' width. Alternatively, advisory bicycle lanes may be installed if auto traffic volumes are less than 4,000.
12c	Vila Street	Gilmore Avenue to Dahl Automotive Driveway	0.31	Buffered Bicycle Lanes	City of Winona	Medium Term			\$ 12,710	Explore removal of 2 of 4 travel lanes. Consider upgrading to a separated facility for shared use, since Vila Street does not include a walkway. Signal at Highway 61 needs bicycle actuation.
13a	Baker Street	Broadway Street to Gilmore Avenue	0.31	Standard Bicycle Lanes	City of Winona	Short Term	Reconstruction	2020	\$ 6,820	Explore parking removal on both sides of this 38' wide street. If not feasible, remove centerline and install advisory bicycle lanes. No parking exists approaching railroad crossing, and median may be reconstructed to allow bicycle lanes.
13b	High School Access	Gilmore Avenue to Lake Street	0.27	Shared Use Path (1)	Winona Public Schools (City of Winona)	Short Term			\$ 144,180	Install a shared use path on school property, matching into the existing spur path at Lake Street, which connects to the Lake Path.
14a	4th Street	High Street to Sioux Street	0.22	Bicycle Boulevard (1)	City of Winona	Short Term			\$ 25,740	Automobile parking remains.
14b	Sioux Street	4th Street to 5th Street	0.06	Bicycle Boulevard (1)	City of Winona	Short Term			\$ 7,020	Automobile parking remains.
14b	Sioux Street	5th Street to Broadway Street	0.07	Bicycle Boulevard (1)	City of Winona	Short Term	Reconstruction	2020	\$ 8,190	Automobile parking remains.
14c	Sioux Street	Broadway Street to Sarnia Street	0.46	Standard Bicycle Lanes	City of Winona	Short Term	Reconstruction	2020	\$ 10,120	Explore parking removal on both sides of this 38' wide street. If not feasible, remove centerline and install advisory bicycle lanes.
14d	Sioux Street	Sarnia Street to Lake Path	0.2	Bicycle Boulevard (1)	City of Winona	Short Term			\$ 23,400	Parking remains. Explore leaving centerline unpainted between Sarnia Street and Lake Street.
15	Flyway Trail	Highway 43 Bridge to City Limits	0.34	Advisory Bicycle Lanes	City of Winona	Short Term			\$ 5,440	Coordinate installation with Flyway Trail.
16a	Riverfront Trail	Riverview Drive to Walnut Street	0.52	Shared Use Path (1)	City of Winona	Medium Term			\$ 277,680	Widen existing shared use path to a minimum of 10', with 12' being desirable, and 15' optimal for separate bicycle and pedestrian lanes.
16b	Riverfront Trail	Walnut Street to Gilmore Creek	2.73	Shared Use Path (3)	City of Winona	Medium Term			\$ 1,857,820	Continue obtaining easements and building trail segments (according to the 2007 Winona Comprehensive Plan, 50% of easements have been obtained). The shared use path will be a minimum of 10', with 12' being desirable, and 15' optimal for separate bicycle and pedestrian lanes. Several segments are currently owned by the City of Winona, where trail construction may begin in the short-term. Includes a bridge over Gilmore Creek.
16c	Riverfront Trail	Gilmore Creek to Homer Road	1.19	Shared Use Path (1)	City of Winona	Medium Term			\$ 635,460	Reconstruct existing shared use path, and construct new segments connecting Gilmore Creek with Highway 43 (paralleling the waterway underneath Highway 61 and Homer Road).
17a	2nd Street	Huff Street to Franklin Street	0.64	Standard Bicycle Lanes	City of Winona	Long Term			\$ 14,080	Add bicycle lanes through lane narrowing - no pavement eradication needed. 48' wide street can be striped with 8' parking lanes, 5' bicycle lanes, and 11' auto travel lanes. See Chapter 7.
17b	2nd Street	Franklin Street to Mankato Avenue	0.77	Standard Bicycle Lanes	City of Winona	Long Term			\$ 16,940	Explore parking removal on one side of the street to include bicycle lanes on this 42' wide street.
17c	2nd Street	Mankato Avenue to Steuben Street	0.21	Bicycle Boulevard (2)	City of Winona	Long Term			\$ 45,150	Automobile parking remains.
18	5th Street	Harriet Street to Franklin Street	0.71	Standard Bicycle Lanes	City of Winona	Short Term			\$ 15,620	Add bicycle lanes through lane narrowing - coordinate with overlay project to avoid pavement marking eradication costs. 48' wide street can be striped with 8' parking lanes, 5' bicycle lanes, and 11' auto travel lanes. Parking is not located on both sides between Harriet and Winona. Follow various striping plans in Chapter 7.
19	Huff Street	2nd Street to Lake Boulevard	1.33	Separated Bicycle Lanes (2) ^	City of Winona	Long Term			\$ 1,409,800	Whenever the street is reconstructed, install separated bicycle lanes above street level next to sidewalks. Standard bicycle lanes may be installed as a short-term measure.
20	Johnson Street	Riverfront Trail to Wabasha Street	0.47	Bicycle Boulevard (2)	City of Winona	Short Term			\$ 101,050	Automobile parking remains.
21a	Main Street	2nd Street to 4th Street	0.14	Buffered Bicycle Lanes	City of Winona	Medium Term			\$ 5,740	Remove an auto travel lane in each direction.
21b	Main Street	4th Street to Broadway Street	0.14	Buffered Bicycle Lanes	MnDOT (City of Winona)	Medium Term			\$ 5,740	Remove an auto travel lane in each direction. See Chapter 7.
21c	Main Street	Broadway Street to Mark Street	0.36	Buffered Bicycle Lanes	MnDOT (City of Winona)	Medium Term			\$ 14,760	Street is currently 52' wide. Narrow existing parking lanes to 8' and auto travel lanes to 11'. Widen bicycle lanes to 6' and add a 2' buffer between auto travel lanes and bicycle lanes.

* Short Term = 2018 to 2024, Medium Term = 2022 to 2030, Long Term = 2027 and beyond

^ If installed with a reconstruction project, the planning level cost estimate will drop due to excavation and landscaping being included in reconstruction.

Implementation of the Future Bicycle Network*

21d	Main Street	Sarnia Street to Lake Path	0.17	Bicycle Boulevard (2)	City of Winona	Medium Term			\$ 36,550	Parking remains. Clear bicycling connection needed to Lake Path at Lake Street (currently blocked by parking stalls).
22	Walnut Street	Riverfront Trail to Wabasha Street	0.47	Bicycle Boulevard (2)	City of Winona	Long Term			\$ 101,050	Automobile parking remains.
23a	Franklin Street	2nd Street to Sarnia Street	0.78	Standard Bicycle Lanes	City of Winona	Long Term			\$ 17,160	Street is currently 44' wide. Explore narrowing lanes (10' travel lanes, 5' bike lanes, 7' parking lanes), removing parking on one side, striping advisory bicycle lanes, or extending curb-to-curb width to 48'.
23b	Franklin Street	Sarnia Street to Lake Path	0.07	Bicycle Boulevard (1)	City of Winona	Long Term			\$ 8,190	Automobile parking remains.
24a	Hamilton Street	Riverfront Trail to 2nd Street	0.15	Bicycle Boulevard (1)	City of Winona	Long Term			\$ 17,550	Automobile parking remains.
24b	Hamilton Street	2nd Street to Broadway Street	0.28	Advisory Bicycle Lanes	City of Winona	Short Term			\$ 4,480	Street is currently 40' wide. Due to low traffic volumes and the lack of a truck route, removing the center line and adding dotted bicycle lanes is recommended. Pavement marking eradication will be an additional cost.
24c	Hamilton Street	Broadway Street to Howard Street	0.29	Advisory Bicycle Lanes	City of Winona	Short Term	Reconstruction	2018	\$ 4,640	Street is currently 40' wide. Due to low traffic volumes and the lack of a truck route, removing the center line and adding dotted bicycle lanes is recommended.
24d	Hamilton Street	Howard Street to Sarnia Street	0.21	Advisory Bicycle Lanes	City of Winona	Short Term			\$ 3,360	Street is currently 44' wide.
24e	Hamilton Street	Sarnia Street to Lake Path	0.08	Shared Use Path (1)	City of Winona	Short Term			\$ 42,720	Construct a bike path to connect Hamilton Street at Sarnia Street with the Lake Path.
25a	St Charles Street	Riverfront Trail to Front Street	0.13	Shared Use Path (1)	City of Winona	Medium Term			\$ 69,420	Construct a bike bath to connect the Riverfront Trail with Front Street.
25b	St Charles Street	Front Street to 2nd Street	0.07	Bicycle Boulevard (1)	City of Winona	Medium Term			\$ 8,190	Automobile parking remains.
26a	Mankato Avenue	2nd Street to Broadway Street	0.28	Buffered Bicycle Lanes	City of Winona	Medium Term	Reconstruction	2021	\$ 11,480	Reduce number of auto travel lanes to install buffered bicycle lanes.
26b	Mankato Avenue	Broadway Street to Sarnia Street	0.5	Separated Bicycle Lanes (2) ^	City of Winona	Medium Term	Reconstruction	2022	\$ 530,000	Reduce number of auto travel lanes to install separated bicycle lanes.
26c	Mankato Avenue/Highway 43	Sarnia Street to Highway 61	0.53	Separated Bicycle Lanes (2) ^	MnDOT (City of Winona)	Short Term	Reconstruction	2022	\$ 561,800	Install separated bicycle lanes on each side of the road. Some segments need both separated bicycle lanes and sidewalks, others need a separated bicycle lane added next to a sidewalk, and another has a shared use path that may be marked with separate lanes for bicycling and walking.
26d	Homer Road/Highway 43	Highway 61 to Highway 43 turnoff	0.26	Shared Use Path (2)	MnDOT (City of Winona)	Short Term			\$ 169,000	Replace existing sidewalk on the east side of the street with a shared use path.
26e	Homer Road (County Road 17)	Highway 43 to Clubview Road	0.66	Shared Use Path (2)	Winona County (City of Winona)	Short Term			\$ 429,000	Widen existing sidewalk on the north and east side of the road to a shared use path.
26f	Homer Road (County Road 15)	Pleasant Valley Road to City Limits	0.64	Shared Use Path (1) ^	Winona County (City of Winona)	Long Term			\$ 341,760	Install shared use path on the north side of the road.
27	Steuben Street	4th Street to Wabasha Street	0.22	Bicycle Boulevard (2)	City of Winona	Medium Term			\$ 47,300	Automobile parking remains.
28	Gilmore Creek	Mankato Avenue to Riverfront Trail	0.94	Shared Use Path (1)	City of Winona	Long Term			\$ 501,960	Install a shared use path on the north side of Shive Road. Road will likely need to be shifted to the south to make space for path.
29	Frontenac Drive	Mankato Avenue to Louisa Street	0.47	Shared Use Path (1) ^	City of Winona	Medium Term			\$ 250,980	Install a shared use path on the south side of the street.
30	Mernard Road	Frontenac Drive to Bruski Drive	0.3	Shared Use Path (2) ^	City of Winona	Medium Term			\$ 195,000	Replace existing sidewalk on the east side of the street with a shared use path.
31a	Louisa Street	9th Street to Bruski Drive	0.54	Shared Use Path (1) ^	City of Winona	Medium Term			\$ 288,360	Install a shared use path on the west side of the street.
31b	Louisa Street	Bruski Drive to Highway 61	0.36	Shared Use Path (1) ^	City of Winona	Long Term			\$ 192,240	Install a shared use path along one side of this street when it is constructed.
31c	Bundy Boulevard	Highway 61 to Homer Road	0.49	Shared Use Path (1) ^	City of Winona	Long Term			\$ 261,660	Install a shared use path on the west side of the street. Will likely require that parking be removed on one side of street and the curb-to-curb width of the street be narrowed.
32	Bruski Drive	Mankato Avenue to Louisa Street	0.42	Shared Use Path (1) ^	City of Winona	Long Term			\$ 224,280	Install a shared use path on the north side of the street.
33	Watlow Trail	Riverfront Trail to Bundy Boulevard	0.42	Shared Use Path (3)	City of Winona (State of Minnesota, Watlow Electric)	Long Term			\$ 639,820	Install a bridge over Burns Valley Creek to match into the Riverfront Trail (project #16c), construct a path to extend to existing path, and upgrade existing gravel path to a paved shared use path.
34	Highway 43	City Limits to Homer Road	1.8	Shared Use Path (1) ^	MnDOT (City of Winona)	Long Term			\$ 961,200	Install a shared use path on one side of the highway when it is rebuilt.
35	Pleasant Valley Road (County Road 15)	Homer Road to City Limits	0.44	Shared Use Path (1) ^	Winona County (City of Winona)	Long Term			\$ 234,960	Install a shared use path on one side of the road.
36a	Garvin Heights Road (County Road 44)	City Limits to East Garvin Heights Road	1.47	Shared Use Path (1)	Winona County (City of Winona)	Long Term			\$ 784,980	Install a shared use path on one side of the road, to connect to the future mixed residential area to the south of the current city limits (see City Comprehensive Plan).
36b	Garvin Heights Road (County Road 44)	East Garvin Heights Road to Lake Boulevard	0.9	Standard Bicycle Lanes	Winona County (City of Winona)	Medium Term			\$ 19,800	Narrow right-of-way may necessitate a climbing bike lane uphill, and allowing bicycle riders to use the full lane downhill. Alternatively, the centerline may be removed during a future overlay project and advisory bicycle lanes installed.
36c	East Garvin Heights Road (County Road 107)	Garvin Heights Road to 400' West of Cul-de-Sac	1.03	Bicycle Boulevard (1)	Winona County (City of Winona)	Medium Term			\$ 120,510	Cost may be reduced with lower numbers of pavement markings and signs.
Not on Map										
30	Huff Street	2nd Street to Lake Boulevard	1.33	Corridor Planning Study (1)	City of Winona	Medium Term			\$ 19,950	Corridor study for future improvements.
31	Riverfront Trail	Riverview Drive to Highway 43	4.44	Corridor Planning Study (2)	City of Winona	Short Term			\$ 57,720	Planning and design for Riverfront Trail completion.

* Short Term = 2018 to 2024, Medium Term = 2022 to 2030, Long Term = 2027 and beyond

^ If installed with a reconstruction project, the planning level cost estimate will drop due to excavation and landscaping being included in reconstruction.

CHAPTER 7: DESIGN RECOMMENDATIONS FOR FUTURE PROJECTS

The following cross sections and aerial renderings are design recommendations for upcoming projects, most of which are in the City of Winona and MnDOT street and road construction programs. These recommendations are concepts for consideration during the early stages of planning for each project. They are based upon the pedestrian and bicycle facility preferences chosen by Winona residents during the community engagement process for this Plan (see Chapter 2 and Appendix A). Specifically, curb extensions were the most favored type of street crossing for pedestrians, and separated bicycle lanes at the sidewalk level were the most favored type of bicycle facility.

ROAD DIETS

Some recommendations include the possibility of a road diet. The following is information about road diets from the Federal Highway Administration's recent guidebook, *Achieving Multimodal Networks – Applying Design Flexibility and Reducing Conflicts*.

“Road Diets are the reconfiguration of one or more travel lanes to calm traffic and provide space for bicycle lanes, turn lanes, streetscapes, wider sidewalks, and other purposes. Four- to three-lane conversions are the most common Road Diet, but there are numerous types (e.g., three to two lanes, or five to three lanes). FHWA has identified Road Diets as a Proven Safety Countermeasure and an Every Day Counts initiative.

“Streets are typically designed based on a forecast of future traffic volumes. In many cases, these estimates were either incorrect or circumstances have changed, resulting in fewer vehicles than anticipated. The outcome is excess capacity and streets that encourage fast speeds, and create poor conditions for pedestrians,

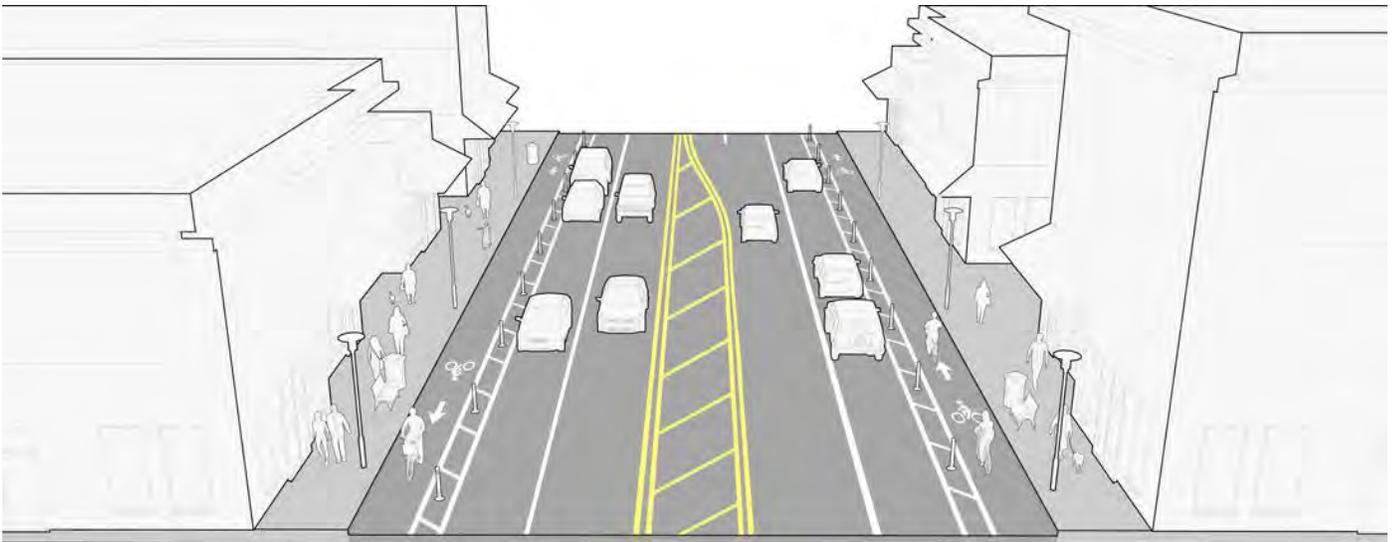
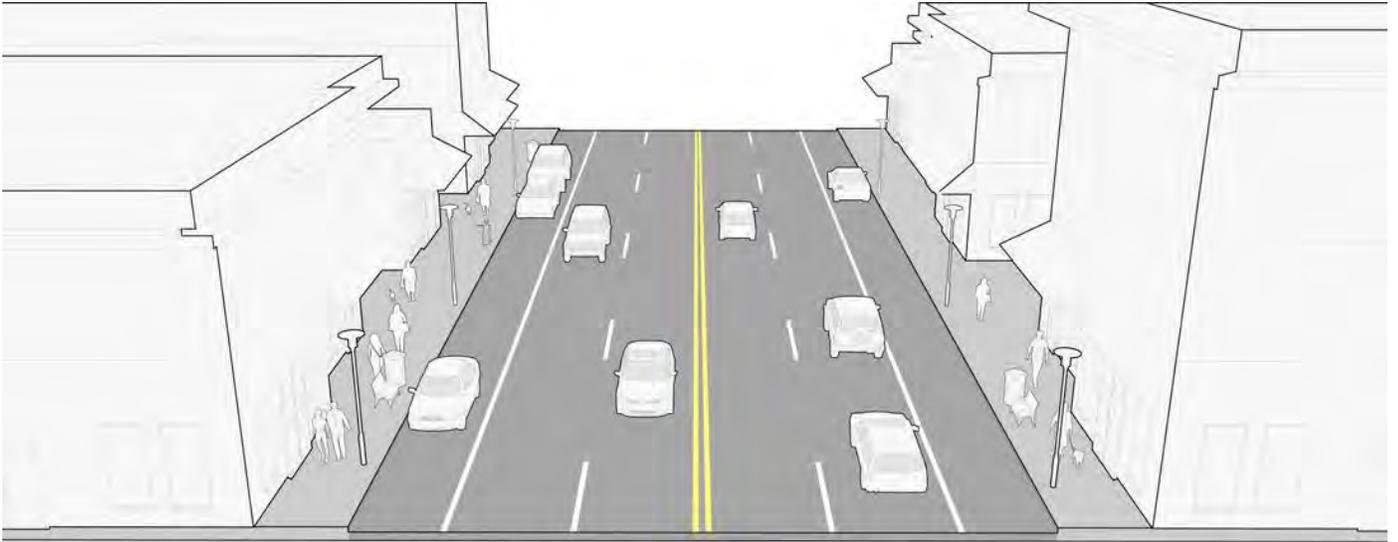
bicyclists, and transit users. Road Diets offer a way to rebalance the street to meet the needs of all users.

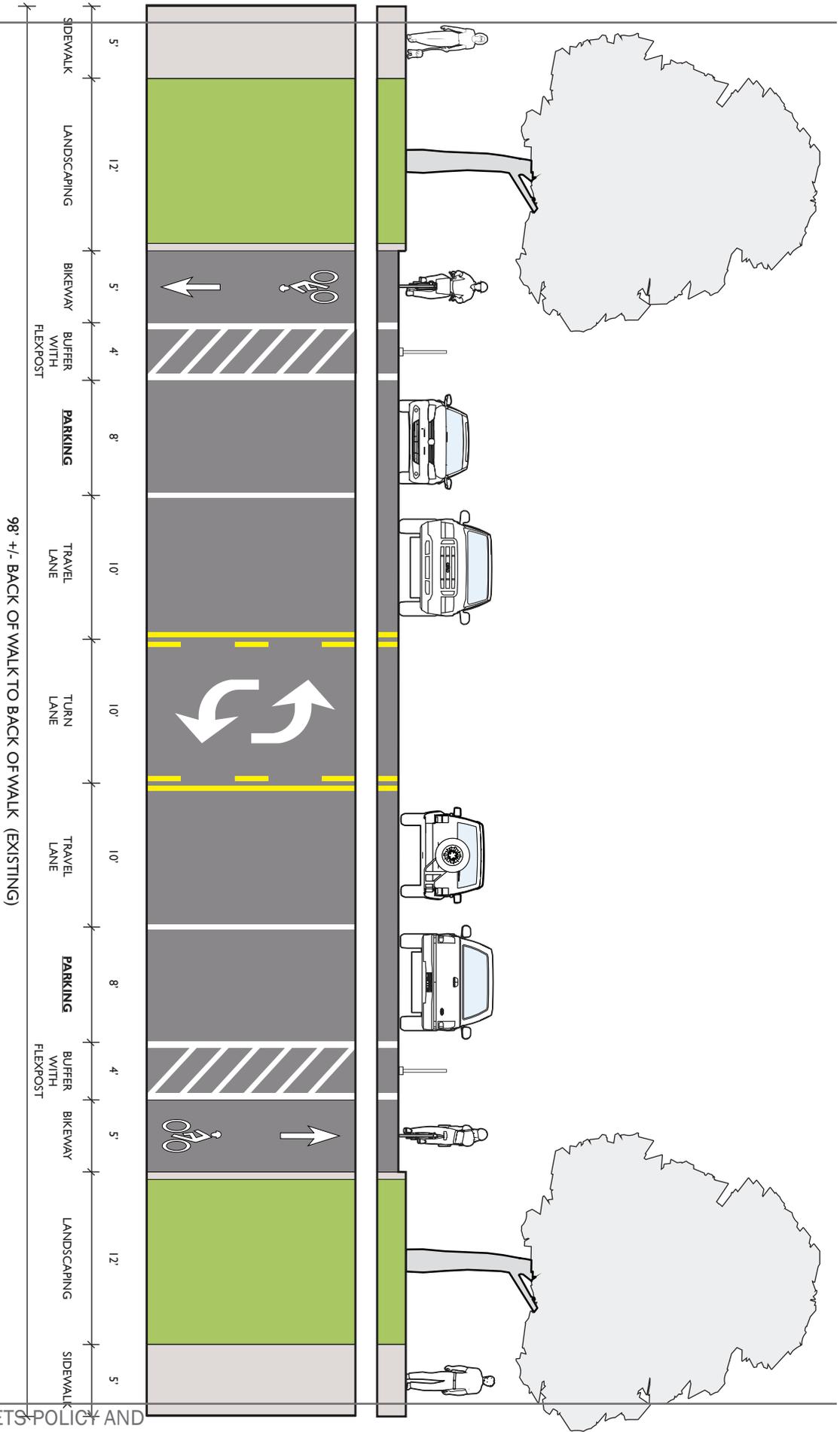
“A conventional approach to evaluate the feasibility of a Road Diet is to evaluate the impact on vehicles, not people. Guidance at the national level provides the flexibility to apply engineering judgment to assess the project holistically, incorporating performance measures for all modes and community goals ...

“The common four- to three-lane Road Diet has proven safety benefits with ‘a 19 to 47 percent reduction in overall crashes’ (FHWA Road Diet Guide 2014, p. 7) . Added two-way left-turn lanes reduce the number of potential conflict points, while slower operating speeds typical of this type of Road Diet reduce the severity of crashes that do occur. In addition to the reduction of speed, pedestrian safety benefits include potentially reduced crossing distances, space for refuge islands, and elimination of multiple threat crashes” (FHWA Road Diet Guide 2014, p. 7).

“Volume thresholds, often average daily traffic (ADT), can initially approximate whether a road diet is appropriate given the proposed number of lanes; however, if volumes are at the upper limits of the threshold, designers should consider further analysis. Communities have varying ADT or peak hour thresholds and some have had success with Road Diets on roads that exceed initial thresholds. ‘Road Diet projects have been completed on roadways with relatively high traffic volumes in urban areas or near larger cities with satisfactory results’” (FHWA Road Diet Guide 2014, p. 17).

Image (opposite) credit: FHWA Achieving Multimodal Networks - Applying Design Flexibility and Reducing Conflicts

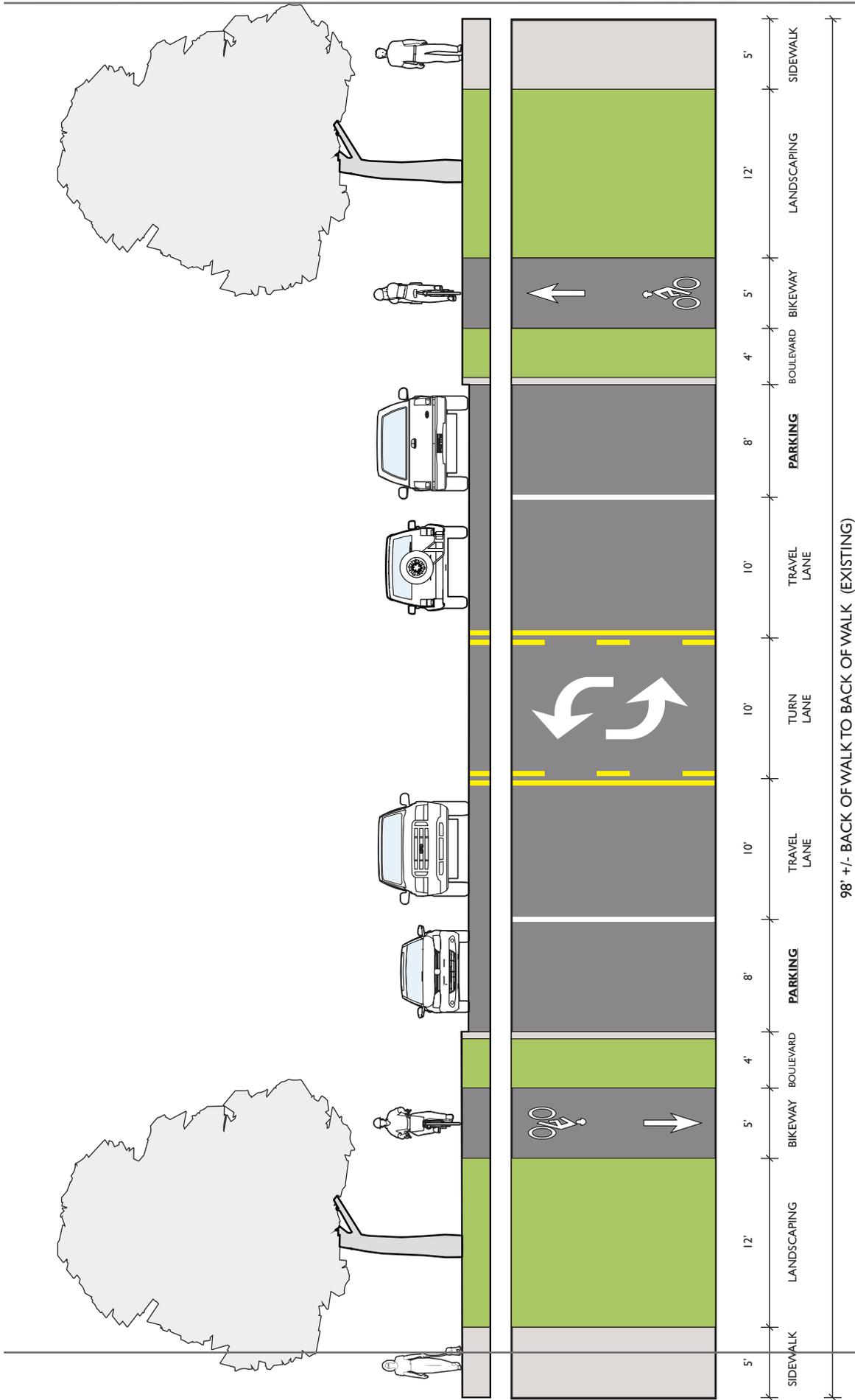




Broadway Street (Huff Street to Main Street) - Interim

Looking East

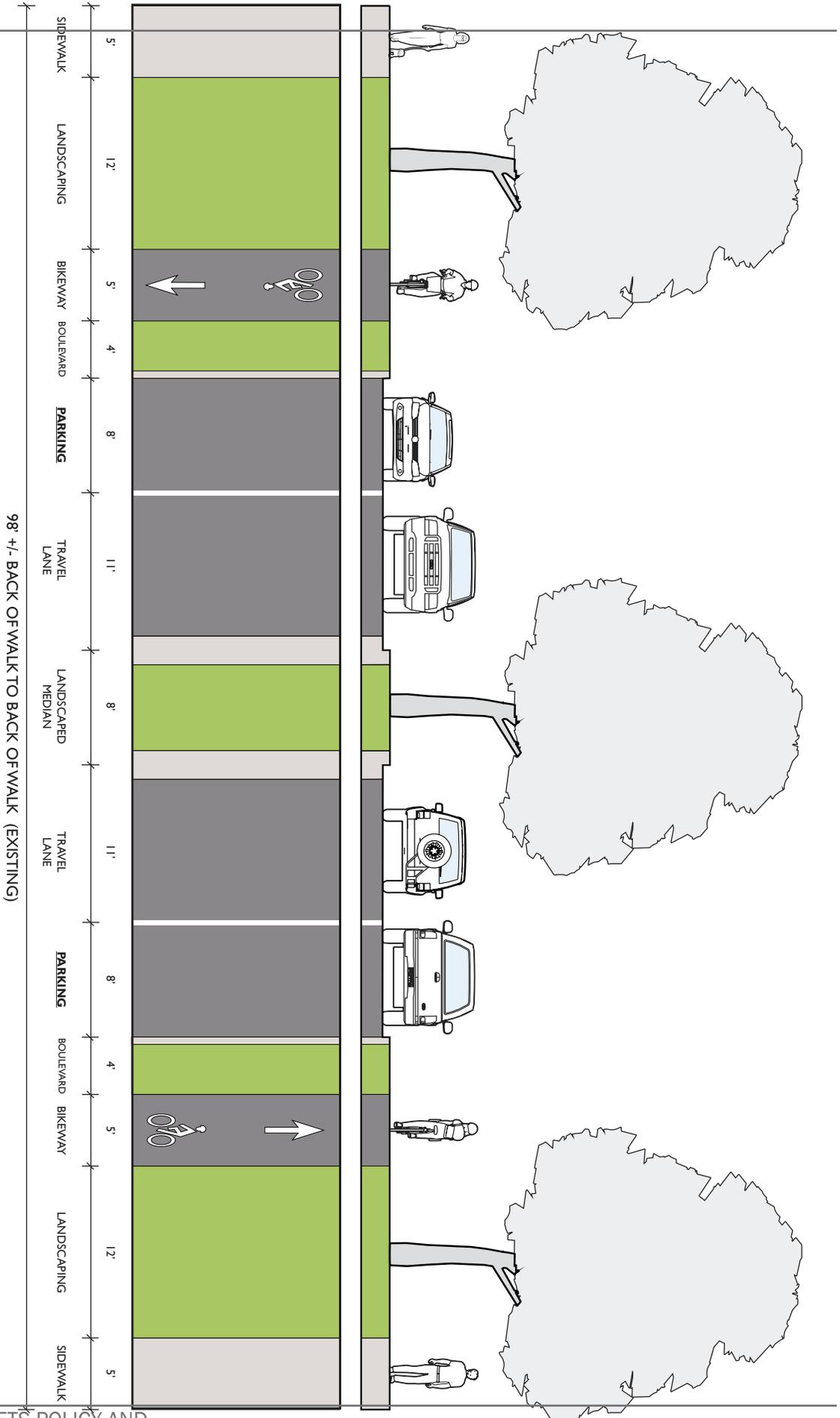
*Narrower lanes encourage slower vehicle speeds.



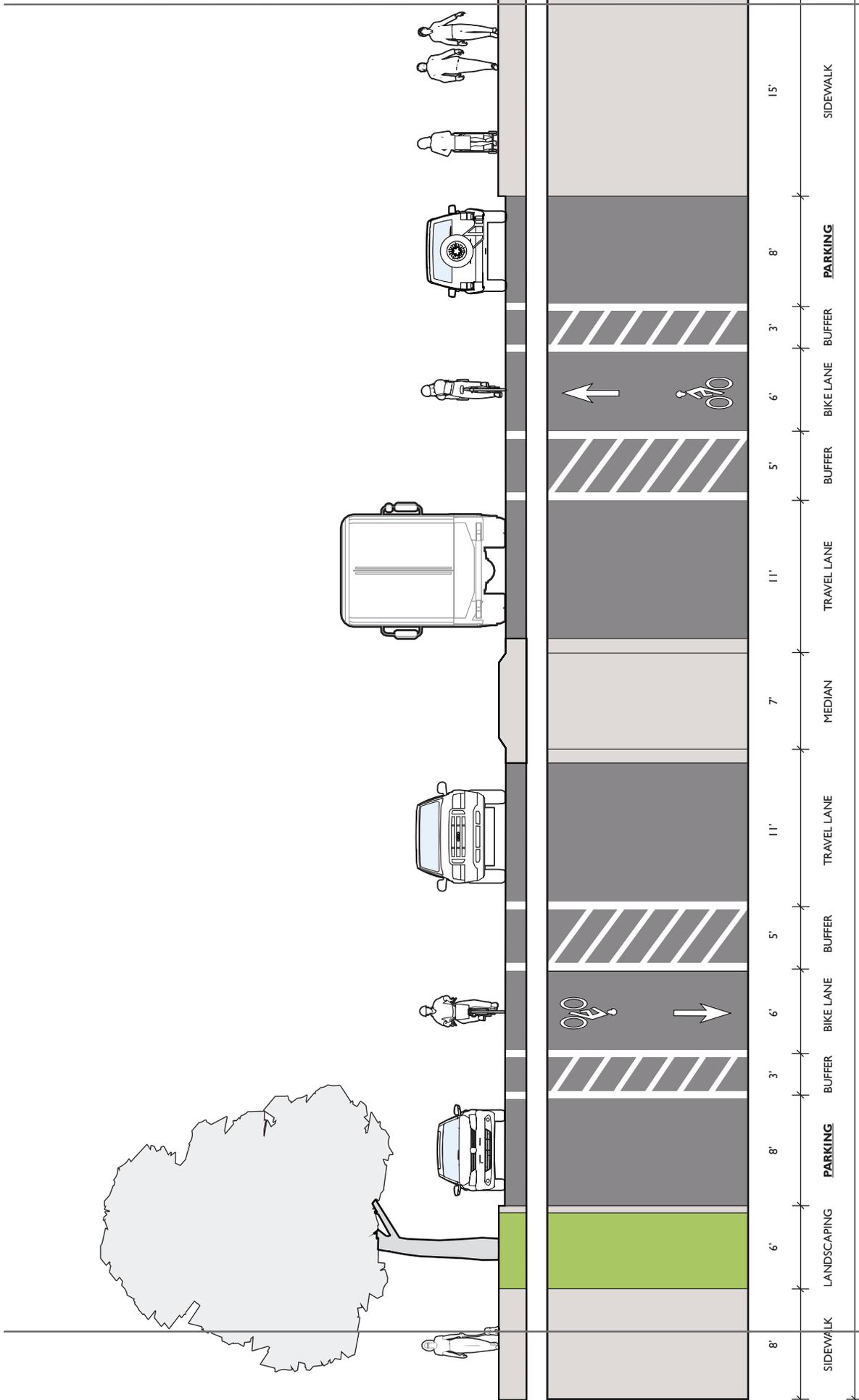
Broadway Street (Huff Street to Main Street) - Long-term
Looking East

*Narrower lanes encourage slower vehicle speeds.

Broadway Street (Huff Street to Main Street) - Median Concept
Looking East

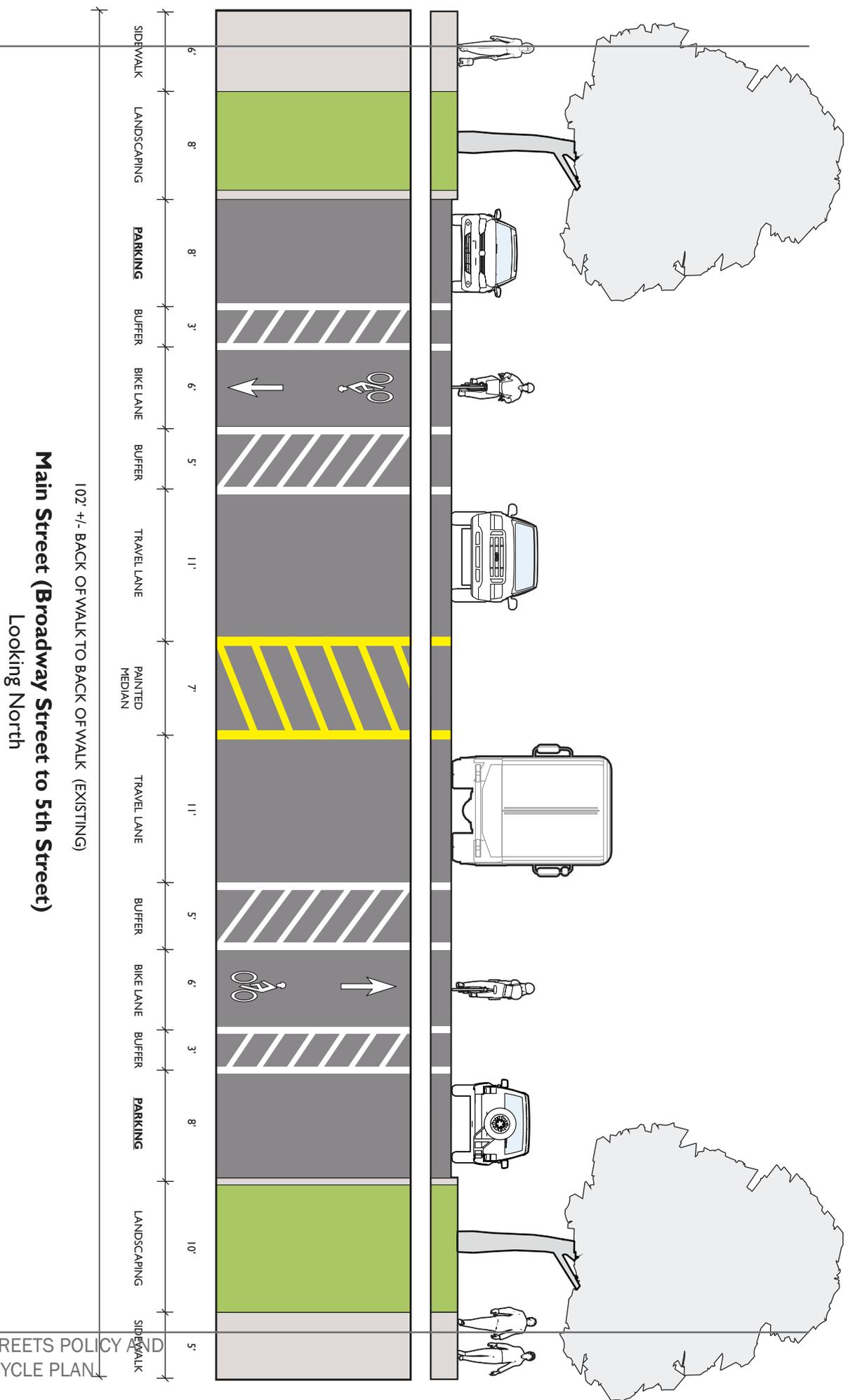


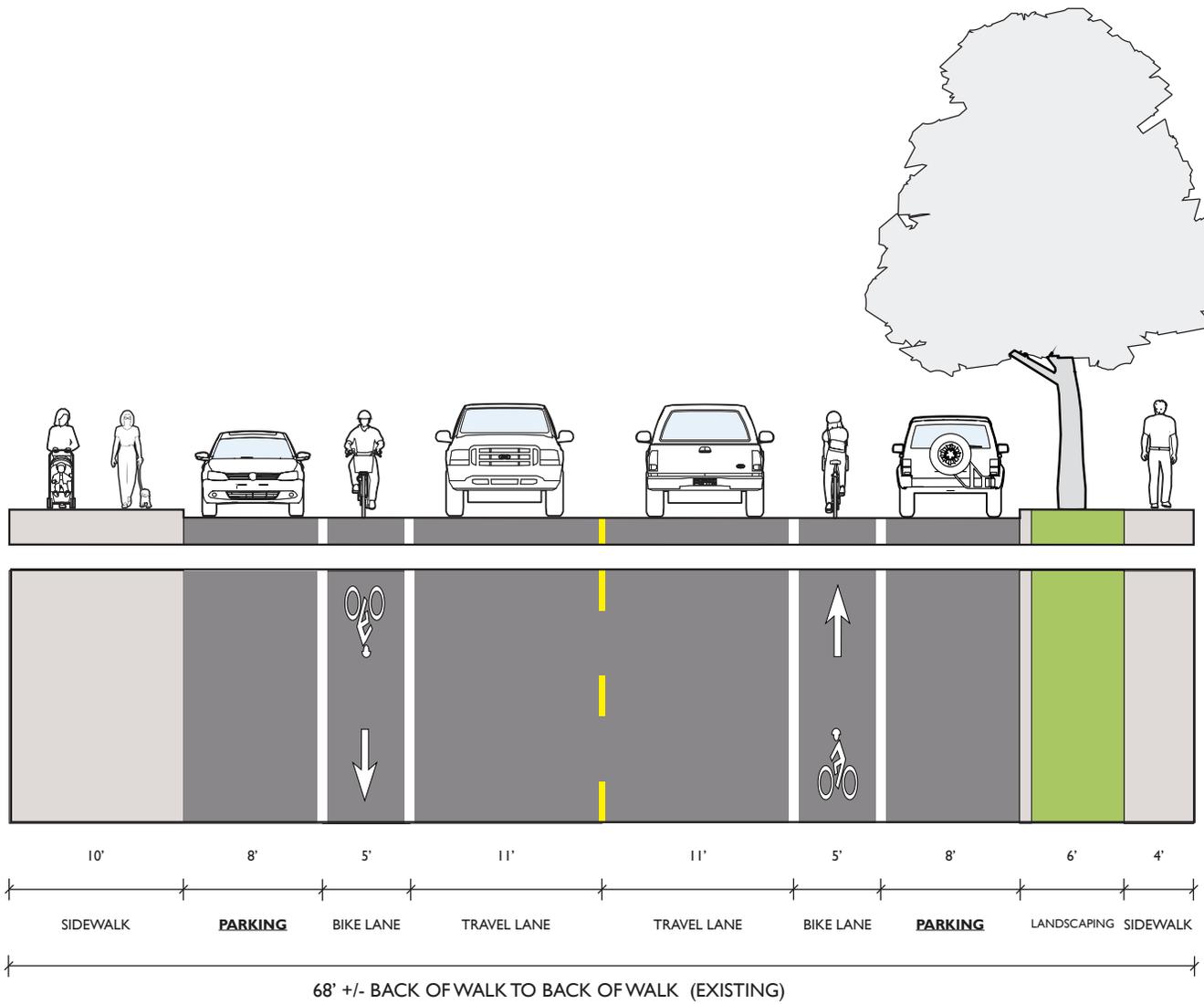
DESIGN RECOMMENDATIONS FOR FUTURE PROJECTS



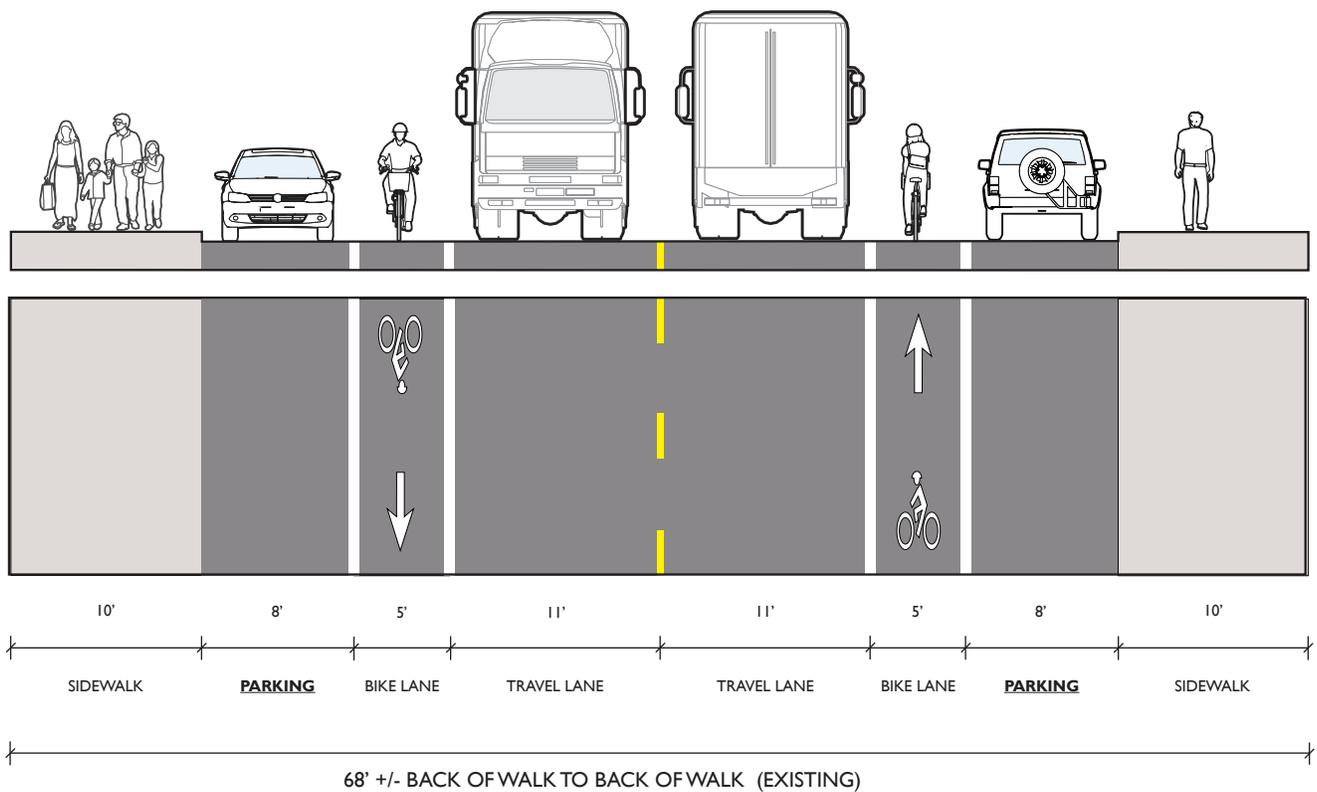
102' +/- BACK OF WALK TO BACK OF WALK (EXISTING)

Main Street (5th Street to 4th Street) Looking North



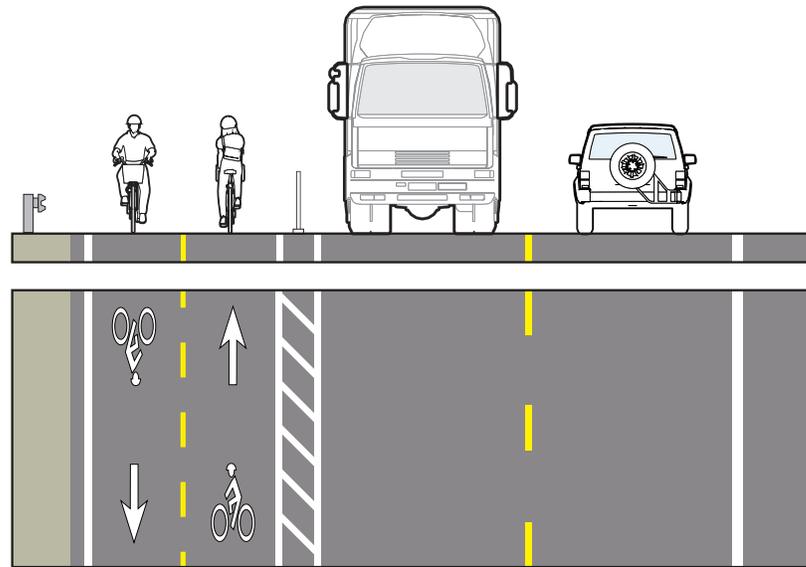


5th Street (Lafayette Street to Walnut Street)
Looking East

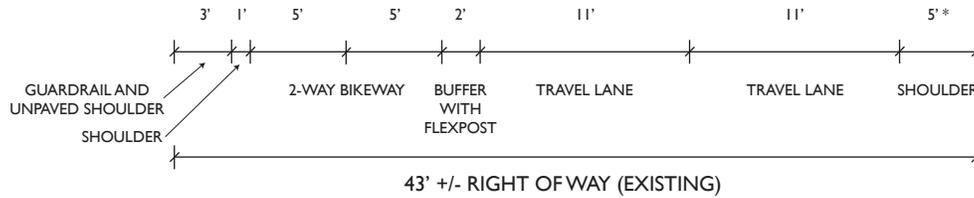


2nd Street (Center Street to Lafayette Street)
Looking East

DESIGN RECOMMENDATIONS FOR FUTURE PROJECTS

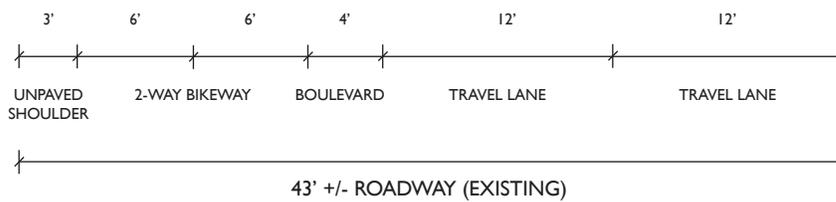
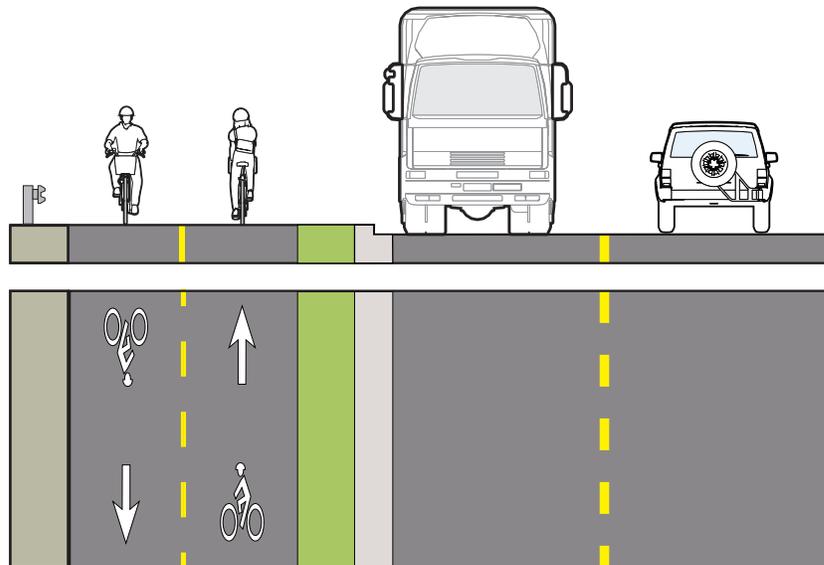


*Check guardrail height and ensure that unpaved shoulder is level with pavement.



*If pavement is expanded, south side shoulder will be increased.

Riverview Drive (Minnesota Marine Art Museum to 2nd Street) Looking East

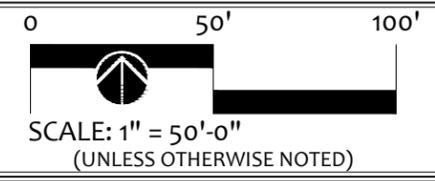


Riverview Drive (Prairie Island Road to 2nd Street) Looking East



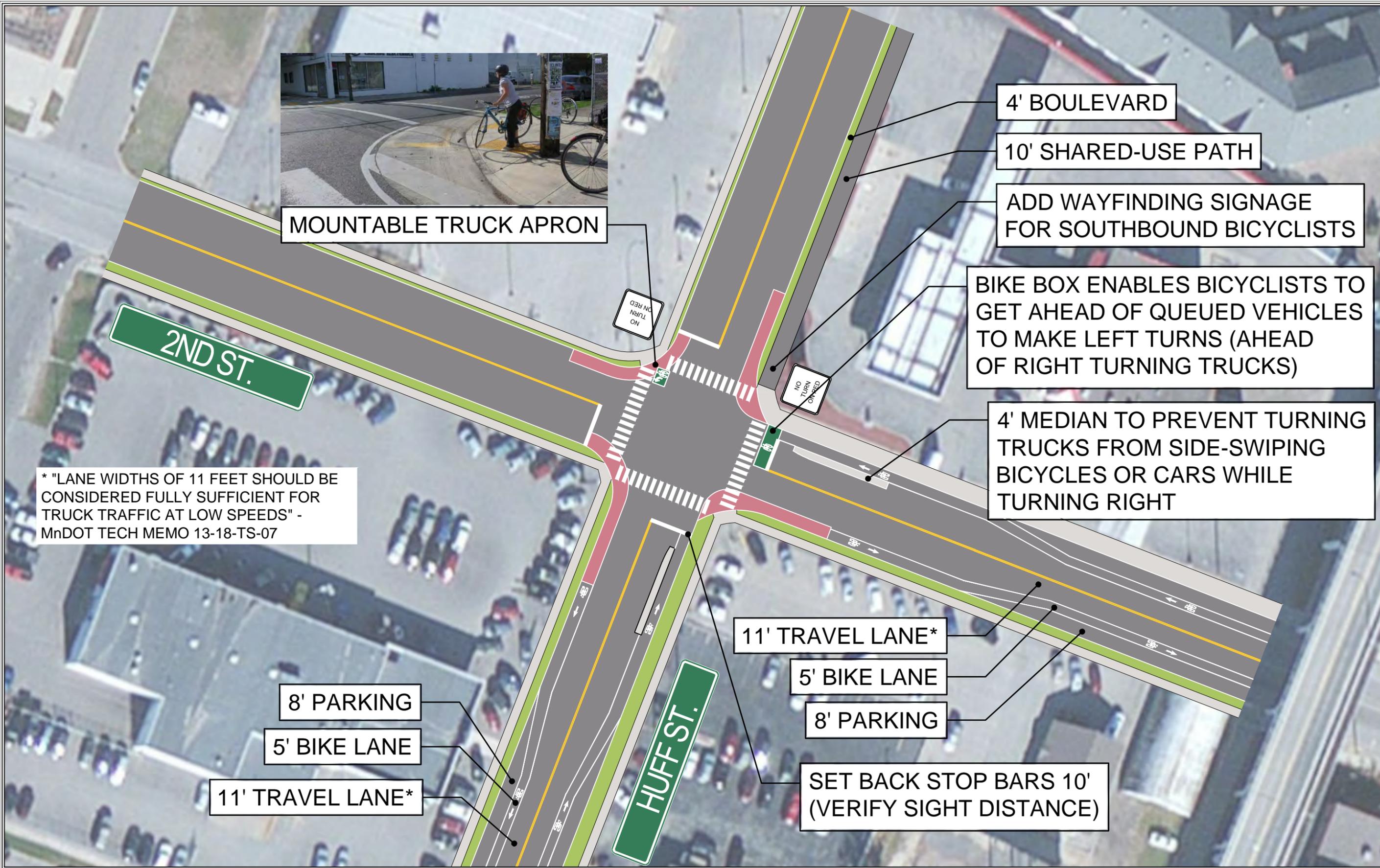
Intersection of Huff St. and 5th St. Future Concept

City of Winona
 Winona Bicycle and Pedestrian Plan

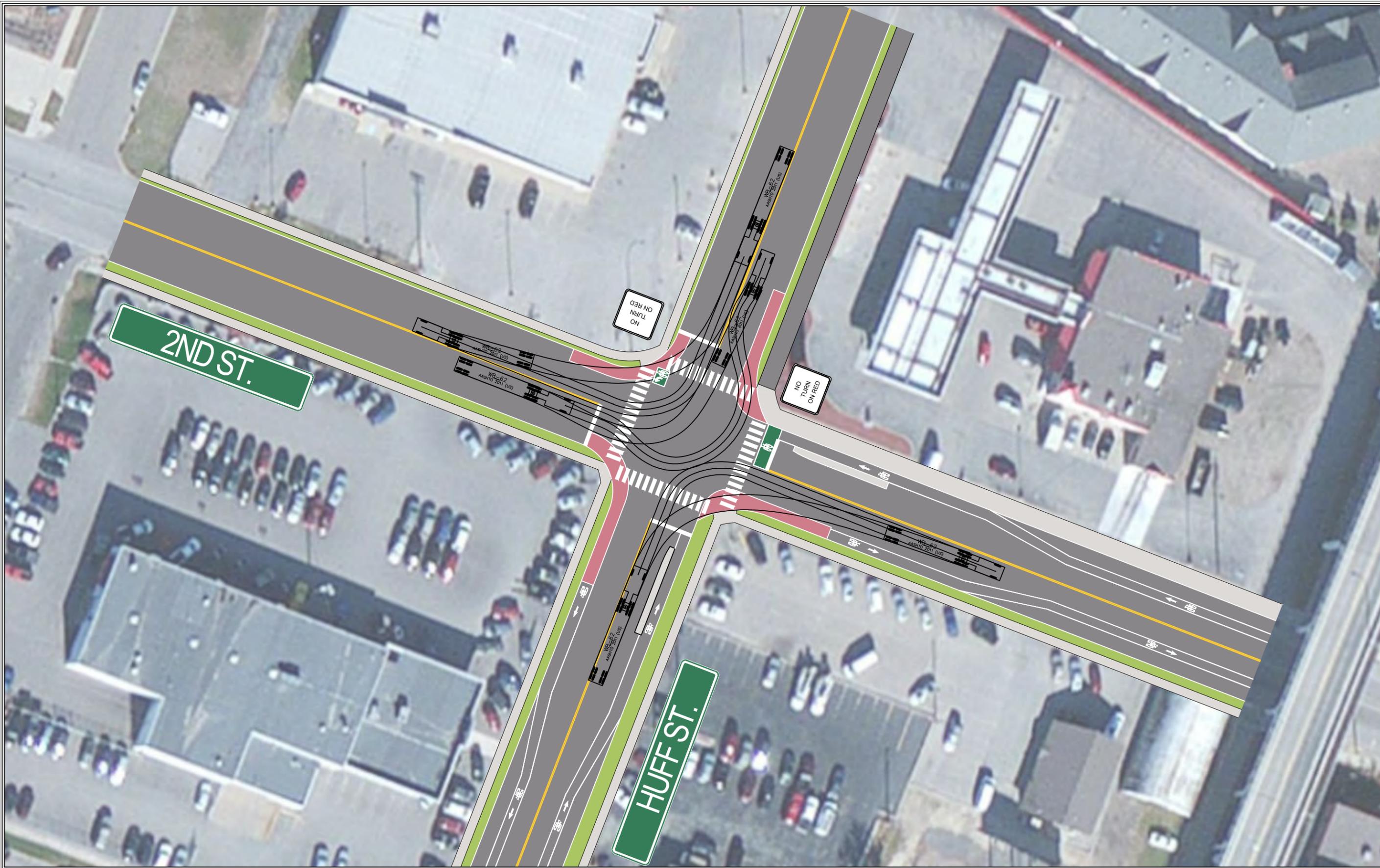


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SHEET TITLE
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2 OF 7

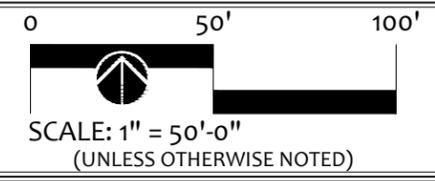


* "LANE WIDTHS OF 11 FEET SHOULD BE CONSIDERED FULLY SUFFICIENT FOR TRUCK TRAFFIC AT LOW SPEEDS" - MnDOT TECH MEMO 13-18-TS-07



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 www.tooledesign.com

Intersection of Huff St. and 2nd St. - Future Concept Truck Turning (WB-62)
 City of Winona
 Winona Bicycle and Pedestrian Plan



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3A OF 7



6' LANDSCAPED MEDIAN

12' TRAVEL LANE

8' PARKING

4' BOULEVARD

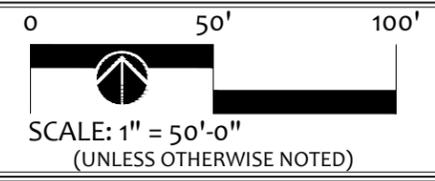
5' BIKEWAY

LANDSCAPING

5' SIDEWALK

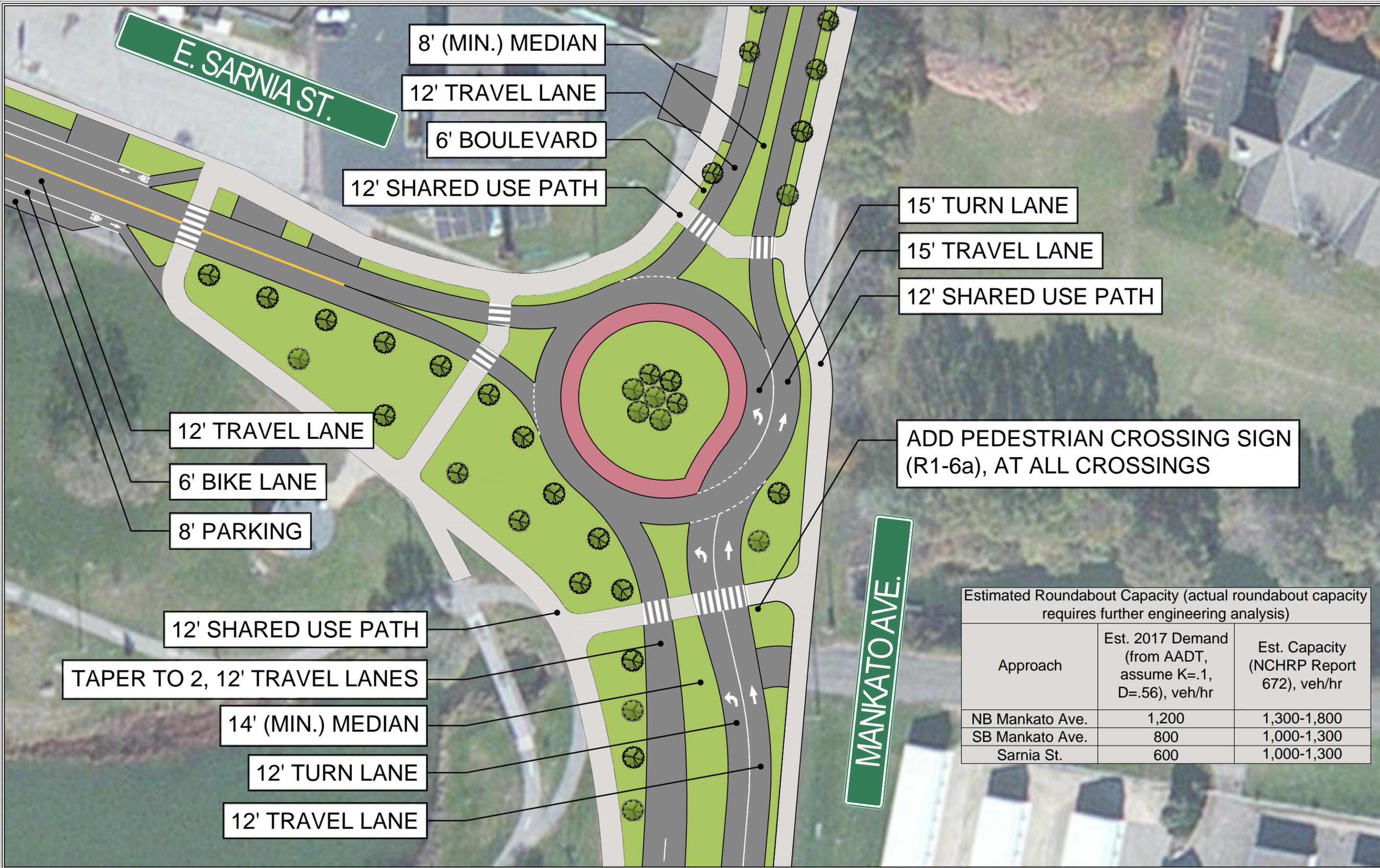
Intersection of E. Broadway St. and Mankato Ave. Future Concept

City of Winona
Winona Bicycle and Pedestrian Plan



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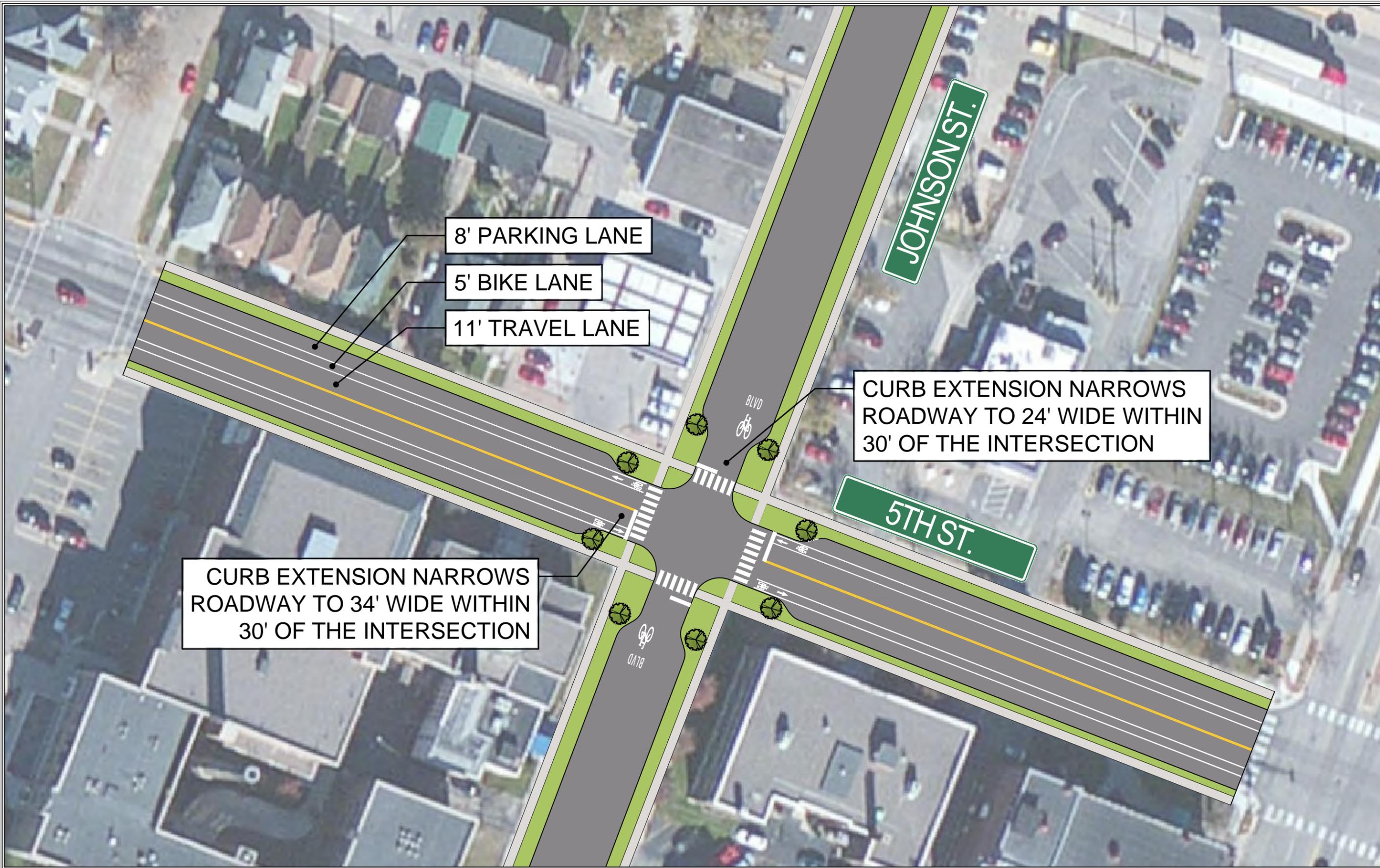


15' TURN LANE
 15' TRAVEL LANE
 12' SHARED USE PATH

ADD PEDESTRIAN CROSSING SIGN (R1-6a), AT ALL CROSSINGS

Estimated Roundabout Capacity (actual roundabout capacity requires further engineering analysis)

Approach	Est. 2017 Demand (from AADT, assume K=.1, D=.56), veh/hr	Est. Capacity (NCHRP Report 672), veh/hr
NB Mankato Ave.	1,200	1,300-1,800
SB Mankato Ave.	800	1,000-1,300
Sarnia St.	600	1,000-1,300



CHAPTER 8: FACILITY TYPES

The following chapter is a toolbox of facility types that may be used, or are already in use, along Winona’s street, path, and roadway network. This chapter of the Plan describes various pedestrian and bicycle facility types applicable for Winona, their benefits, and potential design considerations. The end of the chapter concludes with best practices for parking lot design.

All community members may use this chapter to understand the terminology and possibilities for pedestrian and bicycle facilities. City staff who plan and design transportation facilities may use this toolbox in conjunction with design manuals listed in the Winona Complete Streets Policy, which typically provide greater detail.

Facility types will evolve over time. As the years go by, this chapter should be updated to reflect the latest experience of transportation professionals working for the City of Winona and its partners. Research by government agencies and professional organizations should also inform future updates.

PEDESTRIAN FACILITY TYPES

CURB EXTENSIONS

Curb extensions (also known as bump outs) are created by extending the sidewalk or curb line into the street. Curb extensions are intended to increase safety, calm traffic (particularly right-turning vehicles), and provide extra space along sidewalks for users and street furniture (such as benches, signs, and utility infrastructure).

BENEFITS

- Curb extensions shorten crossing distances (exposure time) and increase visibility between roadway users. Waiting pedestrians can better see approaching traffic and drivers can better see pedestrians waiting to cross the street.

- This treatment is particularly valuable in locations with high volumes of pedestrian traffic or where there are demonstrated pedestrian safety issues.
- May provide space for Americans for Disabilities Act (ADA) compliant, directional curb ramps where sidewalks are narrow.
- Curb extensions may provide space for utilities, signs, bus shelters or waiting areas, bicycle parking, public seating, public art, street vendors, newspaper stands, trash and recycling receptacles, and landscaping elements.



DESIGN CONSIDERATIONS

- Curb extensions should only be considered where on-street parking is present.
- Curb extensions can be located at intersections or mid-block.

- Take into consideration the turning needs of larger vehicles, bicycle needs approaching the curb extension, drainage, snow removal and street sweeping, restricting parking, and matching the width of the crosswalk.
- When a bike lane is present, curb extensions should be designed to be one foot less than the adjacent parking lane to provide enough shy distance for bicycle pedals.
- Where there is no bike lane, curb extensions can be six inches less than the adjacent parking lane width.
- For a seven to eight-foot-wide parking lane with bike lane, build the curb extension to 6 feet in width. This way there is adequate space for the bike lane line stripe and clearance from the curb for bicyclists. If there is no bike lane the curb can be built at 6.5 feet.

- The distance between the crosswalk and the tangent of the curb should be a minimum of five feet.

CROSSWALKS

Marked crosswalks delineate optimal or preferred locations for a pedestrian to cross a street, and indicate to motorists where to stop for pedestrians. Crosswalks are patterned brick and/or pavement markings. Pavement markings must follow one of the styles as shown in the Manual for Uniform Traffic Control Devices (MUTCD). These include high visibility crosswalks (e.g. ladder style) and lower visibility (e.g. standard/parallel style). Markings can be installed using white paint, thermoplastic or other pavement marking material.

Crosswalk Marking Styles

Standard / Parallel



Ladder



Continental



BENEFITS

- Aid drivers in seeing the crosswalk, not just the pedestrian.
- Direct pedestrians to preferred crossing locations.
- Define the path of pedestrian travel.



DESIGN CONSIDERATIONS

- Marked crosswalks should be aligned with the approaching sidewalk and should be located to maximize the visibility of pedestrians while minimizing their exposure to conflicting traffic.
- Marked crosswalks should be at least 10 feet wide or the width of the approaching sidewalk if it is greater. In areas of heavy pedestrian volumes such as downtown and the WSU campus, crosswalks should be wider (e.g. 15 feet).
- Americans with Disabilities Act (ADA)-compliant curb ramps should direct pedestrians into the crosswalk. The bottom of the ramp should lie within the area of the crosswalk (flares do not need to fall within the crosswalk).
- Standard parallel line markings are acceptable (per the MUTCD), however they may be less visible to motorists.
- The design of marked crosswalks at uncontrolled locations should incorporate additional crossing treatments depending on the number of travel lanes, vehicle speed, and the volume of vehicles in a given location.

- The use of brick to identify a crossing must also include MUTCD compliant parallel markings demarcating the crosswalk extent.
- Advance stop lines at stop-controlled and signalized intersections, when used, should be striped no less than 4 feet and no more than 30 feet from the edge of the crosswalk.
- Use crosswalk marking materials that are non-skid and retroreflective.
- High visibility (ladder) style crosswalks should be used at more prominent crossings, while parallel (standard) can be used elsewhere.

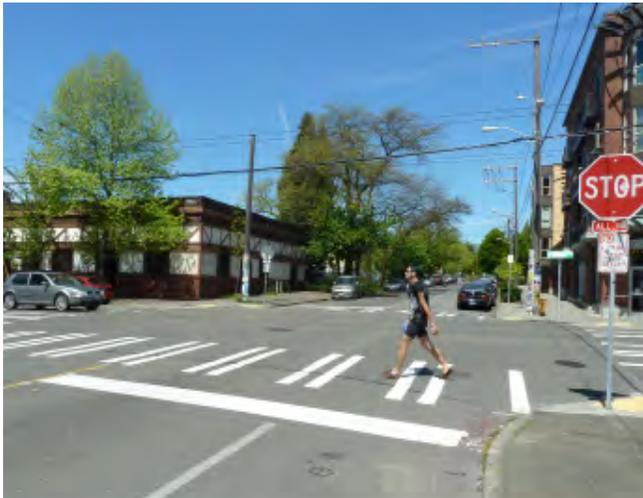


CROSSWALKS AT UNCONTROLLED LOCATIONS

Crosswalk installation at uncontrolled locations requires careful consideration. The table below contains guidelines for intersection and mid-block locations with no traffic signals or stop or yield signs on the approach to the crossing. They do not apply to school crossings. Crosswalks should not be installed at locations that could present an increased safety risk to pedestrians, such as where there is poor sight distance, complex or confusing roadway geometry, substantial volumes of heavy trucks, etc. without first providing adequate design features and/or traffic control devices. Adding crosswalks alone will not make a crossing safer, or necessarily result in more vehicles stopping for pedestrians. Whenever marked crosswalks are installed, it is important to consider other pedestrian facility

enhancements, as needed, to improve the safety of the crossing (e.g., raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic calming measures, bump outs).

- These are general recommendations; good engineering judgment should be used in individual cases for deciding where to install crosswalks.
- Where speed limit exceeds 40 mph, marked crosswalks alone should not be used at unsignalized locations.



MARKED CROSSWALKS

Marked crosswalks may be installed in the following locations and may also include additional signing:

- Locations where traffic is controlled by traffic signals or signs such as a four-way stop. Signalized intersection crosswalks are typically marked at all four crossings where there are sidewalks leading to the intersection. In some cases there may be specific reasons to direct pedestrians to a particular crossing, and therefore not mark one or more legs of the intersection. At stop-controlled intersections all four legs may be marked or only two depending on whether there are reasons to direct pedestrians to a preferred crossing (e.g. poor sight-lines, slope etc.).
- At school crosswalks, which may include special school crossing signs at uncontrolled or mid-block locations to further communicate

to motorists that children are likely to use the crossing.

- At crosswalk locations where there are no signs or signals to control traffic, use the decision-making factors described on the previous page.
- At mid-block locations, including pedestrian or off-road path crossings. These crosswalks may be accompanied by warning signs, advanced stop bars or other crossing treatments depending on the roadway traffic conditions. Mid-block locations must be marked to be a legal crossing.
- Marked crosswalks are recommended to be prioritized at locations that have higher pedestrian crossing volumes; marked crosswalks should be prioritized at all locations with twenty or more pedestrian crossings per peak hour (or 15 or more elderly and/or child pedestrians per peak hour).
- Crosswalk placement should balance the need to extend the desired pedestrian walking path with orienting the crosswalk perpendicular to the curb; perpendicular crosswalks minimize crossing distances and therefore limit the time of exposure.
- Markings may be installed so that the primary paths for vehicle tires are between crosswalk markings, which can reduce wear and maintenance.

CURB RADII

Curb radii are the curved connection of curbs at the corners formed by the intersection of two streets, which guide vehicles in turning corners. The shape of a curb radius has a significant effect on the overall operation and safety of an intersection.

The curb radius is the actual radius of the curb line at an intersection. The effective radius is the radius available for the design vehicle to make the vehicle turn, accounting for the presence of parking, bike lanes, medians, or other features.



BENEFITS

- A tighter curb radius creates a sharper turn for motor vehicles and reduces turning speeds, shortens the crossing distance for pedestrians, and also improves sight distance between pedestrians and motorists.
- Reconstructing curb radii also creates the opportunity to expand pedestrian space at the curb and provides greater flexibility in the placement of curb ramps.

DESIGN CONSIDERATIONS

The shape and dimensions of curb radii vary based on street type, transportation context, and design vehicle (vehicle type used to determine appropriate turn radius at an intersection). Smaller curb radii provide better geometry for installing perpendicular curb ramps, resulting in simpler, more appropriate crosswalk placement, in line with the approaching sidewalk.

- When designing curb radii, factor in both the curb radius and the effective radius.
- Curb radii can allow for the selected design vehicle to complete a turn fully within its designated travel lane or lanes or can accommodate a vehicle turn by allowing for a particular vehicle type to complete a turn with latitude to use adjacent or opposing lanes on the origin or destination streets.
- The effective turning radius (rather than the actual curb radius), should always be used to

determine the ability of vehicles to negotiate a turn. Determination of the design vehicle should consider and balance the needs of the various users of a street--from pedestrians and bicyclists to emergency vehicles and large trucks--considering the volume and frequency of these various users.

- The design vehicle should be selected according to the types of vehicles using the intersection with considerations to relative volumes and frequencies. The designer should distinguish between “designing for” and “accommodating” the needs of large vehicles, which may not require design modifications. If these conditions are present for non-arterial streets, the typical curb radius of 20 feet or less is preferred:
- Higher pedestrian volumes
- Low volumes of large vehicles
- Bicycle and parking lanes create a larger effective radius

Factors that may affect the curb radii should be taken into consideration:

- The street type
- The angle of the intersection
- Curb extensions
- The number and width of receiving lanes
- Large vehicles
- Effective turning radius
- Where there are high volumes of large vehicles making turns, inadequate curb radii could cause large vehicles to regularly travel across the curb and into the pedestrian waiting area

A variety of strategies can be used to maximize pedestrian safety while accommodating large vehicles including:

- Adding parking or bicycle lanes to increase the effective radius of the corner.
- Varying the actual curb radius (i.e., compound curb radii) over the length of the turn so that the radius is smaller as vehicles approach a crosswalk and larger when making the turn. Compound radii effectively shorten crossing distances and make pedestrians visible while accommodating larger vehicle turns; because

they allow more sweeping turns and they do not slow turning vehicles.

- **Painting a median:** Where there is sufficient lane width (10-12 feet including curb reaction) on the destination street, a painted median can enable a large vehicle to complete a turn without turning into opposing traffic.
- **Restricting access:** Where there is a desire to keep curb radii small, restrictions on large vehicles making the turn may be considered. This should be considered in light of the overall street network.
- **Installing advance stop lines** on the destination street to increase the space available for large vehicles only where necessary to make a turn by enabling them to swing into opposing lanes on the destination street while opposing traffic is stopped.
- **Installing truck aprons**, which allow trucks to traverse a mountable curb, while discouraging automobiles from using the larger curb radii.

CROSSING ISLANDS

Crossing islands provide space in the middle of intersections or midblock crossings for pedestrians to wait and look for oncoming traffic. They make crossings easier for pedestrians by providing a refuge area for people crossing the street to wait, rest, or look for oncoming motorists. Crossing islands should be a minimum of six feet in width (with eight feet preferred), which allows for people using wheelchairs, strollers and bicycles to use them comfortably. Islands also have a traffic calming benefit and limit vehicle turning conflicts. Crossing islands can be located along the centerline of a street, as roundabout splitter islands, or as “pork chop” islands where right-turn slip lanes are present.

Benefits

- Provide pedestrians refuge when crossing wide, multi-lane streets.
- Improve crossings at unsignalized locations, as pedestrians are only required to negotiate one direction of traffic at a time.

- Have traffic calming effects.



Design Considerations

- Curb ramps with truncated dome detectable warnings and five by five feet landing areas are required.
- A “nose” that extends past the crosswalk is recommended to protect people waiting on the crossing island and to slow turning drivers.
- Vegetation and other aesthetic treatments may be incorporated, but must not obscure visibility.
- There are two primary types of crossing islands. The first provides a cut-through of the island, keeping pedestrians at street-grade. The second ramps pedestrians up above street grade and may present challenges to constructing accessible curb ramps unless they are more than 17' wide.
- Crossing islands should be considered where crossing distances are greater than 50 feet to allow multi-stage crossings, which in turn allow shorter signal phases.
- Cut-through widths should equal the width of the crosswalk. Cut-throughs may be wider in order to allow the clearing of debris and snow, but should not encourage motor vehicles to use the space for U-turns.
- Crossing islands can be coupled with other traffic-calming features, such as partial diverters.
- At mid-block crossings where width is available, islands should be designed with a stagger, or in a “Z” pattern, encouraging pedestrians to face

oncoming traffic before crossing the other side of the street.

RECTANGULAR RAPID FLASHING BEACON

A Rectangular Rapid Flashing Beacon (RRFB) is a pedestrian warning signal consisting of yellow LED lights in two rectangular clusters, or beacons, that employ a stutter-flash pattern similar to that used on emergency vehicles. The beacons are often mounted below a standard pedestrian crossing warning sign and above the arrow plaque used to indicate the crossing location. RRFBs are pedestrian actuated either by a push-button or passive detection.



BENEFITS

- The stutter flash pattern increases yielding behavior by motorists at pedestrian crossings.

DESIGN CONSIDERATIONS

- Beacons must be placed on either side of roadway and visible from both directions of traffic. If a median exists at the crossing location, a third beacon may be placed in the median, which studies show significantly increases motorist yield rates. RRFBs may be used at uncontrolled intersections and mid-block crossings.
- RRFBs should be accompanied by pedestrian crossing signs (MUTCD W11-2) both at the signal and in advance of the crosswalk location. The assembly approaching the crossing should include a plaque that says AHEAD. The assembly

at the location should include a downward arrow plaque (MUTCD W16-7P) placed at the crosswalk location.

- Consider push button location such that pedestrians will face oncoming motor vehicle traffic. If RRFB crossings are planned adjacent to transit stops, coordinate with transit officials to relocate bus stops to the far side, if necessary.
- A STOP HERE FOR PEDESTRIANS (MUTCD R1-5b/R1-5c) sign with advanced yield bars should be placed a minimum 30 feet from the crosswalk. The distance should also be based on the speed of motor vehicles. A Pedestrian Crossing (MUTCD W11-2) sign with an AHEAD or a distance supplemental plaque may be used in conjunction with and in advance of a MUTCD R1-5b/R1-5c sign.
- RRFBs should be considered at uncontrolled intersections or at mid-block crossings where additional measures are needed due to high volumes and speeds.
- They should be considered where there are high volumes of pedestrians, a high number of vulnerable pedestrians (e.g., near schools, senior centers, transit), or at off-street path crossings.
- In order to encourage pedestrians to enter crosswalks while the RRFB is active, passive or active actuation should trigger an immediate response.
- Lighting improvements should be made in conjunction with RRFB installations, if existing lighting at the crossing location is insufficient.



IN-STREET PEDESTRIAN CROSSING SIGNS

There are a variety of pedestrian warning signs that are used to alert motorists of pedestrian crossings and encourage motorists to slow down and look for pedestrians. In-street pedestrian crossings signs, known as R1-6a in the MUTCD, may be used to remind road users of laws regarding right-of-way at an unsignalized pedestrian crosswalk. R1-6a is shown as a vertical rectangular yellow sign with the words "STATE LAW" in black on two lines above a white panel with a STOP sign above the word "TO" in black above a black walking person symbol. The legend STATE LAW is optional. Below this panel, the words "WITHIN CROSSWALK" are shown in black on two lines at the bottom of the sign.



Credit: Road Traffic Signs



In-street pedestrian crossings signs are sometimes referred to as a "gateway" treatment because they are placed on the edge of the roadway and in the middle of the roadway on the painted lines, which requires drivers to drive between the signs. The signs give the perception of a narrower street, which can help slow motor vehicle speeds.

Benefits

- Lowers motor vehicle speeds
- Increases visibility of pedestrian crossings
- Increases motor vehicles yielding to pedestrians
- Reduces crashes between motor vehicles and pedestrians



DESIGN CONSIDERATIONS

- Place in the roadway at the crosswalk location on the center line, on a lane line, or on a median island.
- Do not post-mount on the left-hand or right-hand side of the roadway or placed in advance of the crosswalk to educate road users about the State law prior to reaching the crosswalk, or be installed as an educational display that is not near any crosswalk
- May be used seasonably to prevent damage in winter because of plowing operations.
- Should be placed on a pedestrian crossing island if an island is available
- The sign support shall be designed to bend over and then bounce back to its normal vertical

position when struck by a vehicle, unless the In-Street Pedestrian Crossing sign is placed on a physical island

- Shall be a maximum of 4 feet above the pavement surface to the top of the sign. The top of an In-Street Pedestrian Crossing sign placed in an island shall be a maximum of 4 feet above the island surface.

RIGHT TURN SLIP LANES

Right turn slip lanes (also known as ‘pork chop’ islands) are dedicated turning lanes that allow vehicles to make quick and easy right turns. Typically, they are not signal controlled but drivers must yield to pedestrians and on-coming traffic. Slip lanes are discouraged because they can increase the speed of turning vehicles, endangering pedestrians.

Right turn slip lanes, when designed correctly, can reduce crossing distances for pedestrians, improve signal timing and reduce crashes involving motorists and pedestrians.



DISADVANTAGES

- They may result in uncomfortable and unsafe crossing conditions for pedestrians if they are designed with large turning radii that encourage high-speed turns.
- They can also present a challenge to through bicyclists since motorists will need to cross their line of travel to access the right turn slip lane.
- The older design makes it difficult for drivers who cannot easily turn their heads to look

behind them to see on-coming traffic or pedestrians.

BENEFITS

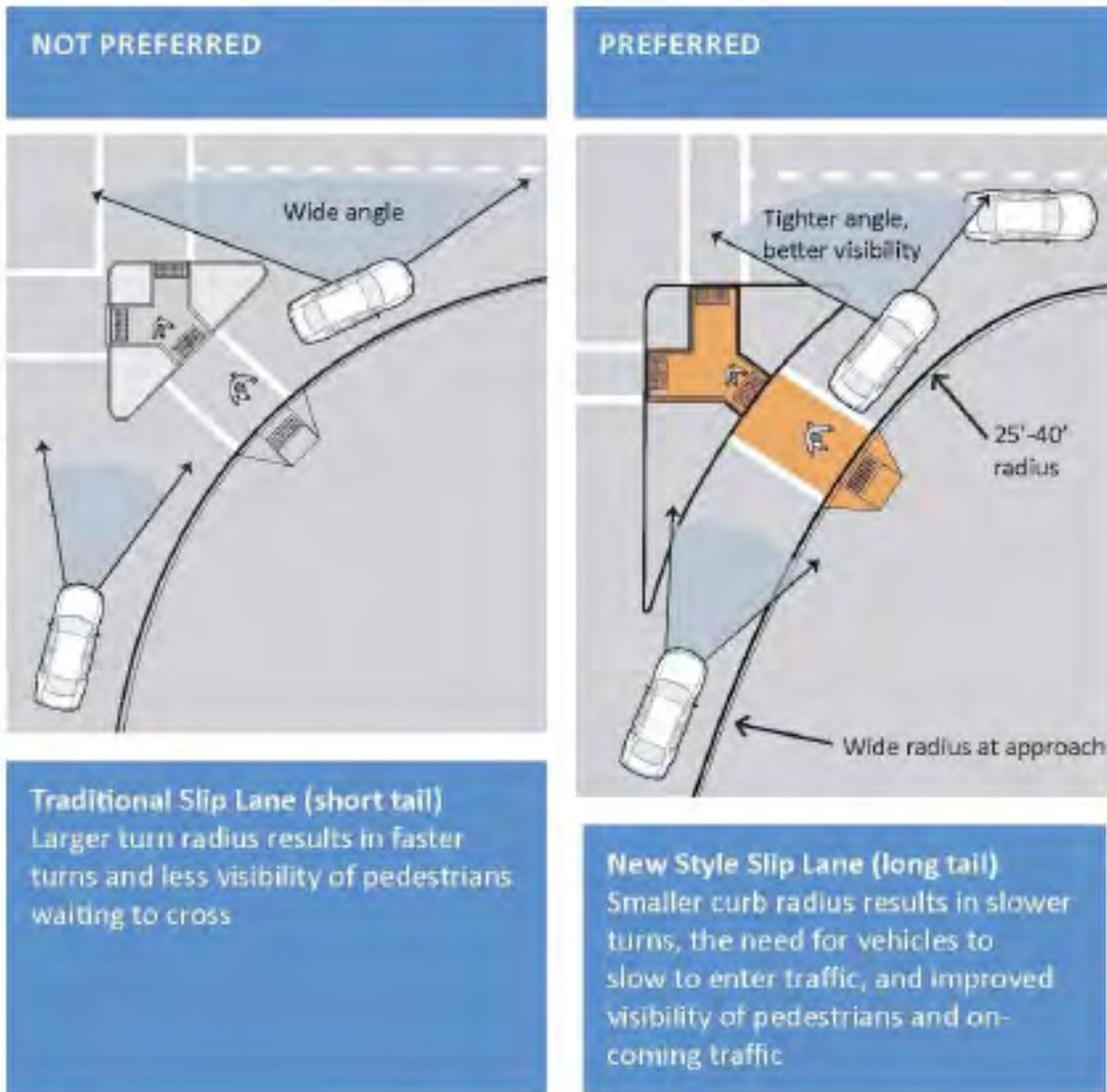
- Increased visibility of pedestrians through improved motorists approach angles.
- Reduced crossing distance and pedestrian exposure time.
- Can lead to slower motor vehicle turning speeds.



DESIGN CONSIDERATIONS

Right turn slip lanes should be considered at intersections with high volumes of right-turning trucks and buses. A right turn slip lanes is often used in lieu of a large curb radius.

- New designs for right turn slip lanes make them function more like a conventional perpendicular intersection, while still enhancing efficiency for motorists. The new design has also been shown to reduce motor vehicle and pedestrian crashes.
- Traditional yield-controlled right turn slip lanes may be more difficult for vision-impaired people to navigate because they are not able to easily assess whether or not a vehicle has yielded and because of non-standard intersection geometry. Evaluate whether a right turn slip lane is truly necessary. As a rule of thumb, ‘pork chop’ islands with long tails on the approaches will be more pedestrian friendly than the older designs with the short, stubby tails on the approaches.



- Curb radii should be revised to create one long radius entering the channelized right turn lane followed by a short one of 25-40 feet maximum exiting the channelized right turn lane to slow turns and improve lines of sight, particularly for pedestrians and vehicles approaching from the driver's left.
- Triangular 'pork chop' islands should be lengthened at a 2:1 ratio, with the tail pointed toward approaching traffic.
- Islands should be long enough to allow a car to wait for a gap in traffic without blocking the crosswalk.
- Crosswalks should be relocated for maximum visibility to a spot where the driver is looking ahead, at least one car length back from the intersecting roadway. Crosswalks should also be

- oriented at a 90-degree angle to the right turn lane to improve sight lines and reduce crossing distance.
- Painted buffers can be used to narrow the perceived width of the right turn slip lane while still accommodating larger vehicles.
- Raised crosswalks may be used to improve pedestrian crossings.

BICYCLE FACILITY TYPES

SEPARATED BICYCLE LANES

A separated bicycle lane, sometimes called a cycle track, is a bikeway facility that is vertically separated from motor vehicle traffic. A separated bicycle lane may be constructed at street level or at the sidewalk level. Separated bicycle lanes isolate bicyclists from motor vehicle traffic using a variety of methods, including curbs, raised concrete medians, flexible delineator posts or removable curbs, on-street parking, or large planter boxes. Separated bicycle lanes provide cyclists with a higher level of comfort compared to bicycle lanes, and are typically used on arterial streets where higher motor vehicle speeds exist. They may also be appropriate on high-volume but lower-speed streets.



DESIGN CONSIDERATIONS

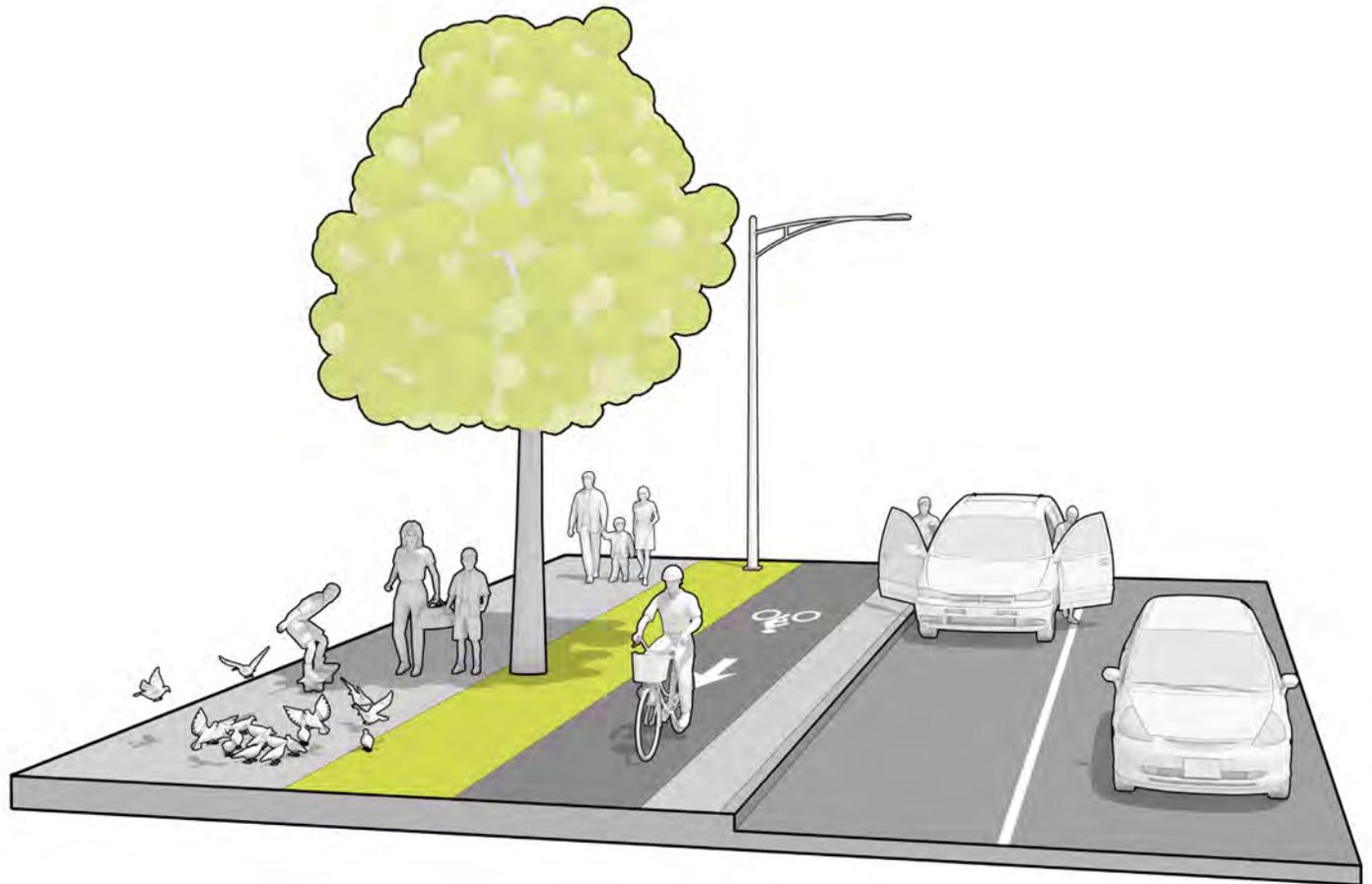
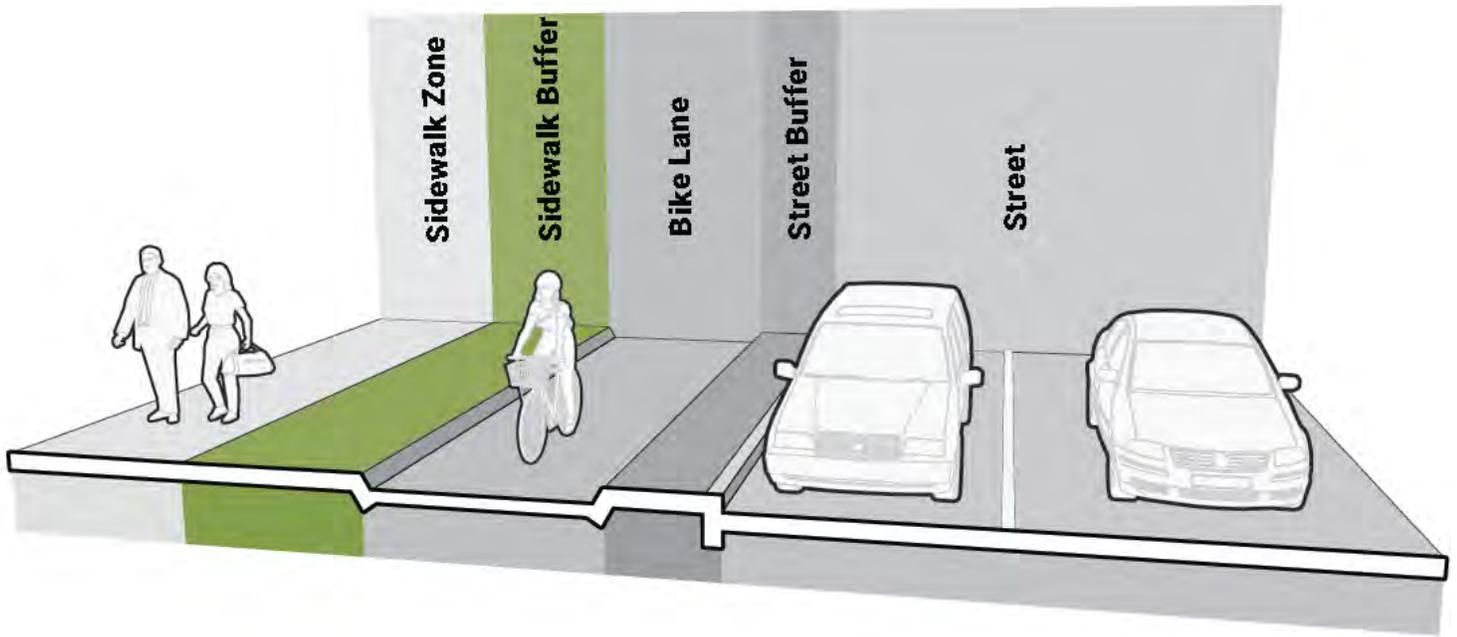
- Preferred width is 6.5 feet for a one-way facility, allowing for passing; 12 feet is preferred for a bi-directional facility
- Minimum width is five feet for a one-way facility, and eight feet for a bi-directional facility
- Preferably applied on medium to high-volume streets with an average daily traffic count of above 4,000 motor vehicles. Exceptions may be made for streets near K-12 schools.
- Appropriate on streets with operating speeds at 30 mph or higher

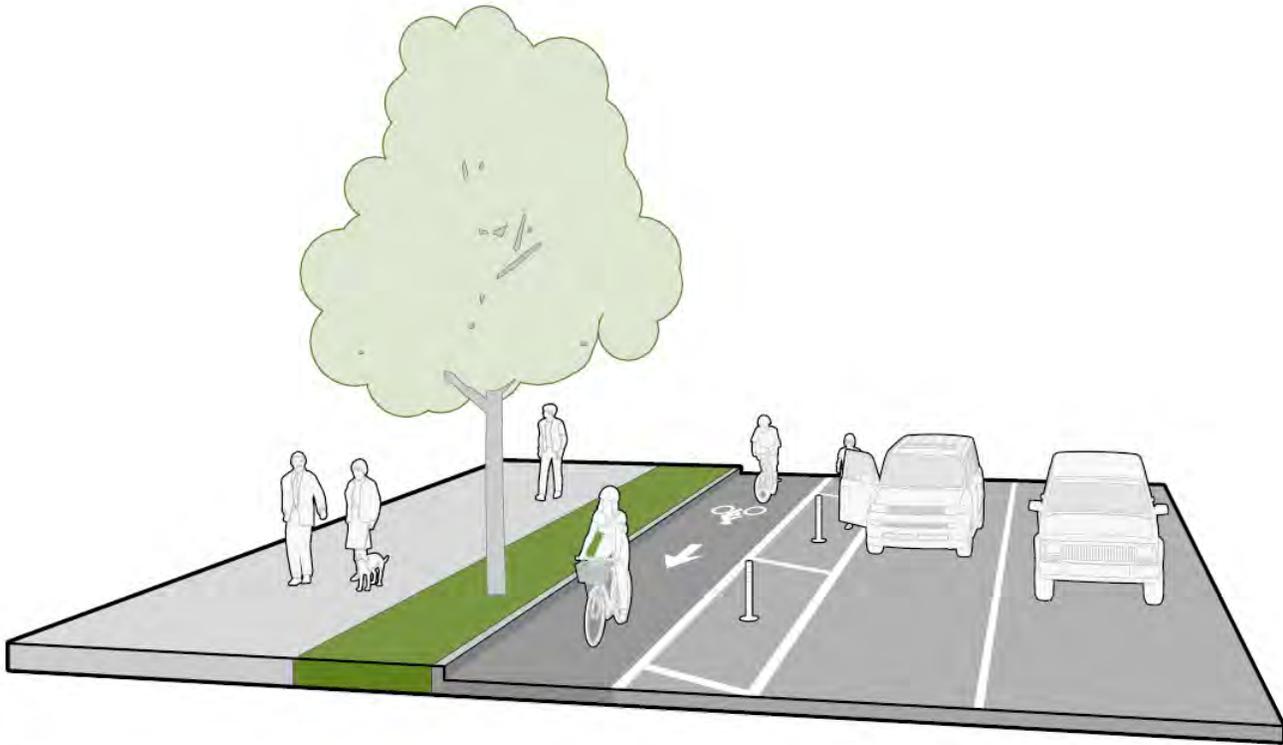
- Separated bicycle lanes require varying widths of buffer space between the bicycle lane and the adjacent lane. Small barriers such as flexible delineator posts or removable curbs can be separated with a minimum 2-foot buffer. In general, a 6-foot buffer is preferred for all separation methods.

Similar to shared-use paths, streets with separated bicycle lanes should have carefully designed intersections in order to function properly and ensure the safety of all users. Intersections with separated bicycle lanes may require adjustments to signal timing and phasing and/or modifications to pavement and curb sections.

The installation of separated bicycle lanes can create more challenging scenarios for street maintenance, particularly in winter. For bikeways under eight feet in width, it is advisable to acquire sidewalk maintenance vehicles that are narrower and can easily navigate the bicycle lanes. Several companies produce utility tractors with multiple attachments, which allow for greater versatility and year-round use. Specialty tractors around five feet in width can navigate narrower one-way separated bicycle lanes to complete sweeping and plowing maintenance.

Separated bicycle lanes should be maintained seasonally as necessary, which may include sweeping, plowing snow, or spreading sand and or salt. On wider, bi-directional separated bicycle lanes that are eight feet wide or greater, maintenance activities can generally be done with a light-duty pick-up truck, including snow plowing.





SHARED USE PATHS

Shared use paths provide a shared space for bicycling, walking and other non-motorized uses. They offer a high-quality bicycling environment preferred by a wide range of people. Some shared use path facilities provide designated lanes for bicycles and pedestrians, especially where there are higher volumes. Sometimes shared use paths are outside of the street right-of-way, and often are sited along abandoned or active rail corridors, bodies of water, and parks.



DESIGN CONSIDERATIONS

- High separation from vehicles
- Minimum width is eight feet with a two-foot clear zone on each side (two-way)
- Preferred width is 10 feet or greater with a two-foot clear zone on each side (two-way)

BICYCLE BOULEVARDS

A bicycle boulevard is typically suited for a local low-speed, low-volume street. A bicycle boulevard prioritizes biking by turning stop signs to prioritize bike movements, giving bicycles the right of way, and using traffic calming (i.e., curb extensions or traffic circles), vehicle diverters, enhanced signage for bicycling, and other means. They are intended to improve safety and comfort and to provide an alternative to higher speed roadways that may be more intimidating for those with less experience or confidence biking.

DESIGN CONSIDERATIONS

- No separation from motor vehicles
- Low vehicle traffic volumes
- 20–30 MPH (posted speed)

- Local or collector street
- Lower stress alternative than standard bicycle lanes on busier streets



BUFFERED BICYCLE LANES

Buffered bike lanes enhance traditional bike lanes with additional striped or buffered space between people biking and motor vehicles. A buffer can be incorporated to the right of the bicycle lane, protecting people biking from the door zone of parked vehicles, to the left of the bicycle lane, protecting people biking from motor vehicles, or both. This application is most appropriate on streets with moderate motor vehicle volumes. Often, right-of-way is limited and creating space for the buffer means narrowing or removing parking or space from other lanes. Similar to bicycle lanes, buffered

bicycle lanes can be a low-cost retrofit as part of paving or restriping.



DESIGN CONSIDERATIONS

- Moderate to high separation from motor vehicles
- Moderate to high vehicle traffic volumes
- Speed limit varies
- Minimum width five feet (parking adjacent) to six feet (curb adjacent), minimum buffer two feet
- Lower stress alternative than standard bicycle lanes

STANDARD BICYCLE LANES

Standard bicycle lanes provide a dedicated space for bicycling alongside motor vehicle traffic. Bicycle lanes can be a low-cost option when adequate right-of-way is available, and often can be incorporated into street paving, sealcoating, and restriping projects.

DESIGN CONSIDERATIONS

- Low to moderate separation from motor vehicles
- Moderate vehicle traffic volumes
- Speed limit varies
- Minimum width is five feet (parking adjacent) to six feet (curb adjacent)



ADVISORY BICYCLE LANES

Advisory bicycle lanes, also known as suggestion lanes or dashed bicycle lanes, are typically applied on low-volume or lower speed streets that are narrow and do not have enough space to accommodate standard bicycle lanes. Advisory bicycle lanes are similar to standard bicycle lanes, although because of the constrained space the centerlines on the roadways are removed to create one very wide lane that is shared between vehicles traveling in both directions. Streets with this facility type are marked to provide two separate standard width bicycle lanes on both sides of the road.



The dashed markings give bicyclists a dedicated space to ride, but are also intended to be available to motorists if space is needed to pass oncoming traffic and the bicycle lane is

not being used by a bicyclist. Motorists yield to bicyclists in the advisory bicycle lane and wait to pass around the outside of bicyclists when there is no oncoming traffic.

DESIGN CONSIDERATIONS

- Preferably applied on low-volume streets with an average daily traffic (ADT) count of 1,000-4,000 motor vehicles.
- Appropriate on streets with operating speeds of 20 mph to 30 mph.
- Center bi-directional motor vehicle drive lane should be 16 to 18 feet wide.
- Typical advisory bicycle lanes are five to six feet wide, following the minimum and recommended widths for standard bicycle lanes.
- Existing roadway centerlines must be removed during installation.

Advisory bicycle lanes have been developed on lower volume, lower speed roads as a more robust alternative to a shared lane pavement marking (aka sharrow), providing more separation between bicyclists and automobile traffic. When advisory bicycle lanes are applied to roads with on-street parallel parking, the advisory bicycle lane is marked with a solid white line on the right (adjacent to the parked cars) and a dashed line on the left (adjacent to the drive lane).

The narrow drive lanes encourage motorists to drive slower and be cautious with oncoming vehicles, therefore they also function as a traffic-calming measure. Advisory bicycle lanes are an uncommon facility type, so application should be accompanied by illustrative signs and a robust public education campaign to help residents understand the new roadway design. Although relatively new in the United States, advisory bicycle lanes have been used successfully in many European cities. Advisory bike lanes require experimental approval from the FHWA before being implemented. The first advisory bicycle lanes in the United States were installed in 2011 in Minneapolis, and since then the City has not had an issue with increased car-

to-car or car-to-bicycle crashes. The FHWA has also granted approval for advisory bicycle lanes in several other communities in the country, including Alexandria (VA), Columbia (MO), Edina (MN), and Richfield (MN).

SHARED LANE MARKINGS

Shared lane markings (also known as sharrows) are used as an awareness device on streets where bicyclists and motor vehicles share the same travel lane. The shared lane markings help position bicyclists in the most appropriate location to ride. They also provides a visual cue to motorists that bicyclists have a right to use the street. They are amongst the least comfortable bicycle facilities for majority of the public, especially when placed on busier streets, and should only be used to fill small gaps on a bicycle route.



DESIGN CONSIDERATIONS

- Shared lane markings should be placed at least 4 feet (on center) from the face of curb where on-street parking is prohibited, or 11 feet (on center) from the face of curb where on-street parking is allowed.
- Shared lane markings are not appropriate on streets with speed limits greater than 35 mph. They are also not typically used on quieter, residential streets.
- Shared lane markings should not be used for several blocks in a row, rather they should only be used as a measure of last resort, where

barriers prevent a bicycle lane from being developed.

- The “Bicycles May Use Full Lane” sign (R4-11 in the MUTCD) is commonly used in conjunction with shared lane markings (Figure 9C-9 in the MUTCD).
- Shared lane markings should be epoxy or thermoplastic for longevity and durability.

SHOULDERS

A paved shoulder may be used along low- to moderate- volume roads in suburban and rural areas with long distances between intersections and access points. A paved shoulder improves connections where bike lanes would be inappropriate and a shared use path would be prohibitively expensive. However, shoulders may be marked as bicycle lanes when greater than four feet and/or bicycle routes. Shoulders’ drawbacks, including frequent interruption by turn lanes or bypass lanes and ambiguous legal standing, make them less appropriate for the general public.



DESIGN CONSIDERATIONS

- Low separation from motor vehicles
- Moderate to high vehicle traffic volumes
- 35-55 MPH (posted speed)
- Minimum width is four feet (width should be determined based on motor vehicle speed)

GREEN CONFLICT ZONE MARKINGS

The majority of motor vehicle crashes involving bicycles in urban areas occur at intersections. Good intersection design makes bicycling more comfortable, reduces conflicts with motor vehicles and pedestrians, and contributes to reduced crashes and injuries for all modes. Green conflict zone pavement markings increase visibility of bicyclists and provide a clear route for bicyclists through the intersection.

Benefits

- Provide continuity through intersections and help define expectations.
- Warn users of potential conflict locations.
- Encourage turning motorists to yield to bicyclists, who have the right-of-way when passing straight through an intersection.



DESIGN CONSIDERATIONS

- To the maximum extent possible, bikeways should be continuous through intersections. Dedicated bike lanes should be provided on all intersection approaches where space is available.
- At intersections with a dedicated right turn lane, bike lanes should be provided to the left of the right turn lane to minimize conflicts with motor vehicles.
- At complex intersections or intersections with higher levels of conflicts, bicycle lanes should be striped continuously through the intersection

- Corridor-wide intersection treatment can maintain consistency; however, spot treatments can be used to highlight conflict locations.

BICYCLE SIGNALS

Bicycle signal heads can provide more clear direction to bicyclists crossing signalized intersections that they may enter an intersection. This is particularly important at locations where bicyclists may be provided an advance or exclusive phase. At locations (typically shared use path crossings) where cyclists are expected to follow pedestrian signals, under present law and timing practices, bicyclists may only “legally” enter the crosswalk during the solid WALK portion of the signal, but the solid WALK portion is significantly shorter than the entire WALK time. This often results in bicyclists disobeying the flashing DON’T WALK portion of the cycle which can lead to them being caught in the intersection during the change interval. Providing bicycle signals allows for a longer display of green as compared to the walk signal, which significantly improves compliance with the traffic control.



Credit: http://mutcd.fhwa.dot.gov/resources/interim_approval/ia16/ia16attachment.pdf

DESIGN CONSIDERATIONS

- Bicycle-specific signal heads are similar to conventional signal heads, but instead of solid

red, yellow, or green lights, they consist of an illuminated red, yellow, or green bicycle symbol.

- Bicycle signals operate as part of a phased system and facilitate movements of different legs of an intersection of roadways and/or shared-use paths.
- Bicycle signals recognize that bicyclists have different travel patterns than cars: they are likely to have slower travel speeds, may need to access different areas of the intersection, or have different movements through an intersection.
- Bicycle signals can help mitigate potential conflicts between bicyclists, motorists, and pedestrians that conventional red, yellow, green, or pedestrian signals may cause.
- Bicycle-specific signals can give concurrent, leading, or separate phases, in comparison to motorists and pedestrians.
- The FHWA has currently given bicycle signals interim approval for use, which does not require a formal request to experiment.



PEDESTRIAN AND BICYCLE ACCESS IN PARKING LOTS

Parking lots pose challenges for people walking and bicycling, since they are designed primarily with automobiles in mind, even though most patrons walk between their automobile and their destination twice (also, depending on the number of locations each driver/pedestrian visits, the pathway they use may be different at arrival versus departure). Because pedestrians

and bicyclists typically have no separated facility to use, there are often unpredictable travel patterns, safety concerns, and general discouragement for people living in nearby neighborhoods from walking and bicycling to and from places of business and employment.

In locations where a building does not have a walkway or bikeway leading to a main entrance from a nearby street, parking lots should be designed to promote access for pedestrians and bicyclists. If a walkway or bikeway is located on a nearby street, parking lots with more than 25 stalls (which also serve as a barrier between the street and a main entrance to the building) should include a connecting walkway or bikeway. For example, the City of Kirkland, Washington's zoning code requires that walkways be included in parking lots with more than 25 stalls, and walkways are required every 150' or every three parking aisles for lots more than 25,000 square feet.



Walkways and bikeways may run through the parking lot, and may be constructed with landscaped buffers, vertical barriers, varying pavement types, and/or paint. But parking minimum requirements set by zoning codes often limit the amount of space available for walkways and bikeways.

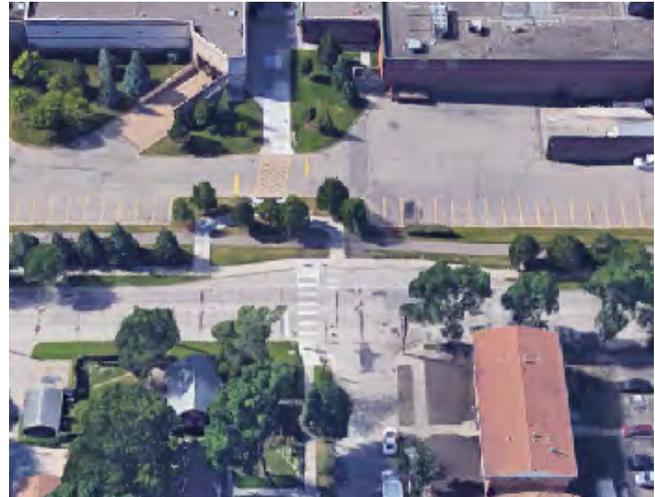


Walkways and bikeways may also run adjacent to buildings (not only through parking lots), and access should also be considered for those traveling between adjacent buildings. For example, if a convenience store and a restaurant are located next to each other, but motorists are required to make a circuitous route through parking lots around a curbed, landscaped area, there should be a short, direct non-motorized path through the landscaped area for people walking and bicycling.

Retailers should also not be allowed to restrict parking for their own establishment, as this often leads to unnecessary driving between proximate destinations. Shared parking encourages walking trips between destinations.



Sometimes residential neighborhoods are located adjacent to retailers with large parking lots. Connections should be designed between these neighborhoods and retailers, and this may in turn inform building layout. For example, in Minneapolis the Quarry Shopping Center was built with walkways between buildings, so that people walking from nearby destinations do not have to walk around retailer buildings and through parking lots.



Credit: Google

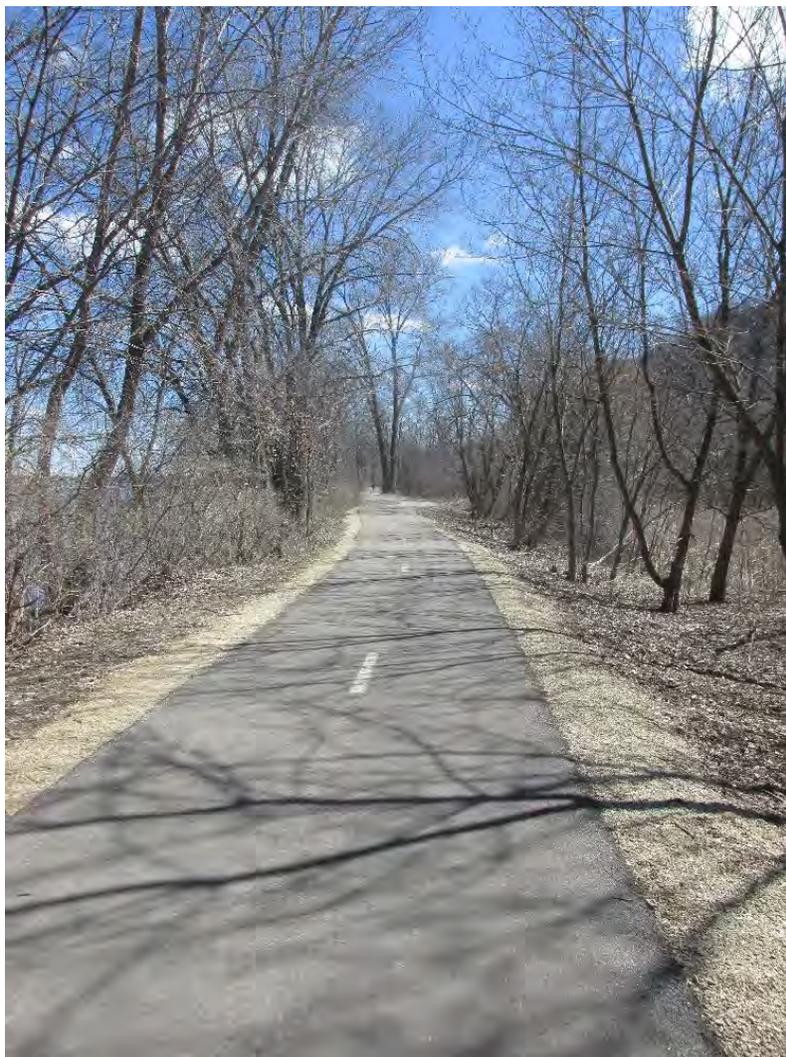


Credit: <https://kielbikeportland.blogspot.com/2013/02/groningen-netherlands-home-to-bicycle.html>



Complete Streets and Pedestrian and Bicycle Plan

Appendix A: Community Engagement Report Engagement Strategies, Participant Interactions, and Key Findings



The Lake Path, a popular place for walking and bicycling in Winona.

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INTRODUCTION

The purpose of the community engagement report is to summarize the approach to and results of engaging community members around the Winona Complete Streets and Pedestrian and Bicycle Plan. The voices of the community members revealed themes for the project team to further analyze and drive recommendations in the plan.

A successful plan must have stakeholder input and buy-in for the final recommendations and priorities. This begins by relying on community member input to determine what problems need to be solved, and generate solutions. This also involves assessing the priorities of community members to ensure plan recommendations are in response to the issues identified by community members as well as those responsible for working toward implementation.

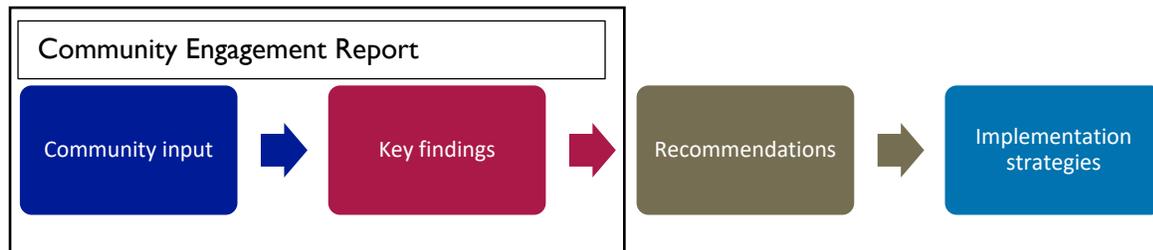


Illustration of plan development process: community input informs key findings which lead to recommendations and implementation strategies.

In June and July 2017, there were approximately 360 participant interactions that resulted in recorded input. This does not include passive participation such as website clicks, reading an article about the plan, or listening to a presentation. The participants represented a range of walking and bicycling habits which helps account for potential bias about the various topics. Finally, the community input resulted in the detection of patterns for several topics, specifically summarized into three key themes: community values and transportation, improving design options, and priority areas for the walking and bicycling networks.

KEY FINDINGS

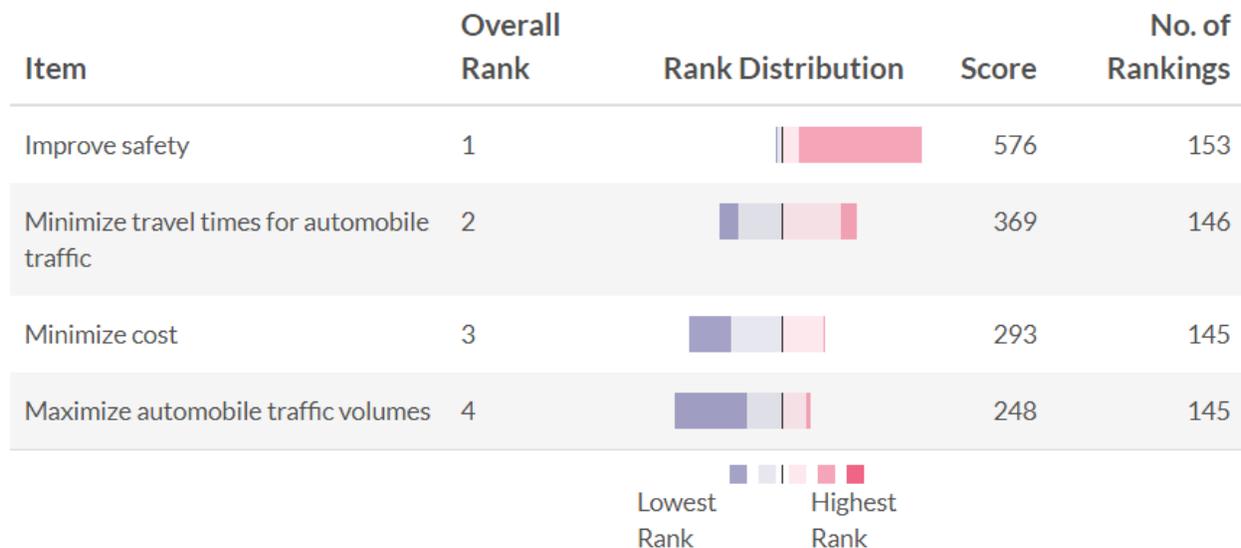
This section summarizes the key findings from the community engagement process in June and July. Successful plans are based on listening to and addressing community priorities – that includes strengths, weaknesses, opportunities, and challenges that cannot be uncovered with multiple choice questions. Open-ended responses, public discourse, and focused listening sessions are where the project team uncovered honest, candid, and sincere priorities that differ from community to community.

Successful plans are also strategic and spell out clear priorities. Public input is intended to serve not as a catchall for every item the community desires, but is most effective when the input drills down to the most important actions. When a sense of priority is revealed through public engagement, it is easier to prioritize and invest strategically for city staff who are faced with decisions about how to spend limited resources most effectively.

Theme A: Integrate Winona’s Community Values into Transportation

Through listening sessions with a range of community stakeholders, it became clear that achieving a complete transportation network, ready to serve the multi-modal needs of a growing community, is a high priority for Winona. Walking and bicycling are prized by the community. For example, many participants mentioned that it’s easy to reach destinations in the core of Winona on foot. One community member said that bicycling events like Bike Month are popular with community members, and another indicated that bicycling is in demand by tourists. Construction projects need proper messaging, to stress the positive aspects of walking and bicycling in a small city like Winona, including the added benefit of health. In the Downtown listening session, one participant explained that most residents like the size of Winona, in addition to the short distances between destinations. Many people mentioned the broad appeal of the health benefits of walking and bicycling.

For Winona community members, **safety** is a top priority when rebuilding streets, when compared to other values such as minimizing travel times for automobile traffic, minimizing cost, and maximizing automobile traffic volumes. An online survey revealed that safety far outranks these other priorities. The clear majority of respondents chose to improve safety over minimizing travel times for automobile traffic, suggesting that crash reduction should be a focus of the Plan. Maximizing automobile traffic volumes was the lowest priority for respondents. The two charts below show responses when participants were asked to rank priorities when rebuilding streets in Winona.



Winona community members view **pedestrians** are also a top priority during future street reconstruction projects. The online survey showed that respondents preferred bicycle riders, drivers of motor vehicles, and transit users, in that order, after pedestrians. However, prioritization of modes is likely to be a point of debate, since drivers of motor vehicles received more “highest rank” votes than bicycle riders.

Item	Overall Rank	Rank Distribution	Score	No. of Rankings
Pedestrians	1		484	153
Bicycle riders	2		426	152
Drivers of motor vehicles	3		375	153
Transit users	4		240	150

Lowest Rank Highest Rank

Today’s transportation network does not fully serve Winona’s **diverse array of residents**. With an automobile network that serves nearly all neighborhoods and destinations, people who walk and ride bicycles currently experience difficulty reaching these same locations. Through listening sessions, the project team learned that this diverse set of users includes low income residents, youth up to 15 years of age, seniors above 70 years of age, non-English speaking immigrants, and people with visual, hearing, mobility, or developmental disabilities. Today, these groups experience hardships reaching destinations, largely because the walking and bicycling networks are not fully developed. For example, multiple people described the public housing units near shopping destinations on either side of Highway 61, with no safe and convenient ways to cross the road. The existing networks are also not maintained to an adequate level of service for use through the winter months. For example, one person said their top priority for walking and bicycling was making sure curb ramps were cleared of snow in the winter.



People walking and bicycling to commercial areas on Highway 61 currently experience disjointed facilities, with few non-motorized routes that connect along service roads or across busy thoroughfares.

In several listening sessions, residents told the project team that **implementation** for walking and bicycling improvements has been slow to-date. Sometimes this occurs due to competing priorities such

as minimizing automobile traffic wait times and maximizing automobile traffic volumes, or maximizing parking opportunities for drivers of motor vehicles. The forthcoming Plan will need to address implementation in a clear and concise manner, giving cost estimates for projects, and taking advantage of existing opportunities where street reconstructions are planned. There will also be a need to partner with agencies operating within Winona, including Winona County and MnDOT. Finally, some listening session participants mentioned that pilot projects will be a useful tool for Winona, so that residents have the chance to experience changes on a temporary basis before permanent construction takes place.

Winona's **vibrant, historic Downtown** is a point of pride for the community. But through the listening session with downtown organizations, the project team found that people who live south of Highway 61 today have no bicycle facilities that connect to Downtown, and few ways to walk across Highway 61 to access the heart of Winona. While there are sidewalks throughout Downtown, and marked crosswalks at most intersections, street crossings are currently wide, and not visible at all times of the year because of faded paint.



Crosswalks are often faded in Downtown, with some intersections having wide distances for pedestrians to cross.

Winona is a community with a wealth of educational institutions, including public and private K-12 schools, a community college, and two universities. Yet the need for transportation **education** was apparent to all listening session groups, who spoke about unpredictable behavior on the part of all user groups. For example, some participants were concerned about people darting out at midblock crossings, or people ignoring stop signs at four-ways. Some residents promoted the idea that infrastructure should be built so that education occurs naturally, through design.

Economic development, related to both tourism and local activity, was mentioned by many community members as a reason to develop walking and bicycling networks. Already, Winona draws out-of-town visitors to mountain bike trails, street festivals, and the Winona Lake path. A riverfront trail with clear connections to Downtown was expressed as a desire because it is currently difficult to know how to walk and bicycle between the two destinations. Many focus group participants were confident that shifting the community's primary focus from automobiles to a more balanced network will promote economic growth for local residents who need to access jobs, schools, goods, and services.

Theme B: Improve Walking and Bicycling Design Options

To better understand design options for walking and bicycling infrastructure, the project team asked workshop participants and online survey respondents about their preferences.

DESIGN PREFERENCES FOR WALKING

Community members were asked to rate their comfort level for walking in various pedestrian environments. Participants viewed a photo and short descriptions of each pedestrian environment, and then rated each one on a scale from 'Very Comfortable' to 'Very Uncomfortable'. The graph below shows the percentage of respondents who ranked each category as either 'Very Comfortable' or 'Comfortable'. The three pedestrian environments that received the most responses for 'Very Comfortable' or 'Comfortable' were curb extensions, rectangular rapid flashing beacons, and well-marked crosswalks along a busy street. The complete results of the pedestrian environment rankings are shown below, and images of each pedestrian environment are shown on the following page.

Percentage of Respondents who rated pedestrian environment
'Very Comfortable' or 'Comfortable'

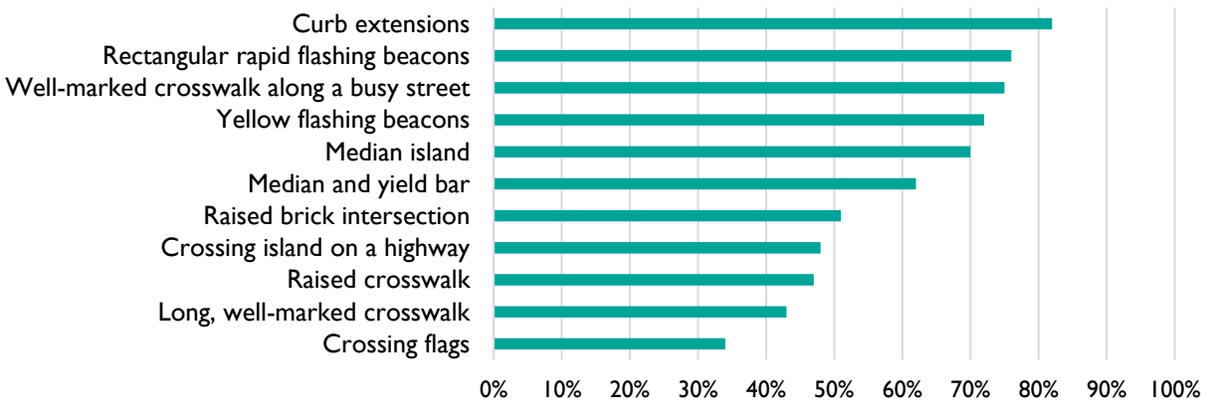


Figure 1: Summary graph of percentage of respondents who rated each pedestrian environment as 'Very Comfortable' or 'Comfortable'.



Curb Extension



Rectangular rapid flashing beacons



Well-marked crosswalk along a busy street



Yellow Flashing Beacons



Median island



Median and yield bar



Raised brick intersection



Crossing island on a highway



Raised crosswalk



Long, well-marked crosswalk



Crossing flags

Figure 2: Each of the eleven pedestrian environments that were rated by survey respondents and community workshop participants.

DESIGN PREFERENCES FOR BICYCLING

Community members were asked to rate their comfort level on various bicycling facilities. Participants viewed a photo of each bicycling facility, and then rated each on a scale from 'Very Comfortable' to 'Very Uncomfortable'. The graph below shows the percentage of respondents who ranked each category as either 'Very Comfortable' or 'Comfortable'. The three bicycling facilities that received the most responses for 'Very Comfortable' or 'Comfortable' were separated bicycle lanes at sidewalk level, separate bicycle lanes at street level, and buffered bicycle lanes. The complete results of the bicycle facility rankings are shown below, and images of each bicycle facility are shown on the following page.

Percentage of Respondents who rated bicycle facility 'Very Comfortable' or 'Comfortable'

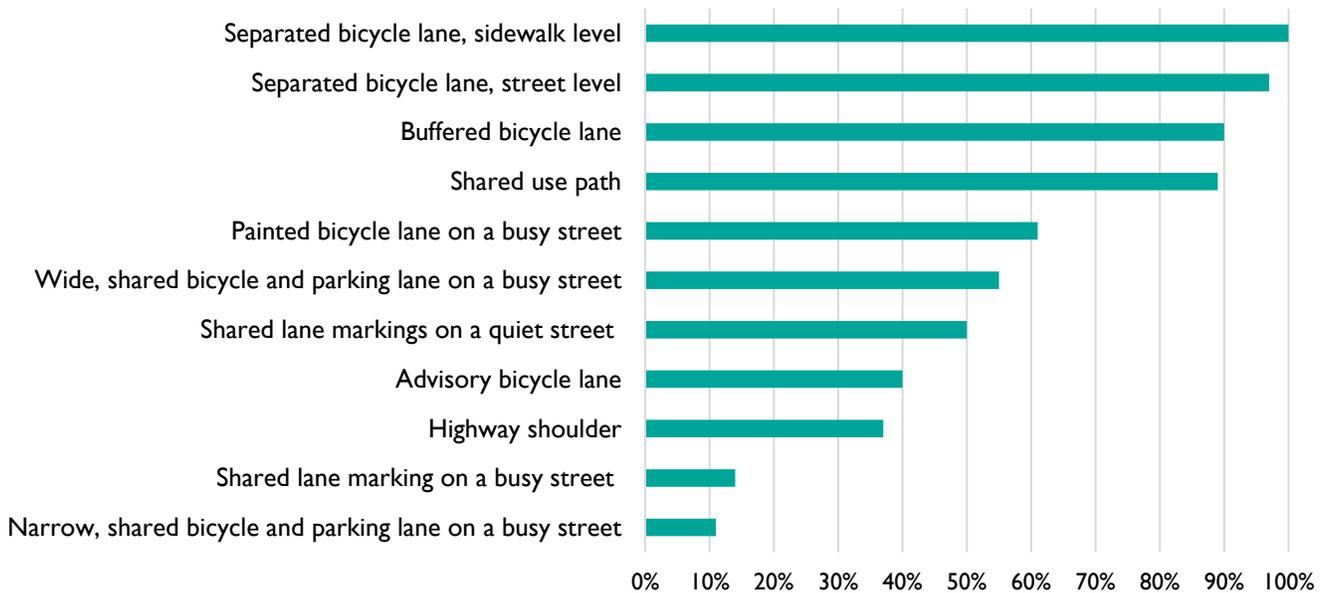


Figure 3: Summary graph of percentage of respondents who rated each bicycle facility as 'Very Comfortable' or 'Comfortable'.



Separated bicycle lane, sidewalk level



Separated bicycle lane, street level



Buffered bicycle lane



Shared use path



Painted bicycle lane on a busy street



Wide, shared bicycle and parking lane on a busy street



Shared lane markings on a quiet street



Advisory bicycle lane



Highway shoulder



Shared lane markings on a busy street



Narrow, shared bicycle and parking lane on a busy street

Figure 4: Each of the eleven bicycle facilities that were rated by survey respondents and community workshop participants.

Theme C: Address Priority Areas in the Walking and Bicycling Network

To better understand the locations to improve the walking and bicycling networks, the project team asked workshop participants and online survey respondents about the top issues for walking and bicycling, as well as the locations needing improvement.

TOP ISSUES FOR WALKING

Participants in the online survey and community workshops were asked to rank a variety of different walking conditions in Winona on a scale from 'Bad' to 'Excellent'. Figure 5 displays the results of participants who voted for each condition as either 'Excellent' or 'Good'. The conditions with the most positive ratings were:

1. Scenery/interesting locations to see while walking
2. Number of destinations within easy walking distance
3. Terrain for walking

The conditions with the least positive ratings were:

1. Ease of crossing busy streets
2. Motorists' attitude toward pedestrians
3. Winter maintenance of sidewalks, curb ramps, and crosswalks

'Excellent' or 'Good' ratings for walking conditions in Winona

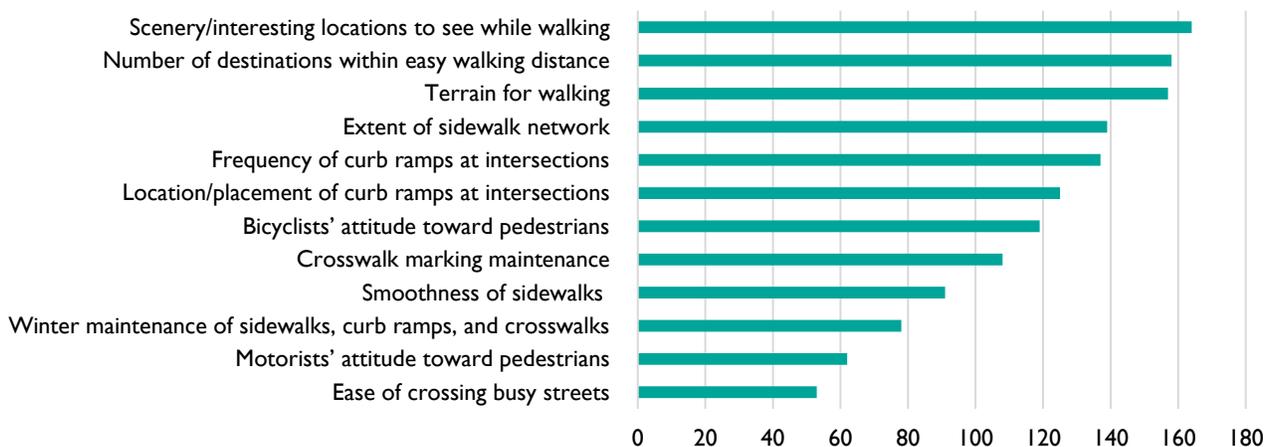


Figure 5: Walking conditions in Winona that received a rating of 'Excellent' or 'Good'.

TOP ISSUES FOR BICYCLING

Participants in the online survey and community workshops were asked to rank a variety of different bicycling conditions in Winona on a scale from 'Bad' to 'Excellent'. Figure 6 displays the results of participants who voted for each condition as either 'Excellent' or 'Good'. The conditions with the most positive ratings were:

1. Number of destinations within easy bicycling distance
2. Scenery to see while bicycling
3. Terrain for bicycling

The conditions with the least positive ratings were:

1. Frequency of automobiles parking within bike facilities
2. Comfort while bicycling across busy streets
3. Comfort while bicycling along busy streets

'Excellent' or 'Good' ratings for bicycling conditions in Winona

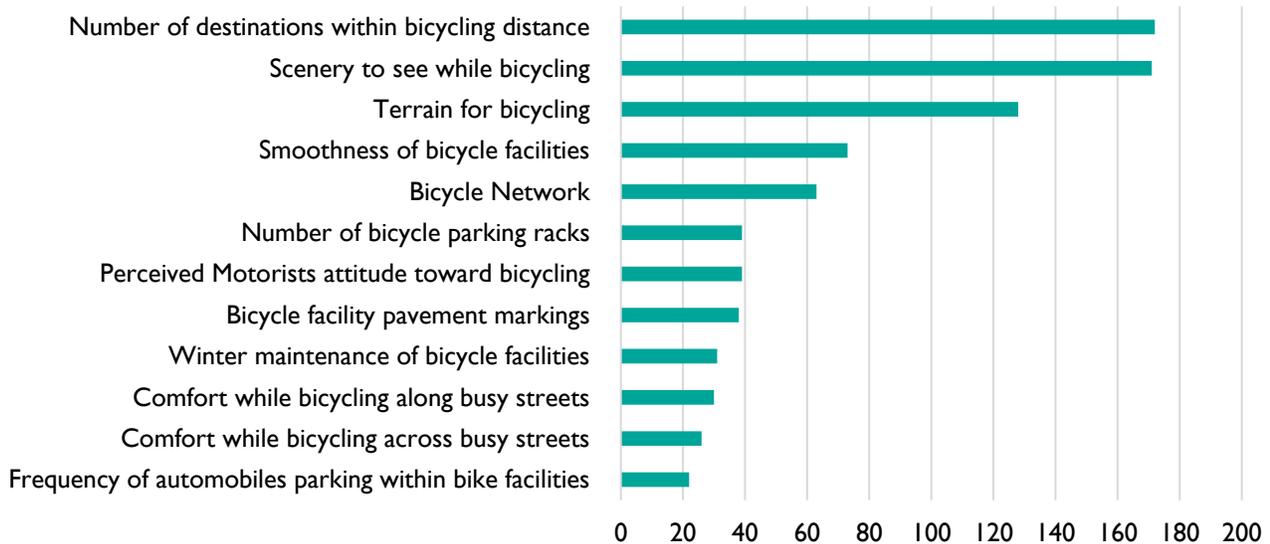


Figure 6: Bicycling conditions in Winona that received a rating of 'Excellent' or 'Good'.

PARTICIPATORY MAPPING EXERCISES

Winona residents, reached at both in-person events and online through an interactive mapping website, were invited to identify examples of intersections that work well for walking and biking as well as intersections they found to be difficult for walking and biking. Residents placed a total of 58 markers at intersections they found to be good for walking or biking and 240 markers at intersections where they found walking or biking to be difficult. Particularly for the intersections found to be difficult for walking or biking, responses converged around several clearly identifiable locations. Residents were also invited to trace routes where they currently bike and routes they would like to be able to safely take by bicycle. Residents traced a total of 179 routes where they currently bike and 83 where they would like to be able to bike. The routes residents identified as wanting to be able to safely bike converged along a few commercial corridors that provide direct links between different parts of town.

Good Intersections for Walking and Biking

Dots marking the intersections residents identified as good for walking and biking are mapped in Figure 7. These intersections were mostly found in the historic downtown core and surrounding neighborhoods.

Difficult Intersections for Walking and Biking

Dots marking the intersections residents identified as difficult for walking and biking are mapped in Figure 8. Three corridors share 152 of the 240 markers at intersections identified as difficult for walking

and biking: Huff Street from Highway 61 to Broadway, Broadway from Huff Street to Mankato Avenue, and Mankato Avenue/Homer Road from Broadway to Pleasant Valley Road. Overall, intersections residents identified as difficult for walking and biking tended to be in commercial areas with multi-lane streets.

Routes Residents Currently Ride

The map shown in Figure 9 summarizes the 179 routes that residents identified as places where they currently bike. This was accomplished by tallying street and trail segments by how often residents drew a route along a street or trail segment. Selected labels are provided to assist with interpretation of the map. Rather than consolidating onto the best routes, existing bicycle travel among participating residents was found to be distributed across multiple parallel routes in all parts of town, with the exception of the Lake Path. This suggests that current trails, bike lanes, and bike routes may not be sufficiently attractive or accessible to draw riders away from parallel options.

Routes Residents Would Like to Ride

The map shown in Figure 10 summarizes the 83 routes that residents identified as places where they would like to ride a bicycle. In contrast to the routes residents identified as places where they currently bike, the desired routes converged along several key corridors: Broadway from about Sioux Street to Mankato Avenue, Mankato Avenue/Homer Road from Broadway to Pleasant Valley Road, and Highway 61 from Mankato Avenue to around Pelzer Street. Residents also tended to trace the waterfront, along Winona's northern and eastern boundary with the Mississippi River.

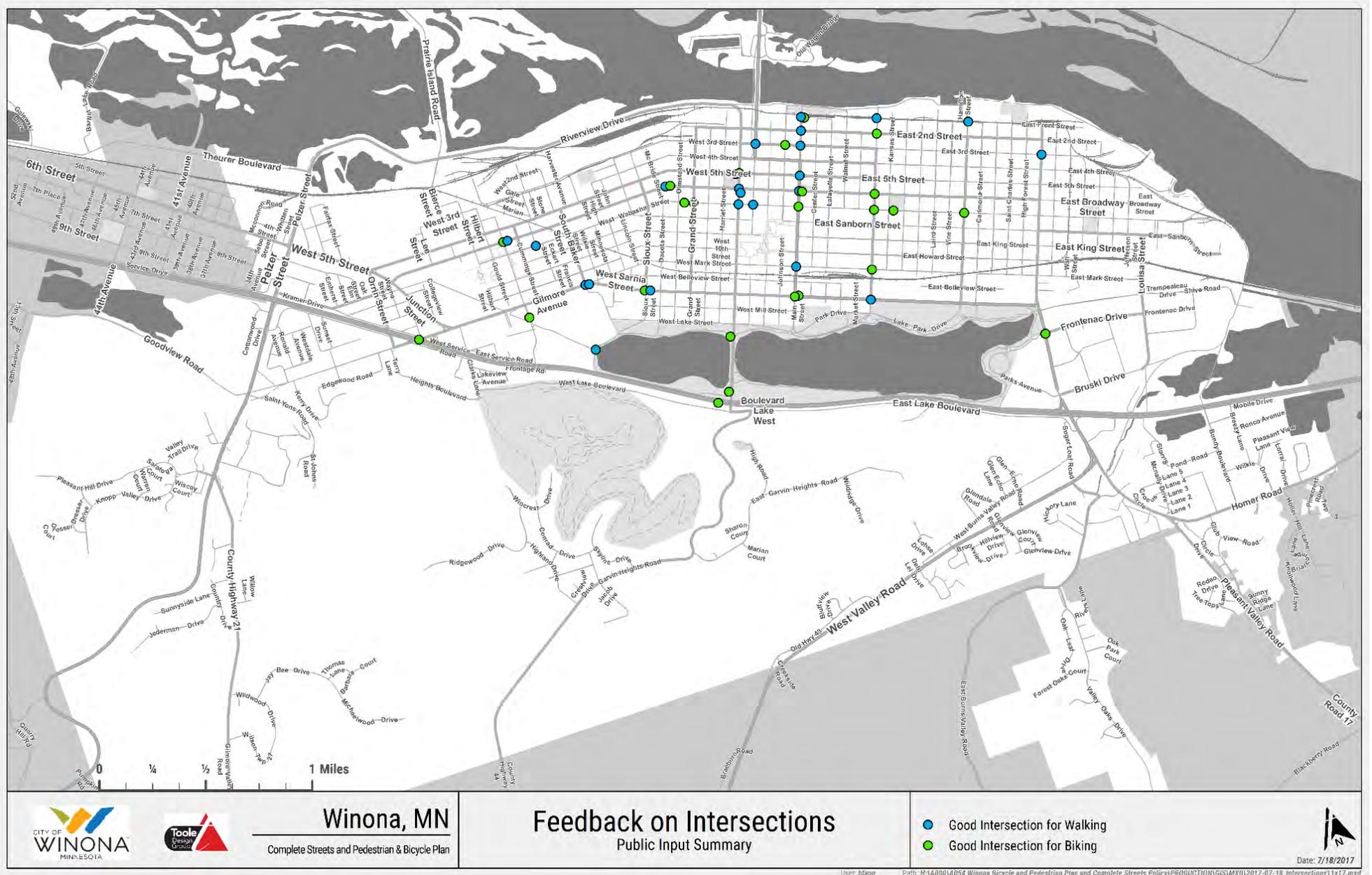


Figure 7: Participants were asked to place dots at intersections that are good for walking and biking.

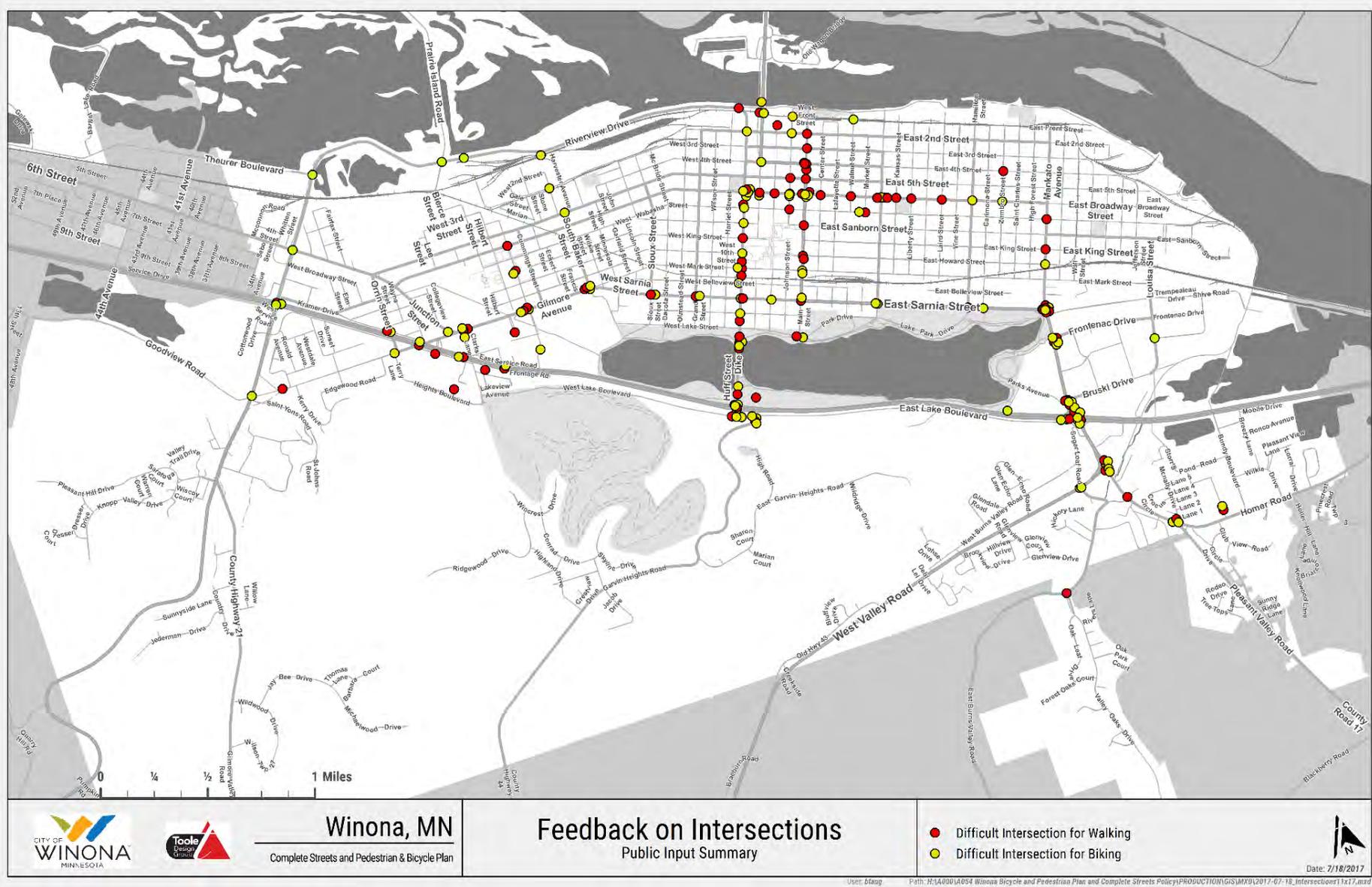


Figure 8: Participants were asked to place dots at intersections that are difficult for walking and biking.

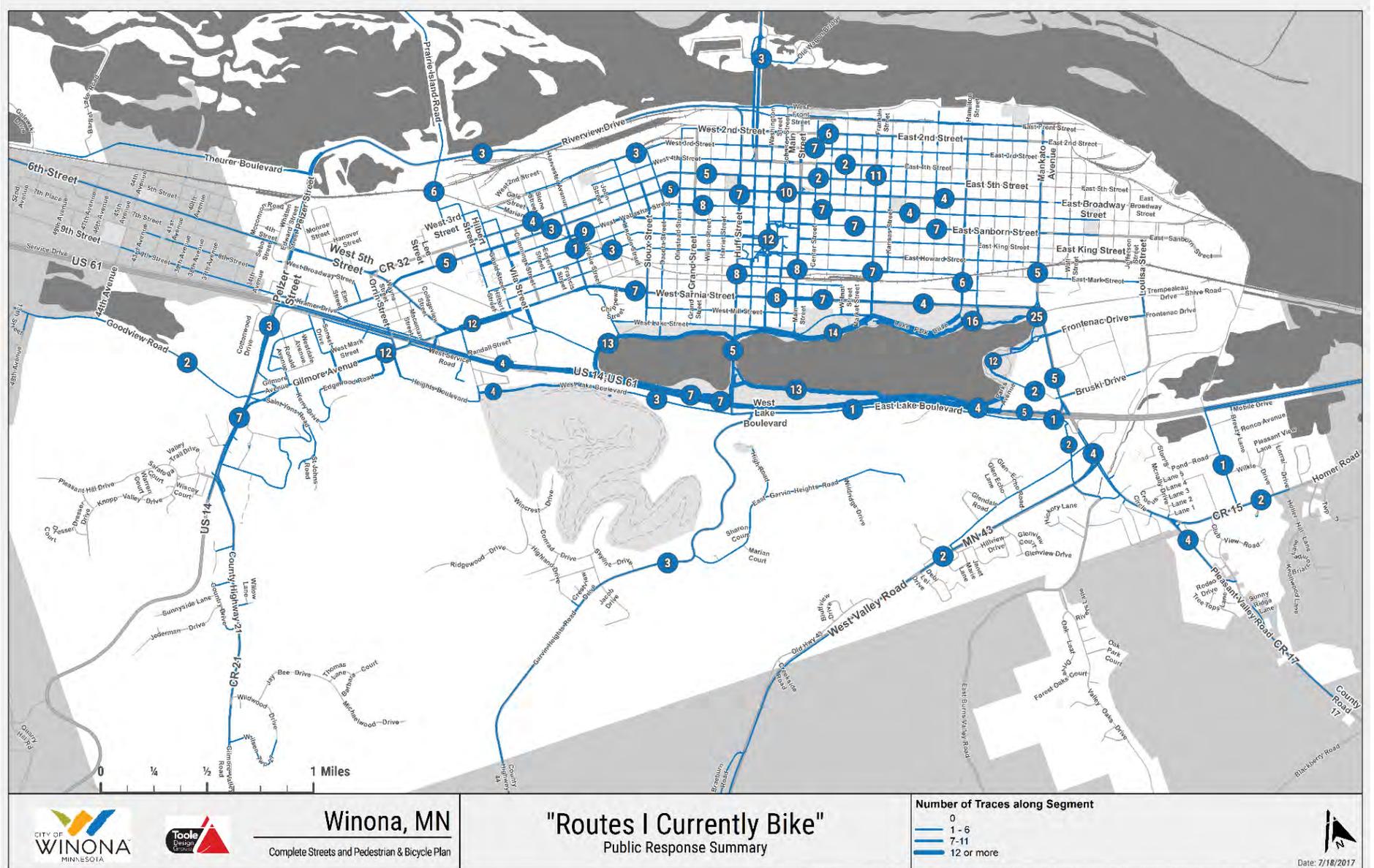


Figure 9: Participants were asked to trace routes they currently traverse by bicycle.

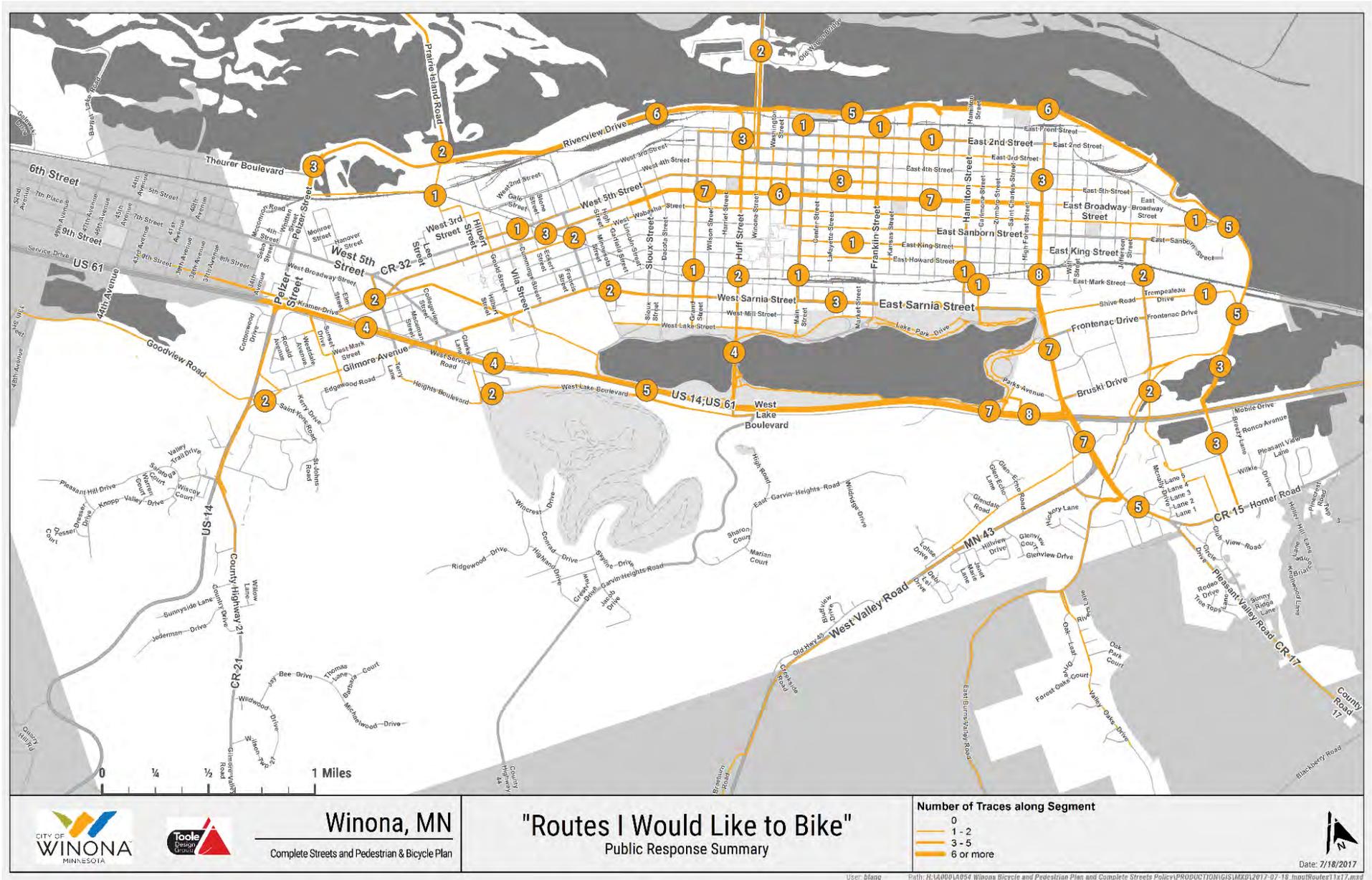


Figure 10: Participants were asked to trace routes they would like to be able to traverse by bicycle.

PARTICIPANT INTERACTIONS

In June and July, approximately 360 interactions were recorded in the Winona Complete Streets and Pedestrian and Bicycle Plan engagement process either online or in person.

- 75 people participated in the Community Workshops on June 27th, 28th, and July 1st
- 30 people were engaged in listening sessions
- 230 people completed the online survey
- 24 people used the online interactive map

Online survey participants were asked to self-identify their race, age, and gender, as well as some simple questions about their bicycling habits and street crossing habits. This helped the project team to get a sense of who was being reached in the community, and what their daily bicycling and pedestrian habits are like. When survey participants were asked how often they ride a bicycle in the warmer months, over 1/3 of respondents replied a few times per week, and nearly 1/4 of respondents replied at least once per day. When asked how often people cross the street as a pedestrian, nearly 2/3 of respondents replied at least once per day, and only 8% said a few times a month or less. These responses indicate that nearly everyone regularly crosses the street as a pedestrian.

Nearly 90% of respondents self-identified as white/Caucasian, and over 2/3 of respondents were females. The ages of participants were wide-spread, but the most common age group was 25-34, with nearly 30% of respondents in that age range. About 11% of respondents reported that their family income is below the federal poverty level. There were approximately 270 people who participated in either the community workshops or survey, and 11 of them reported having a disability of some kind, which is about 4%.

How often do you ride a bicycle in the warmer months?

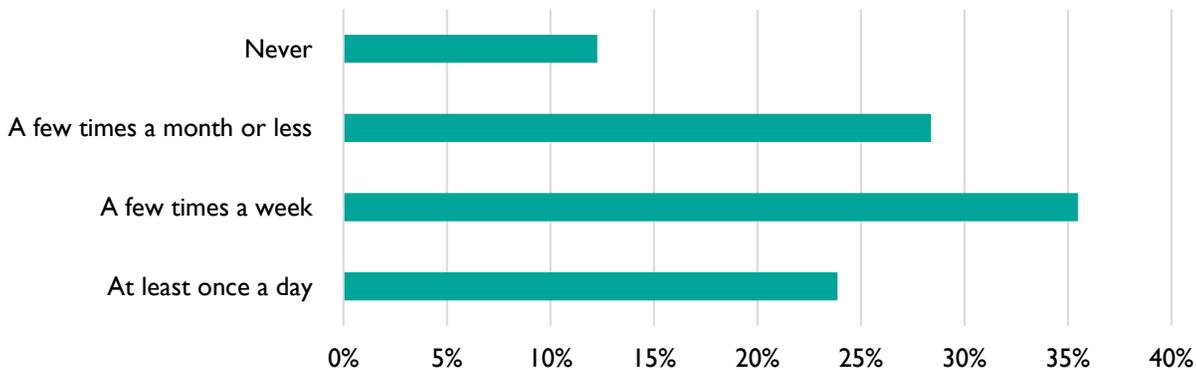


Figure 11: Bicycling habits of participants from the online survey in June-July 2017.

How often do you cross a street or road as a pedestrian?

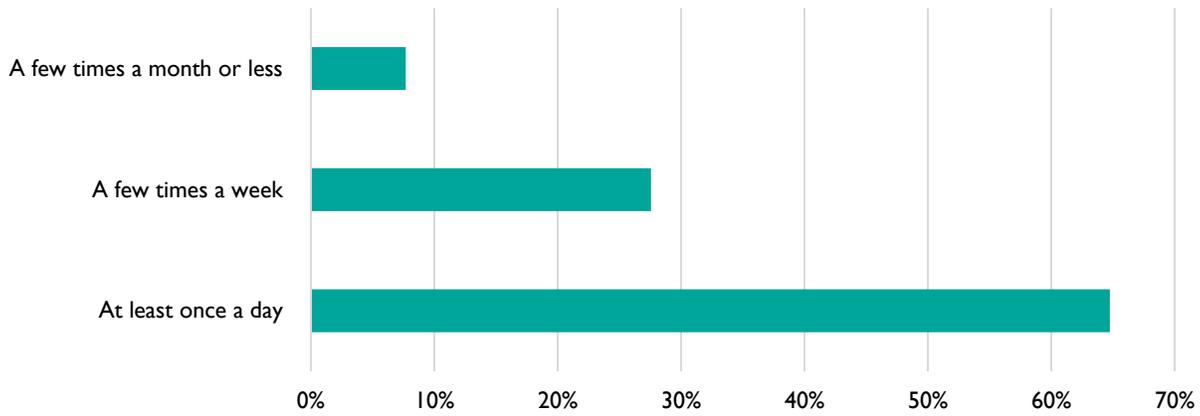


Figure 12: Street crossing habits of participants from the online survey in June-July 2017.

Would you describe yourself as...

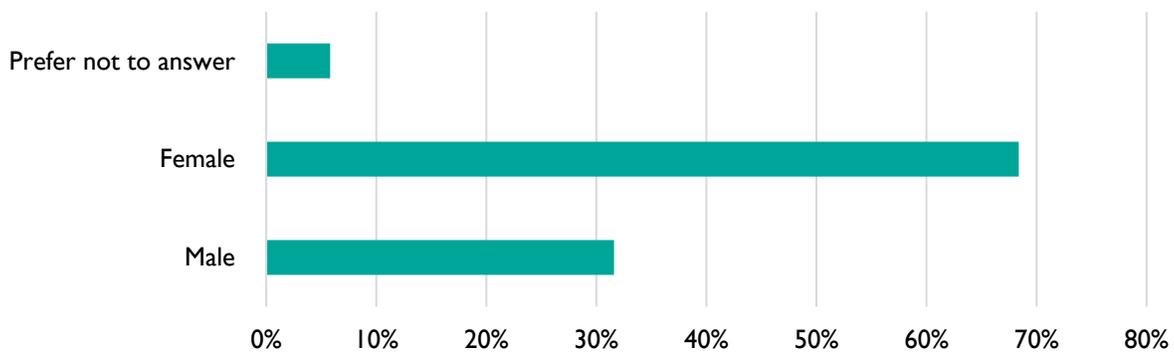


Figure 13: Gender of participants from the online survey in June-July 2017.

Would you describe yourself as...

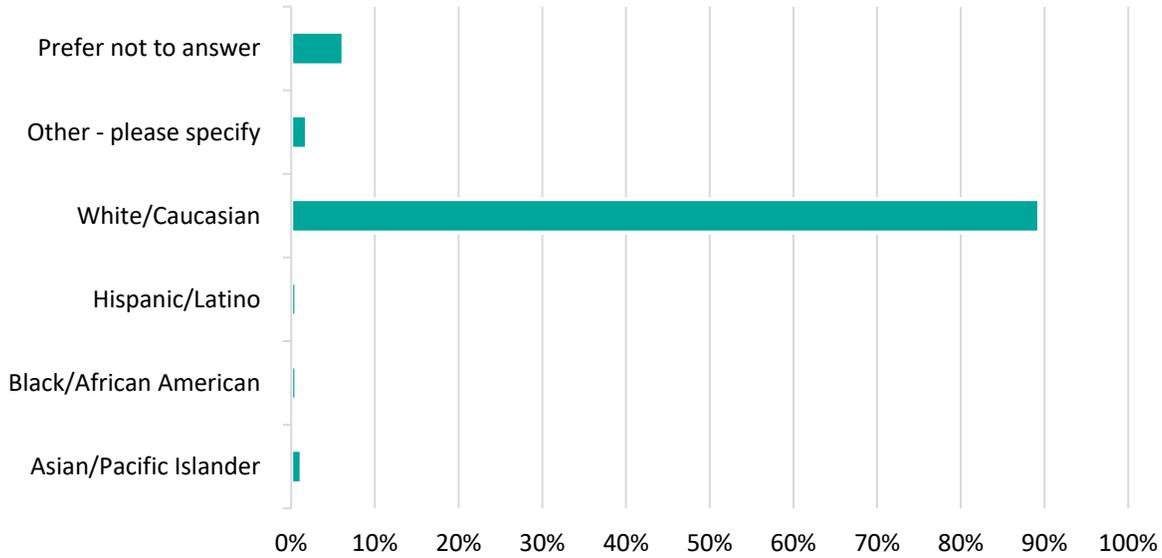


Figure 14: Race of participants from the online survey in June-July 2017.

What is your age?

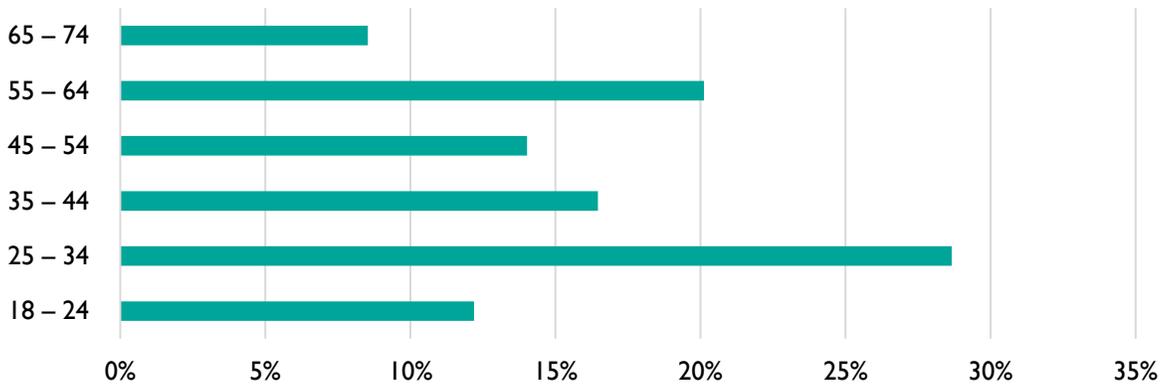


Figure 15: Age of participants from the online survey in June-July 2017.

Is your household's income below the federal poverty line?

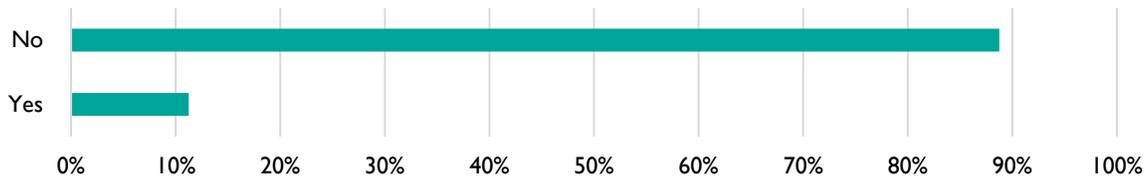


Figure 16: The percentage of participants from the online survey in June-July 2017 that are below the federal poverty line. The federal poverty line thresholds are listed below: \$12,060 for individuals, \$16,240 for a family of 2, \$20,420 for a family of 3, \$24,600 for a family of 4, \$28,780 for a family of 5, \$32,960 for a family of 6, \$37,140 for a family of 7, \$41,320 for a family of 8.

Do you have any of the following disabilities?

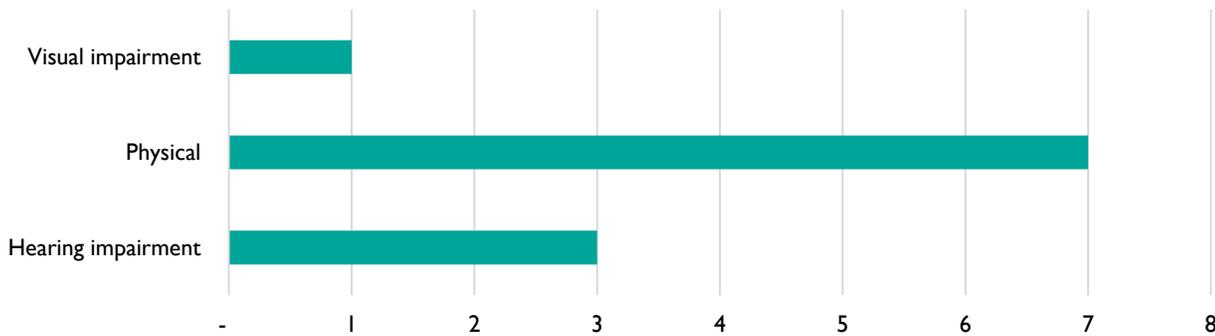


Figure 17: The total number of community workshop participants and survey respondents that have a disability. There were approximately 270 people who participated in either the community workshops or survey, and 11 of them reported having a disability of some kind.

Are you a student or parent of a student at any of the following schools for the upcoming school year?

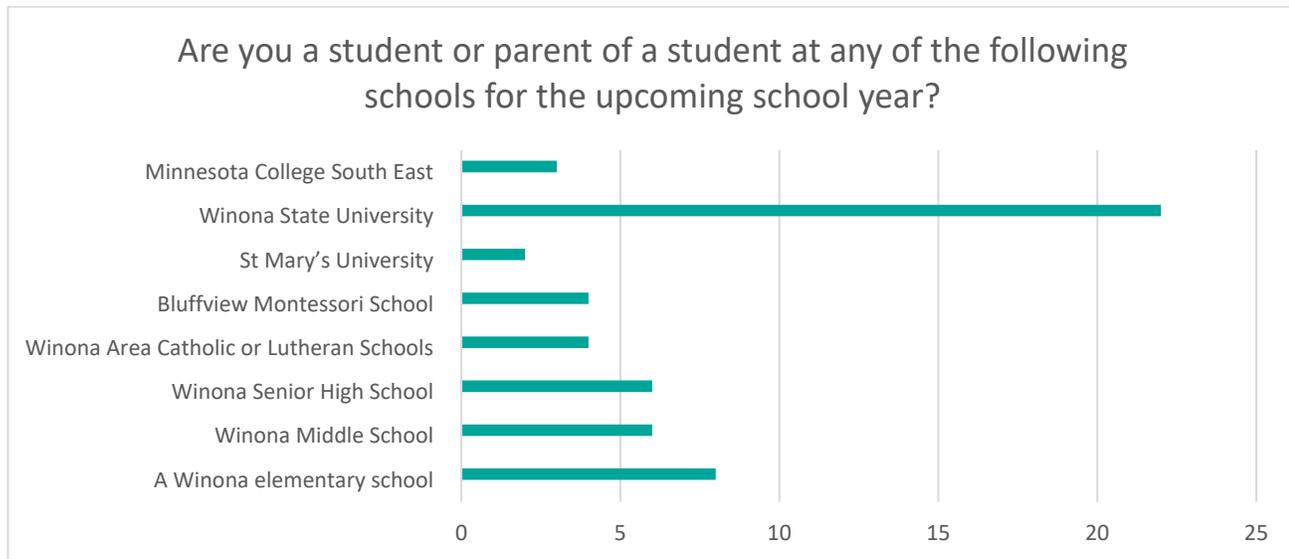


Figure 18 Survey respondents who were students and parents of students at Winona K-12 and higher institutions, led by Winona State University and Winona elementary schools.



Approximately 12 community members shown conversing, reviewing materials, and marking up maps at Winona Health during a community workshop on June 28, 2017

STRATEGIES FOR ENGAGING WINONA COMMUNITY MEMBERS

The Winona Complete Streets and Pedestrian and Bicycle Plan is intended to reflect the vision and goals of the community as a whole, not just those who explicitly identify as a “pedestrian” and “bicyclist”. By uncovering the issues and ideas from community members with indirect interest in walking and bicycling, the plan recommendations will better reflect more universal Winona values and priorities. For example, while a director of a wellness program at a large employer may not identify as bicyclist, there are many reasons she or he may have a financial interest in increasing walking bicycling trips for insurance costs, a healthy and alert workforce, and employee retention.

Oftentimes communities have widespread interest in walking and bicycling, but limited time to devote to meetings and volunteer opportunities, making it difficult to gauge public opinion through conventional public meetings. Making engagement easy, tailored, inviting, and fun helps reach people who may care, but who are generally less vocal on a single issue like walking and bicycling. It was important for the project team to use a range of strategies to solicit feedback from community members.



Bicycles parked in front of the Winona Public Library on June 27, 2017

This section summarizes the strategies used to engage a range of community voices, why the strategies were selected, and how input was recorded. Subsequent sections depict the participant interactions in greater detail as well as the key findings.

Strategy A: Listening Sessions

In June, Toole Design Group conducted a series of listening sessions. The goals of the listening sessions were to learn about the varying perspectives of stakeholders, generate initial buy-in, and identify partnership opportunities for the Winona Complete Streets and Pedestrian and Bicycle Plan. City staff assisted with targeting invitations to people associated with specific groups either based on personal interests or professional expertise.

TDG staff facilitated the listening sessions with a general focus on three key pieces of information: what is working well for walking and bicycling in Winona, what is not working well for walking and bicycling in Winona, and what ideas people have for improving the walking and bicycling environment.

The following sections summarize the participant groups and key themes from the conversations. The listening session information informed the key findings summarized in greater detail later in the report.

COUNTY STAFF

In addition to community outreach, the project team invested in conducting “in-reach” with potential/future implementers of the Plan early in the plan development process. While this plan has been commissioned by the City of Winona, Winona County has jurisdiction over several roads within the city limits. The County also has adopted a 2013 Trail Plan, setting the stage for several non-motorized connections within Winona, and connecting to nearby communities and rural areas.

This listening session had staff representation from the County’s Planning and Environmental Services Department. In addition, an interview with the County’s Engineer is anticipated in late July.

Key themes from the conversation include:

- The health and economic benefits of walking and bicycling will have widespread appeal to the community.
- Downtown is a positive asset for walking, but is more challenging for bicycling with a lack of infrastructure.
- In general, pedestrian crossings are a challenge in Winona. Unclear expectations, poor visibility, and unsafe behaviors by people driving and walking are areas of concern.
- There is strong support for bicycling in the community.
- It’s currently unclear where bicycle riders should go when traveling along streets – in the travel lane, parking lane, or sidewalk?
- Bicycle facility design needs to be more decisive, carving out excess width from existing travel and parking lanes.
- Pilot projects are a way to test facility concepts before their widespread adoption.
- Implementation of bicycling improvements has been a challenge for the community.
- There is a need to make practical recommendations with cost estimates, taking advantage of existing opportunities.
- Funding for projects is limited, so grants are needed.
- The construction of shoulders on County roads are an opportunity to implement bicycle facilities.
- The County has jurisdiction on some roads within the Winona City limits. The extent of that jurisdiction over walking and bicycling facilities along these roads is unknown.

LIVE WELL WINONA

Based on discussions with City staff, the project team engaged the Live Well Winona organization in a listening session to gain a better understanding of what opportunities they view for increasing walking and bicycling participation. Representatives from Winona Health, Goodview, Engage Winona, Project FINE, the Statewide Health Improvement Program, Winona County, the YMCA, Winona Public Schools, and Winona Volunteer Services participated in the listening session.

Key themes from the conversation include:

- There is a pent-up desire for attention to transportation issues, and also a need to build momentum.
- Messaging on infrastructure improvements for walking and bicycling needs to be well thought out and positive in nature.
- The safe choice needs to be the obvious choice, so that education is built into infrastructure design.
- K-8 students, low income people, seniors, and people with disabilities should be prioritized when programming new projects.
- A partnership between the City, County, and MnDOT is important to improve walking and bicycling.
- People don’t want to walk or ride bicycles, if there isn’t an obvious place to do so. Busy streets need walking and bicycling facilities.

- Wide streets are a problem for pedestrians crossing, including but not limited to Highway 61, Broadway Street, and Mankato Avenue. Drivers often don't know when to yield, since not all drivers stop for pedestrians.
- Several streets in commercial districts and low income neighborhoods near Highway 61 do not have sidewalks along them. There are many destinations to walk, but they are not connected.
- Some pedestrian improvement projects have been taking place or are programmed in partnership with MnDOT.
- Stop signs difficult for bicycle riders to follow, if they are too frequently placed.
- The process for sidewalk surface repairs is unclear.

DOWNTOWN ORGANIZATIONS

The project team facilitated a listening session focused on the challenges and opportunities expressed by Downtown business, tourism, and social service organization professionals. These perspectives can be influential in the level of buy-in from the community and can benefit from two-way conversations about how increases in walking and bicycling investment have played out in other communities. Representatives from the Friendship Center, Home and Community Options, Visit Winona, Chamber of Commerce, Winona Main Street, Ed's No Name Bar, and the Minnesota Marine Art Museum participated.

Key themes from the conversation include:

- There is a demand for more walking and bicycling from residents and out-of-town visitors.
- Winona's small town feel is a positive asset that should be emphasized when making walking and bicycling improvements.
- Safety is a very high priority for the community.
- Wayfinding is not well planned out for visitors. A riverfront trail and connections to Downtown are needed.
- There are not enough bicycle facilities, and it's difficult to see, understand, and use existing on-street bicycle facilities.
- Downtown is not connected to residential neighborhoods, hotels, and jobs south of Highway 61, inhibiting walking and bicycling by residents, visitors, and people with disabilities.
- Stoplights and other non-signalized intersections are not designed and maintained year-round for vulnerable users, particularly seniors and people with disabilities.
- Parking is a contentious issue – some people say there is too much, and to others it is not convenient enough.

SCHOOL AND UNIVERSITY FACULTY AND STAFF

Engaging community members who work with K-12 and university students and parents in a listening session was intended to generate ideas for the plan, due to the important role of educational institutions in Winona. The project team met with the transportation coordinator for the Winona Public Schools, as well as faculty and staff at Winona State University and Minnesota State College Southeast.

Key themes from the conversation include:

- Pedestrian crossings of busy streets are challenging in many areas of town, especially near schools and universities.
- There are a lot of missing walking and bicycling connections at intersections and along streets.
- Poor lighting at night, and wide streets with space for drivers to pass other drivers yielding to pedestrians, both play a role in challenging crossings.

- Adults and university students don't often want to be educated about the basics of transportation (i.e. "here is how you cross the street")
- Car parking poses many challenges, including the high amount of space used, reduced visibility at corners, combined parking and bicycle facilities, and 2-hour parking limits downtown (encouraging the need to move cars to avoid a ticket).
- Focus should be placed on welcoming new riders, especially students.
- Parents are fearful of having their children walk to K-12 schools for safety reasons.
- It's easy to reach destinations on a bicycle, because Winona is so compact.
- Bicycling is an asset for Winona's growing outdoor recreation reputation. There is a lot of economic development/tourism potential.
- There is a desire for more trails along Winona's bluff, connecting the city's recreational destinations.
- Some sidewalks and trails are too narrow.

Strategy B: Community Workshops

On June 27th and 28th the project team hosted two community workshops. The first took place at the Winona Public Library with 18 participants, and the second took place at Winona Health, with 22 participants. In addition, a pop-up booth was set up on July 1st at the Winona Farmers' Market, with 35 people participating. The purpose of the workshops were four-fold.



A city staff member helps a child fill out a walking and bicycling survey at the Winona Public Library on June 27, 2017

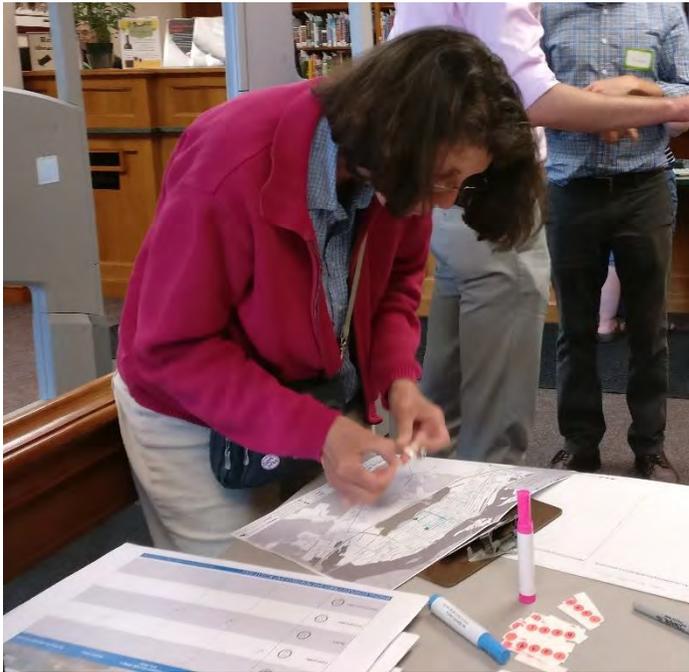
I. To solicit input on what intersections and routes people would like improved for walking and bicycling in the community (and to provide the project team with a sense of the top priorities).

Participants each received their own paper map of the existing street and trail network in Winona and were invited to note and highlight six pieces of information:

- Difficult intersections for walking
- Good intersections for walking
- Difficult intersections for biking

- Good intersections for biking
- Routes I currently ride
- Routes I would like to ride

The information on the maps were digitized by the project team and contributed to the summary maps earlier in this report.



A survey respondent draws on paper maps indicating good and difficult intersections for walking and biking, as well as route she currently bikes and would like to bike, at the Winona Public Library on June 27, 2017.

2. To understand which pedestrian and bicycle facility types would make community members feel most comfortable when walking or bicycling (and indicate what facilities would result in higher use).

Participants were provided a set of stickers to place on a comfort rating scale on a series of posters around the activity center by rating street crossings and bicycle facilities as one of five options:

- Very comfortable
- Comfortable
- Neutral
- Uncomfortable
- Very uncomfortable



Two women place stickers on posters to indicate their bicycle comfort level on a series of posters at Winona Health during a community workshop on June 28, 2017

The project team totaled the results to provide a sense of which facilities would make the most difference to community members. Because people were given stickers color-coded to match their current bicycle riding habits, facility comfort ratings can be sorted by the current riding habits of the participant. This helps the project team detect differences in preference by user type. The major findings are that pedestrian street crossing comfort increases with narrower, well-marked crosswalks, and bicycle facility comfort increases with physical separation from traffic. Results are discussed in greater detail in an earlier section of the report.

3. To understand priorities for Complete Streets

Participants were asked to rank each mode of transportation and differing values when streets are rebuilt in Winona.



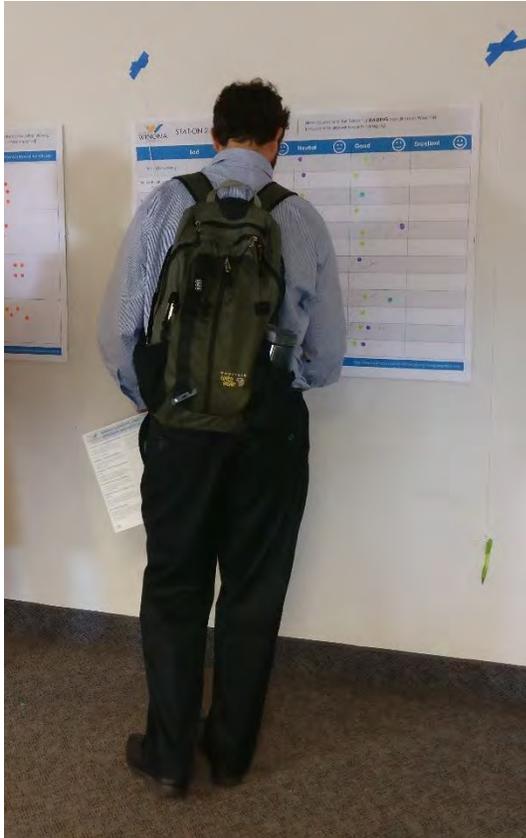
A community member ranks complete streets priorities at Winona Health during the community workshop on June 27, 2017

The project team tallied the results to determine which designs to emphasize during street rebuilding projects, and summarized key findings later in this report. The high-level finding is that community members highly prioritize safety over automobile convenience, as well as walking over other modes of transportation.

4. To rate the top issues for walking and bicycling in Winona

Participants were asked to rate 12 walking and bicycling issues on the following scale:

- Excellent
- Good
- Neutral
- Not good
- Bad



One community member rates the top issues for walking in Winona at Winona Health during a community workshop on June 28, 2017

The major findings were that the terrain, scenery, and number of destinations are Winona's greatest assets for walking and bicycling. The greatest area of improvement needed is walking and bicycling across and along busy streets. The project team compiled these issues which are discussed earlier in this report.



A volunteer welcomes an attendee to the community workshop at Winona Health on June 27, 2017.

Strategy C: Online Surveys and Interactive Maps

For the second half of June and first half of July, an online survey and interactive map were promoted to Winona community members. The online survey asked about the same topics as the community workshops. The survey was visited over 227 times, with 158 people completing the entire survey. The online interactive map had 24 users.

The results of the survey and online interactive map are included in a previous section of this report.

Winona Complete Streets and Pedestrian and Bicycle Plan

Walking Network Issues and Crosswalk Preferences

Rate your comfort level for walking in various pedestrian environments.



Yellow Flashing Beacons (shown above)
I think this street crossing would feel:

Very comfortable	Comfortable	Neutral	Uncomfortable	Very uncomfortable
<input type="radio"/>				

A screen capture of the online survey showing a multiple choice question about comfort level at a yellow flashing beacon.



A screen capture of the online interactive map that displays the options to mark good and difficult intersections, routes people currently ride, and routes people would like to bike.

Strategy D: Promotion and communications

While receiving and recording input from community members is critical to authoring a community-led plan, raising awareness is a valuable strategy for engaging the public. While some people may not choose to weigh in, it is important to raise awareness of the existence of the plan, its purpose, and its effect on the future of the community. Raising awareness early in the planning process helps to uncover concerns and garner enthusiasm.

The project team implemented a robust communications plan with messages about the plan. The following table summarizes the communications used.

Listening Sessions	
	Personalized, targeted emails
	Personalized phone calls
Community Workshops	
	Social Media Outreach
	Community Group targeted emails
	Community group targeted phone calls
	Press release
	Radio interview
	City Website
	Official city notice
	City Council, Planning Commission, and Citizen Environmental Quality Committee Invitations
	Newspaper interviews
Online Survey and Interactive Maps	
	Social Media Outreach
	Community Group targeted emails
	City Website

A summary of communications strategies for the June/July 2017 engagement with specific actions for the listening sessions, community workshops, and online activities

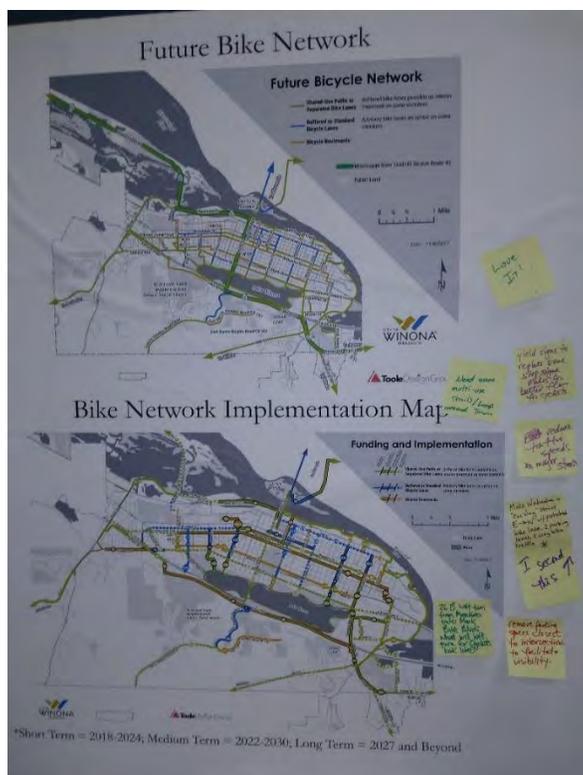
REVIEW OF THE DRAFT PLAN

Using input from the early stages of the process, the project team wrote a draft Plan, which was then made available to the public for review. Presentations of the draft Plan were made at several venues, including the:

- Winona Planning Commission on Monday, October 23rd
- Winona State University Pedestrian Safety Committee on Thursday, October 26th
- Active Transportation Steering Committee on Thursday, October 26th
- Winona City Council on Monday, November 20th

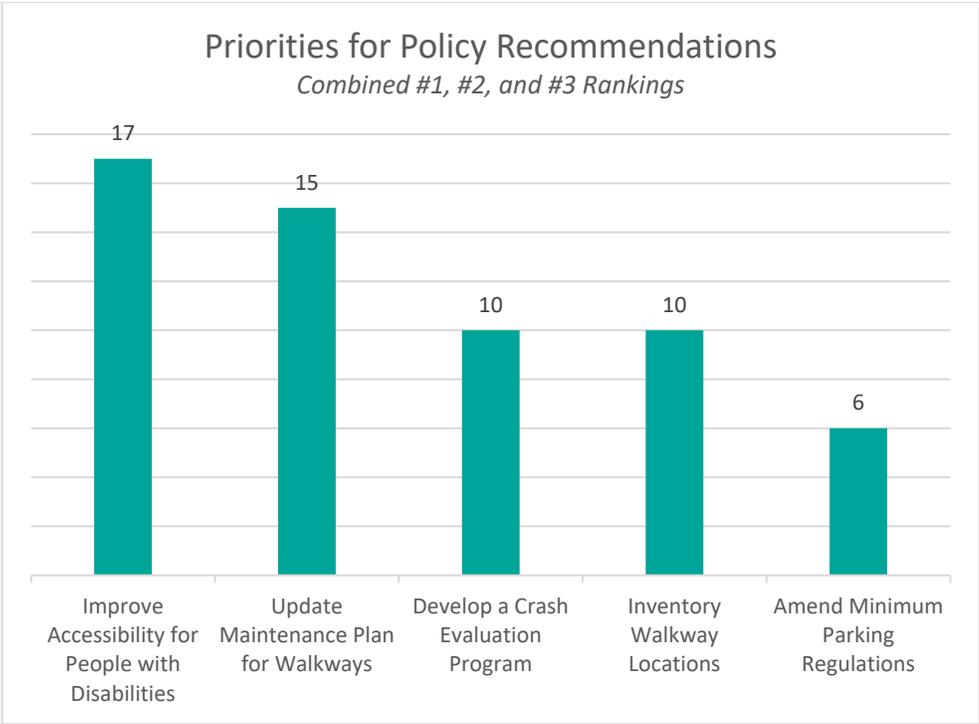
In addition, the draft Plan was posted online for public review, and a community workshop was held on Tuesday, November 14th, 2017 at the Friendship Center, with over 30 people attending. The purpose of the workshop was to:

- Provide an overview of the Plan through a handout.
- Share background on past bicycle network plans.
- Show pedestrian and bicycle facility type preferences from Winona residents (gathered in June and July).
- Allow participants to review and rank policy recommendations.
- Allow people to comment on the future bicycle network and implementation maps.
- Answer questions and listen to comments and concerns.



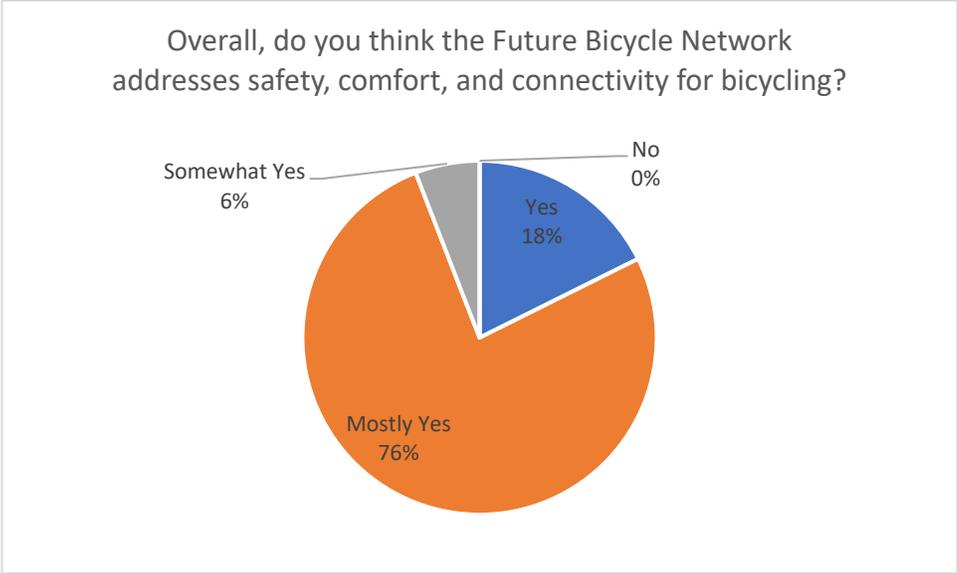
Participants at the community workshop were encouraged to make comments on Post-It notes about the future bicycle network and implementation maps.

In order to rank policy recommendations, participants were asked, “Which policy recommendations do you think should be a priority?” Improving accessibility for people with disabilities and updating the maintenance plan for walkways were the top two priorities, as shown in the next figure.



Top priorities for policy strategies were ranked by community residents who attended the community workshop.

Community workshop participants were also asked about the Future Bicycle Network map shown on page 45 in Chapter 6. Three-quarters of respondents said that the network mostly addresses safety, comfort, and connectivity for bicycling, as shown in the following figure.



While the sample sizes of surveys conducted throughout the planning process were not scientific in nature, public participation in Winona is high when compared to a random sample of other communities recently completing pedestrian and bicycle plans, as shown in the following chart.

Participant Interactions In-Person and Online, Compared to the Total Population

