RED WING

2040 TRANSPORTATION PLAN

FEBRUARY 2019

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Moving to a Sustainable Transportation System

What is a Transportation Plan?

A transportation plan encompasses a comprehensive process that examines all transportation modes (e.g., roadways, transit, pedestrian facilities, bicycle facilities, freight and aviation) and focuses on identifying, planning for, and guiding future decisions and improvements. The planning process views transportation in terms of the movement of people and goods, not just vehicles and integrates transportation components into a system that efficiently and cost-effectively meets the mobility needs of Red Wing's residents, businesses, industries and the traveling public.

The three primary objectives of this Transportation Plan are:

- To provide guidance for staff and elected officials regarding the planning and implementation of effective transportation facilities and systems through 2040.
- To give private residents and businesses background information on transportation issues and allow them to participate in decision-making on transportation issues.
- To communicate to other government agencies on Red Wing's perspectives and intentions regarding transportation planning issues.

Overview of Plan Process

This Red Wing 2040 Transportation Plan represents the first time the city has conducted a citywide transportation planning document. The process began in 2017 as part of the broader comprehensive planning process. It was guided by input from the city, county, business community and other local stakeholders who were engaged at the onset of the transportation plan work as well as during the draft stage of the plan development.

The plan begins by providing an overview of the existing transportation system, to provide a closer look into what facilities are available to residents and visitors, and offer a basic overview of facility conditions. The plan then looks at public feedback received during the outreach process to identify opportunities and challenges within the transportation system. This feedback, combined with population and development projections for the city over the next 20 years, form the basis for the 2040 Transportation Plan and recommendations.

History and Foundation

Previous Planning Efforts

Since the 1970's, the city, County and State have conducted various transportation studies and master plans to guide the planning of the transportation network within the city and the surrounding region. The following plans have been reviewed as precedent for the preparation of this transportation plan:

- 2005 Downtown Transportation Study
- 2005 Riverfront Redevelopment Plan
- 2007 Comprehensive Plan
- Upper Harbor Master Plan
- 2008 Community Sustainability Report (Pages 22-30)
- 2009 Hastings to Red Wing Trail Master Plan
- 2009 Red Wing Downtown Action Plan
- 2011 Bicycle and Pedestrian Master Plan
- 2016 Mayor's Taskforce on Streets and Sidewalks
- Pedestrian Plan & Policy Report.

The Downtown Red Wing Transportation Study focused on the transportation bottleneck at the intersection of Highways MN 58, US Highway 61, and US Highway 63 at the east end of the Red Wing business district. The study documents the analysis of existing and future conditions with an origin-destination survey, traffic forecasts, and a study of circulation patterns downtown. The study also includes a variety of alternatives and recommendations for operational improvements.

2005 Riverfront Redevelopment Plan

The Riverfront Redevelopment Plan was identified as a critical part of the process of updating the 1994 Comprehensive Plan. The plan considers the City's eight miles of Mississippi River shoreline. It documents the process and results of identifying the community's shared vision and guiding principles and identifies six redevelopment zones with recommendations for each zone, trail projects, and recommendations for the riverfront area's design character. The plan also includes an action plan section which establishes specific zoning and land use recommendations for each redevelopment zone along with implementation strategies in order to guide development in a manner consistent with the plan.

2007 Comprehensive Plan

The 2007 Comprehensive Plan is a long-term guide for policymakers to use in making decisions about the growth and development of the city over the next twenty years. The plan documents

the community vision and guiding principles, community background and context, community systems, settlement patterns, design character, and community initiatives. Three core principles are emphasized throughout the plan: 1) that as the community evolves it will focus on integrating and building the green infrastructure system; 2) that future new development will be focused in and around key activity centers and 3) that future land use policy and regulations will emphasize a design character that is telling of Red Wing's historic character and uniqueness. The plan also identifies recommendations and implementation strategies for public and private actions to achieve the community's vision.

Upper Harbor Master Plan

The Upper Harbor Master Plan creates a vision for the river bend portion of Red Wing's riverfront. It is a site plan that provides parks and open areas, parking and storage areas, boat launches, marinas, activity areas, and designated trails and other infrastructure that support a bicycle and pedestrian environment.

2008 Community Sustainability Report

The Community Sustainability Report identifies indicators that contribute to a community's sustainability and evaluates whether Red Wing's indicators are moving toward or away from sustainability. The indicators are categorized into six goal areas: housing & economic development, transportation & circulation, land use, community life & health, government, and environment. The transportation and circulation section documents walkability within the city, resident mode of transportation and travel time to work, pedestrian and bicycle safety, transit options and mass transit ridership, bike lanes, and paths, sidewalk connectivity, and street and boulevard trees.

2009 Hastings to Red Wing Trail Master Plan

The Hastings to Red Wing Trail Master Plan provides a plan for a regional trail from Hastings to Red Wing. The plan documents planning context and background of the project, a vision and public values for the project, as well as proposed primary and optional trail and bike route alignments for different corridor segments that provide implementation flexibility. In addition, the plan includes an implementation and management plan that provides strategies for funding, land acquisition, and development.

2009 Red Wing Downtown Action Plan

The Red Wing Downtown Action Plan establishes a vision for downtown Red Wing as a premier riverfront destination. The plan documents the current state of downtown Red Wing through an analysis of the strengths, weaknesses, and general property use, anticipated changes and trends for the district, a vision for the future that includes six main values, as well as 32 actions designed to uphold and reinforce the six identified values and associated implementation strategies.

2011 Bicycle and Pedestrian Master Plan

The Bicycle and Pedestrian Master Plan is a long-range bicycle and pedestrian network plan developed as an action of the Complete Streets Policy Resolution adopted by the city council in 2011. The plan is a tool to guide the long-term programs, policies, and physical projects to support walking and bicycling in Red Wing. It documents the benefits of bicycling and walking and background on the planning process, establishes a vision and goals, and identifies existing conditions and barriers to bicycle and pedestrian transportation. The plan also includes an action plan section which identifies and sets forth priorities for bicycle and pedestrian projects including the development of an on-street bicycle network, bicycle and pedestrian connections, education and promotional programs, and enforcement strategies.

2016 Pedestrian Plan and Policy Report

This report was the result of two years of work by a fourteen member Mayor's Task Force on Streets and Sidewalks that focused on city policies related to the pedestrian system. Topics tackled included: winter sidewalk maintenance; sidewalk inspection and maintenance policies; pedestrian issues that could be addressed as the city completes street reconstruction projects; sidewalk policies in new subdivisions and in locations where the city has vacant lots that lack sidewalks; recommendations to help establish priorities for filling in the gaps in the pedestrian system; and suggestions about how to sustain the work recommended in the report.

Regional and National Precedents and Resources

Several other regional, statewide, and national resources were referenced to facilitate the development of this transportation plan including:

- FHWA Guide for Small Town and Rural Multimodal Networks
- Minnesota Go 50-year Vision for Transportation
- MnDOT Complete Street from Policy to Project Guidebook
- MnDOT Complete Streets Implementation Resource Guide for Minnesota Local Agencies
- NACTO Guides
- Southeast Minnesota Travel Study
- AASHTO Guide for the Design of Bicycle Facilities

Transportation Vision, Goals and Objectives

The City's Transportation Vision Statement represents the big picture of what the city wants to achieve in the coming decades. It was crafted with input from the community to encompass the overall vision for the future of transportation in Red Wing.

Transportation Vision Statement: Our community's safe and connected transportation network is economically and environmentally sustainable for all types of transportation.

Goals and Objectives

The city has identified five goals with corresponding objectives to provide a framework for realizing the Transportation Vision Statement. These include Stewardship, Safety, Mobility, Economy, and Health. Each transportation goal is described in greater detail below. The goals are numbered for ease of use and do not reflect prioritization.

Goal 1: Stewardship

Preserve and maintain the City's transportation system.

» Stewardship Policies: Maintain the City's transportation system in a state of good repair.

Goal 2: Safety

Provide a safe transportation system for all users – automobiles, trucks, trains, watercraft, aircraft, transit vehicles, bicycles and pedestrians – in the city.

» Safety Policies
- *Reduce the crash rate and increase safety on the City's transportation system.*
- *Protect the City's interconnected transportation network to ensure emergency vehicle response times.*
- *Work with public roadway partners and private property owners on new and redevelopment site design to ensure safe access, internal circulation and interconnectivity among adjacent developments.*
- *Provide traffic calming techniques to improve bicycle and pedestrian safety*

Goal 3: Mobility

Improve mobility, access, and connections for all users of the City's transportation system.

» Mobility Policies
- *Maintain travel time reliability and predictability on the City's transportation system for all users.*
- *Provide efficient access to freight terminals such as ports and rail yards.*
- *Improve multimodal travel options and access for people of all ages and abilities.*
- *Use access management guidelines to promote the appropriate balance between mobility and land access for different categories of roadway facilities.*
- *Support policies that encourage ride sharing commerce and technology*
- *Explore innovative alternatives to provide lower cost transportation options*

Goal 4: Economy

Support the economic competitiveness, vitality, and prosperity of the city through its transportation system.

» Economy Policies
- *Make improvements to the City's transportation network in a cost-effective and economically sustainable manner.*
- *Provide efficient access to freight terminals.*
- *Improve multimodal and transit access to the City's job centers and businesses.*
- *Attract businesses and residents to the city by investing in a safe and efficient transportation system that provides multimodal travel choices.*

Goal 5: Health

Encourage health, well-being and equity in the city via a transportation system accessible to all users and in balance with the natural and cultural environment.

» Health Policies
- *Encourage walking and bicycling in the city via a fully connected network of sidewalks, on-street bike lanes and trails.*
- *Reduce transportation-related air and noise pollution by reducing Vehicle Miles Traveled (VMT).*
- *Improve transit access to hospitals, clinics, and health centers.*
- *Minimize impacts of transportation construction on the natural and cultural environment.*
- *Support electric vehicles*
- *Encourage bike sharing and E-bike options to increase the amount of biking in Red Wing.*

Existing Transportation System

The existing transportation system in Red Wing is made up of a network of infrastructure that supports both motorized and non-motorized means of travel. While the primary means of transportation remains personal vehicles, modes such as walking, biking, transit, freight, rail, port, and aviation are significant elements of the overall system that transport people and goods throughout the city and region. The following sections provide an inventory of the existing transportation system to inform future planning.

Roadway Jurisdictional Classification System

Jurisdictional classification determines which level of government has obligations and authority over the regulation, maintenance, and construction of a roadway, as well as financial responsibility. Jurisdiction is also based on a variety of factors such as character of service, system continuity, access control, traffic volumes and land uses served.

The city has approximately 140 miles of roadway under four jurisdictions: federal, state, county and municipal. Exhibit 1 gives an overview of the percentage of roadways under each jurisdiction. It shows that of the roughly 140 miles of roadway, 78% is municipal, 8% is county, and 10% is state owned. There are also 3% of roadways, or roughly 4.5 miles, that are privately owned, but accessible to the public.

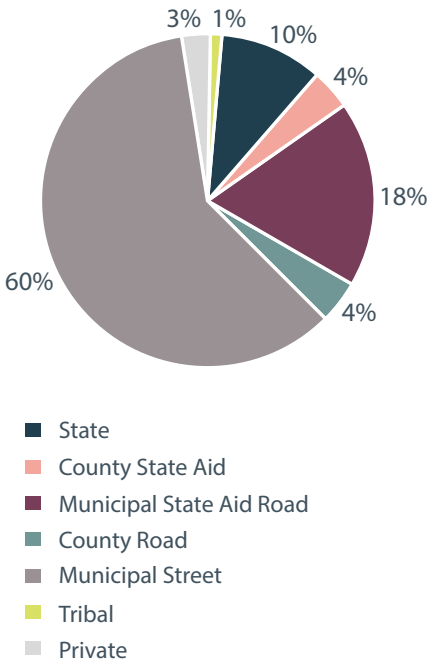


Exhibit 1 - Roadway Ownership for the City of Red Wing

Figure 1 provides a comprehensive map of the jurisdictional classifications for roadways within the city limits.

State Highway System

State Highways are generally categorized as routes that serve longer trips at higher speeds and regional, inter-county, and/or state-wide travel needs. There is a total of 16.4 miles of state highways within the city. This includes two US highways, US Highway 61 and US Highway 63. Though identified as US highways they are owned and maintained by the state. Both roadways are part of the National Highway System (NHS), identified as a system of roads important to the nation's economy, defense, and mobility.

US Highway 61 extends from Wyoming, Minnesota to New Orleans, Louisiana, following the Mississippi River for much of its route. It is also known as the Great River Road and Disabled American Veterans Highway. Local connections in Minnesota along US Highway 61 include Hastings and the Twin Cities Metro Area to the northwest and Lake City, Wabasha, and Winona to the southeast.

US Highway 63 crosses over the Mississippi River on the east end of downtown, before turning southeast. From Red Wing to Lake City, US Highway 63 shares its route with US Highway 61 before turning south to Rochester, MN and continuing south to Ruston, Louisiana. Local connections along US Highway 63 include Ellsworth and Baldwin, WI to the north and Wacouta, Frontenac, Lake City, Zumbro Falls, and Rochester to the south.

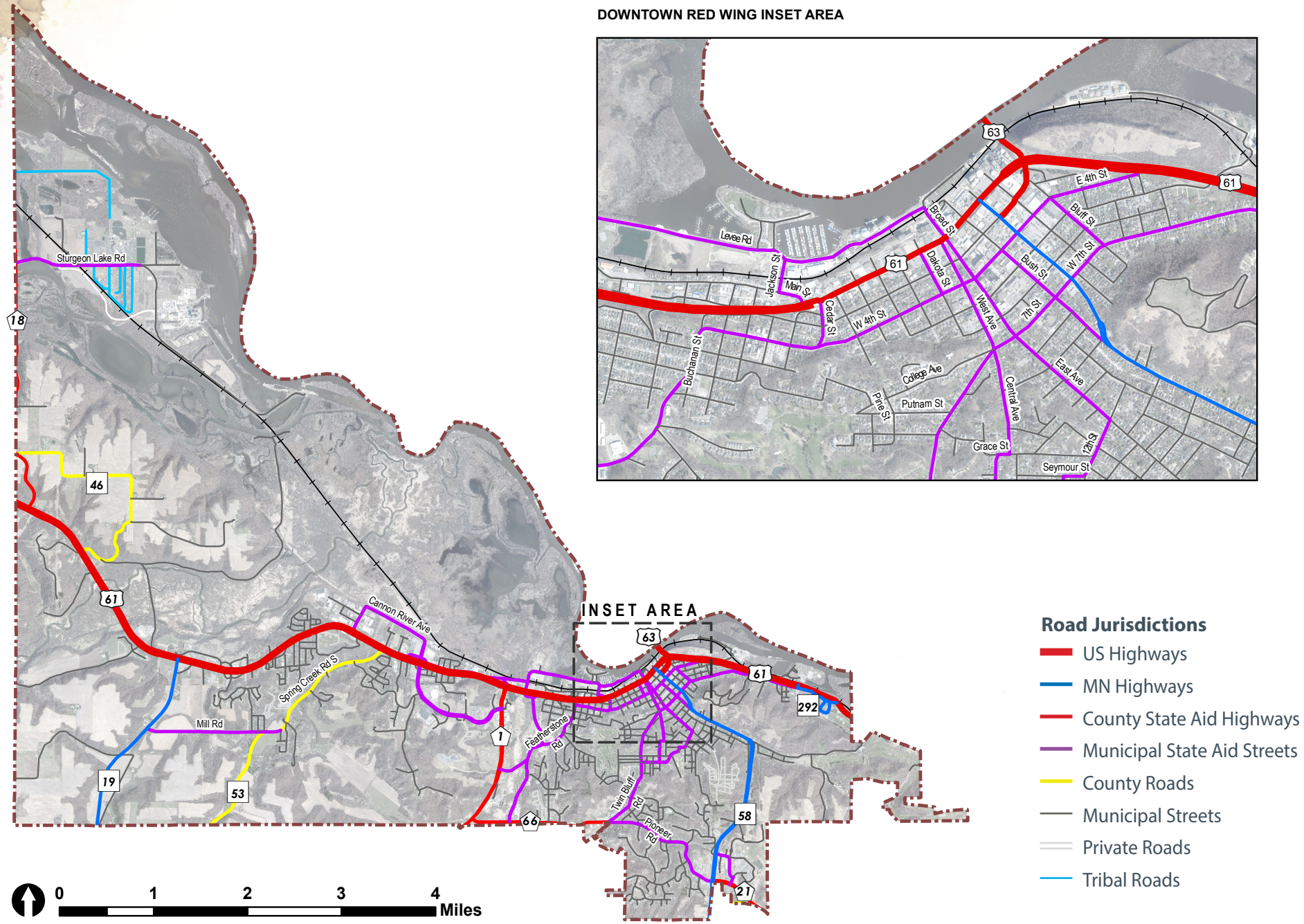


FIGURE 1 ROADWAY JURISDICTIONAL CLASSIFICATION SYSTEM

Other State Highways

MN-19 connects with US Highway 61 on the western end of downtown Red Wing. It travels southwest from US Highway 61 for approximately five miles before turning west to cross the state. It provides connections to cities such as Cannon Falls, Northfield, and Marshall, and highways US 52, I-35, and US 169.

MN-58 travels southeast from US Highway 61 along Plum St and Bush St for approximately 1.25 miles before turning south to connect with Hay Creek, Goodhue, and US 52 in Zumbrota.

MN-292 is a roughly 0.75 mile segment that runs parallel to US Highway 61 and provides access to the MN Correctional Facility and Jail.

Collectively the state highway system provides the primary connections between Red Wing and the surrounding region including the Twin Cities.

Goodhue County Highway System

Goodhue County owns and maintains four County State Aid Highways (CSAH) and two County Roads (CR) within the city limits. The county highway system provides connections between municipal roads and state and federal highways. The roadway types under Goodhue County's jurisdiction range from major collectors carrying larger traffic volumes to local roads with relatively low traffic volumes.

There are 5.4 miles of County State Aid Highways within the city. These roadways include: CSAH 18 (Prairie Island Boulevard), CSAH 1 (Bench Street), CSAH 66 (Pioneer Road from CSAH 1 to Twin Bluff Rd) and CSAH 21 (Flower Valley Road).

There are 5.7 miles of County Roads within the city. These roadways include: CR 46 (Mt Carmel Road) and CR 53 (Spring Creek Road).

Municipal Streets System

Of the roughly 140 miles of publicly owned roadways within the city, 113.2 miles (78%) are owned and operated by the city. Municipal State Aid (MSA) Streets equate to 25.4 miles of roadway. These facilities receive resources from the Highway Users Tax Distribution Fund to assist with construction and maintenance. The remaining 87.8 miles are local roads that rely on local taxes to fund construction and maintenance. See Figure 1 for a map of MSA and local streets.

Private Roads with Public Access

There are roughly 4.5 miles of private streets within the city which serve both residential and commercial development. These facilities are owned and maintained by development associations and individual property owners.

Roadway Functional Classification System

A highly functional roadway network balances providing access to destinations with the safe and efficient transport of people and goods. The Functional Classification System categorizes roadways based on the degree to which they provide local access versus high-speed mobility. These classifications include Principle Arterials, Minor Arterials, Major Collectors, Minor Collectors and Local streets.

Exhibit 2 shows the breakdown of the road network in Red Wing for each functional classification while Figure 2 provides a map of the functional street classifications.

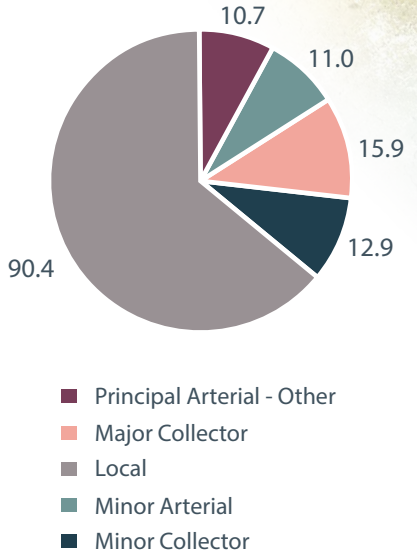


Exhibit 2 - Functional Classification for Roadways in the City of Red Wing (miles)

Principal Arterials

Principal arterials consist of high-speed roadway corridors that provide the highest level of service to regional and national road networks. They typically are access controlled with interchanges, limited at-grade access expressways, or major urban arterials with traffic signals. These facilities operate with the highest emphasis on mobility and safety.

Principal Arterials within the city include:

- US Highway 61
- US Highway 63

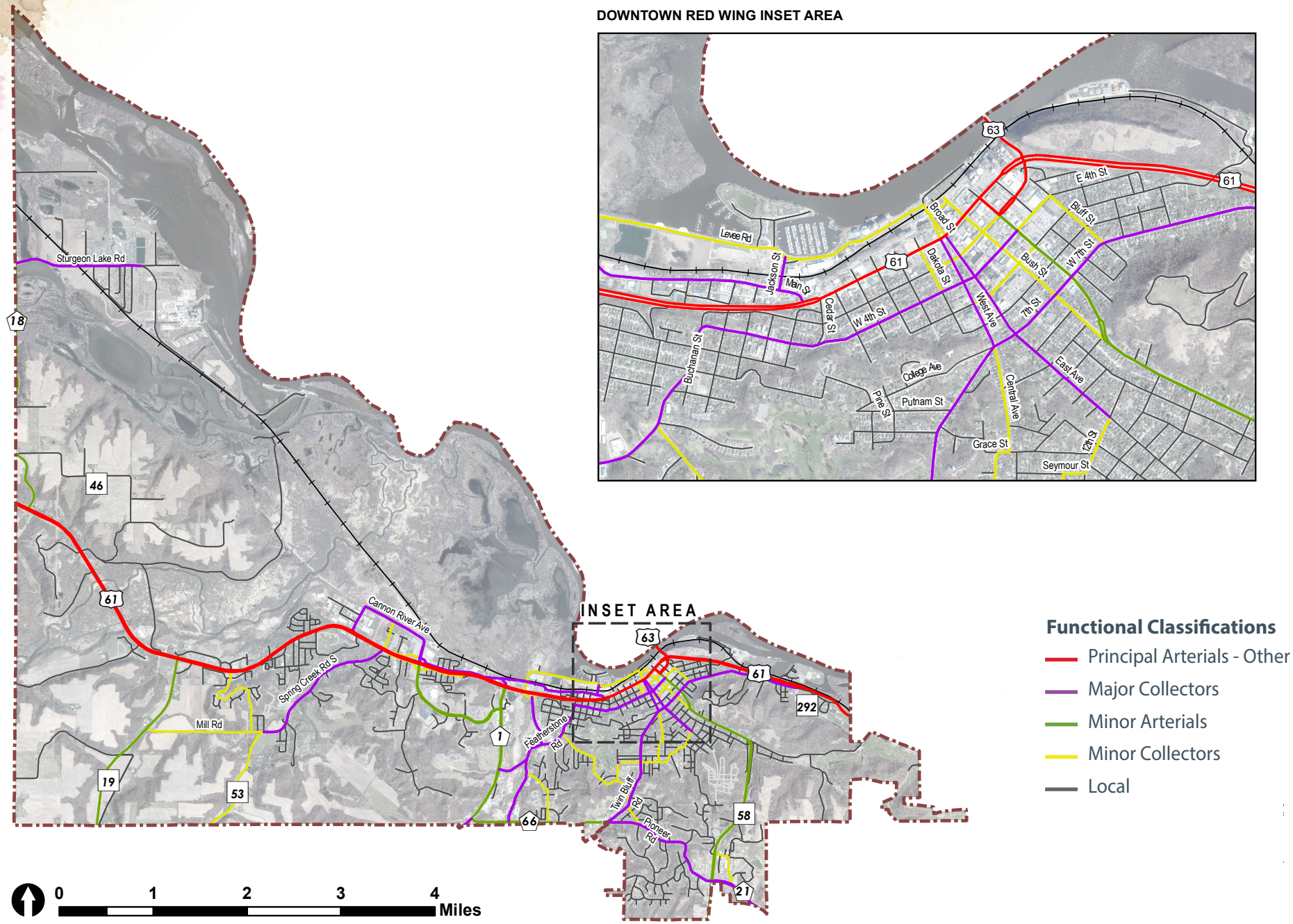


FIGURE 2 ROADWAY FUNCTIONAL CLASSIFICATION SYSTEM

Minor Arterials

Minor arterials consist of regionally important highways, and provide high levels of service to regional road networks. They are eligible to compete for federal funding, and emphasize mobility and safety over local access. Minor Arterials within the city include:

- MN-19
- MN-58
- CSAH 18
- CSAH 1
- CSAH 66
- Tyler Road S

Collectors

Collectors provide lower speed connections between neighborhoods and between neighborhoods and minor business/commercial concentrations. They balance mobility and safety with providing access to destinations. Major and Minor Collectors within the city include:

Major Collectors

- Sturgeon Lake Road
- CR 53/Spring Creek Road S (North of Mill Road)
- Cannon River Avenue
- CSAH 1 (South of CSAH 66)
- N Service Drive/Old W Main Street
- Jackson Street
- Featherstone Road
- Hay Creek Valley Road
- Tile Drive
- W 4th Street (west of Plum Street)
- W 7th Street
- West Avenue
- East Avenue (from US Highway 61 to 12th Street)
- Twin Bluff Road
- Pioneer Road
- CSAH 21/Flower Valley Road

Minor Collectors

- Mill Road, Aspen Avenue, CR 53 (south of Mill Road), Spring Creek Avenue, N Service Drive (west of Tyler Road), South Service Drive, Neal Street, Perlich Avenue, W Maple Avenue, Spruce Drive, Southwood Avenue, Maple Street, Mason Street, Goodhue Street, Central Avenue, 12th Street/ Seymour Street/Mason Street (west of East Avenue to Maple Street), Levee Road, Bush Street (from the railroad to 10th Street), Bluff Street (from W 4th Street to W 7th Street), W 4th Street (from Bluff Street to Plum Street), Broad Street (from Levee Road to US Highway 61), Dakota Street (from US Highway 61 to W 4th Street), and W 6th Street (from East Avenue to Plum Street).

Local

All other public roadways within the city are classified as local streets. They provide low-speed connections and access to destinations, such as homes and shops, and generally have low traffic volumes. The spacing of local streets depends on the density of the development in the area, but the average trip length along this type of road ranges from a few blocks to up to two miles.

Parking

The city has a variety of free and paid parking options for residents, employees and visitors, including on-street parking, surface parking lots, and parking ramps.

Most roads within the grid-like downtown have free on-street parallel parking, including portions US Highway 61 and MN 58. Some cross streets such as Old West Main Street, Potter Street, and Broad Street offer additional on-street parking through diagonal and straight-in 90 degree parking options.

In addition to on-street parking, there are a variety of public and private surface lots and ramps that provide a large number of stalls throughout the city. Figure 3 highlights the off-street parking options identified in the 2009 Downtown Action Plan. Of the 36 lots identified, three are public parking ramps which provide a total of 735 parking stalls to serve local businesses, residents and visitors in the downtown area.

The Studebaker Ramp is the newest of the public facilities at roughly 18 years old. The La Grange Ramp across Bush Street from the St. James Hotel, and the 4th Street Ramp are both over 25 years old and more likely to need maintenance in the coming years.

In newer areas of development such as along Tyler Road, parking is predominantly managed through private surface lots as is typical of more suburban development practices.

Existing Traffic Conditions

How frequently a road gets used and the maximum capacity of the road are the two factors used in understanding traffic conditions at a network wide level.

The existing traffic volumes are calculated using Annual Average Daily Traffic (AADT), which divides the total volume of vehicle traffic on a road in a year by 365 days. The most up to date AADT volumes for the City of Red Wing were obtained from MnDOT and

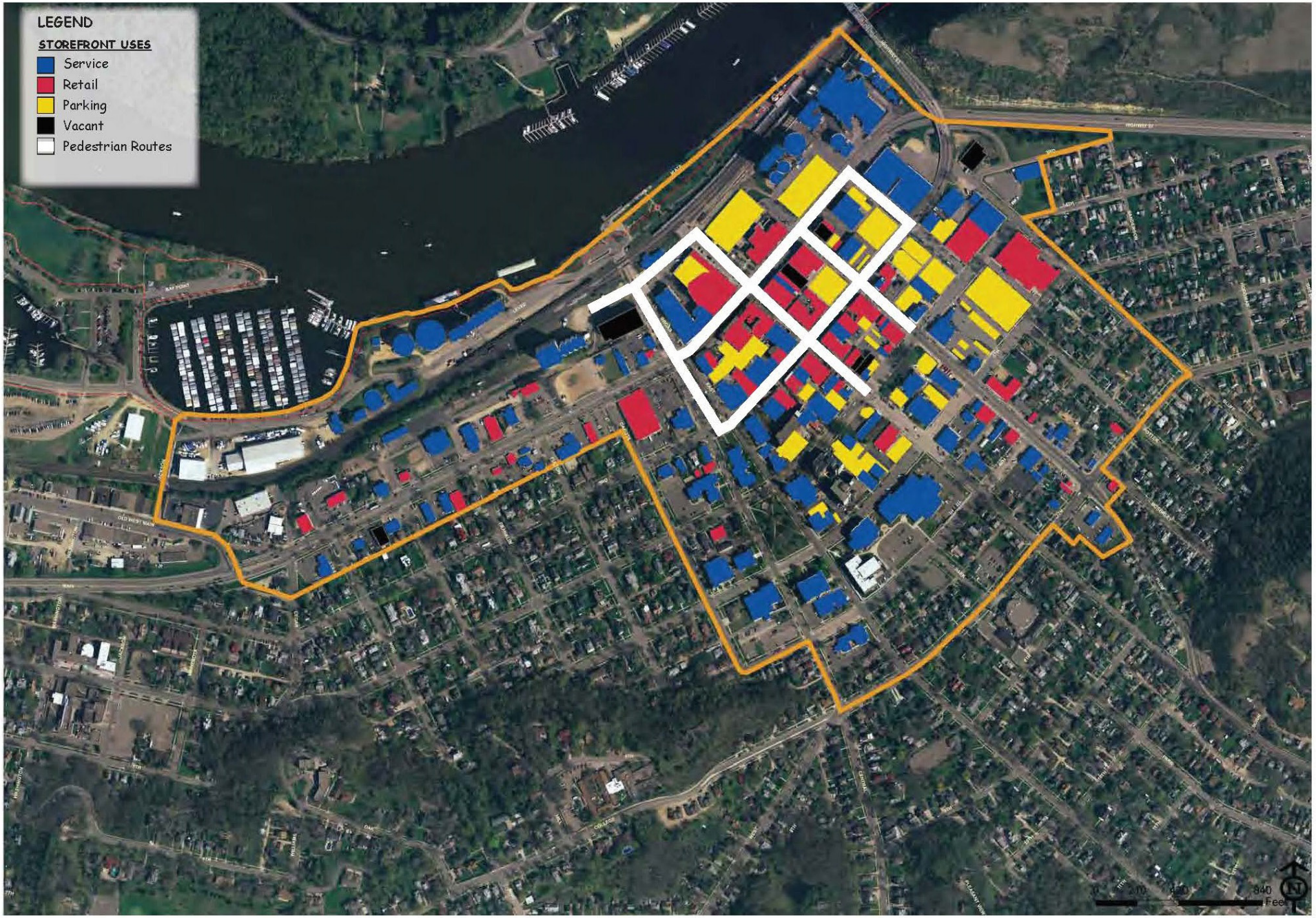


FIGURE 3 OFF STREET PARKING OPTIONS IN 2009

are depicted in Figure 4. In general, the AADT of a road is correlated with its functional classification. Principal arterials generally have high AADT volumes while minor collectors and local streets tend to have lower AADT volumes. For the most part, roads within the city follow this pattern. US Highway 61 and US Highway 63 have predictably high AADT volumes compared to the remainder of roads in the city, with upwards over 23,000 AADT, while some minor collectors have volumes as low as 300 AADT.

Capacity Analysis

In general, the capacity of a roadway is a measure of its availability to accommodate a certain volume of moving vehicles. A roadway segments level of service (LOS) is a quantitative comparison of an existing traffic volume (AADT) and the maximum volume the roadway can accommodate in its present configuration. Based on the ratio between existing traffic volumes and roadway capacity, a LOS grade is assigned. The LOS letter grades (A to F) provide a qualitative indication of the operational efficiency or effectiveness. By definition, LOS "A" conditions represent very little delay or interference for motorists, and LOS "F" conditions represent significant delay or severe congestion for motorists. Exhibit 3 provides an overview of roadway LOS.

Traffic flowing at capacity can be susceptible to breakdown caused by even a minor interruption or incident. Table 1 contains a summary of generalized traffic thresholds for specific roadway types, level of service, and number of traffic lanes. These capacity thresholds are based on the Highway Capacity Manual and the Twin Cities Regional Travel Demand Model.

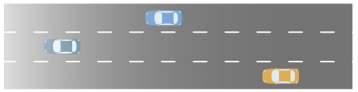
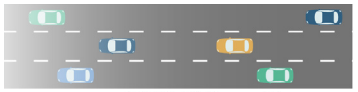
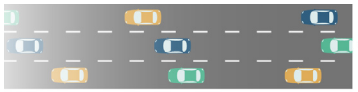
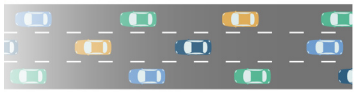
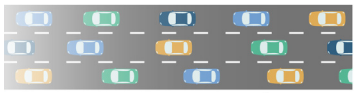
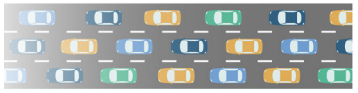
Level of Service	Volume/Capacity (V/C) Ratio	Traffic Flow	Description
A	0.00 to 0.39		**FREE FLOW** Low volumes and no delays.
B	0.40 to 0.59		**STABLE FLOW** Low volumes and speeds dictated by tr conditions.
C	0.60 to 0.79		**STABLE FLOW** Speeds and maneuverability closely control to higher volumes.
D	0.80 to 0.99		**RESTRICTED FLOW** Higher density traffic restricts maneuverabi volumes approaching capacity.
E	1.00 to 1.19		**UNSTABLE FLOW** Low speeds, considerable delays, and volu or slightly over capacity.
F	1.20 and above		**FORCED FLOW** Very low speeds, volumes exceed capacit long delays with stop-and-go traffic.

Exhibit 3: Roadway Level of Service (LOS). Source: SEH and UtahDOT

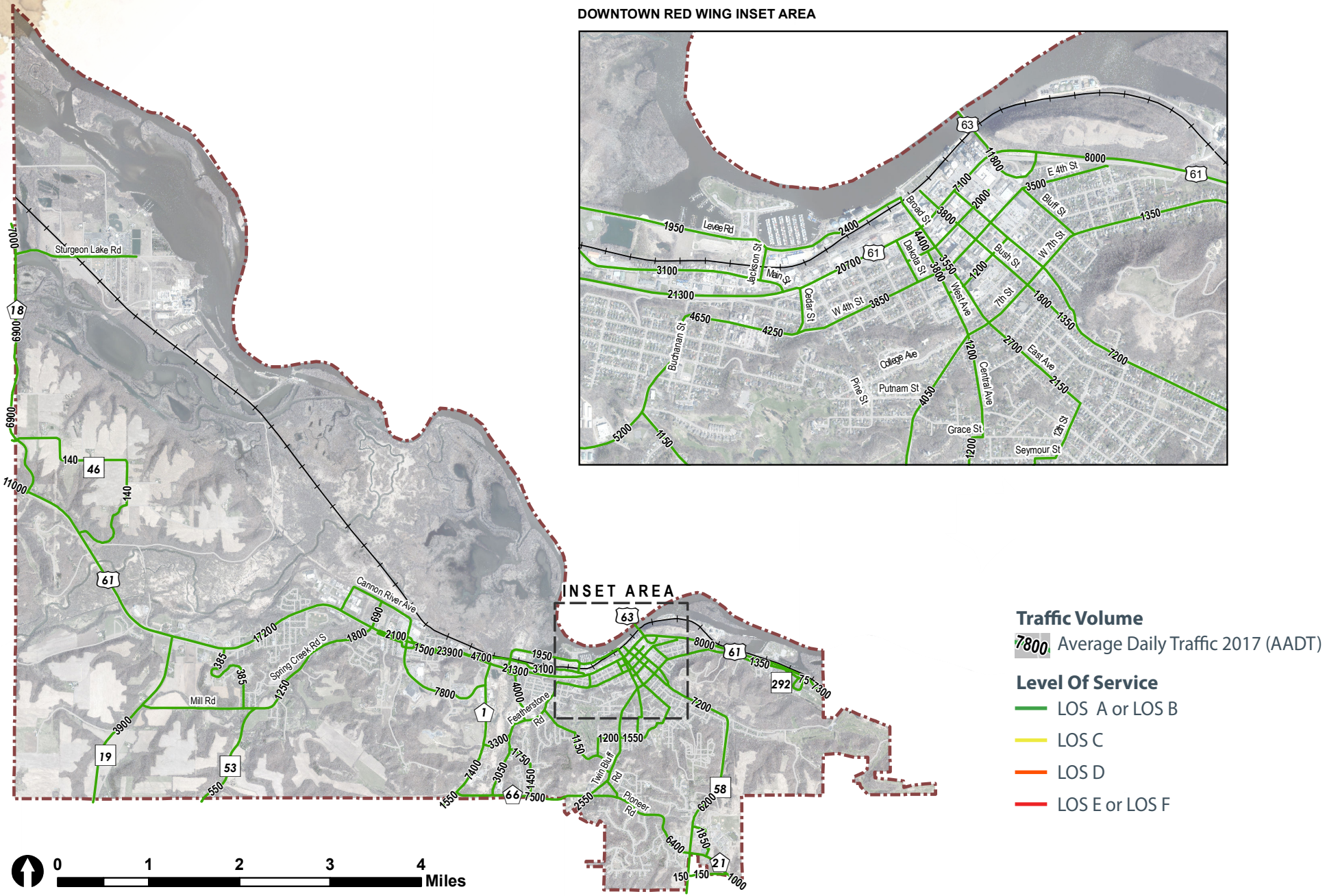


FIGURE 4 EXISTING ANNUAL AVERAGE DAILY TRAFFIC (AADT) AND LEVEL OF SERVICE (LOS)

TABLE 1 GENERALIZED AVERAGE DAILY TRAFFIC LOWER LIMIT THRESHOLDS FOR DIFFERENT LOS

Facility Type	Number of Lanes	B	C	D	E	F
Divided Arterial	4	23,400	27,000	30,600	34,200	37,800
Un-Divided Arterial	4	20,800	24,000	27,200	30,400	33,600
	2	10,400	12,000	13,600	15,200	16,800
Collector or Local Roadway	4	13,700	15,800	17,900	20,000	22,100
	2	6,500	7,500	8,500	9,500	10,500
v/c Ratio		0.65	0.75	0.85	0.95	1.05

Note: Estimated based on freeway daily capacity in Highway Capacity Manual and hourly capacity in the Metro Council Activity Based Model.

In roadway planning, the goal is to provide a facility that effectively and efficiently moves traffic. A roadway should reflect its environment. In general, people in larger metropolitan areas expect to incur some congestion during peak hours, therefore the LOS D/E capacity threshold is usually acceptable. In smaller communities people typically have a lower tolerance for congestion and therefore the LOS C/D threshold is more common.

Table 1 identifies the lower limit volume thresholds and LOS for various roadway facility types and number of lanes. The approximate vehicle/capacity (v/c) ratio related to each LOS grade is also shown.

The LOS for all roadways with AADT information available through MnDOT's traffic data database was calculated by comparing the most recent available traffic counts for each facility to the traffic volume LOS thresholds. Based on the existing counts, all existing roadways have a planning level of service of A or B, indicating that each roadway is operating within its capacity. The roadway segment with the highest existing v/c ratio is the US Highway 63 Bridge north of US Highway 61 with a v/c ratio of 0.74, which is LOS B approaching LOS C. No other roadways had a volume/capacity (v/c) ratio over 0.7. The LOS for each roadway are displayed in Figure 4.

Safety Assessment

As illustrated in Exhibit 4, from 2006 to 2015, the city experienced an annual average of 302 motor vehicle crashes, with the trend decreasing over the 10-year period (Source: MN Crash Mapping Analysis Tool).

Figure 5 presents the locations and frequencies of crashes throughout Red Wing. Location specific crash data was obtained from MnDOT's crash mapping analysis software (MnCMAT) from January 1, 2011 to December 31, 2015 (Crash data for 2016 and 2017 is not currently available through MnCMAT). The intersections with the most crashes during this time period occurred at the cross streets of US Highway 61 and Tyler Road with 53 crashes and US Highway 61 and East Avenue/West Avenue with 53 crashes. Nine of the top 11 intersections with the most crashes are located along US Highway 61 and US Highway 63, with the remaining two intersections located along MN-58.

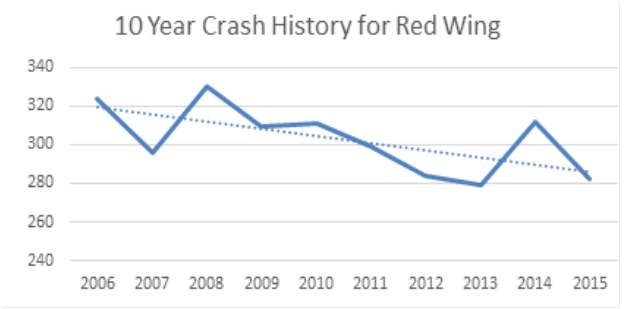


Exhibit 4: 10 Year Crash History

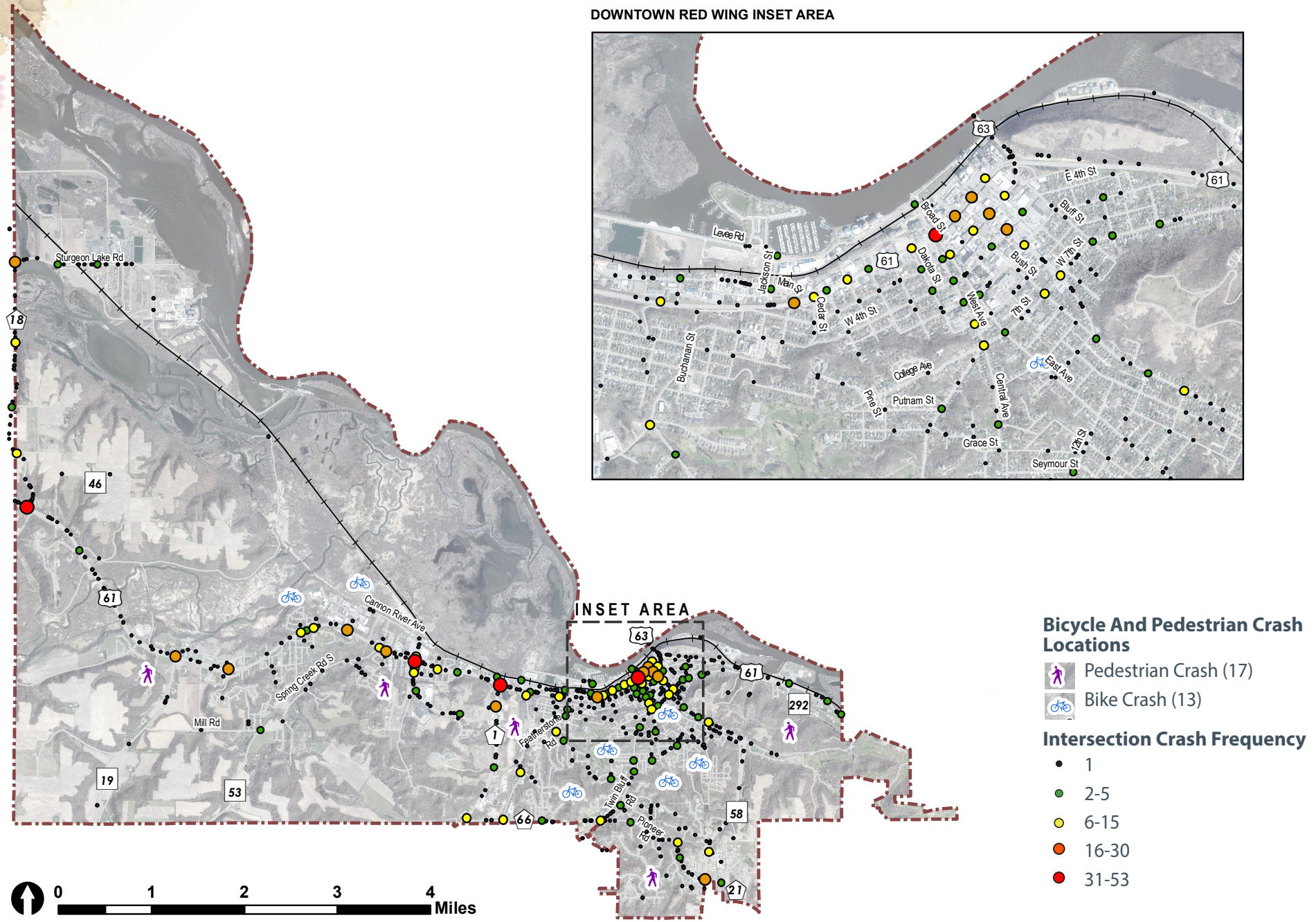


FIGURE 5 CRASH LOCATIONS AND FREQUENCIES FOR 2011-2015

Table 2 provides more detail on the 11 intersections with highest crash frequency, such as intersection jurisdiction and traffic control type. Intersections with high crash history should be further reviewed to determine the causal factors contributing to the high number of crashes. Problem locations should be monitored and further evaluated as deemed appropriate by city staff. Intersection geometric changes and/or traffic control changes can often be identified to reduce the frequency of, or possibly the severity of crashes that occur in the future. Intersection safety is routinely addressed as part of larger corridor construction and reconstruction projects.

TABLE 2 TOP 11 INTERSECTIONS FOR CRASH FREQUENCY IN THE CITY OF RED WING FROM 2011 TO 2015

Intersection	Number of Crashes	Jurisdiction	Traffic Control
US Highway 61 at East Avenue/West Avenue	53	State / City	Traffic Signal
US Highway 61 at Tyler Road	53	State / City	Traffic Signal
US Highway 61 at CSAH 1	43	State / County	Traffic Signal
US Highway 61 at CSAH 18	33	State / County	Two-way Stop
US Highway 61 at MN-58/Plum Street	28	State / State	Traffic Signal
TH 61 at W Main Street	24	State / City	Traffic Signal
MN 58/Plum Street at US Highway 63/3rd Street	24	State / State*	Traffic Signal
US Highway 61 at MN-19	23	State / State	Two-way Stop
US Highway 61 at Bush Street	21	State / City	Signal
MN-58 at CSAH 21	20	State / County	Signal
MN-58/Plum Street at 4th Street	20	State / City	All-way Stop

**With completion of the US Highway 63 river bridge project, the jurisdiction of 3rd Street between MN 58 and US Highway 63 is proposed to change from State to city. Additionally, the traffic control will change from a traffic signal to an all-way stop.*

Non-Motorized Safety

Beyond overall crash statistics, it's important to look at crashes that involve pedestrians and bicyclists as they represent the most vulnerable users of the transportation network. Unlike motorists who are protected by in-vehicle safety measures, pedestrians and bicyclists are fully exposed to the impacts of a crash with a vehicles. Speed is a major factor in the severity of these crashes. At 20 mph, a pedestrian has a 90% chance of survival, while at 40 mph the chance of survival drops to 10 percent. Because of this vulnerability, pedestrian and bicyclist safety requires additional attention when planning a transportation network that is safe for all users.

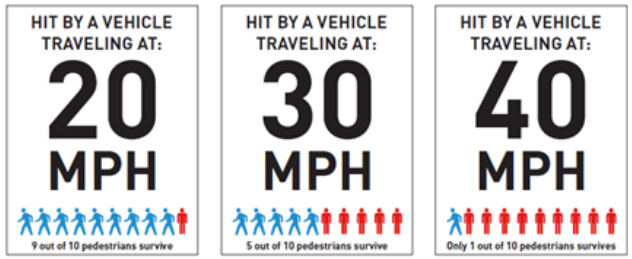


Image Source: Seattle Department of Transportation

At 20 mph, a pedestrian has a 90% chance of survival, while at 40 mph the chance of survival drops to 10 percent

From 2011 to 2015, there were 17 crashes that involved a pedestrian and 13 crashes that involved a bicyclist within the city. The location for these crashes can be seen on Figure 5. Unlike the vehicle-only crashes, which mainly occur in high numbers along principal arterials and major collectors, the pedestrian and bicycle crashes are more spread out and occur on a variety of roadway types from principal arterials and major collectors to local roads. The Bicycle and Pedestrian Master Plan identifies additional problems and solutions to improving safer crossings throughout the city. In general, high speeds and wide roadways were seen as significant barriers to safe crossings, regardless of roadway type.

It should be noted that the absence of a crash at particular locations does not necessarily denote safety. Perceived safety issues for bicyclists and pedestrians can decrease use of an intersection or crossing, leading to avoidance of a particular area, which in turn decreases crash counts.

This crash data, combined with the public feedback documented in the Public Engagement section and the issues identified in the Bicycle and Pedestrian Master Plan, give more insight into where safety is a concern for pedestrians and bicyclists. Additional study, such as the proactive safety assessment currently under development by the county, may be beneficial to analyze both perceived risk and documented crashes. Safe Routes to Schools plans, have been also been created for two of the five public schools within the city, providing an in-depth analysis of safety issues and solutions around the campuses.

Transportation Network Maintenance and Preservation

Roadways

State

MnDOT's 2017 pavement conditions map (below) show portions of US Highway 61, Bush Street, and MN-58 in fair to poor condition, indicating the need for repair or replacement in the coming decade. This presents opportunities for the city to work with MnDOT to make safety improvements, particularly at the high crash intersections identified in the previous section.

County

Goodhue County has operated a pavement management system for many years to identify roadway maintenance priorities. The County pavement management system includes a pavement condition index (PCI) that rates and tracks pavement conditions to help decision making regarding the cost-benefit of road reconstruction versus lower level maintenance strategies. The program is used by the County to develop priorities for pavement maintenance projects on county-owned roads.

Table 3 displays the current projected PCI for the County State Aid Highways and County Roads within Red Wing. The PCI ranges from 27 to 76 for County State Aid Highways and from 57 to 58 for County Roads. The amount of time before improvements are needed is dependent on many factors; however, in general, a PCI greater than 80 or 85 indicates there is more than 10 years before work is required, a PCI in the range of mid-60s to 80s indicates 6 to 10 years before work is required, and a PCI in the range of mid-40s to mid-60s indicates 1 to 5 years before work is required. A PCI less than the mid-40s indicates a need for rehabilitation or reconstruction within a year. The data gathered from the County pavement management system presents opportunities for the city to work with Goodhue County to make roadway condition improvements.

TABLE 3 GOODHUE COUNTY ROADWAYS PROJECTED PCI, 2018

Roadway Name	From	To	Functional Classification	Projected PCI
CSAH 1	South Red Wing limits	0.1 miles north of south Red Wing limits	Major Collector	67
CSAH 1	0.1 miles north of south Red Wing limits	0.5 miles north of south Red Wing limits	Local	73
CSAH 1	0.5 miles north of south Red Wing limits	TH 61	Local	64
CSAH 18	TH 61	CSAH 19 on west Red Wing limits	Minor Arterial	37
CSAH 18	CSAH 19	Sturgeon Lake Road	Minor Arterial	61
CSAH 18	Sturgeon Lake Road	Northwest Red Wing limits	Minor Arterial	76
CSAH 21	TH 58	0.30 miles east	Minor Collector	27
CSAH 66	CSAH 1	0.37 mi east	Major Collector	37
CSAH 66	0.37 miles east of CSAH 1	Twin Bluff Road	Major Collector	41
CR 46	CSAH 18	TH 61	Local	N/A (gravel road)
CR 53	South Red Wing limits	Spring Creek	Local	57
CR 53	Spring Creek	TH 61	Local	58

City

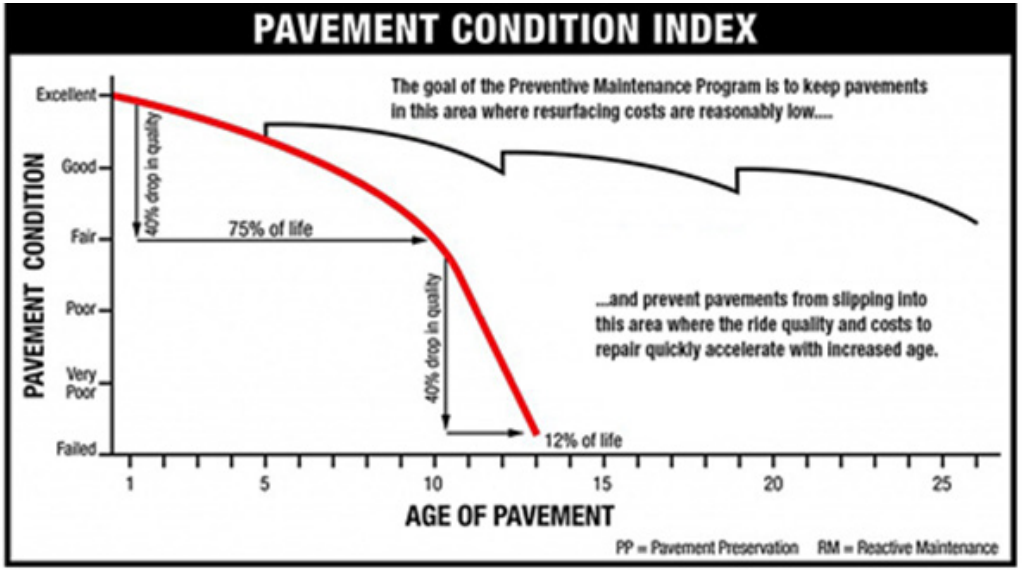
The transportation network in Red Wing constitutes a valuable asset and major public investment. Therefore, it is essential that the maintenance and preservation of this asset be managed in an efficient and cost-effective manner throughout the life-cycle of the infrastructure.

Primary transportation assets can be divided into five categories:

- Roadway Pavement
- Traffic (signals, traffic control signs, pavement markings, etc.)
- Roadside features (retaining walls, guardrail, pedestrian ramps, etc.)
- Drainage (curb/gutter, catch basins, culverts, retention/treatment ponds, etc.)
- Bridges (including large culverts)

The Red Wing Engineering Department has identified the primary roadway needs for the coming years and have prepared a series of maintenance maps that highlight local routes planned for seal coating, mill and overlays, reclamation, and full reconstruction (see maps in *Appendix A*). In addition, in 2016, the City completed a condition assessment that provides a pavement condition rating for all city roadways.

Currently, the city does not have a comprehensive asset management plan for their transportation infrastructure. As such, the city should consider adopting a formal Pavement Maintenance Program. The program should provide a long-term strategy to enhance pavement performance by using an integrated, cost-effective set of practices that extend pavement life, improve safety and meet resident's expectations. As shown in the diagram below, as the pavement condition decreases, the cost for the appropriate method of repair can increase significantly. Maintenance activities applied to surfaces in better condition, such as sealcoats or thin overlays can be more cost effective than waiting until the pavement is in poor condition when it is necessary to perform more costly maintenance or reconstruction. In addition, the disruption of traffic is less for more frequent and minimal maintenance treatments in comparison to larger reconstruction treatments.



Bridges

MnDOT has developed a database to help manage over 20,000 federal, state, county, and local bridges across the state. The database provides information on the age and structural sufficiency of each bridge. Within Red Wing, there are 51 bridges, 21 of which are owned by the state, 14 by the county, 14 by the city, one by a railroad, and one under private ownership.

Table 3 details the bridges within the city that scored less than 80 on the sufficiency rating. These scores are based on a 0 to 100 scale created by the Federal Highway Administration (FHWA). Bridges that score below 80 on the sufficiency rating are eligible for rehabilitation while bridges that score below 50 are eligible for full replacement.

Based on MnDOT Bridge Reports (May of 2018), three bridges are eligible for full replacement (receiving a sufficiency rating less than 50) and six are eligible for bridge rehabilitation (with a sufficiency rating below 80). Of these, Bridge 9040 and Bridge 99205 are currently being replaced as part of MnDOT's Red Wing River Bridge project, which is scheduled to be complete in 2020. With the completion of these new bridges, the number of bridges below a 50% sufficiency rating will drop to roughly 4%, and the number of bridges below an 80% sufficiency rating will drop to roughly 10%.

TABLE 4 BRIDGES WITH LESS THAN AN 80 SUFFICIENCY RATING WITHIN THE CITY OF RED WING

Bridge Number	Location	Year Built	Owner	Length in Feet	ADT	Sufficiency Rating
25592	W Main St. over Hay Creek	2003	Municipal	113	4,700	41
3481*	Cannon Bottom Rd over the Cannon River	1921	Municipal	193.4	0	43.3
9040**	US Highway 63 over Mississippi River	1958	State	1630.8	11,800	43.8
6483***	US Highway 61 over Hay Creek	1952	State	484	20,800	54.7
99205****	US Highway 63 over US61	2018	State	203.2	11,500	61.4
97747	US Highway 61 and CSAH 18 (box culvert at intersection)	1994	State	32.5	11,200	69
97746	US Highway 61 and Cutler Hill Rd (box culvert at the intersection)	1994	State	41.5	17,000	69
25525	Mill Rd over Spring Creek (east crossing)	1978	Municipal	73.7	300	78.9
9449	US Highway 61 over E 5th St	1962	State	133.1	8,000	79.6

** Bridge is closed to traffic*
*** Bridge to be removed upon opening of new Mississippi River bridge in 2019 or 2020.*
**** Scheduled for replacement in 2023/2024*
***** Currently under reconstruction.*
Source: MnDOT BridgeInfo3 database, retrieved May 14, 2018

Transit Service

Public transit is an integral part of the Red Wing transportation system, providing mobility for residents who may not own a car, be able to drive, or who may prefer an alternative to driving.
Figure 6 shows the fixed transit routes that provide local, regional and national transit service by bus and rail.

Local Service

Existing public transportation within the city is operated by Hiawathaland Transit sponsored by Three Rivers Community Action Group, which offers a combination of fixed and on-demand bus service within the city limits and to a limited number of destinations outside the city limits.

According to data obtained from Hiawathaland Transit, bus ridership over the last three years (2015 to 2017) has remained steady with approximately 106,000 annual rides.

Service is offered seven days a week, 357 days per year. In-city bus routes include the Blue, Green and Red Routes, providing service from MN-19 in the west to MN-292 in the east and down to the southeastern edge of the city. Buses are provided every 45 minutes from 4:30 a.m. to 6:00 p.m. Early morning service was recently added at the request of residents. Dial-a-Ride services are also available through 9:00 p.m. on weekdays and 5:00 p.m. on weekends. The following web link provides more information regarding the transit services.

Link to routes: https://threeriverscap.org/transportation/hiawathaland-transit/red-wing-service-area

Regional Service

Hiawathaland provides daily service to and from neighboring communities including Plainview, Wabasha, Lake City, Wanamingo, Zumbrota, and Cannon Falls. This service was established to address employee commuter demand. In addition, based on requests, the service was expanded to early morning hours, however ridership has been light.

Park and Ride Facilities

In an effort to reduce carbon emissions and vehicle miles traveled (VMT, which is the number of miles an individual drives a personal vehicles during a one year period), the city has provided three park-and-ride locations to facilitate carpooling and transit use. The newest facility has been completed at the intersection of US Highway 61 and Withers Harbor Drive and includes 31 parking spaces and an indoor transit station. Additional park-and-ride spaces are available at the La Grange and Studebaker parking ramps.

Other Transit Options

Rail

Other transportation options in Red Wing include Amtrak's Empire Builder, which runs between Chicago and Seattle/Portland. Adjacent stations along Amtrak's route include Winona and La Crosse to the southeast and Saint Paul and Saint Cloud to the northwest. The train station in Red Wing is adjacent to Levee Street, one block north of US Highway 61.

Casino Shuttles

Treasure Island Resort and Casino is a major local destination. The casino runs a free shuttle service from downtown Red Wing to Treasure Island Resort and Casino.

Rideshare and Taxi Service

Rideshare and taxi services can be crucial in providing rides to locations that aren't served by other forms of transit. Rideshare services such as Lyft, Uber, and taxi services such as Red Wing Taxi provide for-profit rides and are available on demand when drivers are available. In general, smaller cities such as Red Wing tend to have lower supply and demand for these services. Because of this, the reliability of rideshare and taxi services can vary greatly.

Non-public rideshare options within the city include a volunteer transit program known as HART, which matches volunteers to those who are unable to use public transit or drive. Volunteers use their personal vehicles to help individuals get to medical appointments, the grocery store, and a variety of other locations.

Non-Motorized Transportation

Walking and biking are the most common modes of non-motorized transportation. They provide inexpensive, healthy and environmentally friendly ways of getting to and from destinations. These non-motorized modes can be used to transport people to and from work, school, entertainment centers, and public transit, and they can also be used a means of recreation. The city has an extensive network of sidewalks, multi-use trails and bike facilities that provide residents with access to a variety of destinations and experiences. The following section outlines the existing facilities provided for non-motorized forms of transportation.

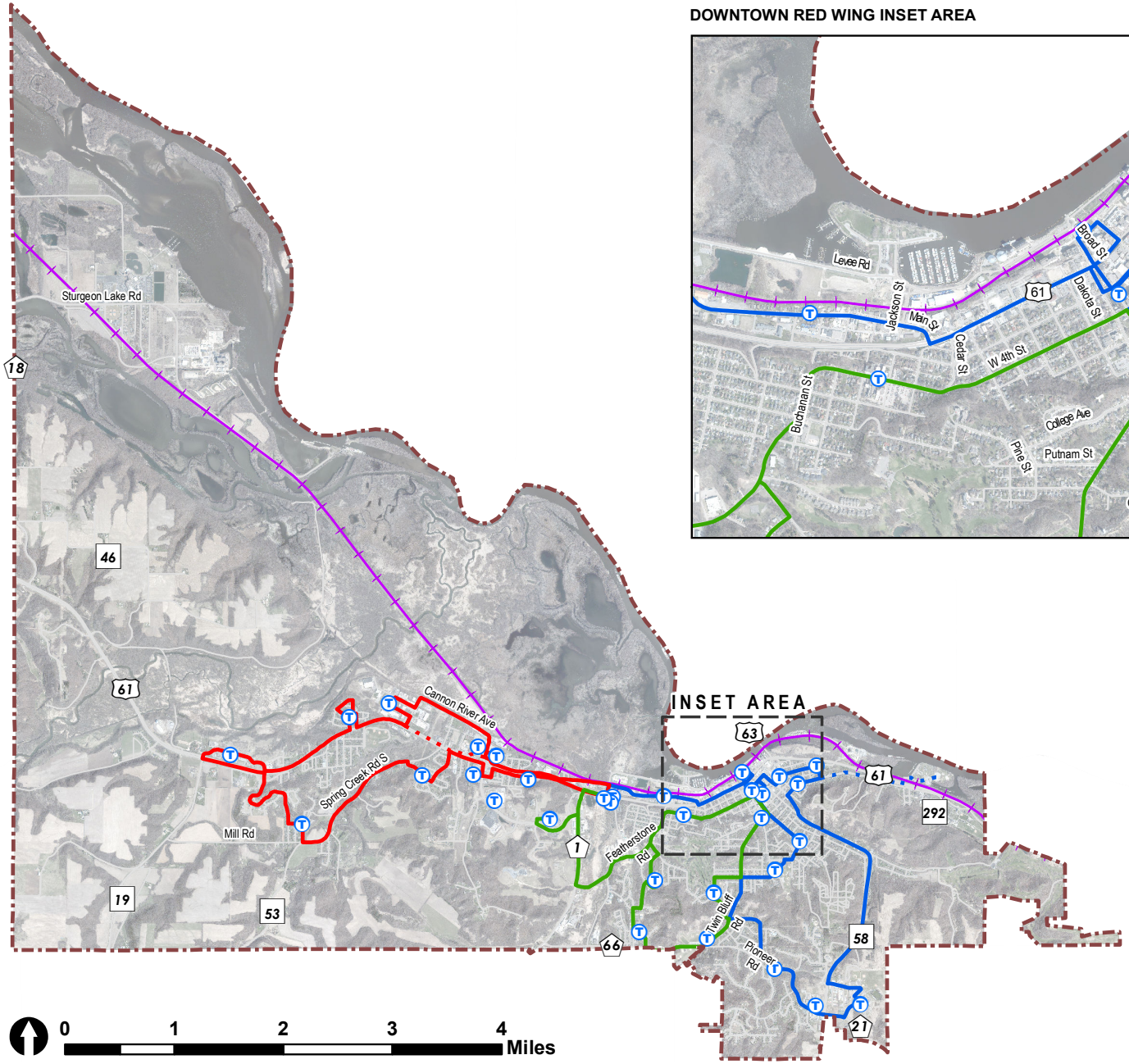


FIGURE 6 TRANSIT SERVICES

Sidewalks

There are a total of 72 miles of sidewalks that serve pedestrian travel within the city. As Figure 7 shows, the majority of the sidewalks are located within the downtown core and the area just to the south of downtown which have more compact development patterns.

Downtown Red Wing was originally built in a compact grid-like development pattern that supports a walkable community. Beyond the downtown area, development is more spread out due to the topographic changes of the Minnesota River Bluff and the suburban style development that has occurred in more recent decades. These areas of sprawling development make it challenging to support vibrant pedestrian environments and may not always warrant the installation of sidewalks due to low traffic volumes and speeds as well as a variety of other factors.

The city completed a Pedestrian Plan and Policy Report in 2016. A task force was establish to direct the process which centered on the following goals:

Short Term Goals:

- Increase accessibility and safety for all walkers and bicyclists
- Improve city plans, policies, and procedures related to pedestrian activity
- Build a criteria system for prioritizing streets, sidewalks, and routes so improvements are based on data and objectivity
- Develop sustainable ways of gathering more residents' input into the planning and decision-making process
- Create necessary tools and processes so changes can be implemented consistently over time

Long Term Goals:

- Increase the number of walkers in Red Wing
- Improve residents' overall health and well being
- Raise residents' satisfaction with their neighborhoods and community
- Make Red Wing attractive for new businesses and families who value walkability, thereby improving the economic development, growth, and vitality of our city

The report includes a detailed condition and needs assessment of the sidewalk network. Some of the primary findings are presented in Table 4.

TABLE 5 SIDEWALK CONNECTIONS NEEDED

Location of Needed Sidewalk Connections
Neal Street
South Park Street
Bush Street
Hennings Avenue
Old West Main Street
Withers Harbor Drive
North and South Service Drive
Pioneer Road to Hay Creek Trail

Multi-Use Paths and Trails

In addition to sidewalks, Red Wing has several multi-use trails that provide local and regional access for people traveling by foot, bicycle, wheelchair, scooter, skateboard, or various other forms of non-motorized transportation.

There are a total of 34 miles of paved trails, including the Cannon Valley Trail, Hay Creek Trail and Goodhue Pioneer Trail. Each of these trails provides local and regional access for recreation and transportation purposes. In the 2011 Bicycle and Pedestrian Master Plan, the city identified an additional 11 miles of planned trails, the majority of which will run parallel to the Canadian Pacific Railroad Line and along CR-53/ Spring Creek Road S. A three block, separated bicycle/pedestrian facility is located on a section of US Highway 61 and a new separated bicycle/pedestrian facility is under construction as part of the new river bridge construction project, along two blocks of West Third Street and along the new bridge facility.

Bicycle Network

A comprehensive and connected bicycle network is an important piece of making a safe and connected transportation network that is economically and environmentally sustainable for all types of transportation. At the time of this report, there were a limited number of on-street or bicycle-only facilities within the city. Share the Road routes exist along West Third Street, Hill Street, and West Avenue. As shown in Figure 8, the city currently lacks a comprehensive and connected bicycle network to meet the needs and goals identified in this and previous planning efforts.

Although bicyclists are allowed on city streets, the lack of designated bicycle facilities prohibits a large percentage of the population from participating due to safety and comfort concerns. According to a recent study conducted by the City of Portland, there are four different types of bicyclists: Strong and Fearless, Enthused and Confident, Interested but Concerned, and Not Interested.

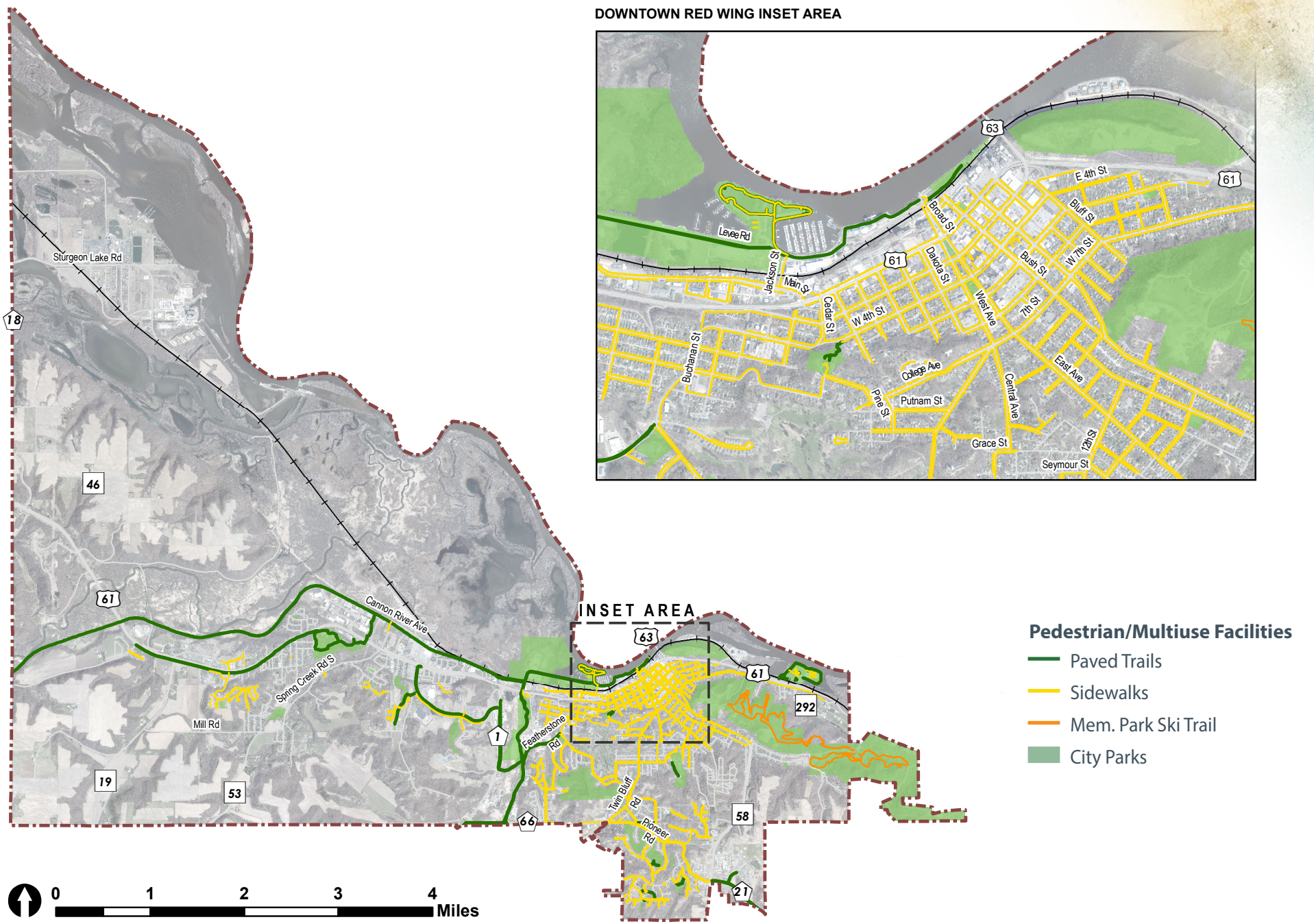


FIGURE 7 EXISTING SIDEWALK FACILITIES AND MULTI-USE TRAILS IN RED WING, MN

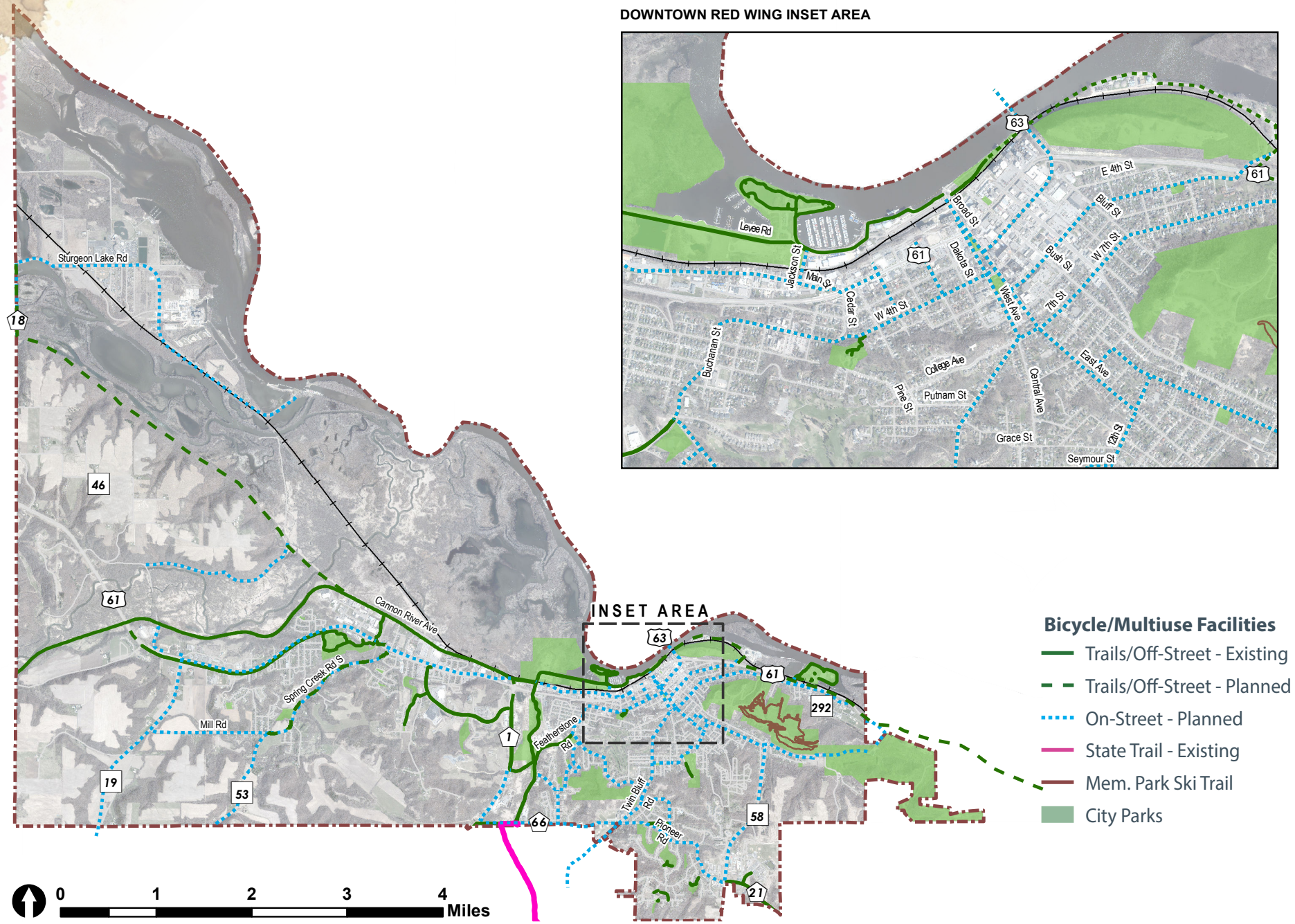


FIGURE 8 EXISTING AND PROPOSED BICYCLE FACILITIES AND MULTI-USE TRAILS IN RED WING, MN

Users in the Strong and Fearless and Enthused and Confident groups make up about 6-10 percent of the population. They are generally comfortable riding on all facility types, but the Enthused and Confident group generally choose low traffic stress routes or shared-use paths when available.

The largest user type is the Interested but Concerned cohort which makes up approximately 60 percent of the population. This group will typically only ride on low speed residential streets or protected bicycle facilities where there are fewer perceived barriers such as traffic and safety. This group represents the largest opportunity to increase the rate of bicycling in the city, but they require more investment in infrastructure to participate.

To create a more connected network that works for all user types, bicycle routes have been identified in the 2011 Bicycle and Pedestrian Master Plan. Routes along Twin Bluff Road, Pioneer Road, West Fourth Street, and Seventh Street are planned for future bike lanes or Share the Road markings and signage. Once completed, Red Wing will have approximately seven miles of bicycle facilities, providing residents access to schools, places of employment, shopping, and entertainment centers.

Complete Streets

As the transportation system in Red Wing evolves to meet future needs, the city is committed to provide safe, convenient, and context-sensitive facilities for all modes of travel and for users of all ages and all abilities. To meet this commitment, the city adopted a Complete Streets Policy in January of 2011 which prioritizes the most vulnerable users: Pedestrians, Bicyclists and Transit Users. The Policy requires the consideration and encourages the development of sidewalks, bike facilities, transit amenities, and safe crossings in the building and redevelopment of streets within the city. By redistributing public right-of-way to accommodate all modes of travel, Complete Streets have the opportunity to:

- Improve access and safety for those who cannot or choose not to drive motor vehicles
- Provide public health benefits, such as encouraging physical activity and improving air quality, by providing the opportunity for more people to bike and walk safely
- Reduce the amount of pavement, creating a more environmentally friendly street corridor
- Avoid expensive retrofits by including discussions of multimodal facilities at the very beginning of a project
- Provide safe routes to school for children

The 2040 Transportation Plan incorporates these Complete Streets principles into the future transportation system by planning for a safe and connected network that is economically and environmentally sustainable for all types of transportation.

Other forms of Transportation

Freight/Trucking

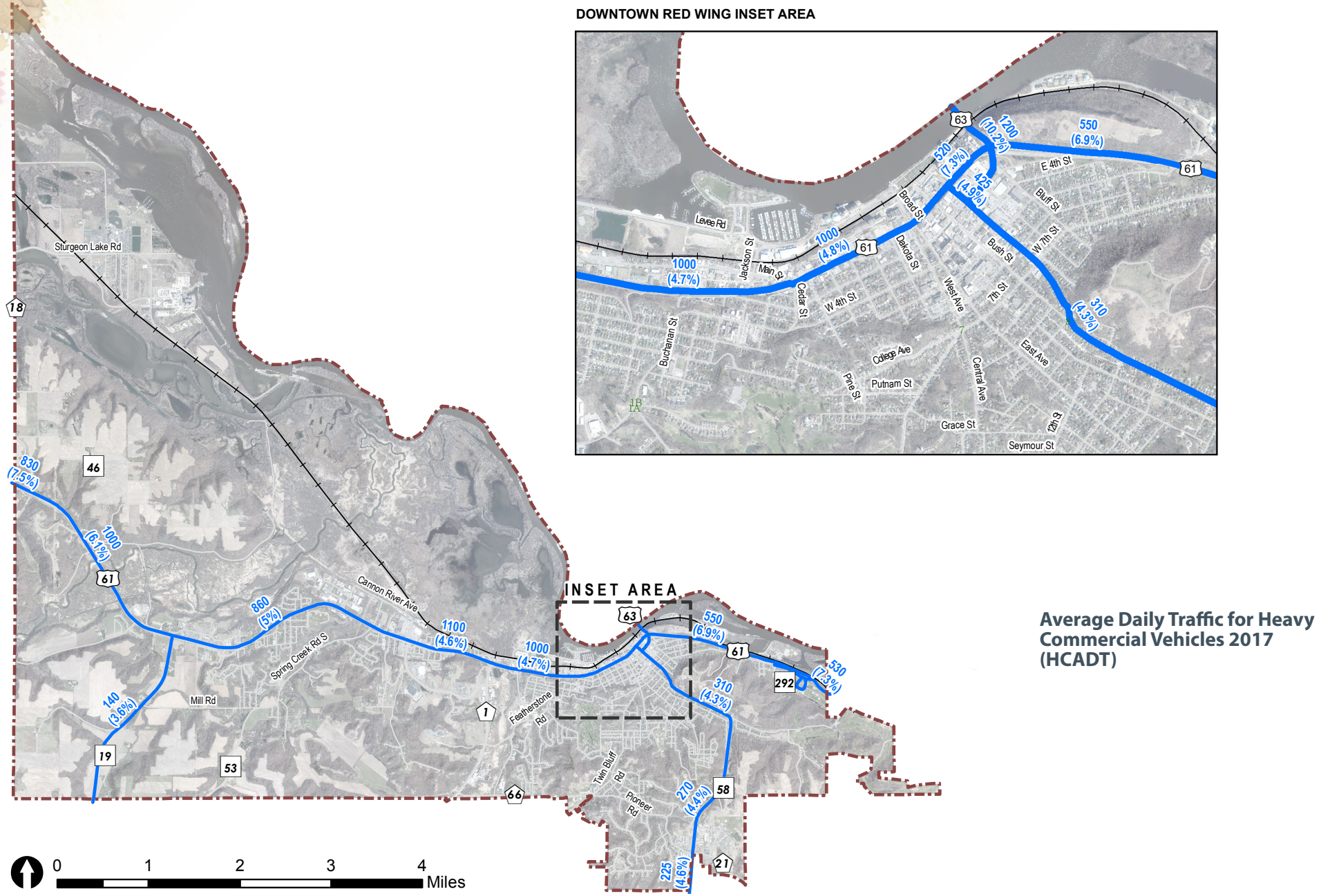
Red Wing is home to many industrial and commercial companies that collectively provide a large number of jobs for Red Wing and surroundings area residents. To survive and thrive, these companies relay on the network of roadways extending into, through and within the community. The state highway system (i.e. US Highway 61, US Highway 63, and MN 58) are the backbone of the truck route roadway network.

Figure 9 illustrates the heavy commercial average daily traffic (HCADT) volumes along the key arterial roadways. The figure also indicates what percent the HCADT represents of the total daily roadway traffic volume. The figure clearly indicates that US Highway 61 carries the largest truck volumes followed by MN 58 and MN 19.

Outreach to Freight Businesses

In February and March of 2018, nine businesses with operations in Red Wing responded to a MnDOT survey on their businesses freight use, transportation concerns, and employee commuting habits. The following summarizes the comments received from companies that either rely on freight movement to conduct business or provide professional freight services to businesses within the city.

- While rail and port were once the primary modes for transporting goods, the majority of freight is currently being transported by truck via US Highway 61 and also US Highway 63 and MN-58.
- Proximity to US Highway 61 is seen as a major asset, but access and congestion along the corridor are seen as issues that cause significant delays and safety concerns
- Close proximity of local industry creates times of freight and commuter related congestion
- Bridge and road capacities are not seen as an area of concern
- Bypass lanes and larger shoulders are desired by truck operators for easier entrance onto and exit off of US Highway 61
- There are concerns for driver safety due to perceived high traffic speeds, distracted driving, and lack of turn and acceleration lanes on US Highway 61
- There are concerns about insufficient signage and lighting in spot locations



Average Daily Traffic for Heavy Commercial Vehicles 2017 (HCADT)

FIGURE 9 HEAVY COMMERCIAL EXISTING AADT

In addition to the MnDOT survey efforts, key freight generators were contacted as part of this planning process. Though the responses were somewhat limited and many providers want to keep detailed information confidential, some key input obtained includes:

» For some operators, truck volumes are very seasonal
» Access to the river front grain terminals is very limited and constrained
» The majority of agricultural products are via US Highway 61 and MN-58 from the north and west

Ports and Waterways

Located on the banks of the Mississippi River, Red Wing has a rich history of using the river form transporting people and goods. Though over the years, truck traffic (via the highway system) has become the predominant freight mode, the port is still a key element and a large part of what makes Red Wing a key freight hub.

There are three barge terminals in the community (see Figure 10):

» Red Wing Grain
» ADM
» Xcel Facility/Red Wing Municipal Dock #1

There are also several small vessel marina facilities including:

» Ole Miss Marina (city owned)
» Bill's Bay Marina
» Red Wing Marina

Rail

The city is served by both rail passenger service (Amtrak) and freight rail service (Canadian Pacific). Each is summarized below.

Amtrak

Amtrak is the nation's largest provider of contract-commuter services for state and regional authorities. The passenger rail line serves more than 500 stations in 46 states. A small, unstaffed Amtrak station is located on Levee Street in Red Wing. Amtrak operates the Empire Builder (one daily train in each direction) that provides passenger service between Chicago and the Seattle/Portland area and utilizes Canadian Pacific Railroad tracks through Red Wing. The Empire Builder operates through Red Wing's historic depot, but there are currently no ticketing or baggage services available at the station.

Canadian Pacific

The main line of the Canadian Pacific (CP) Railroad runs along the northern edge of Goodhue County between the Mississippi River and US Highway 61. The CP rail line averages 21 trains per day, with maximum timetable speeds of up to 79 mph within Red Wing's city limits. Trains on the corridor include passenger trains (Amtrak), intermodal trains, lower-speed coal and commodity trains, general freight trains, and local freight trains.

Aviation

The Red Wing Airport (FAA Identifier: RGK) is owned and operated by the City of Red Wing. The Airport serves general aviation transportation needs and is located approximately 3 miles northeast of Red Wing and across the Mississippi River in Pierce County, Wisconsin. The airport property encompasses an area of approximately 540 acres. Access from downtown Red Wing to the Airport is via US Highway 63, across the Mississippi River to Wisconsin State Highway 35.

The Airport has a single paved runway (Runway 9/27, constructed in 2000) that is 5,010 feet in length and 100 feet wide. While Runway 9/27 is jet capable there is no scheduled commercial airline service at the Airport. The airport has an average of 38 flights per day. Most of the flights consist of general aviation, with 5% use by military jet airplanes and 2% air taxi.

The City of Red Wing is partially within the influence area of the airport, and subject to associated land use restrictions. Height restrictions range from 927 feet above sea level along the river to 1122 feet southeast of downtown. With elevation in this area ranging from 700-1000 feet above sea level, it is unlikely that the restrictions will have a significant impact on future development.

The closest regional airport is the Minneapolis-St. Paul International airport, approximately 40 miles to the northwest.

Public Engagement

The process for creating the 2040 Transportation Plan included a review of past transportation planning efforts, new technical analysis of the transportation system, and a public engagement process that was part of the broader 2040 Comprehensive Plan. Engagement took place during the early stages of the planning process as well as through the plan development stage. Residents, business owners and a range of organizations were consulted to obtain a full understanding of the issues and challenges facing the existing transportation system and the community's vision for the future.

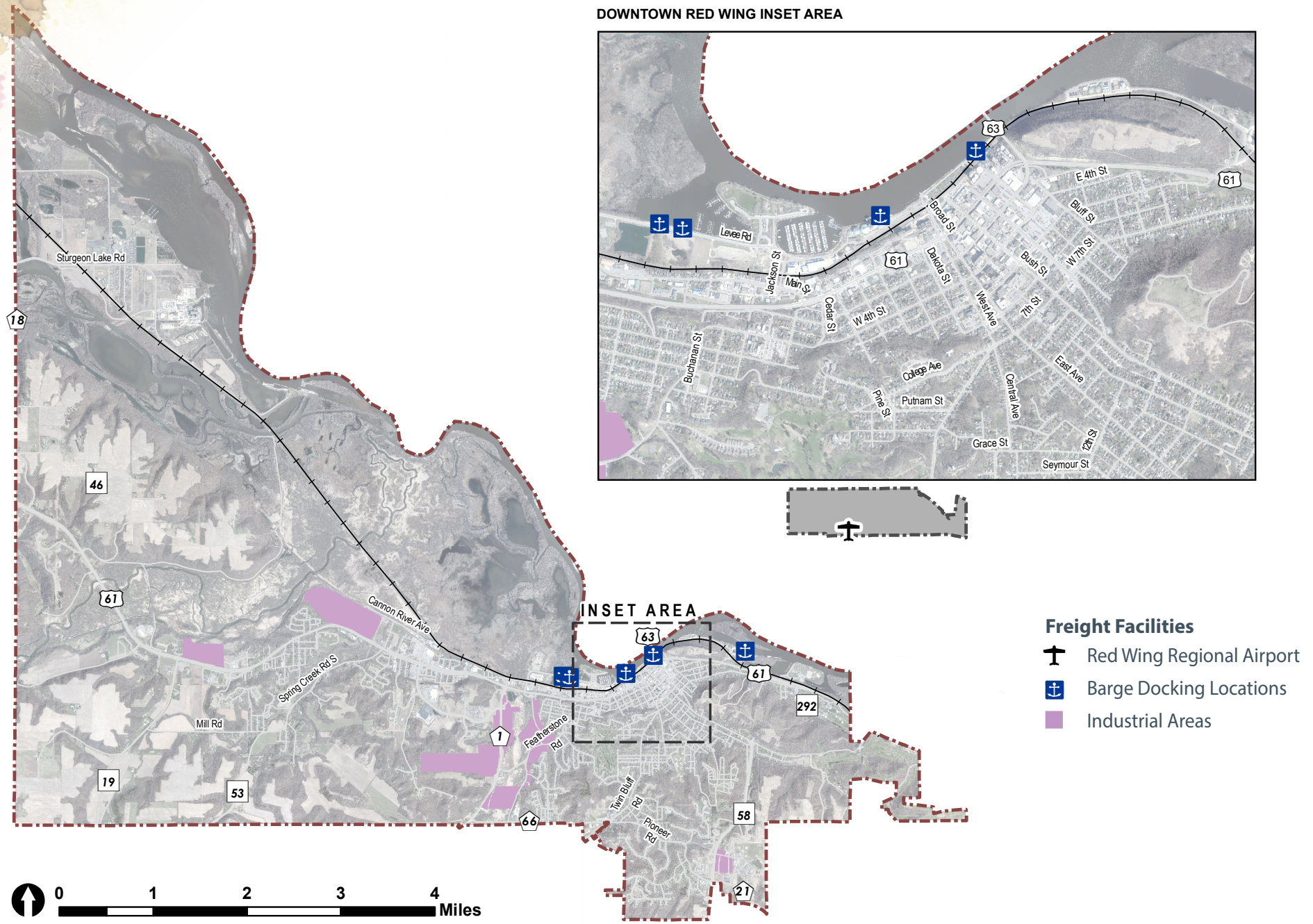


FIGURE 10 RED WING AREA FREIGHT FACILITIES

Engagement for the 2040 Comprehensive Plan began in 2017 with various outreach efforts. During this time, over 500 respondents mentioned transportation improvements as an important element in making Red Wing a better place to live. This included an emphases on:

» Better infrastructure upkeep
» Improvements to public transportation
» Bike and pedestrian infrastructure
» Improvement to traffic flow and parking
» Less construction

Additional engagement was conducted in 2018 to gather more detailed comments on transportation related issues. Public open houses and a workshop with city staff were the main venues for collecting additional stakeholder feedback on transportation. The following section provides an overview of public feedback from these events which, combined with technical analysis and previous planning efforts, provides the basis for the 2040 Transportation Plan.

Staff Workshop on Transportation

On March 29, 2018 city staff and the consultant team met to discuss previous planning efforts and identify areas of interest and concern for the 2040 Transportation Plan. This discussion focused on all modes of transportation and identified preliminary transportation system goals, issues, and key locations for special area studies. The following locations were identified for further study, the results of which are provided in the Special Area Study section of this document.

» MN 58 at Bush Street and 10th Street
» CSAH 18 at Sturgeon Lake Boulevard
» Featherstone Road/Maple Avenue/Alvina Street
» MN 58 at Pioneer Road
» MN 58 at Guernsey Lane/Hi Park Avenue
» MN 58 at South Park Street and Bush Street
» US Highway 61 at Tyler Road
» Tyler Road from Kosec Drive to Hewitt Boulevard
» College Avenue/West Avenue/Central Avenue/W 7th Street intersection
» West Avenue at Maple Street
» Old West Main Street from Bench Street to Withers Harbor Drive

Open House

On April 26, 2018 stakeholder feedback on the transportation system was collected at a 2040 Comprehensive Plan Open House held at the Red Wing Public Library. Comments were received from over 200 residents on their goals for the transportation system as well as comments on safety, connectivity and services. Based on community feedback, the following preliminary goals were identified. These goals helped define the overall vision, goals and objectives for the 2040 Transportation Plan.

Highest Priority Goals

» Offer outstanding mobility, accessibility, and connections free from barriers.
» Continue forging an innovative transportation system that invigorates our economy and prosperity.
» Build a system that allows every resident to lead a healthier, more well-balanced lifestyle.

Priority Goals

» Preserve and maintain a high-quality system with superior standards.
» Create a safe system for all users across all modes of transportation.

Figure 11 shows the location specific comments received during the Open House mapping exercise. Comments were categorized into bike paths and trails, bus stops and routes, crosswalks and sidewalks, intersections and streets, or any other comment the participants wished to share. The majority of the comments reflected concerns for safety along US Highway 61, Featherstone Road, and West Maple Avenue. The list of comments received are included in Appendix B.

The list below shows the locations where residents had vehicle and/or safety concerns. Only two of the intersections on this list correspond to the high crash intersections in Table 2 of the safety analysis suggesting that the locations with the highest incidence of crashes are not necessarily the locations where people feel unsafe walking, biking or driving. Additional research and data may be needed to address these discrepancies.

» Tyler Road and US Highway 61**
» Tyler Road S and Kosec Drive
» Pioneer Road and Gernentz Lane
» Pioneer Road and Twin Bluff Road
» Spring Creek Road S and Dale Court
» US Highway 61 and MN 292 / E 7th Street
» US Highway 61 and Cedar Street
» US Highway 61 and Hill Street
» US Highway 61 and Fulton Street
» Hallstrom Drive and Gernentz Lane
» Bush Street and 10th Street
» Bush Street and 13th Street
» Bush Street and 17th Street
» County Road 18 and US Highway 61**
» MN 58 and Guernsey Lane
» East 7th Street

** Intersection that also ranks in the Top 11 for crash frequency

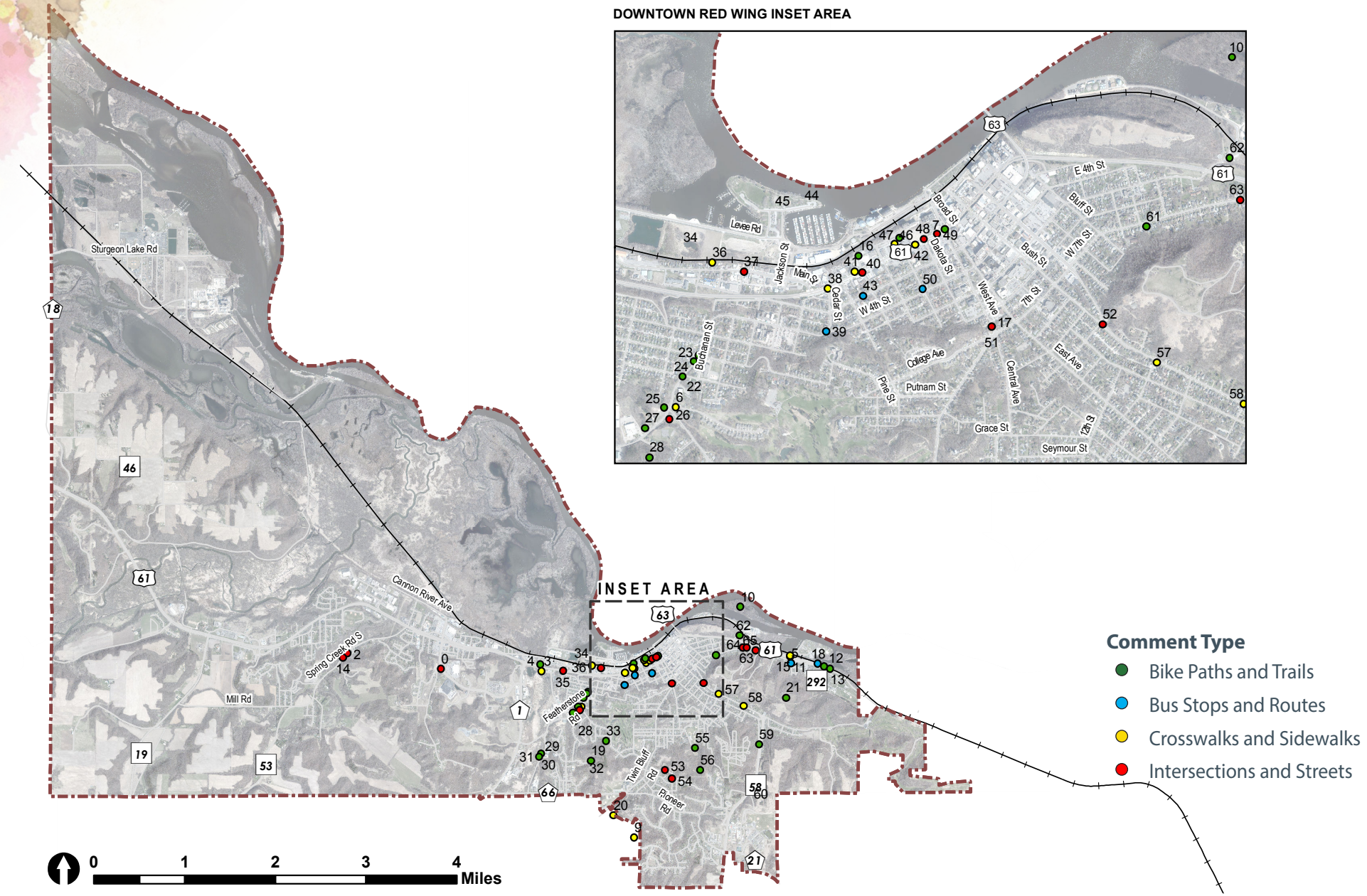


FIGURE 11 TRANSPORTATION RELATED COMMENTS RECEIVED AT APRIL 6, 2018 OPEN HOUSE

2040 Transportation Plan

2040 Roadway System

The consideration of a 2040 roadway systems needs to examine the conditions of the network that serves the City of Red Wing while also anticipating future demands and deficiencies. Future deficiencies and recommendations are based on effects on the current system with an application of long-range (20-year) traffic projections. The 2040 roadway system analysis includes the following elements:

- Development of 20-year traffic projections;
- An inventory and assessment of the roadway system's existing and future capacity conditions and safety/traffic operations using 20-year traffic projections;
- An inventory and determination of the suitability of the current functional and jurisdictional designation of the local and regional roadway system in the City of Red Wing;
- Consideration of access and corridor preservation techniques.

2040 Traffic Volume Forecasts

Traffic volume projections were prepared for the year 2040 using a combination of AADT information available through MnDOT's Traffic Data database and MnDOT's Minnesota Equivalent Single Axle Load (MnESAL) Traffic Forecasting Tool. The forecasts take into account the demographics of Goodhue County and apply an adjustment to the forecast AADTs. Goodhue County has an adjustment factor of 0.93 and is classified as a medium growth area, which means that if the historical trend indicated a 1.0 percent per year growth rate the demographically adjusted forecast would use 0.93 percent per year as a growth rate. The growth rate has a set minimum value of 0.5 percent per year. Any outliers in AADTs were removed to more accurately forecast future traffic demands. Figure 12 presents the 2040 traffic forecast results.

Capacity Assessment

Despite the topographical challenges the river valley presents, the City of Red Wing has a comprehensive system of roadways that fulfill travel desires of residents and employees in and surrounding the community. However, as development and travel demand increase, issues may arise regarding roadway capacity.

To gain a clearer understanding of potential areas of concern regarding future roadway capacity constraints, an assessment of forecast operational concerns throughout the city has been completed using the 2040 traffic forecasts along with the planning level capacity guidelines presented in Table 1 in the Existing Vehicular Traffic Conditions section. The purpose of this analysis is critical in identifying transportation system needs and/or future roadway improvements that may require advanced planning, design, and implementation to avoid operational problems as travel demand and traffic volumes increase. However, it should be noted that the planning level capacity thresholds do not provide a basis for determining the need for specific intersection improvements. For instance, traffic conditions that do not fit the average daily traffic criteria (e.g., weekend thru traffic, seasonal/holiday peak travel periods, or special events) are likely to produce different levels of congestion. Additionally, factors such as the amount of direct access and unique roadway geometrics influence the capacity of a roadway.

Based on planned transportation improvements and forecast traffic volumes, no roadway segments are projected to exhibit sustained congestion. As shown in Figure 12, the congestion levels for the segments of roadway in Red Wing are all anticipated to operate at acceptable levels of service A or B.

It should be noted that special traffic conditions, not meeting the definition of average daily traffic, such as seasonal peaks or special events, may affect congestion levels. Additionally, factors such as intersection design, access, and roadway geometrics may alter the capacity of the roadway.

Safety Assessment

Safety Assessment section under Existing Transportation System presented an assessment of existing safety conditions including the identification of the Top 11 worst crash locations within Red Wing. Since the frequency and distribution of reported crashes indicate several "crash hot spots" it is recommended that these areas be regularly monitored. If future conditions deteriorate to a point of concern that corrective actions need to be implemented, a full safety assessment shall be conducted that would analyze crash type, severity, and contributing factors (e.g. roadway geometrics, speeds, traffic control type, etc.).

Many locations identified as having safety concerns may in fact be the result of an aging system that was built prior to modern roadway design standards. Implementation of current roadway design standards are expected to help eliminate many safety concern areas located throughout the community. Additional locations may become apparent as a result of new development and increases in traffic volumes.

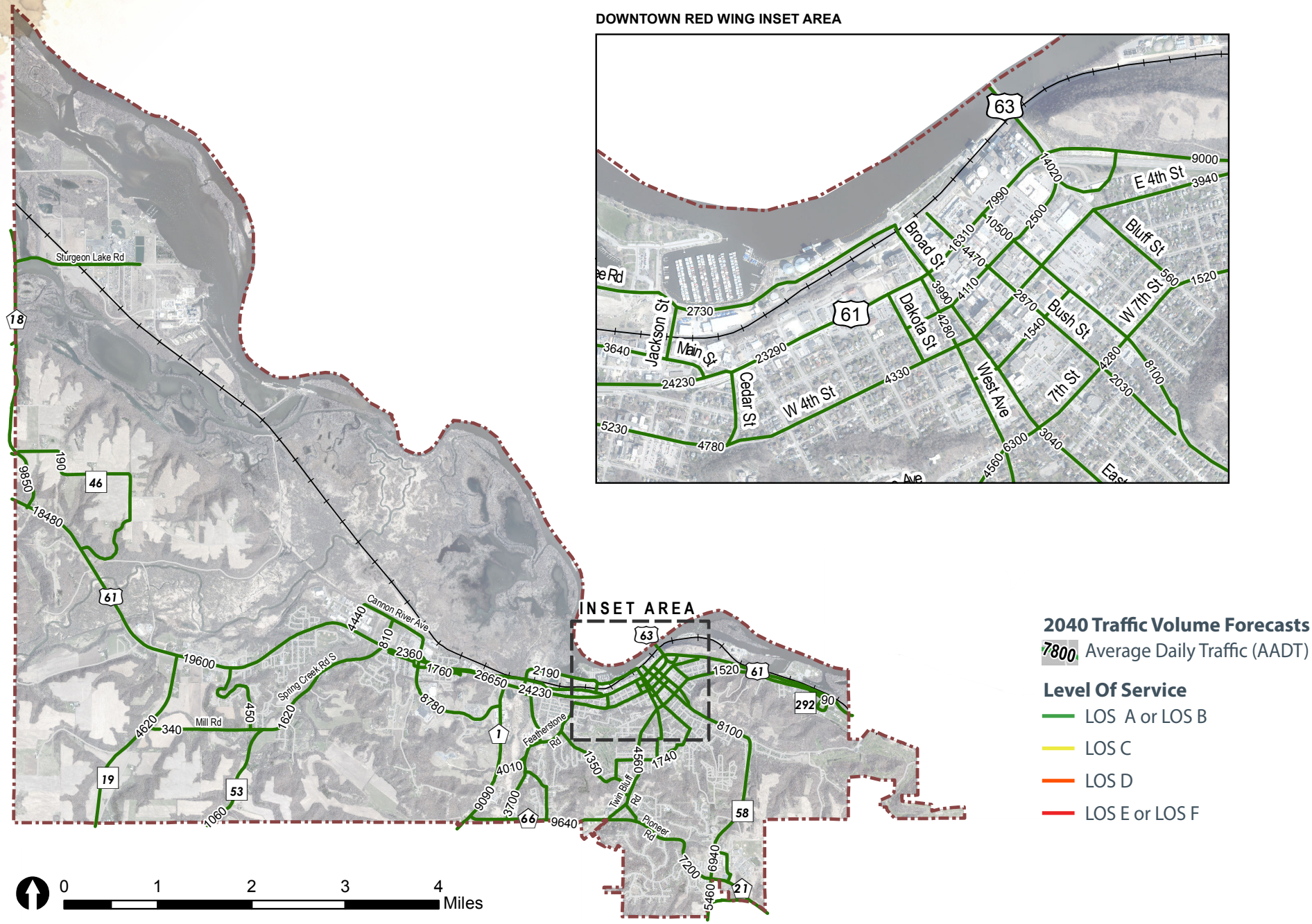


FIGURE 12 FORECAST (2040) AADT AND LEVEL OF SERVICE (LOS)

Future Jurisdictional Classification System

As discussed in the Existing Transportation System section, roadway jurisdiction is important because it affects a number of organizational functions and obligations (i.e. regulatory, maintenance, construction, and financial). An assessment of the existing jurisdictional system (see Figure 1) versus the appropriate designation based on the future types and volume of trips a roadway is expected to serve, the routes functional classification, and the jurisdictions maintenance ability was conducted. The goal in reviewing jurisdiction is to match the function of a roadway with the appropriate organizational level (government jurisdiction) that is best suited to handle the route's long-term function.

Jurisdictional Transfer Guidelines

Issues and factors that must be considered when determining potential jurisdictional changes include: historical practices, type of trips served (purpose and length) by the roadway, existing and forecast volume of traffic, access controls, existing and future functional classification designation, legal requirements, and funding and maintenance issues. A set of jurisdictional guidelines by governmental level (state, county, and city) shall provide a basis to review the routes in Red Wing for potential jurisdictional transfers, but are not to be used to determine if a jurisdictional transfer is feasible and/or politically acceptable, nor do they establish a timeframe under which a transfer is to occur. Instead, the guidelines define a common sense approach for arriving at logical jurisdictional designations. Once there is agreement on how the jurisdictional designations should be established, an on-going jurisdictional transfer process will need to be developed. This process should address issues such as the financial implications for construction and maintenance of the facility, operational implications (perceived level of service, ability to maintain), perceived fairness in the distribution of route responsibilities, and timing of transfer. It is not anticipated that all guidelines must be met in order for a jurisdictional transfer to be recommended. However, the more criteria a route meets, the stronger the case for considering a future change in jurisdiction.

State Jurisdiction Guidelines

State jurisdiction (U.S Highway and Trunk Highway) is focused on routes that commonly can be characterized as follows:

- classified as either a principal or minor arterial;
- typically longer routes that provide for statewide and interstate travel, serving longer regional trips that connect larger population and trade centers;
- commonly spaced at intervals that are consistent with population density, such that all developed areas of the state are within reasonable distance of an arterial;
- typically have higher design features which are intended to accommodate freight traffic and promote higher travel speeds (mobility) and have less focus on direct property access; and
- typically carry the major portion of trips entering and leaving urban areas.

County Jurisdiction Guidelines

While more common in rural areas, County jurisdiction (County State Aid Highways and County Roads) is present within communities and often focuses on routes that can be characterized as follows:

- functionally classified as a minor arterial, major collector, or minor collector;
- provide essential intra-county connections/links not served by principal and/or other minor arterial routes. They serve larger populations or traffic generators (business centers) that are not directly served by arterial routes; and
- often provide links between local traffic generators and outlying rural areas.

City Jurisdiction

Roadways that primarily provide property access and serve local traffic circulation are normally under local jurisdiction (city). These routes typically constitute up to 80 percent of the entire system mileage in an urban area and can be characterized as follows:

- typically shorter in length and carry lower traffic volumes; and
- primarily provide land access and traffic circulation to residential neighborhoods and employment centers such as commercial/retail, office, and industrial areas.

Candidates for Potential Jurisdictional Transfer

The majority of jurisdictional assignments for roadways within the City of Red Wing appear to be properly aligned according to the guidelines listed above. Two short-term candidates for potential jurisdictional transfer included the following:

- Transfer of Goodhue County Road 46 (Mount Carmel Road) from CSAH 18 to US Highway 61 from County jurisdiction to the City of Red Wing. This segment of county road serves less than 200 daily trips and a small number of large lot residential/agricultural developments.
- Transfer a portion of MN 292 from the west intersection with US Highway 61/63 to the property line of the correctional facility with the remaining portion of MN 292 transferred to the Minnesota Department of Corrections as a driveway

In addition, it is recommended that the city begin a dialog with Goodhue County on the future jurisdictional classification of Pioneer Road and County Road 66 between CSAH 1 and TH 58.

The continued development or redevelopment throughout the community may drive the need to revisit jurisdictional assignments for various roadways including the city acquiring the jurisdiction of existing township roads that exist within the City's "Future Growth Areas". For any jurisdictional transfer to occur, the process would need to follow the provisions outlined in Minnesota State Statutes §162.02 and §163.11. Furthermore, involved jurisdictions would need to enter into an agreed-upon process.

Future Functional Classification System

The existing functional classification system (see Figure 2) for roadways in Red Wing was reviewed to ensure appropriate network connectivity is maintained and that the appropriate classification is assigned based on 20-year projected traffic volumes. Additional criteria considered in determining if a roadway's functional classification should be changed included:

- Estimated Trip Length
- Type of Trip Served
- Spacing Between Routes
- System Continuity
- Local and Regional Mobility
- Connections to Activity Centers
- Accessibility
- Speed of Travel

Based on this review, a possible functional classification
change was identified and listed below in Table 6.

TABLE 6 RECOMMEND FUTURE FUNCTIONAL CLASSIFICATION CHANGE

Roadway	From	To	Current Functional Classification	Future Functional Classification
Bush Street/Golf Links Drive	Highway 58	US Highway 61	Local	Minor Collector

Right-of-way Preservation

Right-of-way preservation entails the coordinated application of various methods to obtain control of or otherwise protect right of way for future transportation improvements. The illustration shown in Exhibit 5 highlights the standard elements of a transportation right-of-way corridor.

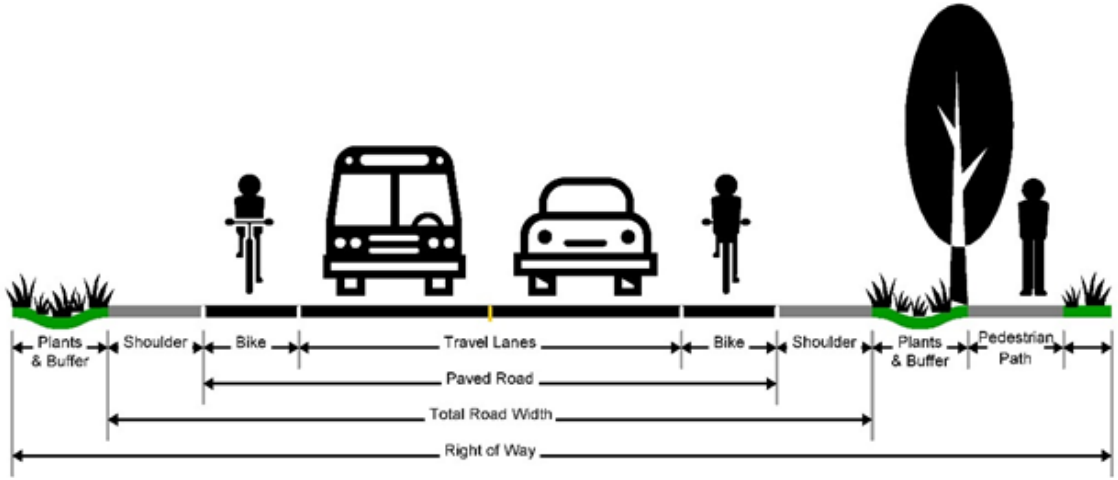


Exhibit 5: Standard Roadway Right-of-Way

The primary purpose of preserving right of way is to greatly reduce the costs of acquiring property at the time of the actual implementation of the transportation infrastructure. Costs should be measured in terms of dollars, environmental impacts, and social effects incurred by homeowners, businesses and the community as a whole.

There are many different techniques available to protect right-of-way corridors for future transportation improvements. The City of Red Wing may determine the need to preserve right-of-way in developing and/or redeveloping areas. The basic approaches for preserving transportation right-of-way are summarized below:

» Access Management (limiting property access) - Access management principals should be a part of all levels of transportation planning. Access management principals are further discussed in the following section. To be successful, it is important that access management guidelines are applied consistently and uniformly at the time development/platting occurs.

» Land Use Regulations (development activities, plat reviews, setback requirements, official maps, and other subdivision regulations) - Land use regulation techniques are facilitated through the comprehensive planning and zoning process. Certain regulations such as setbacks can be applied to individual parcels, while others such as adopting an official map are typically developed for an entire corridors or subarea and require a more significant level of planning and corridor definition.

» Landowner Agreements (development agreements, transferable development rights) - Landowner agreements are often limited in effectiveness when dealing with a large project area due to the potentially larger number of individual landowners involved. By definition landowner agreements are applied on a parcel-by-parcel basis and are most effective when dealing with larger land holdings and a small number of owners.

» Land Acquisition (purchase of easements, title purchase, and eminent domain) - Land acquisition is an approach applied only when specific improvements are eminent. The applicability of acquisition is directly linked to the availability of funding.

In summary, the use of these preservation options is dependent on many factors including available funding, the timing of development, and the programming of the transportation improvements.

Roadway Design Guidelines- Living Streets

What is a Living Street?

Living Streets is a term that has developed over the past 10 years that reflects a combination of the Complete Streets and Green Streets design philosophies. Complete Streets refers to street design that provides for multiple modes of transportation and Green Streets refers to street design that reduces environmental impacts by reducing impervious surface, managing stormwater, and providing shade.

Early in the transportation planning process, the City of Red Wing decided to incorporate the living street philosophy into the development of roadway design guidelines presented later in this section. The city recognizes the importance of establishing guidelines to provide uniformity and direction to the City's ongoing street maintenance and reconstruction process. The design guidelines recognize that while all public streets are designed for public use, different roadways are designed to have different functions and serve different types of traffic and travel modes. The volume of traffic that should be on each street is directly related to how a street is used and its function for the overall community.

Benefits of Living Streets

» Economic: lower initial costs; lower maintenance costs; increased property values; economic revitalization.

» Community: improve public health; increase safety; enhance neighborhood beauty; strengthen sense of community; provide positive impact upon children.

» Environmental: improve water quality; improve air quality; reduce the urban heat island affect; reduce materials and energy used in street construction; promote the planting of trees.

» Calming traffic: Through implementation of different measures such as reducing street width, adding bump-outs, raised crosswalks, dynamic signing, and different pavement treatments. These measures help ensure roadways serve their specified function.

Design Guidelines

Recognizing the unique characteristics of Red Wing's street network which has developed over many years and is significantly influenced by the river bluff topography, the design guidelines are intended to be flexible and will continued to be refined into the future. Street designs on the state-aid system will need to follow current state-aid standards that are in effect at the time of construction.

The Living Streets design templates apply to three primary roadway classification categories:

» Urban Streets – roadways located in urban areas where pedestrians and/or bicyclist are expected to more commonly conflict with vehicle movements and where active traffic control systems may not be present. Urban streets include all residential streets with on-street parking, those with intersections and/or uncontrolled pedestrian crossings less than ¼ mile spacing, commercial or industrial districts with significant activation of their street frontage due to the location of storefronts, or where the average driveway spacing is less than 300' apart on the same side of the street.
» Urban Roads – roadways located in urban/suburban areas that have higher operating speeds and corresponding public roadway and driveway access spacing. Urban roads may also have enhanced pedestrian crossings.
» Rural Roads – roadways located outside of an urban or suburban area where average driveway spacing is more than 300-feet apart from another access point

Figure 13 depicts the location of these classification categories.

For city streets that are part of the Municipal State Aid System (primarily minor arterials and collectors), the design guidelines provide flexibility to comply with standards in order to maintain State Aid funding for those roads and use it in their reconstruction.

A brief discussion of each roadway type follows along with conceptual design templates for each on the following pages. The concepts include design options such as the number of traffic lanes, whether or not there are parking and/or bike lanes, whether or not sidewalks are provided, etc.

Urban Streets

Urban streets encompass the majority of roadway mileage under the City's jurisdiction. Their primary function is to provide access to residential neighborhoods and linking those neighborhoods to urban roads and destinations within and outside of Red Wing. A series of Urban Street typical roadway sections is included on the following pages.

General Design Parameters:

» Typically 50 - 60 foot right-of-way, but could be as narrow as 40 feet and as wide as 100 feet
» Roadway has two travel lanes (generally 10-foot) and on-street parking lane (7 to 8-foot width) on one or both sides of the roadway.
» Sidewalks are generally provided development density and pedestrian movements/patterns in the area. Some urban streets do not require a sidewalk while for others a sidewalk on one side is preferred and with busier urban on both sides of the street except in constrained rights-of-way or in locations with very low traffic volumes.

Under appropriate roadway geometry and low speed and AADT levels, urban streets may feature shared-lane markings or sharrows indicating a shared roadway between motorists and bicyclists. On urban streets with higher speed and higher traffic volumes, greater levels of separation may be needed between motorists and bicyclists. Facilities such as buffered bike lanes or multi-use trails can be warranted on busier local roads, especially in the vicinity of schools or parks or when a roadway is part of a key bicycle corridor.

Urban Roads

Urban roads in comparison to urban streets tend to be more continuous, carry slightly higher traffic volumes, operate at higher speeds, and should average more than 300 feet between access points (driveways). Urban Roads may also serve residential land uses in urban and suburban areas, but also service commercial and industrial/manufacturing land uses. Urban roads typically terminate at higher functioning routes such as county roads or state highways. A series of Urban Roads typical roadway sections is included on the following pages.

General Design Parameters:

» Typically 65 to 120-foot right-of-way
» Roadway has either two or four travel lanes (11 to 12-foot)
» No on-street parking allowed
» Sidewalk or shared path should be included along both sides of urban roads due to higher traffic speeds and volumes. Enhanced crossings of urban roads should also be considered.

Rural Roads

Rural roads serve lower density development in non-urban or suburban areas. Rural roads can provide connections to urban roads and higher functioning routes such as county roads and state highways. Rural road have higher travel speeds, less frequent access (driveways and public road intersections), and serve fewer pedestrian/bicycle trips.

General Design Parameters:

» Typically 60 to 80-foot right-of-way
» Roadway has two travel lanes (11 to 12-foot width) and shoulders (6 to 10-foot) on both sides of the roadway.
» No curb and gutter drainage
» No designated parking
» Sidewalk and shared path application varies depending on land uses and pedestrian/bicycle movements and/or connections needed in the area.
» May be paved or gravel based on roadway traffic volumes or drainage.

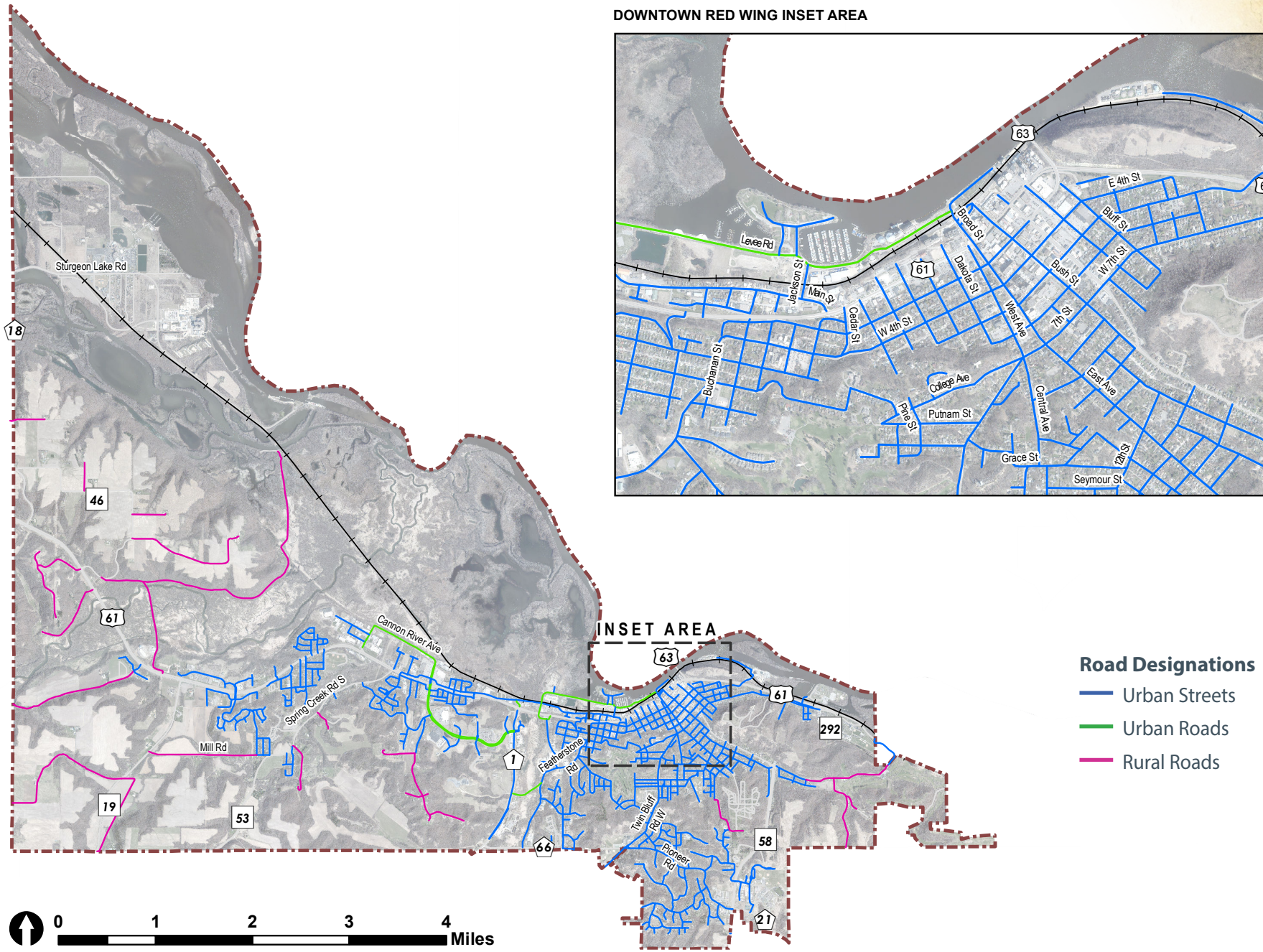
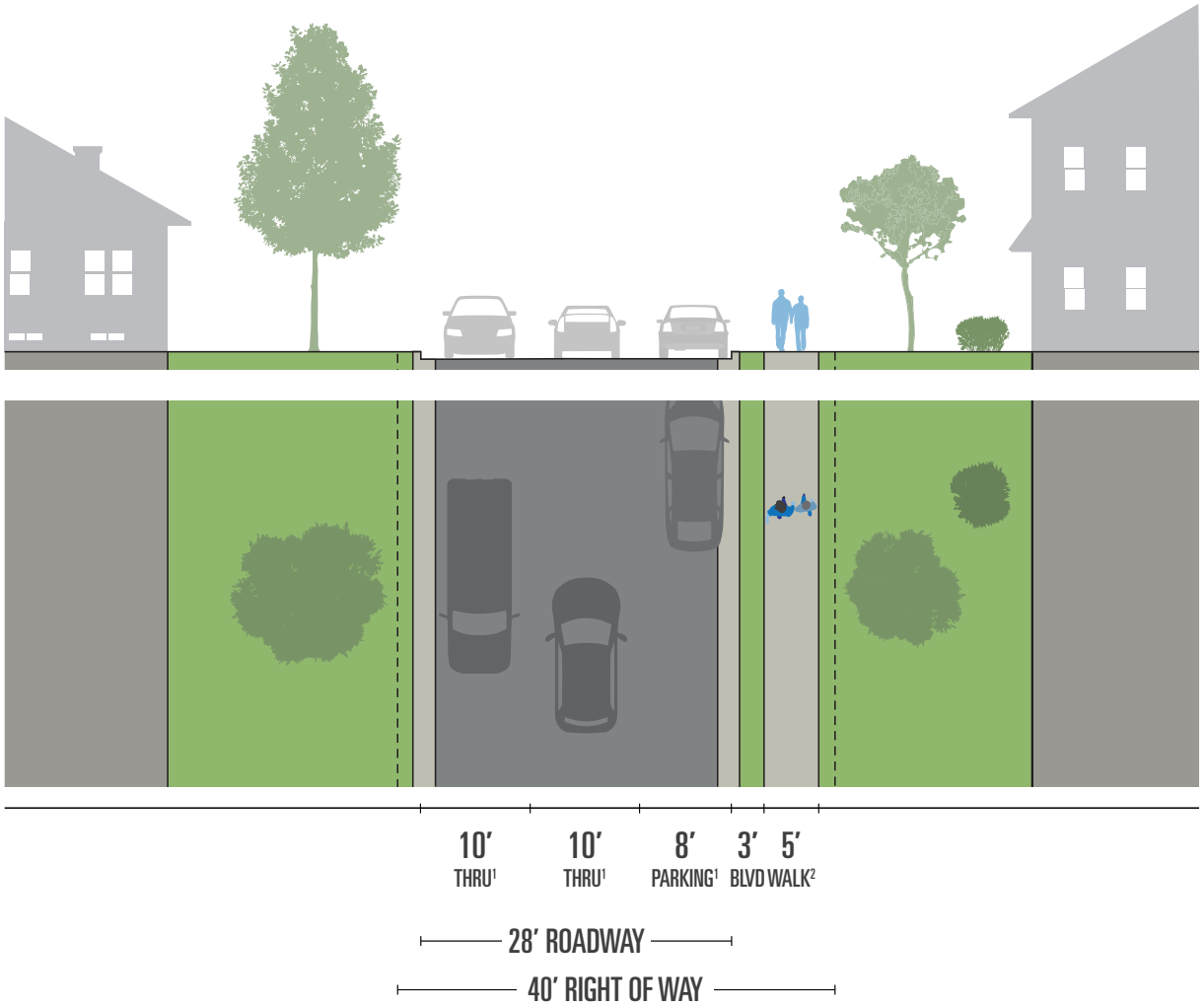


FIGURE 13 ROAD DESIGNATIONS

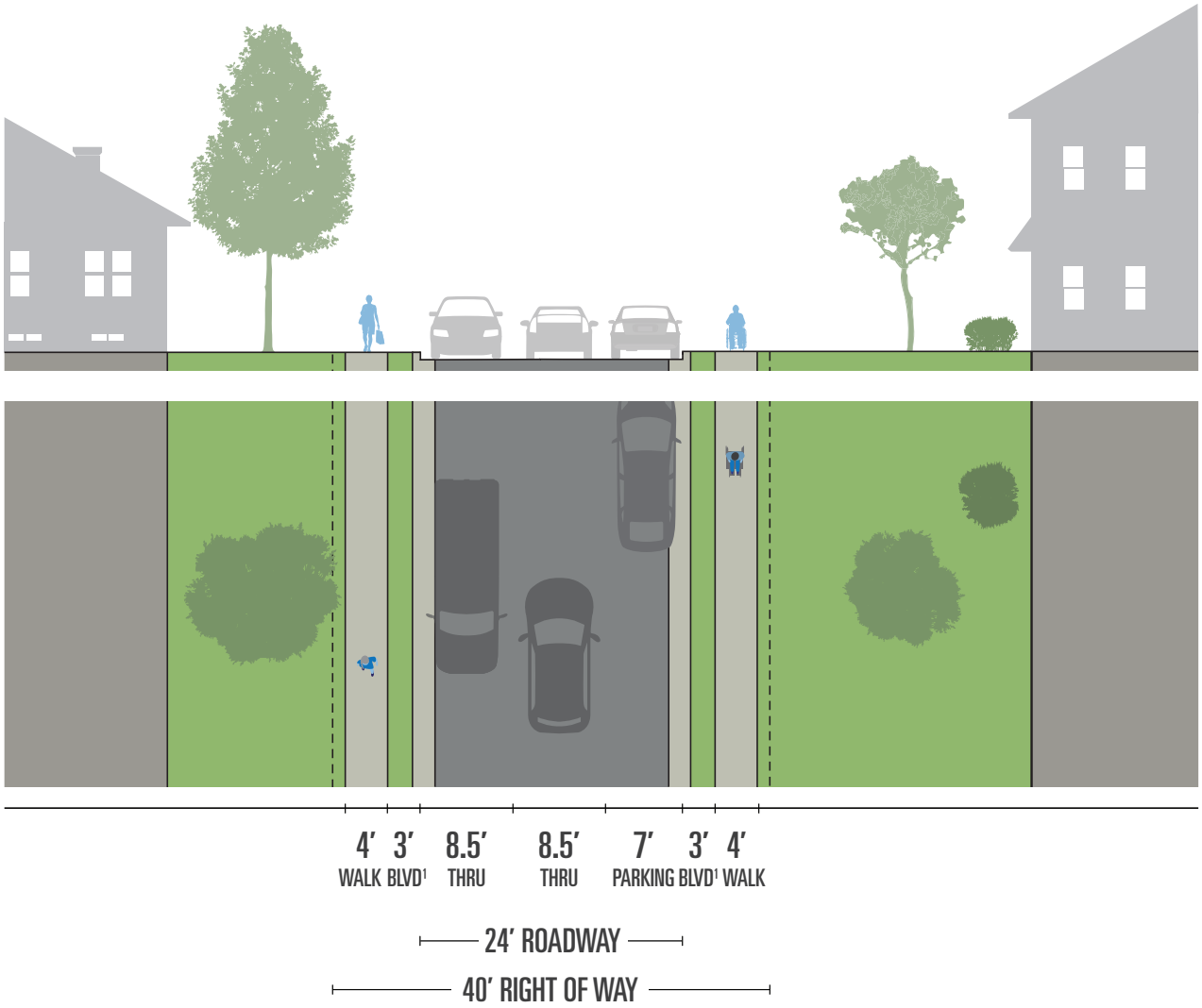


40′ RIGHT OF WAY URBAN STREET

One Side Parking - One Sidewalk

[1]Width of travel lanes and/or parking lanes may be reduced in vertically constrained areas.

[2]Sidewalk should be provided on at least one side of the street where possible. In areas with vertical constraints or low-scoring street segments based on Scoring Criteria for Engineer Reporting on Complete Streets Policy, installation of sidewalk is optional.



40′ RIGHT OF WAY URBAN STREET

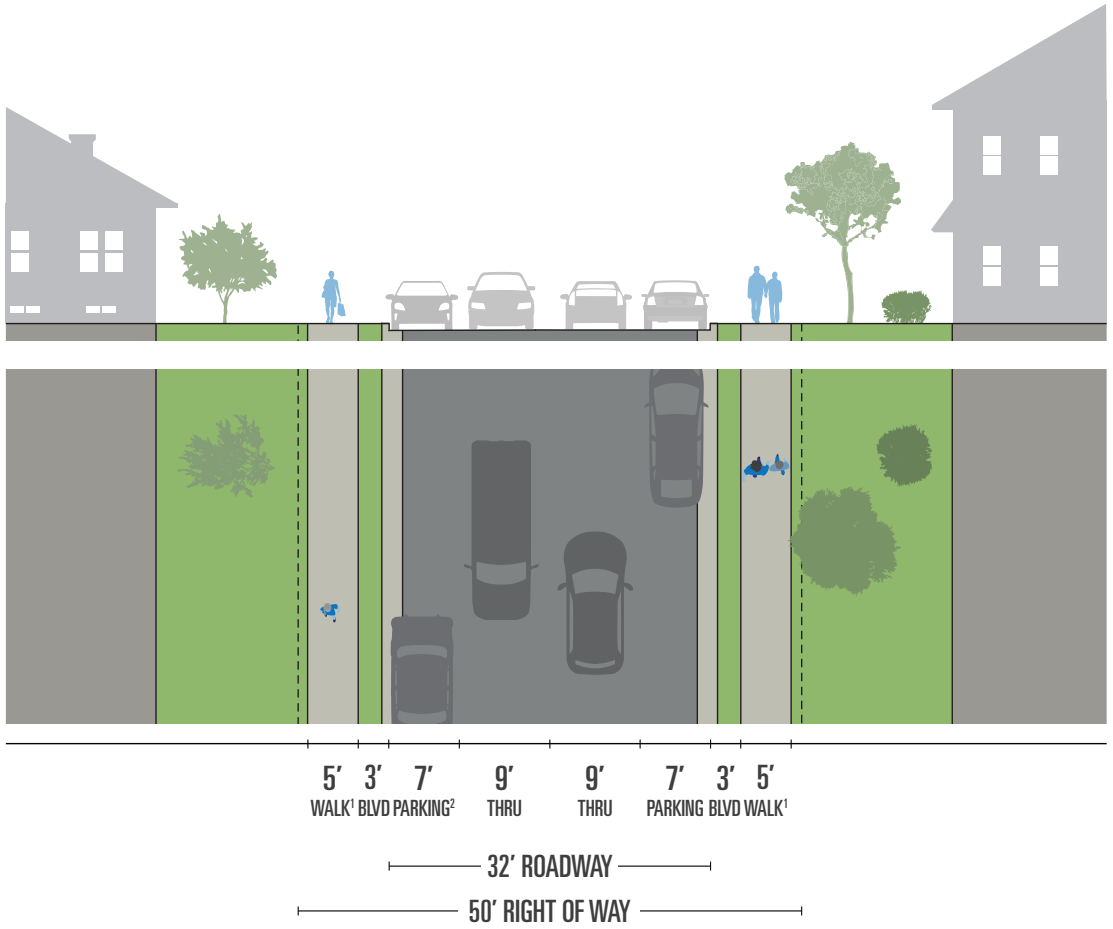
One Side Parking - Two Sidewalks

[1]Boulevard may be grass or concrete. If boulevard is concrete, sidewalk width should be increased to 5 feet to better meet ADA compliance.

50′ RIGHT OF WAY URBAN STREET

One Side Parking - Two Sidewalks

[1]Sidewalks should be provided on both sides where possible. In areas with vertical constraints or low-scoring street segments based on Scoring Criteria for Engineer Reporting on Complete Streets Policy, sidewalks may be provided on only one side or neither side as determined by the Engineer and City Council.

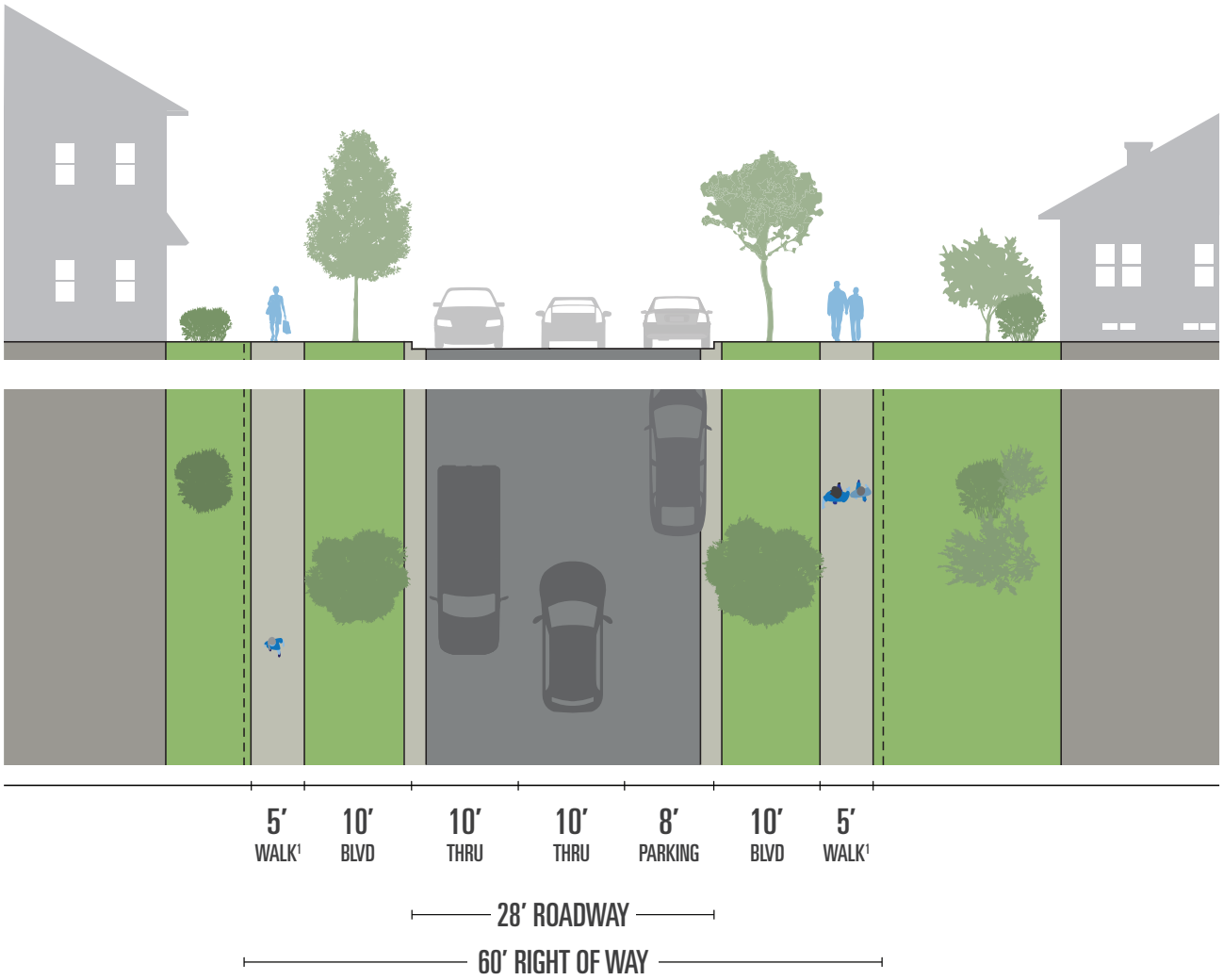


50′ RIGHT OF WAY URBAN STREET

One Side Parking Year-round/Seasonal Two Side Parking - Two Sidewalks

[1]Sidewalks should be provided on both sides where possible. In areas with vertical constraints or low-scoring street segments based on Scoring Criteria for Engineer Reporting on Complete Streets Policy, sidewalks may be provided on only one side or neither side as determined by the Engineer and City Council.

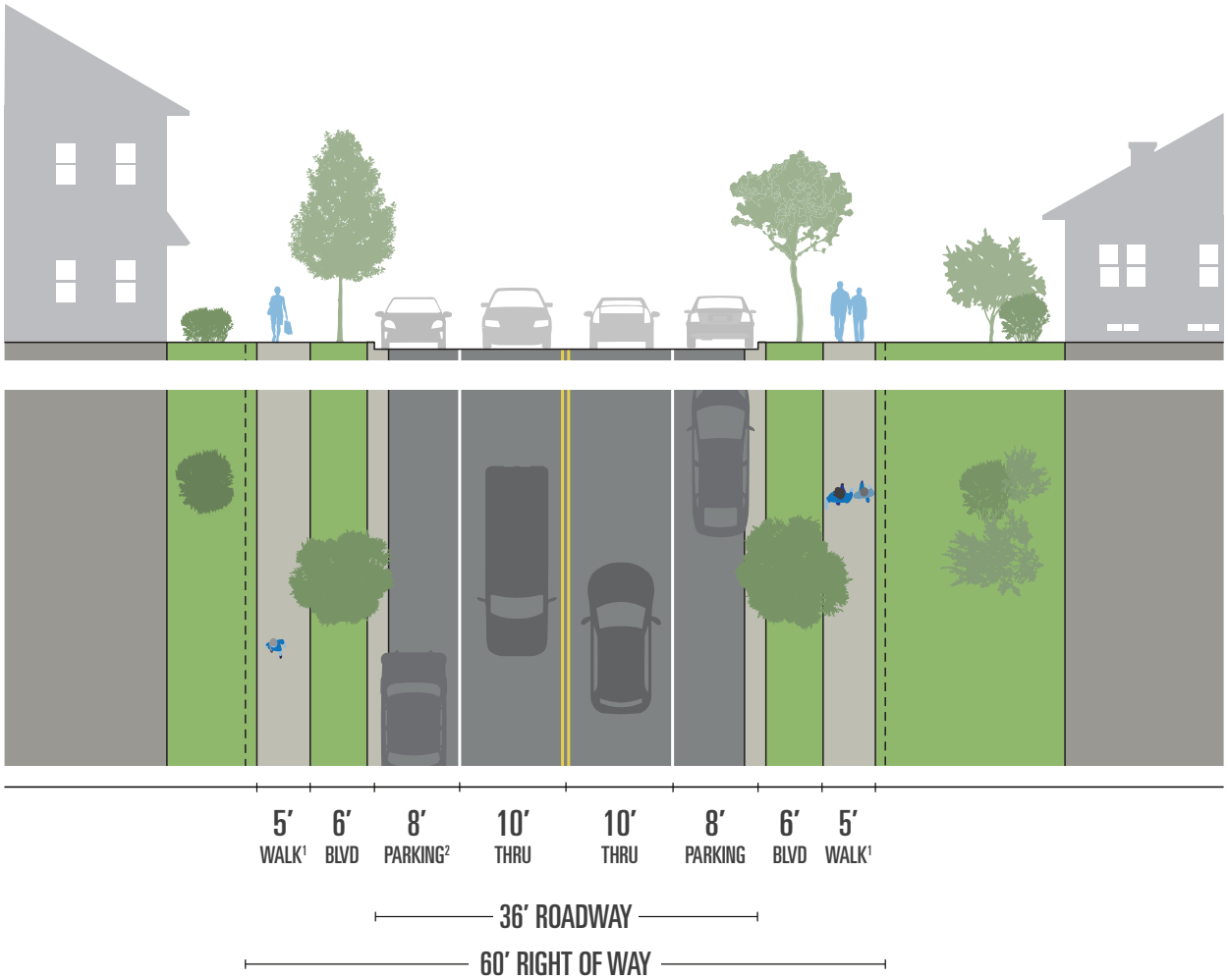
[2]Provide second side on street seasonal parking if parking counts show high on-street parking usage or adjacent properties lack sufficient off-street parking.



60′ RIGHT OF WAY URBAN STREET

One Side Parking - Two Sidewalks

[1]Sidewalks should be provided on both sides where possible. In areas with vertical constraints or low-scoring street segments based on Scoring Criteria for Engineer Reporting on Complete Streets Policy, sidewalks may be provided on only one side or neither side as determined by the Engineer and City Council.

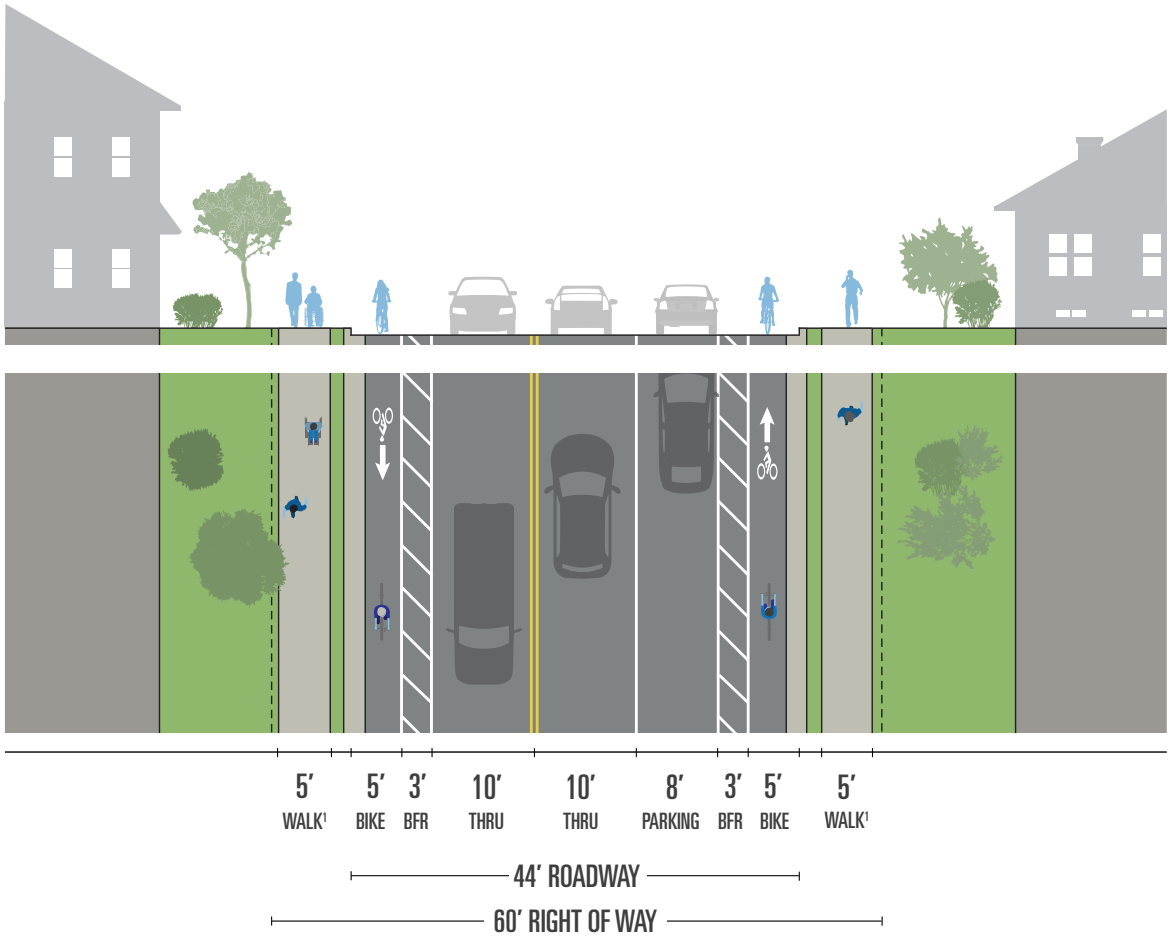


60′ RIGHT OF WAY URBAN STREET

Two Side Parking - Two Sidewalks

[1]Sidewalks should be provided on both sides where possible. In areas with vertical constraints or low-scoring street segments based on Scoring Criteria for Engineer Reporting on Complete Streets Policy, sidewalks may be provided on only one side or neither side as determined by the Engineer and City Council.

[2]Provide second parking lane (seasonal or year-round) if parking counts show high on-street parking usage or adjacent properties lack sufficient off-street parking.

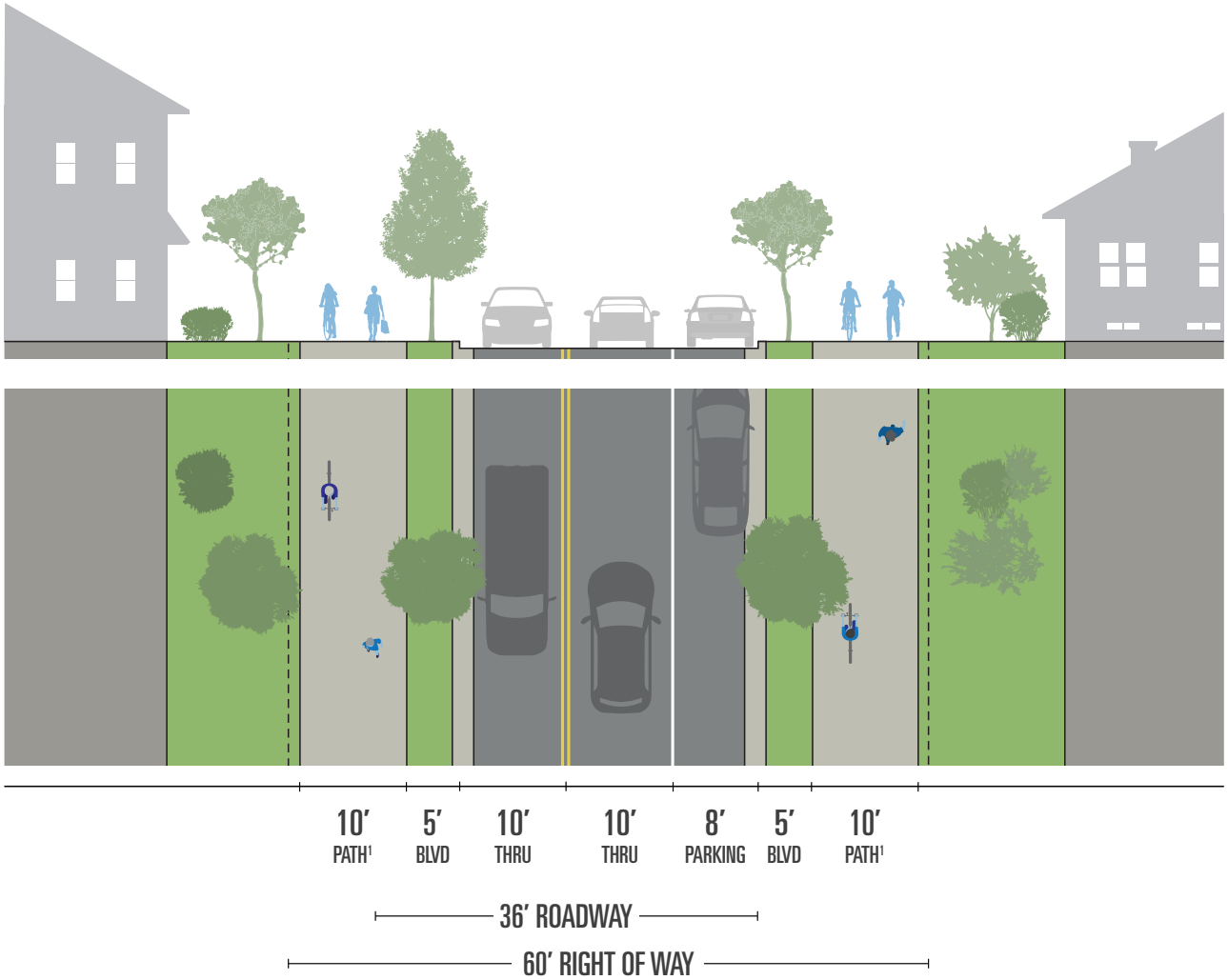


60′ RIGHT OF WAY URBAN STREET

One Side Parking - Two Sidewalks with Buffered On-Street Bike Lanes[2]

[1] Sidewalks should be provided on both sides where possible. In areas with vertical constraints or low-scoring street segments based on Scoring Criteria for Engineer Reporting on Complete Streets Policy, sidewalks may be provided on only one side or neither side as determined by the Engineer and City Council.

[2] On-street bike lanes should be provided on street segments shown for on-street bike lanes in the Bicycle and Pedestrian Master Plan unless off-street facilities provided. Sharrows/shared lanes should not be substituted for on-street bike lanes unless right-of-way is vertically constrained.

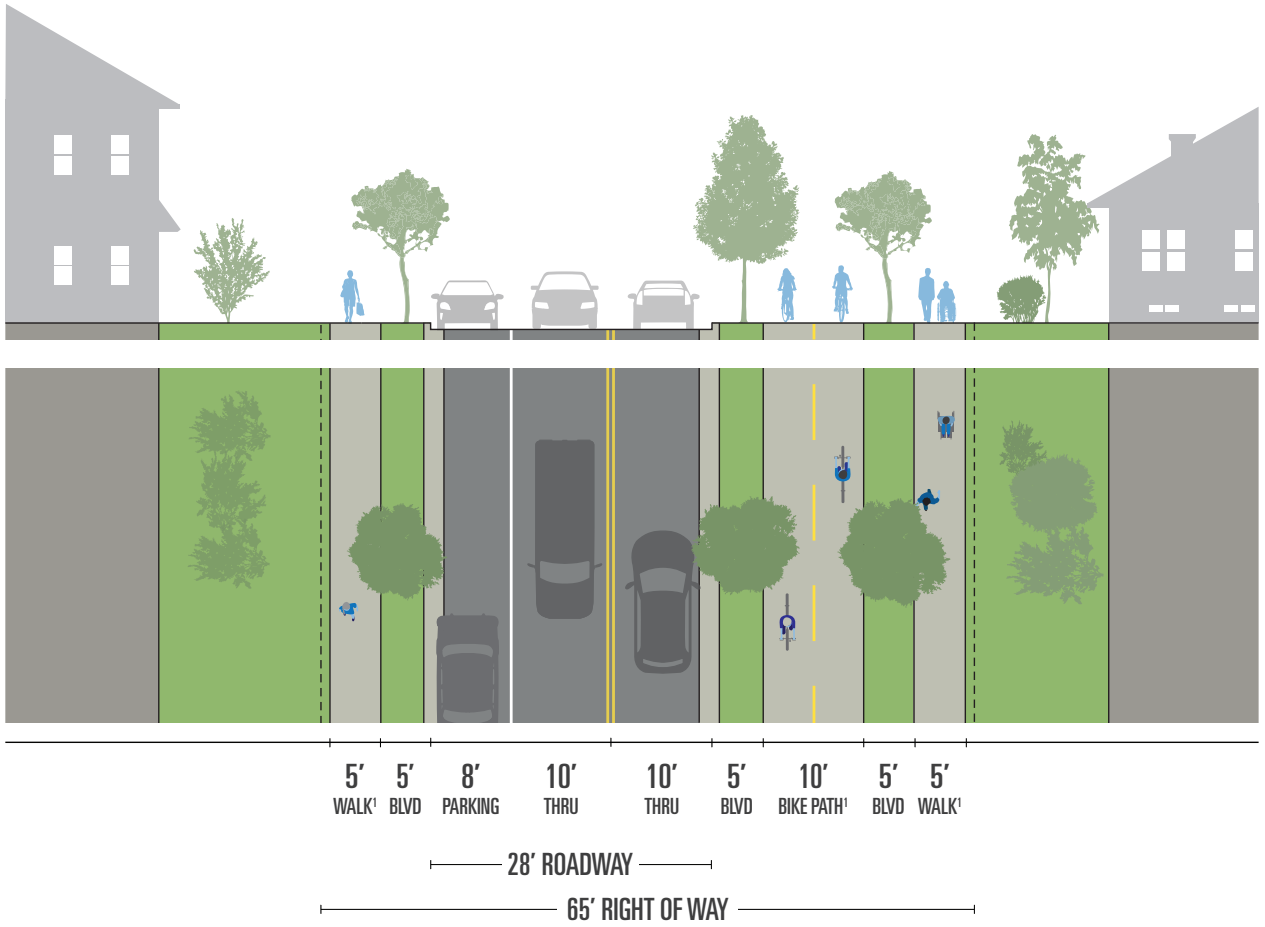


60′ RIGHT OF WAY URBAN STREET

One Side Parking - Two Sidepaths[2]

[1]Sidepaths preferred over on-street bike lanes where feasible.

[2]This design may be used on street segments shown as future or existing on-street bike lanes in the Bicycle and Pedestrian Master Plan.



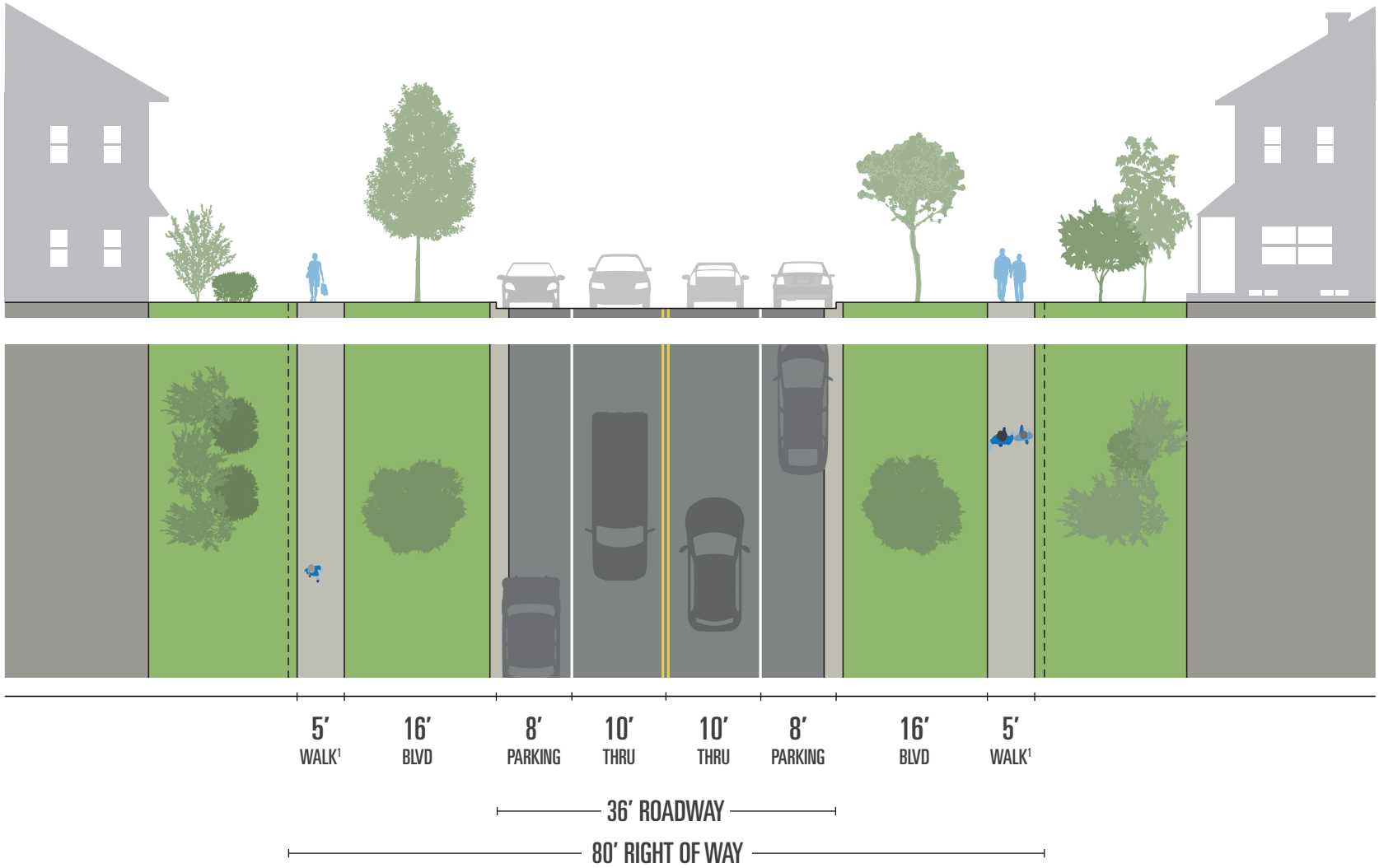
65′ RIGHT OF WAY URBAN STREET

One Side Parking - Two Sidewalks w/ Two-Way Off-Street Bike Path[3]

[1]Sidewalks should be provided on both sides where possible. In areas with vertical constraints or low-scoring street segments based on Scoring Criteria for Engineer Reporting on Complete Streets Policy, sidewalks may be provided on only one side or neither side as determined by the Engineer and City Council.

[2]Off-street bicycle facilities preferred over on-street bike lanes where feasible.

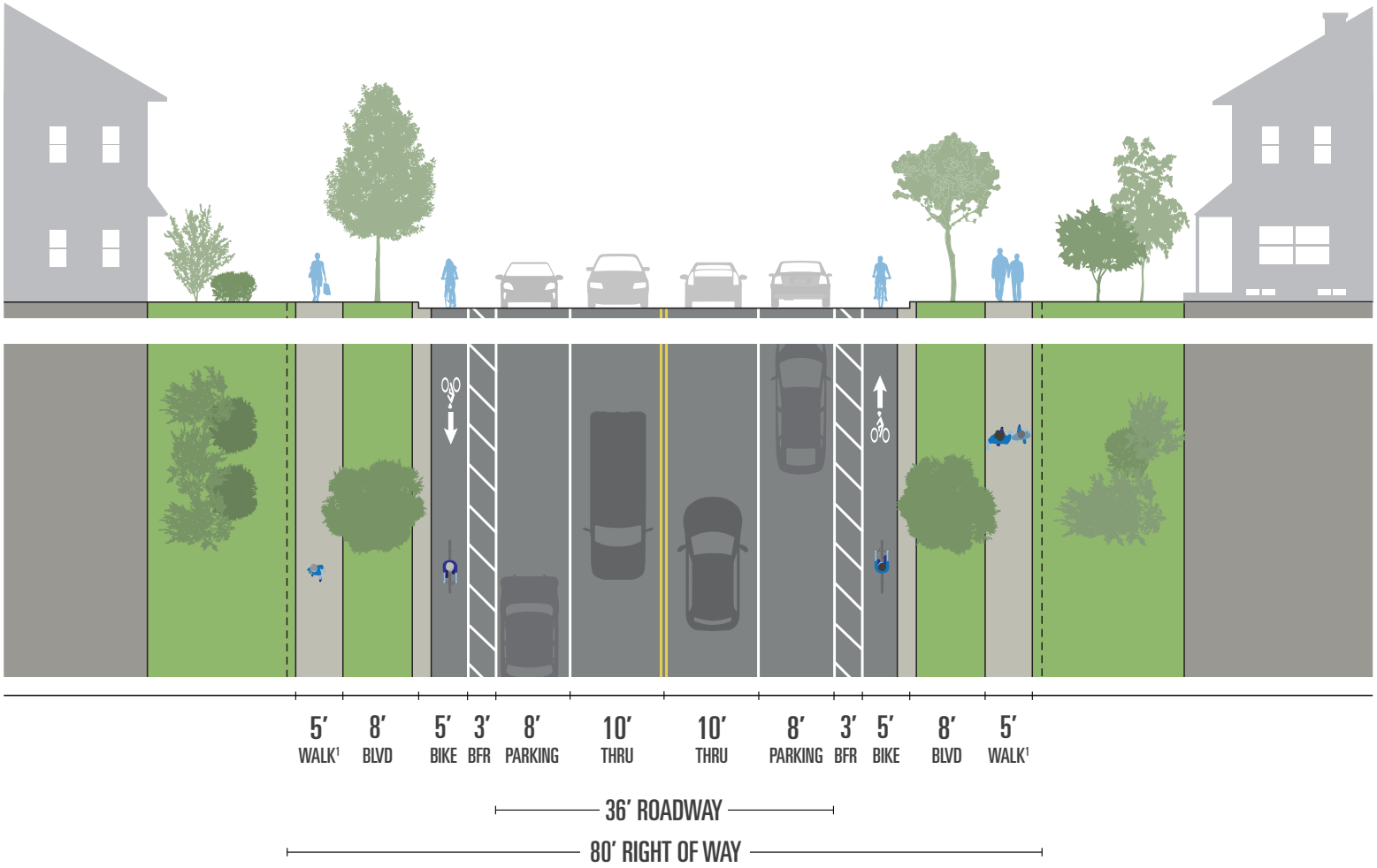
[3]This design may be used on street segments shown as future or existing on-street bike lanes in the Bicycle and Pedestrian Master Plan.



80′ RIGHT OF WAY URBAN STREET

Two Side Parking - Two Sidewalks

[1]Sidewalks should be provided on both sides where possible. In areas with vertical constraints or low-scoring street segments based on Scoring Criteria for Engineer Reporting on Complete Streets Policy, sidewalks may be provided on only one side or neither side as determined by the Engineer and City Council.

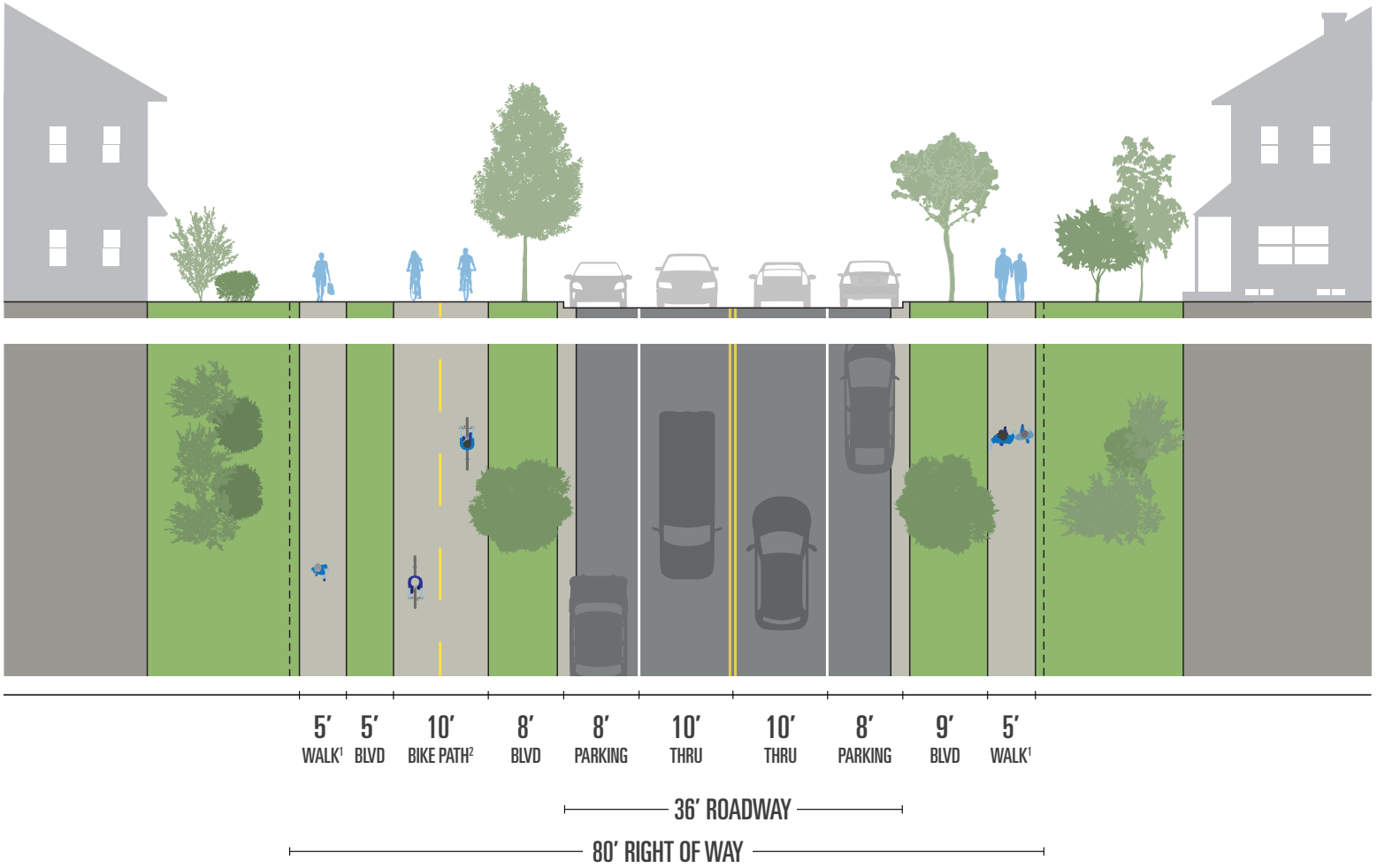


80′ RIGHT OF WAY URBAN STREET

Two Side Parking - Two Sidewalks and Two Buffered Bike Lanes[2]

[1]Sidewalks should be provided on both sides where possible. In areas with vertical constraints or low-scoring street segments based on Scoring Criteria for Engineer Reporting on Complete Streets Policy, sidewalks may be provided on only one side or neither side as determined by the Engineer and City Council.

[2]On-street bike lanes should be provided on street segments shown for on-street bike lanes in the Bicycle and Pedestrian Master Plan unless off-street facilities provided. Sharrows/shared lanes should not be substituted for on-street bike lanes unless right-of-way is vertically constrained.



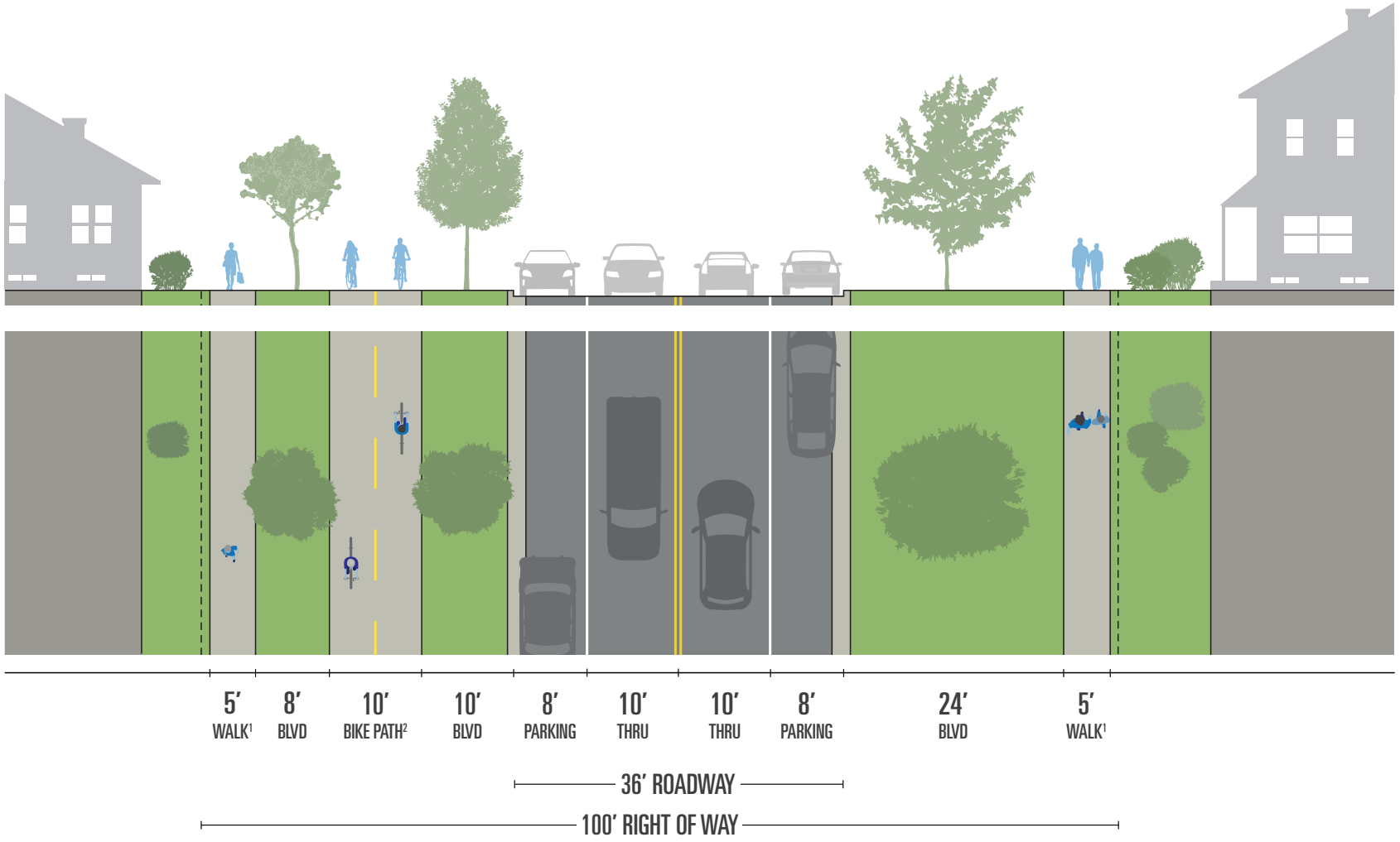
80′ RIGHT OF WAY URBAN STREET

Two Side Parking - Two Sidewalks with Off-Street Two-Way Bike Path[3]

[1] Sidewalks should be provided on both sides where possible. In areas with vertical constraints or low-scoring street segments based on Scoring Criteria for Engineer Reporting on Complete Streets Policy, sidewalks may be provided on only one side or neither side as determined by the Engineer and City Council.

[2] Off-street bicycle facilities preferred over on-street bike lanes where feasible.

[3] This design may be used on street segments shown as future or existing on-street bike lanes in the Bicycle and Pedestrian Master Plan.

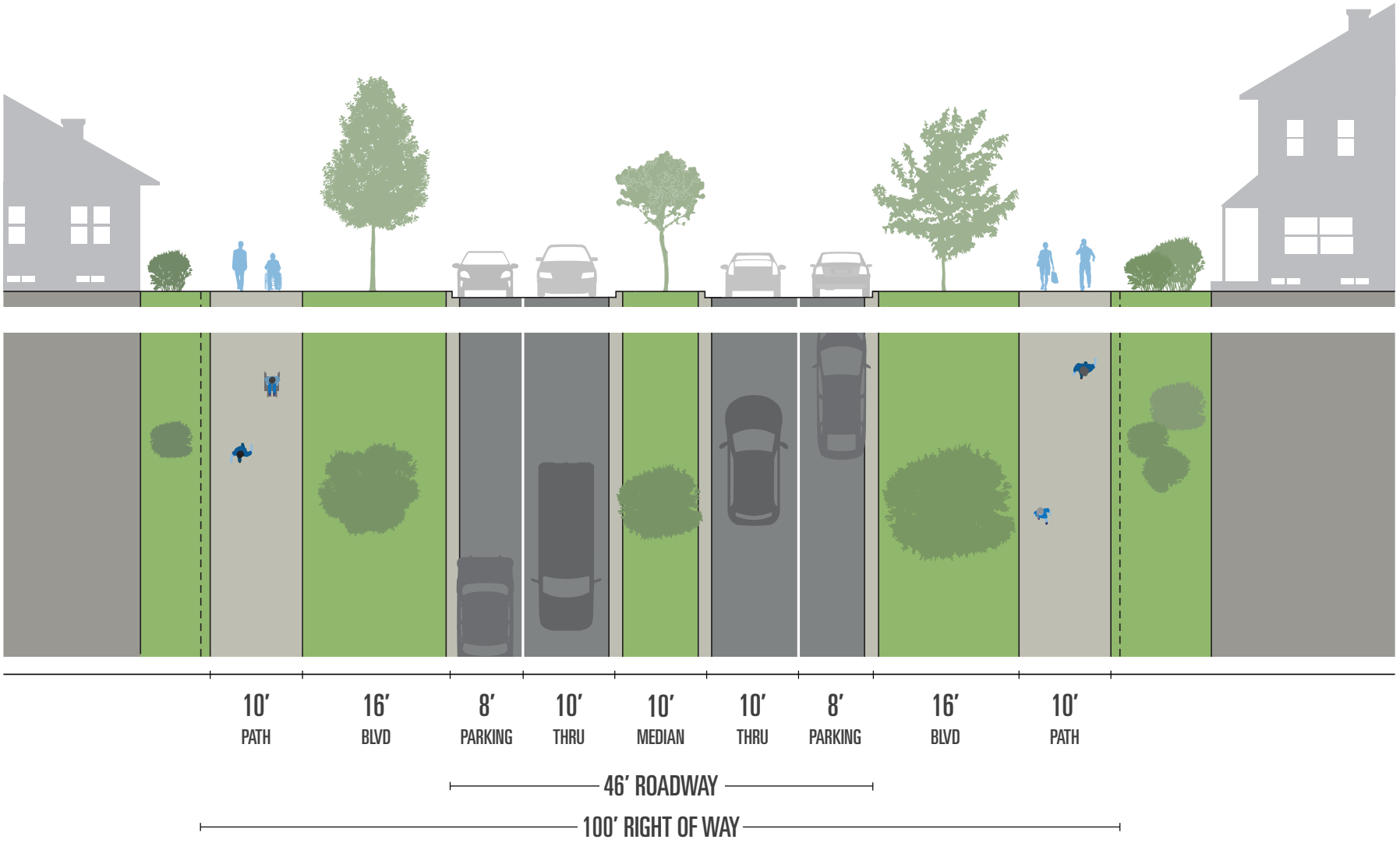


100′ RIGHT OF WAY URBAN STREET

Two Side Parking - Two Sidewalks with Off-Street Two-Way Bike Path

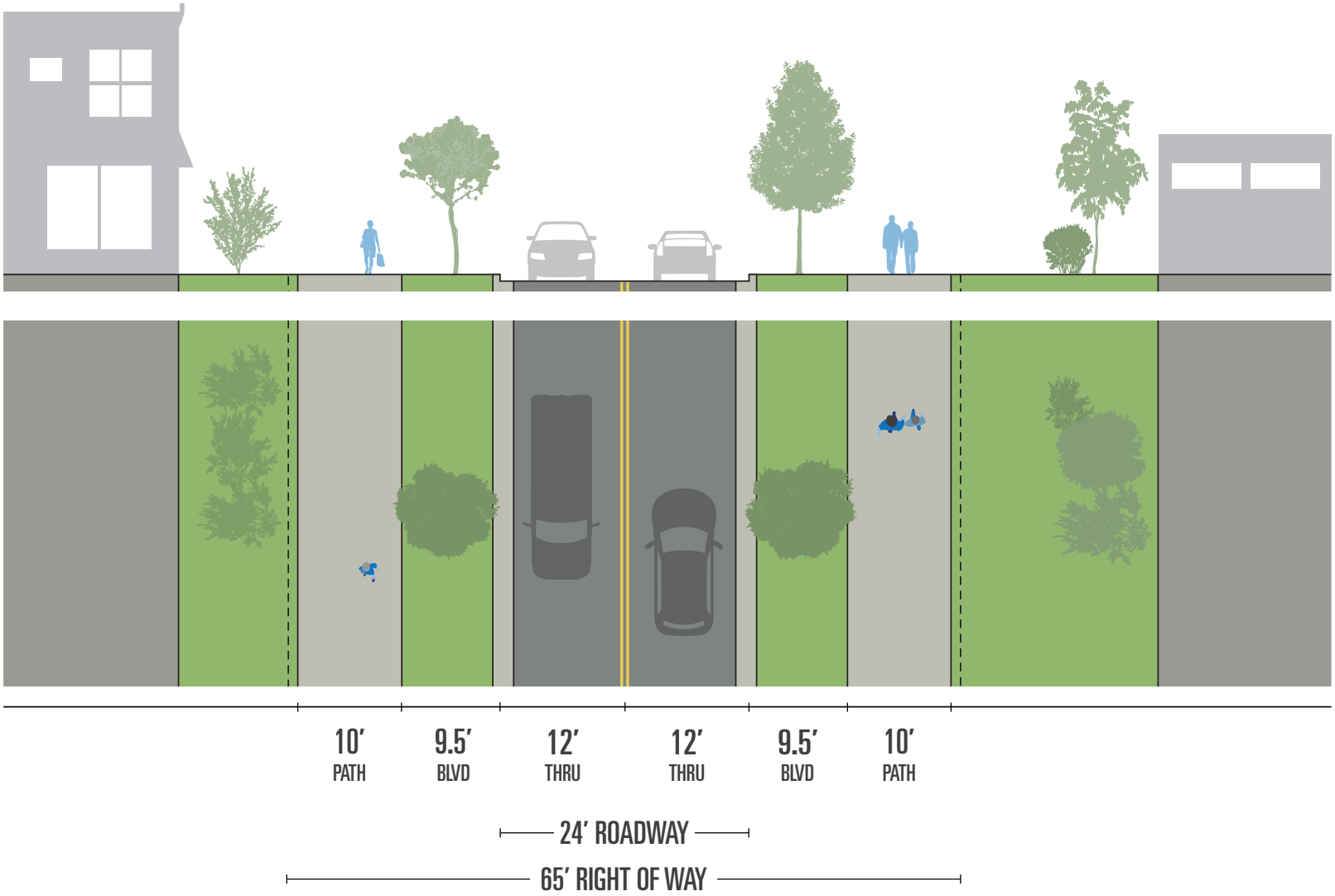
[1]Sidewalks should be provided on both sides where possible. In areas with vertical constraints or low-scoring street segments based on Scoring Criteria for Engineer Reporting on Complete Streets Policy, sidewalks may be provided on only one side or neither side as determined by the Engineer and City Council.

[2]Optional if street segment not shown as existing or future bike facility in Bicycle and Pedestrian Master Plan.

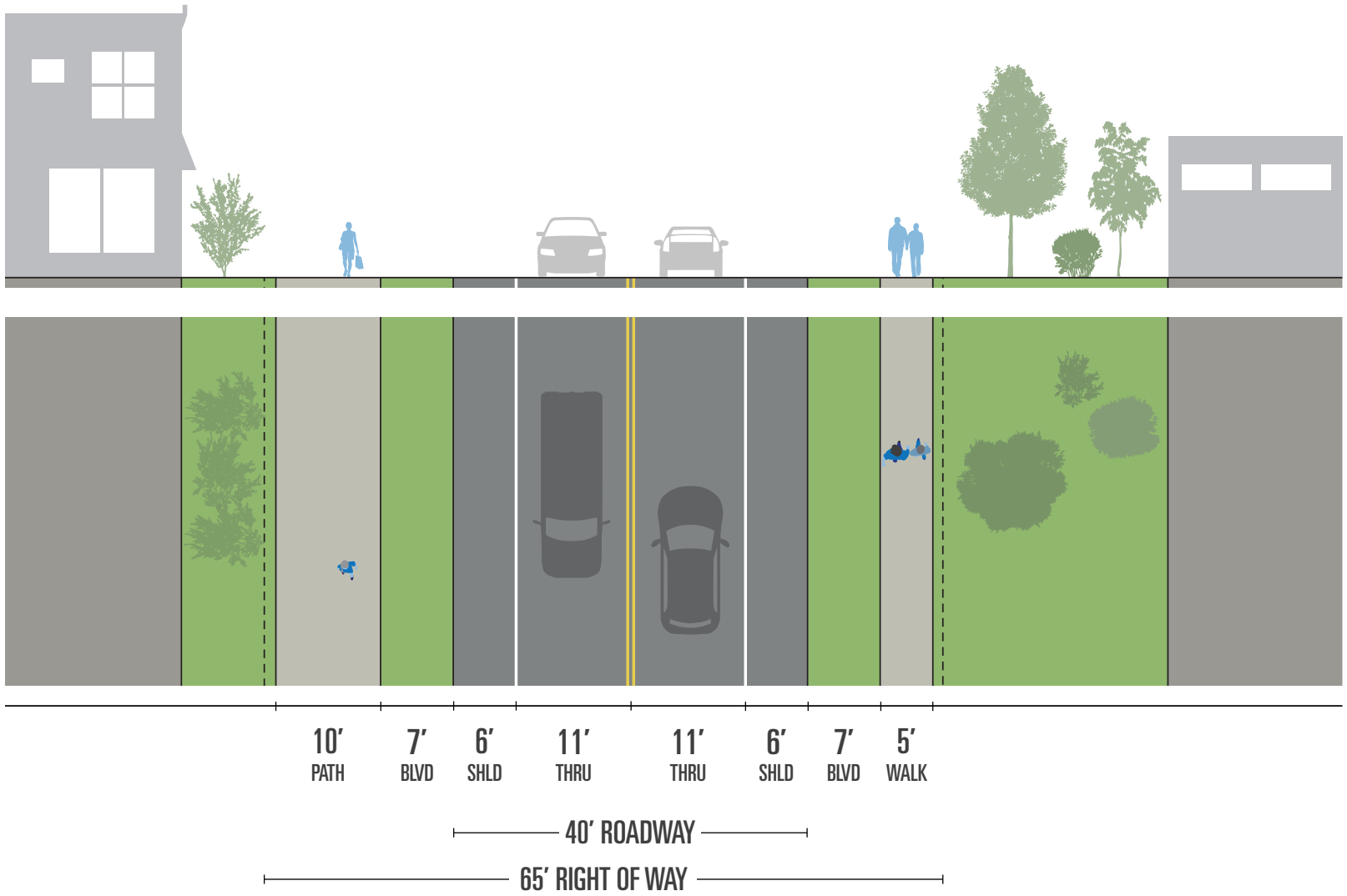


100′ RIGHT OF WAY URBAN STREET

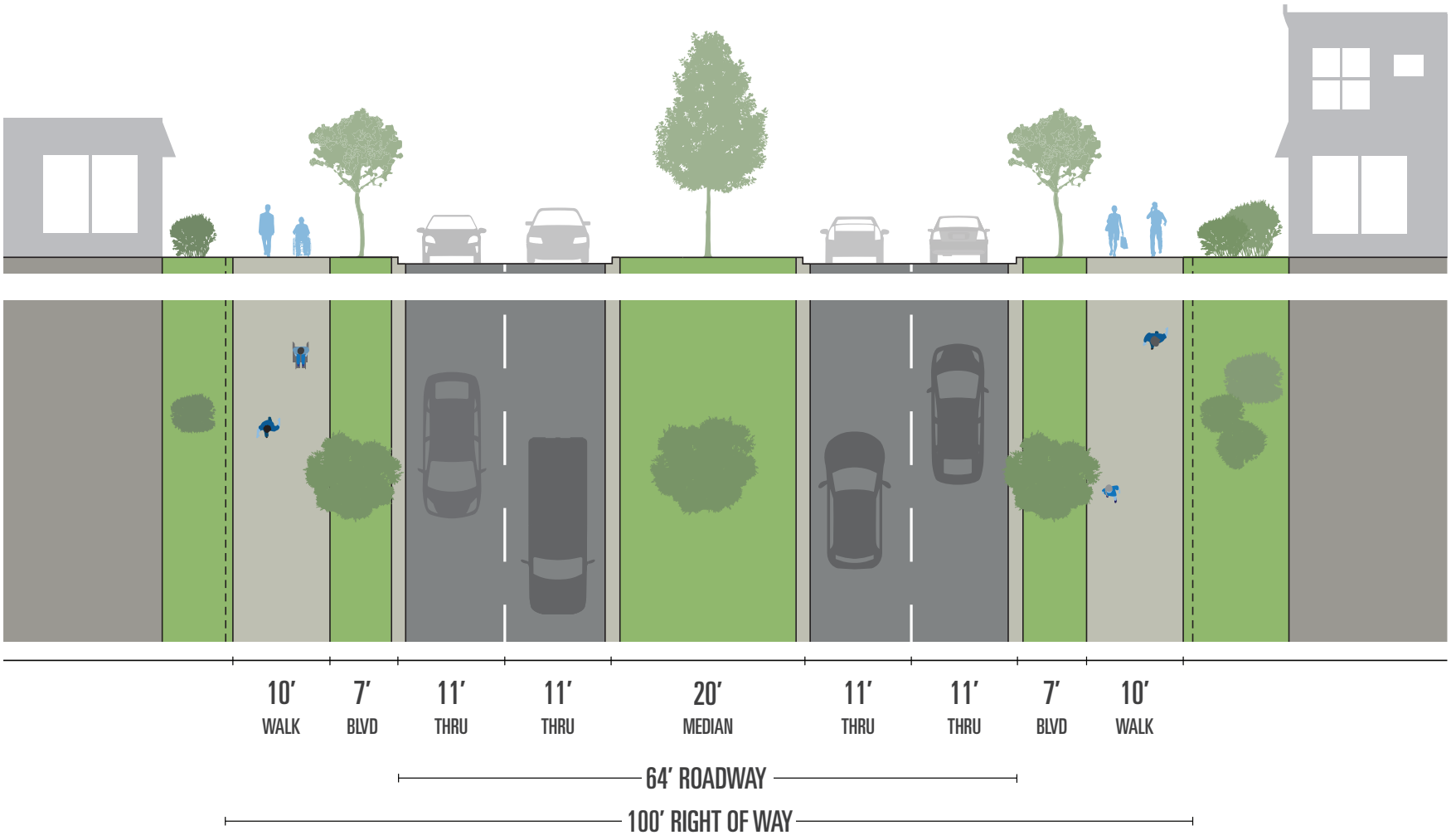
Parkway with Two Side Parking - Two Sidepaths



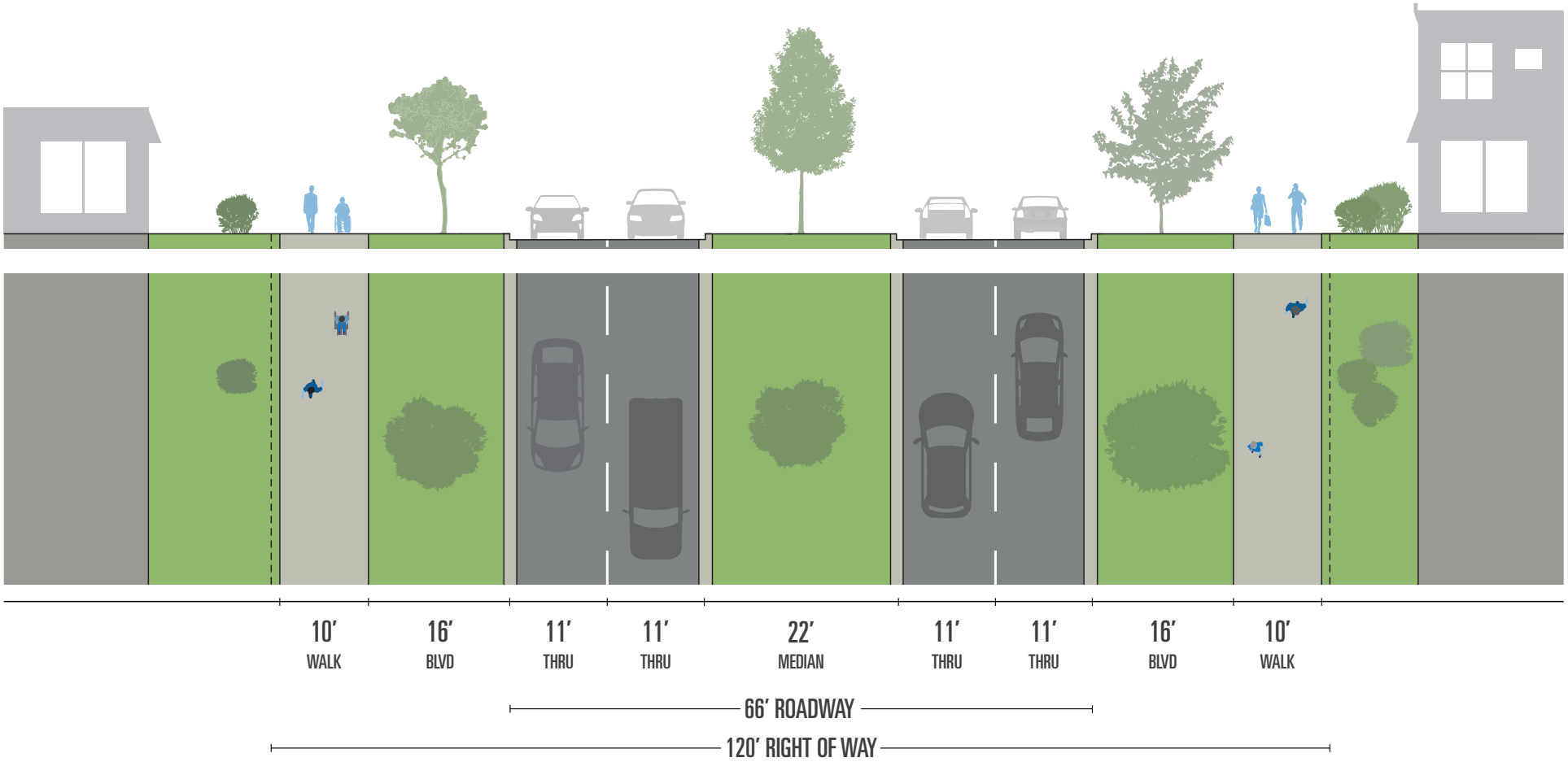
65' RIGHT OF WAY URBAN ROAD
Urban Section



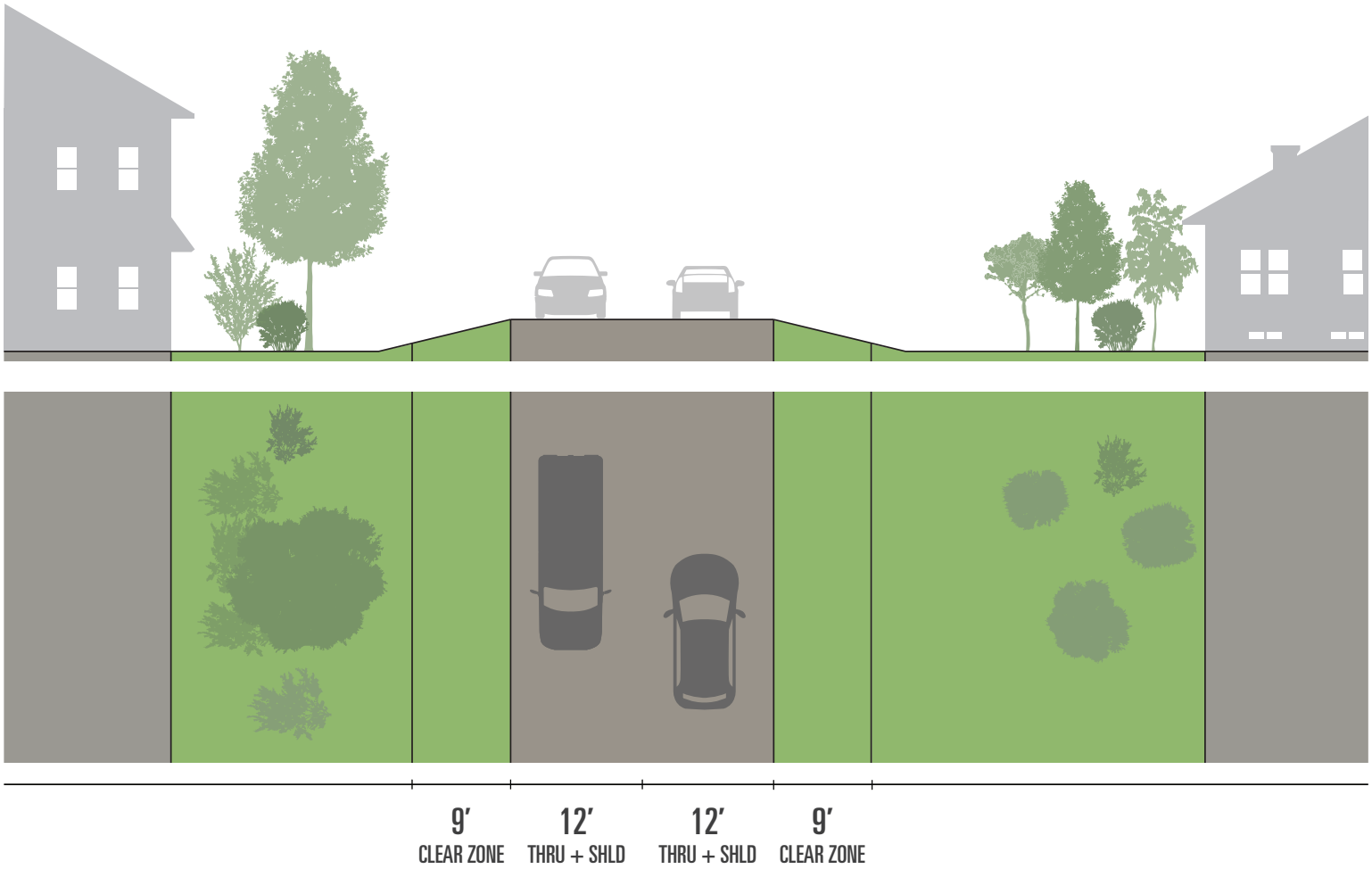
65′ RIGHT OF WAY URBAN ROAD
Rural Section



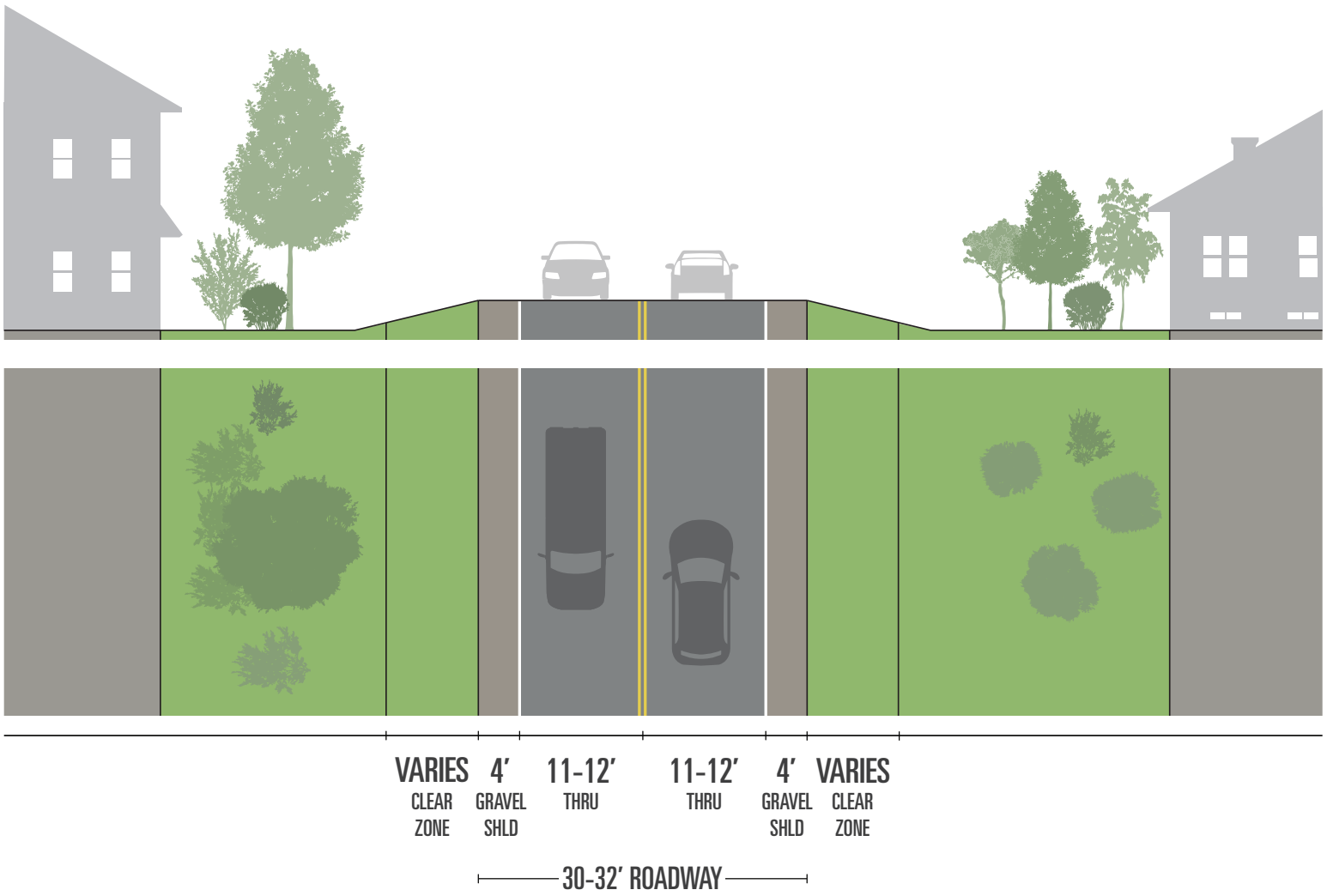
100' RIGHT OF WAY URBAN ROAD
4-Lane Parkway Section



120′ RIGHT OF WAY URBAN ROAD
4-Lane Parkway Section



RURAL ROAD
Gravel Surface
(Under 300 ADT & Design Speed 30 MPH)



RURAL ROAD
Paved
(Under 300 ADT & Design Speed 30 MPH)

Access Management

Access management is an effort to maintain the effective flow of traffic on the network so each roadway can provide its functional duties while accommodating access needs of adjacent land.

Successful access management requires cooperation between land development and transportation interests in order to protect the public's investment in roads. Roadway functionality (See Exhibit 6) has a direct relationship between land access and roadway mobility. As shown in the exhibit, there is a correlation to the amount of access provided and the ability to move traffic along a roadway. Higher levels of access reduce the ability for traffic to travel safely at higher speeds along the roadway. Therefore, urban roads that have a high mobility function should have lower levels of access compared to urban streets that focus less on mobility and provide a higher level of access.

The level of access along a roadway can also have a direct correlation to safety conditions. Exhibit 7 shows the relationship between increased levels of access and increased crash rates. By law reasonable access must be provided to each parcel. Therefore, early coordination between land development and roadway access needs to occur.

Red Wing can only fully control access onto city roadways and access onto other roadways is the responsibility of the state or county. However, access onto any route can be influenced and managed through local subdivision requirements, zoning regulations, and development standards/ agreements. In Red Wing, adoption of access spacing guidelines are recommended as a strategy to effectively manage existing access and to provide access controls for new developments. Recommended access spacing guidelines for Red Wing (shown in Tables 6 and 7) follow the roadway classification categories presented in Roadway Design Guidelines-Living Streets section of this Transportation Plan.

When the city receives a development proposal that proposes access onto a roadway under the jurisdiction of the state or county, the city will continue to coordinate the review of these proposals with the appropriate roadway authority. The city will also participate in the design process with the appropriate agency when roadways are proposed for construction or reconstruction to ensure proper design and location of access points.

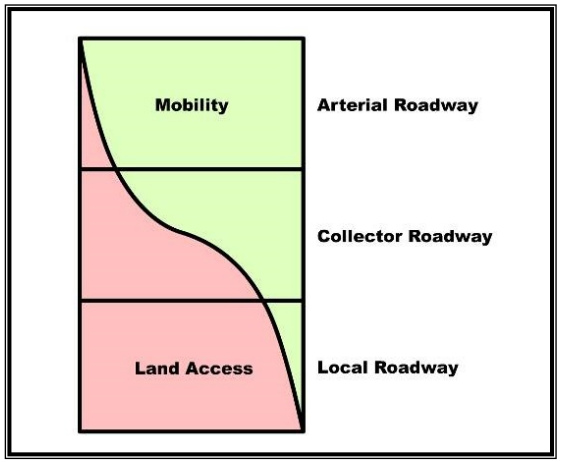


Exhibit 6: Roadway Access/Mobility Relationship

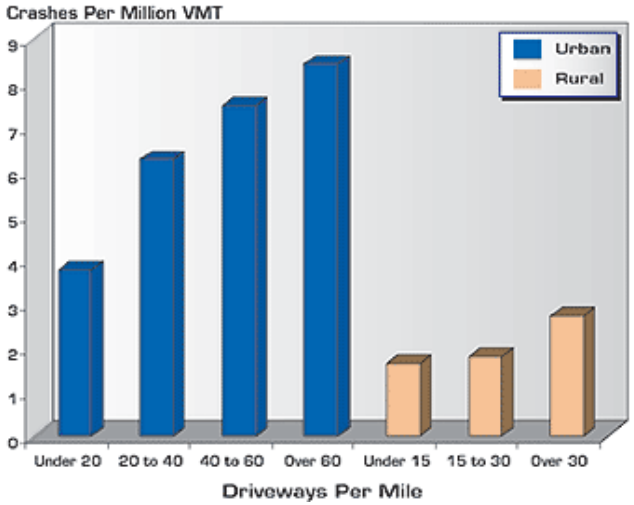


TABLE 7 RED WING PUBLIC STREET ACCESS SPACING GUIDELINES

Type of Public Access Requested	Type of Roadway Affected by Access			
	Urban Street (≤ 30 mph operating speed)	Urban Road (30+ mph operating speed)		Rural Road
	Undivided	Divided	Undivided	Undivided
Urban Street – Partial Access	Access restrictions via signing and/or small medians as needed	1/8 mile	1/8 mile; Access restrictions via signing and/or small medians as needed	Access restrictions via signing and/or small medians as needed
Urban Street – Full Access	300-foot minimum	1/4 mile	1/4 mile	300–foot minimum
Urban Road – Partial Access	Access restrictions via signing and/or small medians as needed	N/A	N/A	Access restrictions via signing and/or small medians as needed
Urban Road – Full Access	300-foot minimum	1/4 mile	1/4 mile	300–foot minimum
Rural Road – Partial Access	Access restrictions via signing and/or small medians as needed	1/8 mile	1/8 mile; Access restrictions via signing and/or small medians as needed	Access restrictions via signing and/or small medians as needed
Rural Road – Full Access	300-foot minimum	1/4 mile	1/4 mile	300-foot minimum

Table Notes:

1) Greater access may be allowed when topography or other site conditions do not allow access to meet the requirements. More stringent access requirements may be required by the City Engineer on steep grades or areas with inadequate sight distance.

2) See bike/pedestrian access standards for bike/pedestrian access requirements.

3) Construction of turn lanes, determination of amount of partial access, and intersection traffic control to be decided on a corridor or intersection basis.

4) Traffic signals should not be constructed unless the City Engineer has determined that alternate forms of traffic control are not adequate to handle traffic needs or provide adequate safety.

5) All access locations should have adequate stopping sight distance, drainage, lighting, spacing from adjacent access, and proper alignment.

TABLE 8 PRIVATE DRIVEWAY ACCESS SPACING GUIDELINES

Minimum Driveway Distance from Intersecting Street				
Street Intersecting Proposed Driveway	**Private Residential Driveway Distance from Nearest Intersecting…**			**Minimum Spacing Between Adjacent Driveways**
	Urban Street	**Urban Road**	**Rural Road**	
Urban Street < 3,000 ADT	50-feet	50-feet	50-feet	30-feet
Urban Street > 3,000 ADT	100-feet	150-feet	100-feet	60-feet
Urban Road	Not Permitted			Not Permitted
Rural Road	100-feet	150-feet	100-feet	30-feet
Street Intersecting Proposed Driveway	**Shared Residential, Multi-Family Residential, and Individual Commercial Driveway Distance from Nearest Intersecting…**			**Minimum Spacing Between Adjacent Driveways**
	Urban Street	**Urban Road**	**Rural Road**	
Urban Street < 3,000 ADT	100-feet	150-feet	100-feet	100-feet
Urban Street > 3,000 ADT	100-feet	150-feet	100-feet	100-feet
Urban Road	1/4 mile			1/4 mile
Rural Road	100-feet	200-feet	100-feet	50-feet
Street Intersecting Proposed Driveway	**Multiple Commercial Driveways Distance from Nearest Intersecting…**			**Minimum Spacing Between Adjacent Driveways**
	Urban Street	**Urban Road**	**Rural Road**	
Urban Street < 3,000 ADT	150-feet	150-feet	150-feet	150-feet
Urban Street > 3,000 ADT	150-feet	150-feet	150-feet	150-feet
Urban Road	1/4 mile			1/4 mile
Rural Road	150-feet	150-feet	150-feet	150-feet

Table Notes:

1) Private Residential Driveways consitute 1 driveway per parcel containing up to 4 units of housing (1-4 family housing, townhouse, condominium, etc.)

2) Shared Residential Driveways constitute 1 driveway shared between 2 or more parcels each containing up to 4 units of housing (1-4 family housing, townhouse, condominium, etc.)

3) Multi-Family Residential Driveways consistute 1 driveway per parcel containing a residential unit with 5 or more unites of housing (larger condominiums, apartments, etc.)

4) Individual Commercial Driveways consistute 1 driveway per parcel containing a commercial, industrial, institutional, office, mixed use, or other similar land use.

5) Multiple Commercial Driveways consistute 1 driveway shared between 2 or more parcels containing commercial, industrial, institutional, office, mixed use, or other similar land uses. This driveway may also be shared with one or more private or multi-family residential driveways.

6) Combined driveways or alley access preferred on urban streets over 3000 ADT. Existing urban streets over 3000 ADT with existing driveway spacing less than the required spacing are allowed until redevelopment occurs.

7) Driveway spacing requirements may be reduced due to topographical challenges.

8) Access may be allowed with less spacing on urban roads due to topography constraints but may be limited to right-in/right-out or 3/4 access as determined by the City Engineer.

9) All access locations should have adequate stopping sight distance, drainage, spacing from adjacent access, and proper alignment.

Another access management example is when a new development or redevelopment is proposed along a major collector or arterial route, it should be reviewed with not only access to the lots within that particular plat, but also in relation to adjacent properties with a focus on providing alternative access to the arterial through a connected local roadway. The internal street network should be designed to accommodate/ connect to adjacent commercial and/or residential parcels that may someday experience similar levels of land development. The ability to minimize the number of access points (both public streets and private drives) to arterial and major collector roads that have a functional duty of providing mobility over land access is a primary objective of this access management strategy.

Access strategies should be implemented using different methods. Any process should also deal with situations outside the guidelines, such as hardship cases. The City's Engineering Department should review and provide reasonable recommendations for such situations.

Along developed road corridors, the number of existing access points usually exceeds access guidelines. Unless these areas are undergoing substantial redevelopment, access management must be approached differently. The access management strategy for such areas should entail minimizing new accesses, while seeking opportunities for consolidating/reducing existing access points as redevelopment plans are proposed.

The following access suggestions provide alternatives for minimizing access and for addressing access issues when the guidelines cannot be met:

» Consolidate and Limit the Number of Accesses for Individual Properties
» Shared Access Points or Cross Access Easements for Adjacent Properties
» New Developments Shall Obtain Access from an Adjacent Road or Frontage/ Backage Road
» Encourage Proper Lot Layout to Minimize Access Points
» Median Restrictions

Regional Transportation System Considerations

As noted in the Existing Transportation System section, the state highway system provides the primary connections between Red Wing and the surrounding region. Though outside the City's jurisdiction it is important for the city to remain engaged with MnDOT to better ensure that this system addresses the range of commuter and commerce needs of the community. A long standing priority has been plans to improve the safety and capacity of Highways 50, 52 and 61 to enhance this vital Red Wing to Twin Cities corridor.

2040 Transit Service

The local transit system, Hiawathaland Transit provides both fixed route and "dial-a-ride" service. As indicated in the Transit Service section, bus ridership increased by roughly 60 percent between 2010 and 2015. However, the system may face challenges in addressing the growing demands with limited resources. Service refinements have continued in an attempt to enhance service where there is the greatest demand and reduce services where ridership trends are lower.

In addition, input provided from transit agency staff indicate there are constraints in the roadway network that restrict the ability to provide effective service in certain areas with higher demand. These include:

» Bus operations being adversely affected by afternoon congestion in the downtown area.
» Constrained intersections along various routes limiting safe turning movements for transit vehicles
» Constrained (narrow) roadways making it difficult for transit vehicles to negotiate streets, especially with on-street parking

Red Wing Public Works and transit staff need to continue their on-going coordination to identify priority issue areas and seek opportunities to pursue improvements to the roadway network, especially as part of the City's street maintenance and improvement process. Potential opportunities could include:

» Develop programs in coordination with local employers to promote carpooling
» Partner with ridesharing services (i.e. Lyft and Uber) to provide supplemental transit service, including to customers outside the fixed route service area
» Include transit service considerations when pursuing reconstruction of city streets (i.e. ensure streets on existing or potential transit routes are appropriately designed to accommodate transit vehicles and that sidewalks are included on streets that link to transit routes.

In addition to the local transit system considerations, the city should remain engaged in regional transit initiatives including the Red Rock Corridor. Though the corridor studies to date have not considered future services beyond Hastings, the city should stay connected with the efforts and continue to advocate for the longer term potential of regional transit services extending to Red Wing and other southeastern communities such as Rochester/ Zumbrota.

2040 Pedestrian and Bicycle Facilities

Walkable and bikeable communities support a high quality of life, improve personal and environmental health, and promote strong and connected communities and economies. The Red Wing Bicycle and Pedestrian Master Plan (adopted November 2011) and the Pedestrian Plan & Policy Report (2014-2016) highlight the existing conditions and the many benefits of non-motorized transportation options for residents and visitors. These plans also acknowledges that developing a fully connected system can take many years and only be accomplished through a series of smaller incremental improvements as limited fiscal resources are available to improve the transportation network as a whole.

As noted in the Non-Motorized Transportation section, the city has an extensive network of sidewalks, multi-use trails and bike facilities that provide residents with access to a variety of destinations and experiences. Generally, the downtown area is well connected with a grid of sidewalks, but there are gaps in the system, both downtown and reaching into the surrounding neighborhoods that should be targeted for improvement. The Bicycle and Pedestrian Master Plan identifies 11 miles of planned trails, including new corridors parallel to the CP Rail Line and along CR-53/ Spring Creek Road S.

Non-Motorized Transportation Section discussed the City's limited on-street bicycle network. However, the Bicycle and Pedestrian Master Plan proposes to add roughly 37.5 miles of on-road facilities ranging from painted sharrows and route signage to protected bicycle lanes. The planned facilities are illustrated in Figure 8.

In conjunction with the increased support of trail and sidewalk connectivity throughout Red Wing, the city has become more aware of the safety needs of pedestrians. Special safety provisions for pedestrians shall be considered when pedestrian facilities are proposed along all roadway but especially along major collector and/or arterial routes. The city shall continue to monitor pedestrian safety conditions and implement safety measures (e.g. enhanced lighting, signage, striping, signal systems, etc.) as issues arise.

Beyond the city limits, the city should stay involved as appropriate in efforts to extend regional trails along the Mississippi River valley that could provide connections to Hastings and Lake City.

Americans with Disabilities Act (ADA) Transition Plan

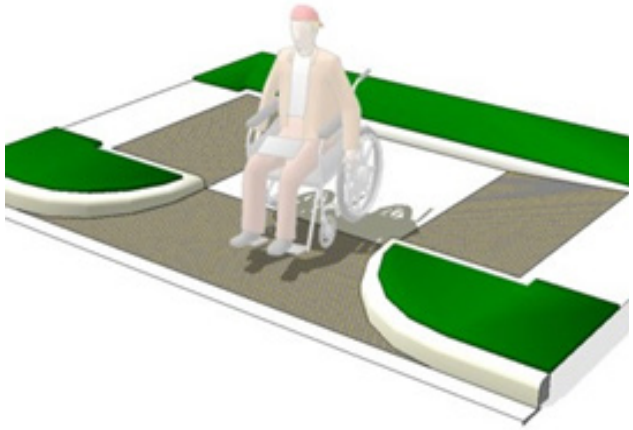
The Americans with Disabilities Act (ADA), enacted on July 26, 1990, is a civil rights law prohibiting discrimination against individuals on the basis of disability. ADA regulations require all public agencies such as Red Wing develop a Transition Plan detailing policies and practices for implementing physical pedestrian improvements on public lands, including within the public right-of-way.

On July 9, 2018, the City of Red Wing ADA Transition Plan For Public Rights of Way was adopted. The plan was prepared by the City's Engineering Department with input from city staff, city council, and community members. The goals of the ADA Transition Plan is to optimize the pedestrian experience, to provide safe and usable pedestrian facilities for all individuals, and to assure compliance with federal, state and local regulations and standards.

As part of the plan development, Red Wing conducted a self-evaluation of its curb ramp facilities and details the accessibility of city-owned right of way as it relates to pedestrian curb ramps. In the future, the city will be conducting further evaluations of its sidewalks, trails, buildings, communications, and city policies to identify additional updates to ensure future accessibility to all individuals.

The curb ramp evaluation found that at this time nearly 85 percent of all curb ramps in the city are non-compliant with ADA standards. An improvement priority schedule was established as part of the planning process that ranked areas based on accessibility benefits for the greatest number of users. It is the City's intention to follow the priority area rankings for standalone ADA improvement projects. The Pedestrian Plan & Policy Report (2014-2016) recommended the city include funds in the annual Capital Improvement Program (CIP) to upgrade sidewalks and curb ramps to ADA standards. However, the majority of curb ramp upgrades will occur in conjunction with other city street projects that will incorporate ADA compliant curb ramps into the design.

In 2010, the Minnesota Department of Transportation (MnDOT) adopted a statewide ADA Transition Plan for improvements being proposed on the Trunk Highway system and State Aid system. As a result,



several ADA compliant improvements, including the improvements along Main Street and those associated with the Highway 61/63 River Bridge Project have already been implemented throughout Red Wing.

The City's Transition Plan is a living document that will need to receive routine updates. As additional city-owned facilities (sidewalks, trails, buildings), communications and policies are evaluated and as projects are implemented the transition plan will be updated.

Other forms of Transportation

Freight

The City of Red Wing is a freight hub for southeastern Minnesota. The city recognizes the importance of freight movements and how it plays a critical role in supporting the community's economy, competitiveness, and quality of life. A safe, efficient, reliable, and robust freight transportation system, enables area residents to have access to the goods and materials they need to live and work, and businesses who are dependent upon the freight transportation system to distribute their products to customers or receive shipments needed to manufacture goods. The city also recognizes that many aspects of freight movement are controlled by the private sector and that mobility and access issues affecting freight transportation needs to be coordinated with MnDOT and other partners (both private and public) to ensure the transportation system continues to address and support current and future freight needs.

Freight related infrastructure and facilities in Red Wing are discussed in the following sections:

Trucking

The primary truck routes through the Red Wing area are US Highway 61, US Highway 63, MN-58, and MN-19. US Highway 61 travels through downtown Red Wing with approximately 5 to 7 percent of the AADT volumes being heavy commercial trucks. As US Highway 61 generally provides north-south connectivity through the region linking southeastern Minnesota with the Twin Cities, which is approximately 35 miles northwest of Red Wing. As such, US Highway 61 is an important travel route for freight. Within Red Wing, however, US Highway 61 also functions as the primary general transportation roadway. There are not many options provided within Red Wing to fulfill US Highway 61's function as a truck route that could remove heavy truck movements through downtown and the boarder community. The reconfiguration of the US Highway 61/US Highway 63 interchange near the east end of downtown will improve truck operations in the Plum Street/3rd Street/Main Street area. Improvements on the local transportation system (e.g. Withers Harbor Drive and Broad Street) shall consider truck movements to better service the freight connection between the Red Wing Grain Area and US Highway 61.

Through survey responses and discussions with key freight generators, it has been determined that minor improvements could be implemented including the construction of bypass lanes, wider shoulders, improved access to riverfront grain terminals, and enhanced signage and lighting at key locations.

The City of Red Wing will continue to work with freight stakeholders (MnDOT, Goodhue County, local industries) to provide appropriate identification of spot improvements that will benefit the trucking industry, particularly for drivers that may not be familiar with the Red Wing roadway system.

Port

Red Wing has long been known as an industrial and manufacturing community. An important element of the community's transportation system is the presence of the Mississippi River and the Red Wing ports. Red Wing is one of only four river ports in Minnesota. In 2015, approximately 97,000 tons of commodities passed through Red Wing's port. The port not only allows barges to carry cargo to international destinations, but the port helps drive tourism via river cruises.

The Red Wing Port Authority will continue to play an active role in helping port dependent businesses expand and relocate to Red Wing. The city will also consider enhancements to the port areas that are focused around providing amenities and a positive experience for tourists.

Rail

Railroads are an important component of the regional and statewide transportation system. Freight rail links the region with major national and international markets. Discussed in the Other Forms of Transportation section, the Canadian Pacific Railway (CP) owns and operates the railroad tracks in the City of Red Wing. As with all privately owned rail facilities, the CP is responsible for the future maintenance, operation, and safety along the rail corridor.

Rail infrastructure and facilities can also impact the physical and social environment and other components of the transportation system. There are eleven public at-grade rail crossings, five grade separated crossings and seven private crossings within Red Wing. Safety at these crossings remain a high priority for the city. While constructing a grade separated (overpass/underpass) facility may be the safest option it can be cost prohibitive. Therefore, continued investment in high benefit-low cost at-

grade rail crossing improvements and expanded educational programs may be more feasible approaches. The City of Red Wing will continue to work with MnDOT, Goodhue County, and the CP in making safety improvements where public roadways intersect and cross rail lines.

Passenger Rail – Empire Builder

Currently Amtrak's Empire Builder service includes one eastbound and one westbound train per day. Expanding service to two daily trains has been discussed for several years and was stated to be a Phase 1 corridor in the 2015 Minnesota State Rail Plan. Currently there are no set plans to expand the service however the City of Red Wing supports adding an additional daily train, which has been in consideration for several years.

High Speed Passenger Rail

The rail corridor through Red Wing is part of the vision for establishing regional high speed passenger rail service between Chicago and the Twin Cities. The Minnesota Department of Transportation, the Federal Railroad Administration, and Goodhue County in partnership with Minnesota's High Speed Rail Commission have designated this Mississippi route as the preferred line for any high-speed rail connection. This initiative was also defined as a Phase 1 corridor in the 2015 Minnesota State Rail Plan, however at this time there are no established plans for implementing the high speed service.

Red Rock Commuter Rail

Studies have been completed that have assessed the feasibility of providing commuter rail service between St. Paul's Union Depot and Hastings. Some consideration has been given to the possibility to extend the service from Hastings to Red Wing. However, given ridership projections and costs, the development of design plans for the Red Rock Commuter Rail service have been delayed. The city should continue to monitor the transit planning activities in the Twin Cities over time in case Red Rock service is ever reconsidered.

Aviation / Airport

As noted in the Other Forms of Transportation section, the Red Wing Airport (RGK) serves general aviation transportation needs. The Red Wing Airport Layout Plan was developed in 1995 and a Narrative Report Update was completed in 2008. According to the 2008 Report Update, the number of based aircraft is forecast to increase at about 1.4 additional aircraft per year. Also, aircraft operations at RGK are projected to increase on average at 2.2 percent annually and reach approximately 37,200 annual aircraft operations by year 2026.

The recommended runway length for Runway 9/27 for the 20-year Airport Narrative Report period (year 2026) is 7,000 feet, which is 1,990 feet longer than the existing runway. If Runway 9/27 was extended to the east, Wisconsin Highway 35 would need to be relocated. Another constraint to the east of the existing runway alignment is the terrain. The bluffs surrounding the area would be an obstruction to the runway approach if the runway was extended to the east. To the west, a runway extension would be limited to the clearance requirements over existing developments (e.g. testing towers located on Thomas and Betts property). Since 2000, the towers were no longer being used for testing purposes. In order to better entice businesses to the area, Red Wing will continue purpose the runway extension and further discussions with adjacent landowners as the city plans for the extension of Runway 9/27 to 7,000 feet.

The Narrative Report Update identifies other "enhancements" that could improve safety and performance at the airport. The following is a summary list of recommended basic facility improvements listed in the Narrative Report Update:

- improve pavement strength from 30,000 lbs. (single wheel gear) to 60,000 lbs.
- expand auto parking lot to accommodate one parking stall per based aircraft
- purchase additional land for future runway extension
- expand the commercial apron and aircraft parking
- construct additional hangers and taxi lanes

All facilities and operations at the airport will continue to be monitored and improvements will be planned and programmed as needed.

Special Area Studies

As noted in the Public Engagement section, early in the plan development process city staff and the consultant team met to discuss previous planning efforts and identify priority areas of concern and need throughout the community. The discussion focused on all modes of transportation and centered on identifying potential system improvements to address key safety and operational issues. The intent of this process was to develop a set of conceptual transportation system improvements to determine if potentially feasible solutions could be identified. The intent was to document these concepts in the 2040 Transportation Plan for reference and potential further consideration at a later date. The following locations were identified as priorities based on documented safety issues as well as the collective experience and observations of city staff:

- US Highway 61 and Tyler Road
- MN 58 at Pioneer Road

- MN 58 at Guernsey Lane/Hi Park Avenue
- CSAH 18 at Sturgeon Lake Boulevard
- College Avenue/West Avenue/Central Avenue/W 7th Street intersection
- Featherstone Road/Maple Avenue/Alvina Street intersection
- Tyler Road from Kosec Drive to Hewitt Boulevard
- MN-58 at South Park Street and Bush Street
- MN-58 at Bush Street and 10th Street
- West Avenue at Maple Street
- Old West Main Street from Bench Street to Withers Harbor Drive

The draft improvement concepts developed for these locations are illustrated in the Appendix. The city recognizes that the improvements represented in the graphics are very conceptual and that further assessment and engineering along with public outreach would be required in order to determine whether any of the concepts merit potential implementation.

Emerging Trends and Challenges Affecting Transportation

The transportation industry is facing new trends and emerging challenges that will likely influence future priorities in long range planning. The challenges derive from the impacts of national and global trends, including changing demographics, changing economy, technology and innovation, climate change, disparity and equity, health and livability, regional growth and urbanization, and fiscal constraints for aging infrastructure. Further complicating matters, many of the trends and challenges are interrelated and the linkages between them will affect the preservation, maintenance, and renewal of transportation infrastructure. Therefore, it is important for Red Wing to monitor trends that influence the use and condition of the transportation system in order to adapt policies, operations, and investments in a timely manner. Key transportation trends and challenges that could influence how people and goods move within and through Red Wing over the next 20 to 30 years are summarized below.

Changing Demographics

The population in Red Wing and Goodhue County is aging and becoming more ethnically and culturally diverse. This trend is expected to continue over the next 20 years which is anticipated to impact transportation needs, travel patterns, and expectations regarding mobility.

Most of the aging population is expected to continue driving, but the number of trips and overall travel demand will be less because of retirement, health, and other life-style changes. Also, their travel patterns (i.e. time of day, destinations) are expected to change as elderly populations tend to travel more during off peak periods and to non-employment destinations. This demographic shift will increase the need to improve the safety and accessibility of the transportation system. Further diversification within the population may also increase the demand for affordable transportation choices.

As the workplace looks to replace the retiring baby boomers, we need to be conscience of the preferences of younger workers. Millennials (born between 1983 – 2000) have shown a preference for living in higher density urban communities that are connected and walkable, transit-oriented, and near the social amenities they seek. Some of the results of these choices of this younger population is that they tend to drive less, postpone getting their driver's licenses, and are more environmentally conscious and are more likely to not own a car. As these individuals age, this trend may result in fewer drivers, fewer cars on the road, fewer trips taken, and fewer miles driven than we are experiencing today.

Changing Economy

Economic globalization has placed more pressure on regional and local economies to be adaptable and competitive to remain prosperous. In addition to globalization, Red Wing residents and businesses are also facing rapid technological changes, the emergence of the sharing economy, and an impending labor force shortage. A modern and efficient transportation system will become even more vital for businesses that need to be able to quickly react to world market needs and deliver products and services in a timely fashion.

Telecommunication advancements are also changing our work environments and travel demands. Expanded on-line opportunities and capabilities are providing an influx of flexibility in the form of remote access and telecommuting. The result of this trend may be reduced travel demands, especially during morning and evening peak travel periods. How we obtain health care, education, and other services are also likely to change with expanded on-line opportunities, which may further reduce the number of trips on the transportation system.

The sharing economy and e-shopping will result in the need for new and improved delivery systems potentially changing the costs and patterns of shipping. Paired with new emerging technologies, such as drones and driverless vehicles, this could result in significant changes to our economy. E-shopping has steadily increased over the last decade, which has resulted in more goods and

services being acquired online whereby reducing travel demand and needs for all consumers.

Ascent of Autonomous Vehicles

An autonomous vehicle (also known as a driverless vehicle, self-driving vehicle, robotic vehicle) are defined by the US Department of Transportation as "those in which operation of the vehicle occurs without direct driver input to control the steering, acceleration, and braking and are designed so that the driver is not expected to constantly monitor the roadway while operating in self-driving mode."

Autonomous cars use a combination or system of technologies. The first system is for general navigation. A GPS system provides accurate location of a road and provides the overall direction of the vehicle. The second is a system sensors, radars, or cameras to recognize dynamic conditions (other roadway users, stopped cars, road construction, bikers, pedestrian, etc.). The third system aggregates all the data collect from the mix of navigation and sensors to provide action for the autonomous vehicle. Further technologies are in development that will allow vehicles and other objects to "speak" to one another, which will significantly enhance safety and operations.

A number of direct transportation benefits could arise from the use of autonomous vehicles including, but not limited to, reduced congestion or increased mobility, improved safety for all roadway users (vehicles, bicyclists, pedestrians), and lower infrastructure costs. Other benefits may also be realized such lower insurance costs, lower fuel consumption, less need for parking, enhanced mobility of youth, disabled, low-income, and/or elderly populations.

Among the main obstacles to widespread development are technological challenges, government regulations, funding, liability, replacement of existing vehicles, and security just to name a few.

As autonomous vehicle technology continues to evolve and gain acceptance and use, the city will follow and evaluate the potential of such vehicles and its implications to city regulations and design requirements.

Shared Mobility Devices

Cities across the country and world are seeing an introduction of new app-based mobility services such as shared cars, bicycles, and electric scooters. These services have the potential to assist in providing more affordable mobility options. There are instances where these services and their associated devices (dockless electric scooters and bikes) have been introduced without enough advanced planning and consideration for how and where they are allowed to operate within public rights of way and where they are stored during times when they are not being used.

The City of Red Wing will need to monitor these emerging mobility options and potentially develop the appropriate regulatory framework to regulate and control these new innovations to better ensure public safety is not compromised.

Drones or Unmanned Aerial Vehicles

Drones, or Unmanned Aerial Vehicles (UAVs), have become smaller, more powerful, and less expensive and as a result have become much more common sight in our cities.

The Federal Aviation Administration predicts the number of drones to grow from approximately 2.5 million in 2017 to over 8 million by 2020. It is anticipated that over the next 20 years, an increasing number of drones will carry out services hundreds of feet above our roadways. Cities will need to adopt and not just plan for activities on the ground but also on an aerial basis.

Several issues surround the use of drones including safety, noise, personal intrusion, and privacy. The City of Red Wing will need to account for their legal limits and restrictions (land use and zoning powers) and have a solid understanding of their role in protecting the public realm by possibly designating when and where drones (or UAVs) can operate.

Advanced Telecommunications

Telecommunication (Telecom) technologies are constantly evolving as private carriers are currently in the midst of next generation 5G implementation. As this telecom system expands it is anticipated that there will be a need for "small cell sites" to locate within already crowded public rights of way. As a result, the City of Red Wing will need to track the progress of telecom technologies and determine if changes need to be made in their roadway design guidelines, zoning requirements, and/or permitting processes.

Source: Washington Post

Other Telecom advancements and smart-phone software are affecting the transportation network today, and will continue to do so into the future. In many ways, the transportation system is already being automated by:

» Navigation devices and smart-phone applications that provide and adjust to real time traffic like Google Maps, TomTom, Waze, Garmin, and many other traffic apps.
» Ride-sharing applications (e.g. Uber, Lyft, iHail).

These real-time applications affect the transportation network today. When congestion occurs on primary routes, users are diverted to alternate routes to avoid congestion and save travel time. Many of these alternate routes are local roadways that were not intended to serve this level of traffic and can quickly become congested and is some cases create safety concerns. Roadway authorities such as MnDOT and Goodhue County, and Red Wing in the future should seek to integrate these real-time private sector applications into the operations of their public facilities, especially traffic signal timings, to better manage their transportation systems. The use and effect on these real-time traffic applications is expected to increase in the future.

Ride-sharing applications (e.g. Uber, Lyft, iHail) are further automating the way we travel, are reducing dependence on vehicle ownership, and could affect future infrastructure needs (parking areas).

Intelligent Transportation Systems (ITS) and Advanced Traffic Management Systems (ATMS)

Roadway jurisdictions continue to invest in and implement ITS and ATMS applications that assist in the safe and efficient operations and management of motorized and non-motorized use of the local and regional transportation network. Some of these applications are listed below:

» Adaptive Traffic Control – interconnected traffic signals and video detection
» Flashing Yellow Left Turn Arrows
» Dynamic Speed Display Signs
» Dynamic Message Signs
» Rectangular Rapid Flashing Beacons at Pedestrian Crossings
» Accessible Bicycle/Pedestrian Signals and Countdown Timers

Advanced Driver Assistance Systems

Advanced driver assistance systems (ADAS) are one of the fastest-growing segments in automotive electronics. Several vehicle manufacturers are currently offering various forms of ADAS that are intended to automate, adapt, and enhance vehicle systems for improved safety and better driving. Many of the on-board systems are designed to avoid crashes by providing advanced warnings that alert the driver to potential problems. Some systems even include safeguards to avoid crashes by taking over control of the vehicle. On-board features can automate lighting, provide adaptive cruise control, automate braking, incorporate GPS/traffic warnings, connect to smartphones, alert the driver to other cars or dangers, keep the vehicle in the correct lane, provide blind spot alerts, and provide automated parallel parking.

Performance-Based Practical Design

Transportation agencies are increasingly challenged with addressing their system performance, mobility, and safety needs in the current era of financial limitations. As a result, many agencies are utilizing a new planning and design process called Performance-Based Practical Design (PBPD) that can be used during the project development process to inform the selection of transportation projects and types of elements to include in the design and implementation phases.

As defined by the Federal Highway Administration, PBPD encourages the evaluation of the performance impacts of roadway design decisions relative to the cost of providing various design features. PBPD can be articulated as modifying a traditional design approach from a "top-down," standards-first approach to a "design-up" approach where transportation decision-makers exercise engineering judgment to build upon the improvements from existing conditions to meet both project and system objectives. PBPD uses appropriate performance-analysis tools and considers both short- and long-term project and system goals while addressing project purpose and need. Following a PBPD approach can make using scarce resources more efficient so that more improvements can be made and the overall transportation system performance exceeds the performance that would have otherwise been achieved if the focus was on individual project-based (as opposed to systems based) decisions. Following are notable PBPD attributes:

» PBPD focuses on performance improvements that benefit both project and system needs.
» Agencies make sound decisions based upon performance analysis

- By scrutinizing each element of a project's scope relative to value, need, and urgency, a PBPD approach seeks a greater return on infrastructure investments.
- PBPD strengthens the emphasis on planning-level corridor or system performance needs and objectives when planning, scoping, and developing individual projects.
- PBPD does not eliminate, modify, or compromise existing design standards or regulatory requirements.

Climate Changes

Transportation accounts for two-thirds of U.S. petroleum consumption. A combination of technological innovation and regulation is placing the nation on a trajectory of greatly reduced fuel consumption and greenhouse gas emissions from vehicles which is expected to result in long term benefits on the climate as transportation demand continues to grow.

A major performance challenge across all modes of transportation is the inadequacy of preparation for natural and human-made disasters, as well as for extreme weather events. Over the past several decades temperatures locally and globally have been rising and scientists expect this trend to continue. With these climate changes the Midwest Region of the Country and southeastern Minnesota is expected to experience more heavy rainfall and extreme weather events which will place stresses on transportation infrastructure. The City of Red Wing recognizes that the transportation system needs to become more resilient to enhance safety, minimize service disruption, and to protect the environment (water quality/erosion). During system planning, design, construction, operations, and system maintenance the city will continue to be proactive in assessing and implementing tools and strategies to adapt infrastructure, lessen potential effects, and maximize the efficiency and effectiveness of the transportation system.

Disparity and Equity

Disparities in transportation along with other systems and services are often times placed on disadvantaged populations including those without access to a car, low-income households, and racial or ethnic minority populations. These populations are having to devote a greater percentage of their income on their daily transportation needs. The result of these disparities is limited mobility and access to employment, connections with family and friends, education, shopping, and other essential destinations (healthcare, childcare, recreational opportunities). Providing a multi-modal transportation system including effective transit services and a comprehensive bicycle and pedestrian network is crucial to responding to the mobility needs of all residents. The ongoing public outreach efforts conducted by the city continue to indicate support for lowering the cost of transportation by expanding multi-modal transportation options in the community. Continued efforts to eliminate disparities will lead to more livable and resilient communities.

Health and Livability

Transportation and health are linked through a variety of factors. For example, there is an increased awareness of the importance of active lifestyles and higher levels of daily physical activity, which can be accommodated through people-centered transportation designs that incorporates travel mode choices. Red Wing recognizes the health benefits and increased demands and established a complete streets policy that demonstrates the city's commitment to develop and maintain a safe, efficient, balanced and environmentally sound local transportation system and to support Active Living – integrating physical activity into daily routines through activities such as biking, walking, or taking transit.

Fiscal Constraints and Aging Transportation Infrastructure

Federal and state transportation taxes that generate revenues dedicated for funding transportation infrastructure are declining as a result of fuel economy improvements (reduced gas tax revenues) and inflation; increased wear and tear from growing travel demand is further exacerbating the gap in funding.

Much of the existing infrastructure within Red Wing and the surrounding area was built decades ago, when there was a rapid buildout of transportation infrastructure. Substantial funds are now needed to maintain, upgrade, and replace the aging transportation infrastructure. This need is complicated by the fact that transportation funding has not kept up with demand and the effects of inflation on revenues, which continues to be a constraint for governments at all levels. The lack of adequate transportation investments will lead to further deterioration which may jeopardize the future safety and effectiveness of the overall system.

Recognizing the funding challenges, the city is actively pursuing strategies to manage ongoing roadway maintenance commitments by seeking opportunities to reduce pavement width on portions of the street network. As noted in the Design Guidelines presented earlier in this chapter, the city has adopted the Living Streets philosophy

which focuses on developing streets which provide multi-modal options, reduce pavement width, and emphasize green space to reduce roadway runoff. Amongst other benefits, these design principals reduce long term maintenance costs.

Implementation

The identification of transportation deficiencies is one of the main elements of a transportation plan. In total, these deficiencies will shape where and how the city will focus a majority of its financial resources in the coming years. The 20-year timeframe of this planning process extends well beyond the typical five-year horizon used by the city in the Capital Improvement Plan (CIP) to program infrastructure improvements. The five-year CIP represents projects a timeframe during which available funding can be estimated with reasonable certainty. Beyond five years, the financial resources that will be available to the city are less certain.

Short Term Improvements (0-5 years): Capital Improvement Program

The City of Red Wing maintains a multi-year CIP that includes the City's short-term (0-5 years), capital investments. In addition, city staff maintain a 10-year CIP because of the long period of time that it takes to undertake large transportation projects. The CIP identifies strategic improvements to the City's existing infrastructure and is designed to address important community needs. The 5-year CIP is updated annually by city staff and submitted to the city council for review and approval. Staff also uses the CIP for mid- and long-range planning and budget needs.

Figure 14 depicts the programmed 2019 through 2023 roadway reconstruction projects identified in the City of Red Wing's current CIP.

Implementation Actions

In addition to the short-term CIP projects discussed above, the implementation action items identified in this section represent opportunities to address the transportation needs and constraints identified throughout this Transportation Plan. This information, organized according to travel mode and the different components of the overall transportation system is summarized below in Table 9. The implementation timeframes are broken into time horizons that should be used as general guides. In several instances a specific improvement, program, policy may be scheduled for implementation in the short or longer term horizon, but also identified as needing ongoing/monitoring of the situation. The time horizons are as follows:

- Short Term Improvements: 0-5 years
- Longer Term Improvements: 6-20+ years
- Ongoing/Monitoring: No specific timeframe identified

Beyond defining the types of improvements, the table indicates which of the five strategic goals (stewardship, safety, mobility, economy, and health) each of the improvements address.

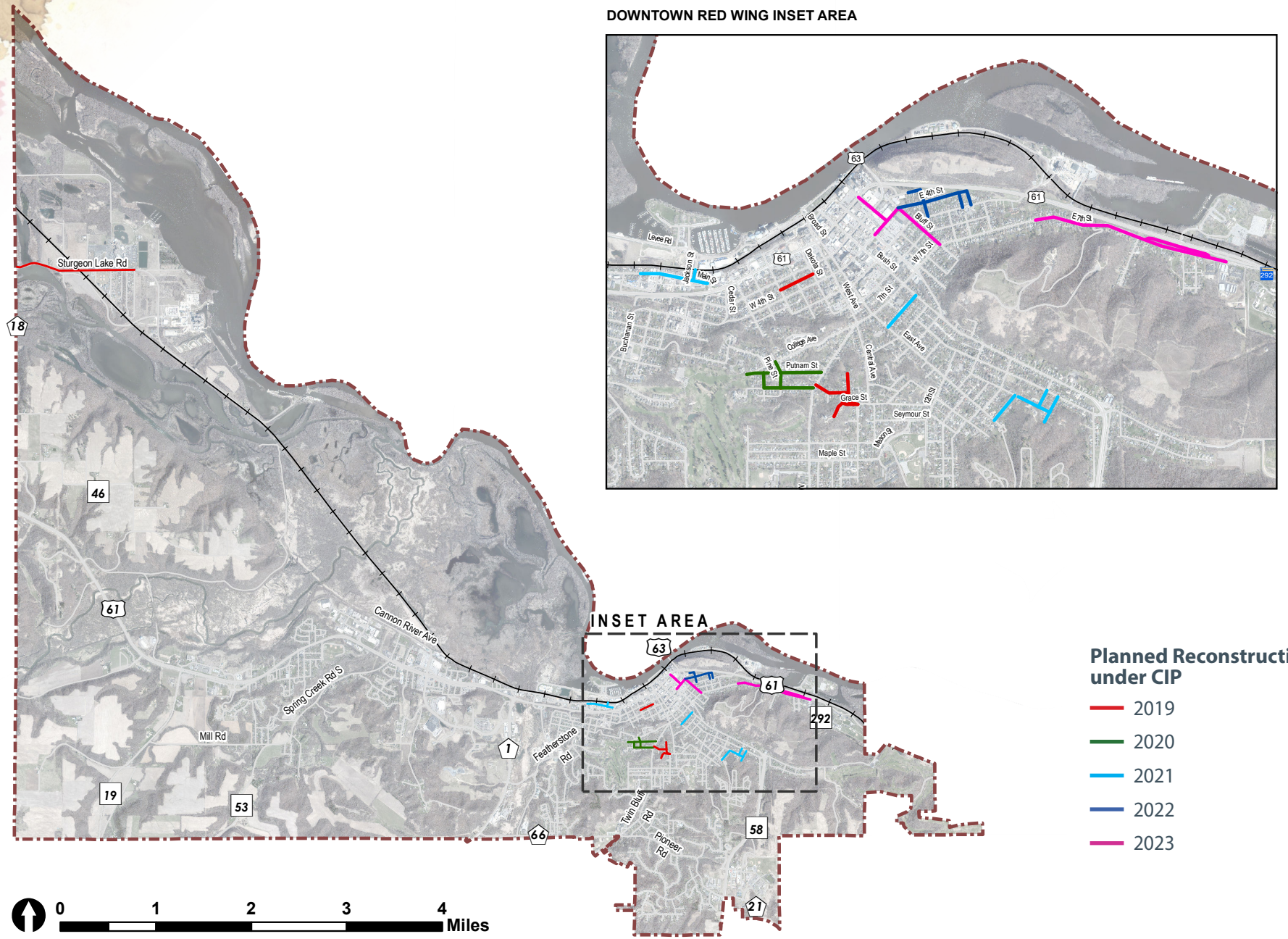


FIGURE 14 PLANNED CAPITAL IMPROVEMENT PROJECTS

TABLE 9 IMPLEMENTATION OF IMPROVEMENTS

	Improvement Type	Short Term (0-5 years)	Mid- to Long-Term (6–20+ years)	Ongoing/ Monitoring	Applicable Strategic Goals
Roadway/Traffic					
1)	Construct programmed roadway Improvements per the City's Capital Improvement Plan.	X			ALL
2)	Further review high crash frequency intersections to determine the causal factors contributing to the high number of crashes.	X			Safety
3)	Program needed safety improvements (e.g. geometric or traffic control changes) to reduce frequency of and/ or severity of crashes at problem intersections.	X	X	X	Safety
4)	Monitor roadway operations and their design capacity thresholds and program improvements as appropriate.		X	X	Mobility
5)	Change the functional classification of Bush Street/Golf Links Drive from TH 58 to US Highway 61 from a local route to a minor collector.	X			Stewardship
6)	Monitor travel patterns and traffic volumes to determine if/when functional classification changes are warranted.			X	Stewardship
7)	Coordinate with Goodhue County on the transfer of County Road 46 (Mount Carmel Road) from CSAH 18 to US Highway 61 from County jurisdiction to Red Wing.	X			Stewardship
8)	Coordinate with Goodhue County on the future jurisdictional classification of Pioneer Road from CSAH 1 to Highway 58.	X	X		Stewardship
9)	Support the jurisdictional transfer of MN 292 from the west intersection with US Highway 61/63 to the property line of the correctional facility to the MN Department of Corrections (facility driveway).	X			Stewardship
10)	Where appropriate, utilize the City's Roadway Design Guidelines including the preservation and acquisition of needed right of way to implement the City's Complete Street and Living Street vision.	X		X	Safety, Mobility, Health
11)	Create an asset management plan for transportation infrastructure (pavement, bridges, sidewalks/trails, lighting, signage, pavement markings, etc.).		X		Stewardship
12)	Monitor evolving requirements and design standards related to the American Disabilities Act and apply treatments in project designs.	X	X	X	Safety, Health
13)	Perform/review site specific traffic studies and implement the City's access management guidelines.			X	Safety, Mobility
14)	Periodically meet with Goodhue County to discuss roadway design standards and access management issues related to County Road improvements.			X	Safety, Mobility
15)	Improve intersections when major improvements or reconstruction are needed at locations that have been identified as having significant geometric deficiencies, similar to those locations listed in the appendix.	X	X		Safety, Mobility

Table 9 - Implementation of Improvements (Continued)

	Improvement Type	Short Term (0-5 years)	Mid- to Long-Term (6–20+ years)	Ongoing/ Monitoring	Applicable Strategic Goals
Non-motorized Transportation (Pedestrians/Bicycle)					
1)	Expansion of the City's pedestrian and bicycle transportation network in accordance with the Red Wing Bicycle and Pedestrian Master Plan.	X	X		Safety, Mobility, Health
2)	Monitor pedestrian/bicycle crashes in order to quickly address problem areas by implementing safety improvements for these vulnerable users of the transportation system.			X	Safety
3)	Utilize the Roadway Design Guidelines to plan and implement Complete Streets/Living Street concepts for new and reconstructed city streets.	X	X		Safety, Health
4)	Work with Goodhue County to evaluate and implement non-motorized improvements on County roads			X	Safety, Health
5)	Implement ADA-compliant pedestrian improvements in accordance with the City's ADA Transition Plan.	X	X		Safety
6)	Work with developers of new residential and/or commercial areas to accommodate bicycle and pedestrian access/facilities as discussed in the Red Wing Bicycle and Pedestrian Master Plan.			X	Safety, Mobility, Economy, Health
7)	Implement Mayor's 2016 Taskforce recommendations.	X	X		Safety, Mobility
Transit					
1)	Coordinate with Hiawathaland Transit to identify expanded service routes and stops complimentary to local origins/destinations.	X		X	Mobility, Economy
2)	Support the future expansion of regional bus service and rail services.			X	Mobility, Economy
3)	Encourage transit providers to partner with ridesharing programs to provide transit-like service to locations and routes that are not conducive to effective transit service.			X	Mobility, Economy
4)	Monitor the demand of and need for expanded park-and-ride facilities.			X	Mobility, Economy
5)	Develop marketing plan for current park-and-ride facilities.	X			Mobility, Economy
6)	Encourage expansion of ride-sharing services.			X	Mobility, Health
7)	Encourage expansion of bicycle sharing services.			X	Mobility, Economy

Table 9 - Implementation of Improvements (Continued)

	Improvement Type	Short Term (0-5 years)	Mid- to Long-Term (6–20+ years)	Ongoing/ Monitoring	Applicable Strategic Goals
Freight/Trucking					
1)	Initiate a feasibility study and coordinate with MnDOT on an improved connection to US Highway 61 from Withers Harbor Drive or Bench Street for trucks entering/exiting the riverfront area (e.g. Red Wing Grain).	X			Safety, Mobility
2)	Ensure designated Truck Routes are clearly and adequately signed for freight vehicles traveling within and through the community.	X			Safety, Mobility, Economy
3)	Continue to work with freight stakeholders to identify barriers/restrictions exist that limit the safe and efficient movement of freight throughout the community. Consider spot improvements (e.g. turn/bypass lanes, wider shoulders, acceleration/deceleration lanes, wider turning radii).			X	Safety, Mobility, Economy
Rail					
1)	Continue to coordinate with rail stakeholders (e.g. MnDOT, CP Rail, Goodhue County) and seek high benefit-low cost safety improvements where public roadways cross rail lines.			X	Safety
2)	Continue to support the expansion of rail services including an additional daily train along the Amtrak Empire Builder line and future regional high speed rail and/or commuter rail services in the area.			X	Mobility, Economy
3)	Rail safety - pursue at-grade crossing improvements	X	X		Safety, Mobility
Ports					
1)	Continue to help port dependent businesses expand and relocate to Red Wing. The city will also program enhancements to the port areas that are focused around providing amenities and a positive experience for tourists.			X	Economy
Aviation/Red Wing Airport					
1)	Continue to pursue basic facility improvements listed in the Red Wing Airport Facilities Plan Update.			X	Mobility, Economy

Funding Sources

The City of Red Wing will have varying degrees of financial participation in future roadway related projects, whether they are local, county, or state projects. A financial challenge facing the city is the impact of inflation on construction resources. Historically, annual inflation rates for transportation infrastructure projects has outpaced overall inflation indexes. In recent years, consumer inflation has ranged between approximately 1 percent and 2 percent while transportation construction costs typically increase between 3 percent and 4 percent each year. As a result the City's purchasing power for transportation infrastructure projects is decreasing over time.

In order to implement transportation improvements and programs the city may need to obtain funding from a variety of sources, some of which are summarized below.

General Ad Valorem (Property) Taxes – Transportation projects can be funded with the general pool of municipal revenues raised through property taxes.

Municipal State Aid – Cities with populations of greater than 5,000 (such as Red Wing) are eligible for funding assistance from the Highway User Tax Distribution Fund. This funding program is supported by the state gas tax and vehicle taxes, as well as federal transportation funds through MnDOT). These funds are allocated to a network of Municipal State Aid (MSA) streets. Currently, the City of Red Wing receives an apportionment per year for improvements to its MSA streets.

Federal Transportation Funds – The guidelines for direct federal transportation project funding is established under the Fixing America's Surface Transportation Act (FAST).

Roadway, transit, non-motorized, and other transportation-related projects are selected based on evaluation, prioritization, and recommendation by the Area Transportation Partnership (ATP) and MnDOT.

Cooperative Agreements with MnDOT – MnDOT can cooperate on planning, implementing, and financing transportation projects which provide benefits to the state highway system. The financial terms and obligations are generally established at the front end of the projects.

MnDOT Safe-Route-To-School Program – MnDOT funds municipal infrastructure or non-infrastructure pedestrian focused projects that support the establishment of safer connections (routes) to schools.

MNDNR Recreation Grant Programs – The MNDNR has several grant programs for funding non-motorized transportation improvements (e.g. trails) that benefit and/or support outdoor recreation and other regional/state parks and trails.

Tax Increment Financing (TIF) – This is a local method of funding improvements that are needed immediately by using the additional tax revenue anticipated to be generated because of the given project's benefits in future years. The difference between current tax revenues from the targeted district and the increased future tax revenues resulting from the improvements is dedicated to retiring the municipal bonds used to finance the initial improvement(s).

Property Tax Abatement - a city may grant an abatement of some or all of the taxes or the increase in taxes it imposes on a parcel of property if the city excepts the benefits of the proposed abatement agreement to at least equal the costs of the proposed agreement. The city must also determine that the agreement is in the public interest because it will increase or preserve tax base, provide employment opportunities, provide or help acquire or construct public facilities, help redevelop or renew blighted areas, or help provide access to services for residents of the city.

Development Participation – Under this approach, the impact of the additional traffic from a proposed development on the local roadway system is projected, using standard traffic engineering procedures. Costs associated with improving the roadway system to handle the additional traffic at an acceptable level of service are assessed to the developer. This approach generally involves some level of negotiation between the local government and the developer to work out a cost-sharing agreement that allows the development to move forward.

Assessments – Properties that benefit from a roadway scheduled for improvement may be assessed for the cost of construction. In order to assess the owner, it must be demonstrated that the value of their property will increase by at least the amount of the assessment.

Grants – Many grant programs exist that generally can provide for partial or full payment for specific project components. For example, the Department of Employment and Economic Development (DEED) has provided grant funding for transportation projects. Funds appropriated for the program must be used to promote economic development, increase employment, and improve transportation systems to accommodate private investment and job creation.

Appendix A

ENGINEERING DEPARTMENT PLANNED IMPROVEMENTS

2019-2023 Seal Coats, Mill & Overlays, and Reclamations

MATCHLINE

INSET

(USE SEPARATE SCALE)

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

MATCHLINE

MATCHLINE

MATCHLINE

Seal Coat / Mill & Overlay

2019

2020

2021

2022

2023

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

N W E S

LEGEND

INTERSTATE TRUNK HIGHWAY.....

U.S. TRUNK HIGHWAY.....

STATE TRUNK HIGHWAY.....

COUNTY STATE AID HIGHWAY.....

COUNTY ROAD.....

CORPORATE LIMITS.....

PUBLIC ROAD .....

PRIVATE ROAD .....

CLOSED ROAD .....

MUNICIPALITY OF

RED WING

ENGINEERING DEPARTMENT

City of RED WING

2010 U.S. CENSUS – POP. 16,459

2024-2028 Seal Coats, Mill & Overlays, and Reclamations

MATCHLINE

INSET

(USE SEPARATE SCALE)

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

MATCHLINE

MATCHLINE

MATCHLINE

Seal Coat Mill & Overlay

2024

2025

2026

2027

2028

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

N

W E

S

LEGEND

INTERSTATE TRUNK HIGHWAY.....

U.S. TRUNK HIGHWAY.....

STATE TRUNK HIGHWAY.....

COUNTY STATE AID HIGHWAY.....

COUNTY ROAD.....

CORPORATE LIMITS.....

PUBLIC ROAD .....

PRIVATE ROAD .....

CLOSED ROAD .....

MUNICIPALITY OF

RED WING

ENGINEERING DEPARTMENT

City of RED WING

2010 U.S. CENSUS – POP. 16,459

2019-2023 Projects Currently Identified in CIP

MATCHLINE

INSET

(USE SEPARATE SCALE)

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

MATCHLINE

MATCHLINE

MATCHLINE

Reconstruction Year

- 2019
- 2020
- 2021
- 2022
- 2023

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

N W E S

LEGEND

- INTERSTATE TRUNK HIGHWAY.....
- U.S. TRUNK HIGHWAY.....
- STATE TRUNK HIGHWAY.....
- COUNTY STATE AID HIGHWAY.....
- COUNTY ROAD.....
- CORPORATE LIMITS.....
- PUBLIC ROAD .....
- PRIVATE ROAD .....
- CLOSED ROAD .....

MUNICIPALITY OF

RED WING

ENGINEERING DEPARTMENT

City of RED WING

2010 U.S. CENSUS – POP. 16,459

Existing Utilities Over 80 Years Old That Are Not Currently Identified for Reconstruction in 5-Year CIP

MATCHLINE

INSET

(USE SEPARATE SCALE)

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

MATCHLINE

Year Oldest Utilities Installed

- < 1898
- 1899-1918
- 1919-1938

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

N W E S

LEGEND

- INTERSTATE TRUNK HIGHWAY.....
- U.S. TRUNK HIGHWAY.....
- STATE TRUNK HIGHWAY.....
- COUNTY STATE AID HIGHWAY.....
- COUNTY ROAD.....
- CORPORATE LIMITS.....
- PUBLIC ROAD .....
- PRIVATE ROAD .....
- CLOSED ROAD .....

MATCHLINE

MATCHLINE

MUNICIPALITY OF

RED WING

ENGINEERING DEPARTMENT

City of RED WING

2010 U.S. CENSUS – POP. 16,459

2019-2023 Additional Street & Utility Reconstruction Projects that are proposed to be added to 5-Year CIP

MATCHLINE

INSET

(USE SEPARATE SCALE)

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

MATCHLINE

Reconstruction Year

- 2019
- 2020
- 2021
- 2022
- 2023

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

N W E S

LEGEND

- INTERSTATE TRUNK HIGHWAY.....
- U.S. TRUNK HIGHWAY.....
- STATE TRUNK HIGHWAY.....
- COUNTY STATE AID HIGHWAY.....
- COUNTY ROAD.....
- CORPORATE LIMITS.....
- PUBLIC ROAD .....
- PRIVATE ROAD .....
- CLOSED ROAD .....

MATCHLINE

MATCHLINE

MUNICIPALITY OF

RED WING

ENGINEERING DEPARTMENT

City of RED WING

2010 U.S. CENSUS – POP. 16,459

2024-2028 Proposed Street & Utility Reconstruction Projects

MATCHLINE

INSET

(USE SEPARATE SCALE)

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

MATCHLINE

MATCHLINE

MATCHLINE

Reconstruction Year

- 2024
- 2025
- 2026
- 2027
- 2028

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

N W E S

LEGEND

- INTERSTATE TRUNK HIGHWAY.....
- U.S. TRUNK HIGHWAY.....
- STATE TRUNK HIGHWAY.....
- COUNTY STATE AID HIGHWAY.....
- COUNTY ROAD.....
- CORPORATE LIMITS.....
- PUBLIC ROAD .....
- PRIVATE ROAD .....
- CLOSED ROAD .....

MUNICIPALITY OF

RED WING

ENGINEERING DEPARTMENT

City of RED WING

2010 U.S. CENSUS – POP. 16,459

2029-2033 Proposed Street & Utility Reconstruction Projects

MATCHLINE

INSET

(USE SEPARATE SCALE)

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

MATCHLINE

MATCHLINE

MATCHLINE

LEGEND

- INTERSTATE TRUNK HIGHWAY.....
- U.S. TRUNK HIGHWAY.....
- STATE TRUNK HIGHWAY.....
- COUNTY STATE AID HIGHWAY.....
- COUNTY ROAD.....
- CORPORATE LIMITS.....
- PUBLIC ROAD .....
- PRIVATE ROAD .....
- CLOSED ROAD .....

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

N W E S

MUNICIPALITY OF

RED WING

ENGINEERING DEPARTMENT

2010 U.S. CENSUS – POP. 16,459

2034-2040 Proposed Street & Utility Reconstruction Projects

MATCHLINE

INSET

(USE SEPARATE SCALE)

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

MATCHLINE

MATCHLINE

MATCHLINE

LEGEND

- INTERSTATE TRUNK HIGHWAY.....
- U.S. TRUNK HIGHWAY.....
- STATE TRUNK HIGHWAY.....
- COUNTY STATE AID HIGHWAY.....
- COUNTY ROAD.....
- CORPORATE LIMITS.....
- PUBLIC ROAD .....
- PRIVATE ROAD .....
- CLOSED ROAD .....

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

N W E S

MUNICIPALITY OF

RED WING

ENGINEERING DEPARTMENT

City of RED WING

2010 U.S. CENSUS – POP. 16,459

2024-2028 Proposed Surface Reconstruction Projects

MATCHLINE

INSET

(USE SEPARATE SCALE)

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

MATCHLINE

MATCHLINE

MATCHLINE

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

N

W E

S

LEGEND

- INTERSTATE TRUNK HIGHWAY.....
- U.S. TRUNK HIGHWAY.....
- STATE TRUNK HIGHWAY.....
- COUNTY STATE AID HIGHWAY.....
- COUNTY ROAD.....
- CORPORATE LIMITS.....
- PUBLIC ROAD .....
- PRIVATE ROAD .....
- CLOSED ROAD .....

MUNICIPALITY OF

RED WING

ENGINEERING DEPARTMENT

City of RED WING

2010 U.S. CENSUS – POP. 16,459

2029-2033 Proposed Surface Reconstruction Projects

2034-2040 Proposed Surface Reconstruction Projects

MATCHLINE

INSET

(USE SEPARATE SCALE)

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

MATCHLINE

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

N

W E

S

LEGEND

- INTERSTATE TRUNK HIGHWAY.....
- U.S. TRUNK HIGHWAY.....
- STATE TRUNK HIGHWAY.....
- COUNTY STATE AID HIGHWAY.....
- COUNTY ROAD.....
- CORPORATE LIMITS.....
- PUBLIC ROAD .....
- PRIVATE ROAD .....
- CLOSED ROAD .....

MATCHLINE

MATCHLINE

MUNICIPALITY OF

RED WING

ENGINEERING DEPARTMENT

City of RED WING

2010 U.S. CENSUS – POP. 16,459

Alleys

MATCHLINE

INSET

(USE SEPARATE SCALE)

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

MATCHLINE

MATCHLINE

MATCHLINE

	Good Surface Condition	Fair Surface Condition	Poor Surface Condition
No Underground Utilities			
Alleys with Underground Utilities < 80 Years Old			
Alleys with Underground Utilities 80 Years Old and Older			

SCALE

1600 0 1600 3200 FEET

500 0 500 1000 METERS

2018

BASIC DATA – 1977

N W E S

LEGEND

INTERSTATE TRUNK HIGHWAY.....

U.S. TRUNK HIGHWAY.....

STATE TRUNK HIGHWAY.....

COUNTY STATE AID HIGHWAY.....

COUNTY ROAD.....

CORPORATE LIMITS.....

PUBLIC ROAD .....

PRIVATE ROAD .....

CLOSED ROAD .....

MUNICIPALITY OF

RED WING

ENGINEERING DEPARTMENT

City of RED WING

2010 U.S. CENSUS – POP. 16,459

Appendix B

APRIL 26, 2018 OPEN HOUSE PUBLIC COMMENTS TRANSPORTATION RELATED

Red Wing Comprehensive Plan
April 26th Open House Getting Around Station Public Comments

Map ID	Type	Text	Intersection
0	Intersections and Streets	Difficult Intersetion	Tyler Rd S and Kosec Dr
1	Intersections and Streets	Speeding on Grenentz lane. Hazardous to kids	Pioneer Rd and Gernentz Ln
2	Bike Paths and Trails	Truck traffic is a hazard. Lower the speed	Spring Creek Rd S and Dale Ct
3	Crosswalks and Sidewalks		US-61 and Withers Harbor Dr
4	Bike Paths and Trails	Connect Haycreek and Cannon valley trails	US-61 and Withers Harbor Dr
5	Bus Stops and Routes		US-61 and Sunset Ln
6	Crosswalks and Sidewalks		Featherstone Rd and Alvina St
7	Bike Paths and Trails	Bike routes downtown. Share the road	US-61 and West Ave
8	Crosswalks and Sidewalks		US-61 and Fulton St
9	Crosswalks and Sidewalks		S Oak Dr and Southview Ridge
10	Bike Paths and Trails	Need connection from Levee to Calvill	Carlson Island
11	Crosswalks and Sidewalks		US-61 and Nymphara Ln
12	Bike Paths and Trails		US-61 and CR 292 Blvd
13	Bike Paths and Trails		US-61 and CR 292 Blvd
14	Bike Paths and Trails	Truck traffic is a hazard. Lower the speed	Spring Creek Rd S and Dale Ct
15	Crosswalks and Sidewalks		US-61 and Nymphara Ln
16	Bike Paths and Trails	Bike paths/bikers downtown. layover station.	US-61 and Hill St
17	Intersections and Streets	High traffic noise on West Ave	West Ave and W 7th St
18	Bus Stops and Routes	School bus co stops here. not safe.	Hwy 61 and CR 292 Blvd
19	Bike Paths and Trails	Connect trail to fair grounds w/o crossing road	Neal St and Siewer St
20	Crosswalks and Sidewalks	Add sidewalk to S. Oak Dr.	Hay Creek Trail and S Oak Dr
21	Bike Paths and Trails	Make dirt bike trails	Sorins Bluff
22	Bike Paths and Trails		Featherstone Rd and W 7th St
23	Bike Paths and Trails		Featherstone Rd and W 6th St
24	Bike Paths and Trails		Featherstone Rd and W 6th St
25	Bike Paths and Trails		Featherstone Rd and Alvina St
26	Intersections and Streets		Featherstone Rd and Alvina St
27	Bike Paths and Trails		Featherstone Rd and W Maple Ave
28	Bike Paths and Trails	Missing trail to Featherstone Park	Woodland Park
29	Other	Need parking	Hay Creek Valley Rd and Neal St
30	Bike Paths and Trails	Could use stairs leading to bike trail	Hay Creek Valley Rd and Neal St
31	Bike Paths and Trails	Could use stairs leading to bike trail	Hay Creek Valley Rd and Neal St
32	Other	Trash and dog poop accumulates, loud noises	Neal St and Siewer St
33	Bike Paths and Trails	Improve trail signage	Red Oak Ave and Sumac Dr
34	Other	Need restaurants overlooking the river	Levee Rd and Bay Point Dr
35	Intersections and Streets	Beautiful tunnel and wall	US-61 and Clay St
36	Crosswalks and Sidewalks		Old W Main St and Clay St
37	Intersections and Streets		Old W Main St and Jefferson St
38	Crosswalks and Sidewalks	Left turn, Improve signage	US-61 and Cedar St
39	Bus Stops and Routes		Cedar St and W 4th St
40	Intersections and Streets	Difficult Left Turn	US-61 and Hill St
41	Crosswalks and Sidewalks		US-61 and Hill St
42	Crosswalks and Sidewalks	Left Turn	US-61 and Fulton St
43	Bus Stops and Routes		Pine St and W 3rd St
44	Other	Install Ev charging stations	Bay Point Park
45	Other	Install Ev charging stations	Bay Point Park
46	Crosswalks and Sidewalks		US-61 and Fulton St
47	Bike Paths and Trails		US-61 and Fulton St
48	Intersections and Streets		US-61 and Dakota St
49	Intersections and Streets	Grain trucks race through. Hazardous	US-61 and West Ave
50	Bus Stops and Routes		Fulton St and W 4th St
51	Other	No playground in walking distance	West Ave and Central Ave
52	Intersections and Streets		Plum St and Bush St
53	Intersections and Streets	Speeding, wide street	Hallstrom Dr and Gernentz Ln
54	Intersections and Streets	Stormwater speedbump is a problem	Hallstrom Dr and Gernentz Ln
55	Bike Paths and Trails	More signage to find the ath. field and trail	Athletic Fields
56	Bike Paths and Trails	Add trail bw cherry, ath. field and twin bluffs	Twin Bluffs
57	Crosswalks and Sidewalks	Ped x-ing flashers	Bush St and 13th St
58	Crosswalks and Sidewalks	Flashers	Bush St and 17th St
59	Bike Paths and Trails	Heavy ped/bike traffic. Needs trail	MN-58
60	Bike Paths and Trails	Trail from S. Park to Pioneer Rd.	MN-58
61	Bike Paths and Trails		E 7th St and Green St
62	Bike Paths and Trails		US-61 and W 5th St
63	Intersections and Streets		E 7th St and Sterns Dr
64	Intersections and Streets		E 7th St and Sterns Dr
65	Intersections and Streets		E 7th St and Sterns Dr
66	Intersections and Streets		E 7th St and Skyline Dr
67	Intersections and Streets	Speeding, drunk driving	E 7th St and Skyline Dr

Appendix C

DRAFT IMPROVEMENT CONCEPTS

These concepts were developed in coordination with city staff to represent possible options for addressing issues at key locations across the community. Additional planning, public involvement and design efforts will be required if and when the city decides to advance with potential improvements at any location.

Appendix C

Draft Improvement Concepts

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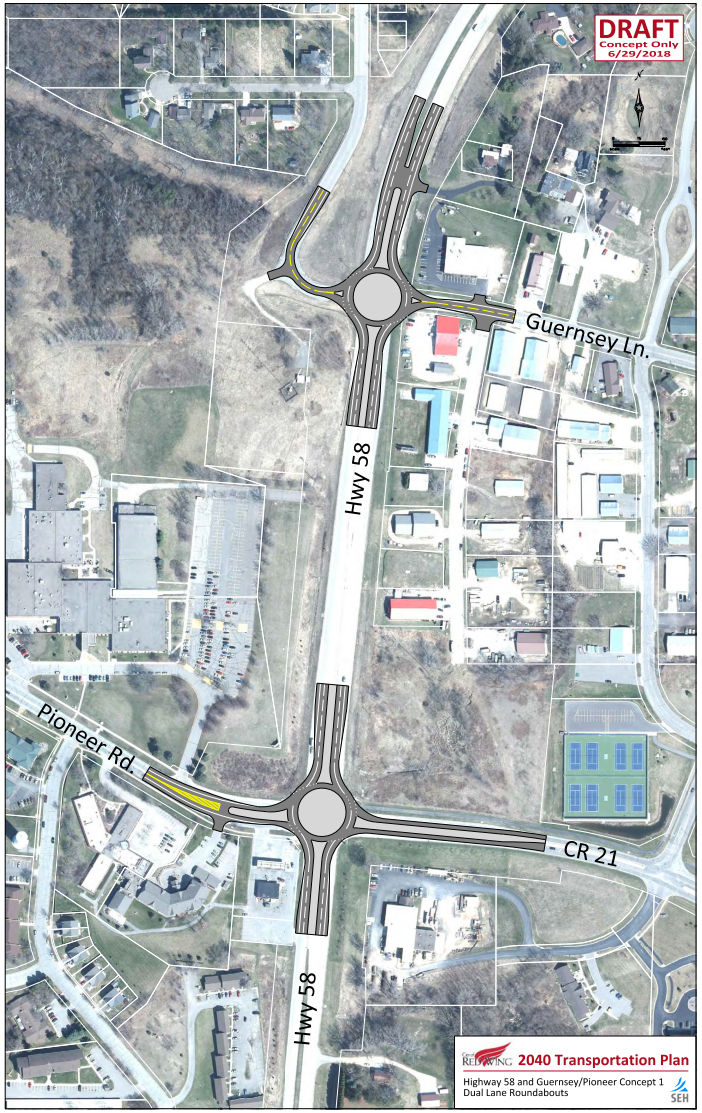

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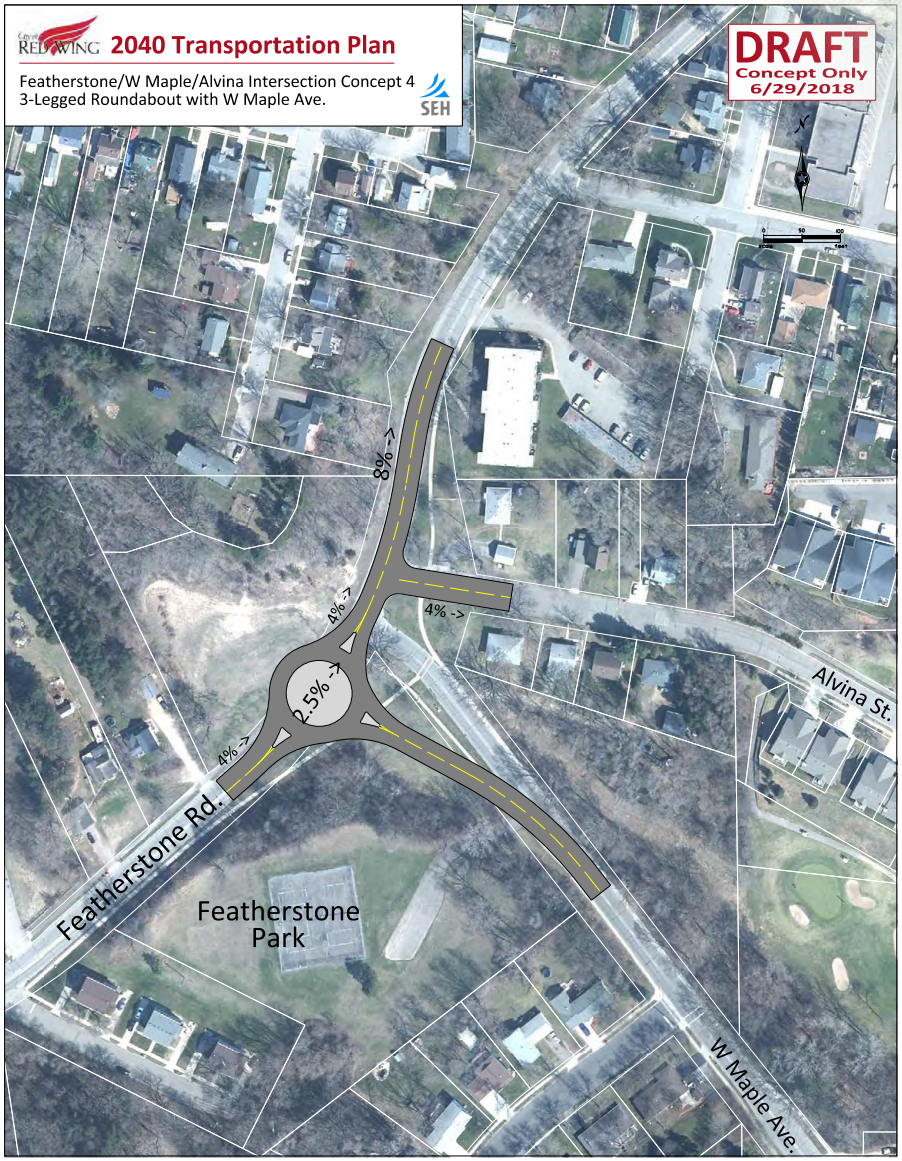

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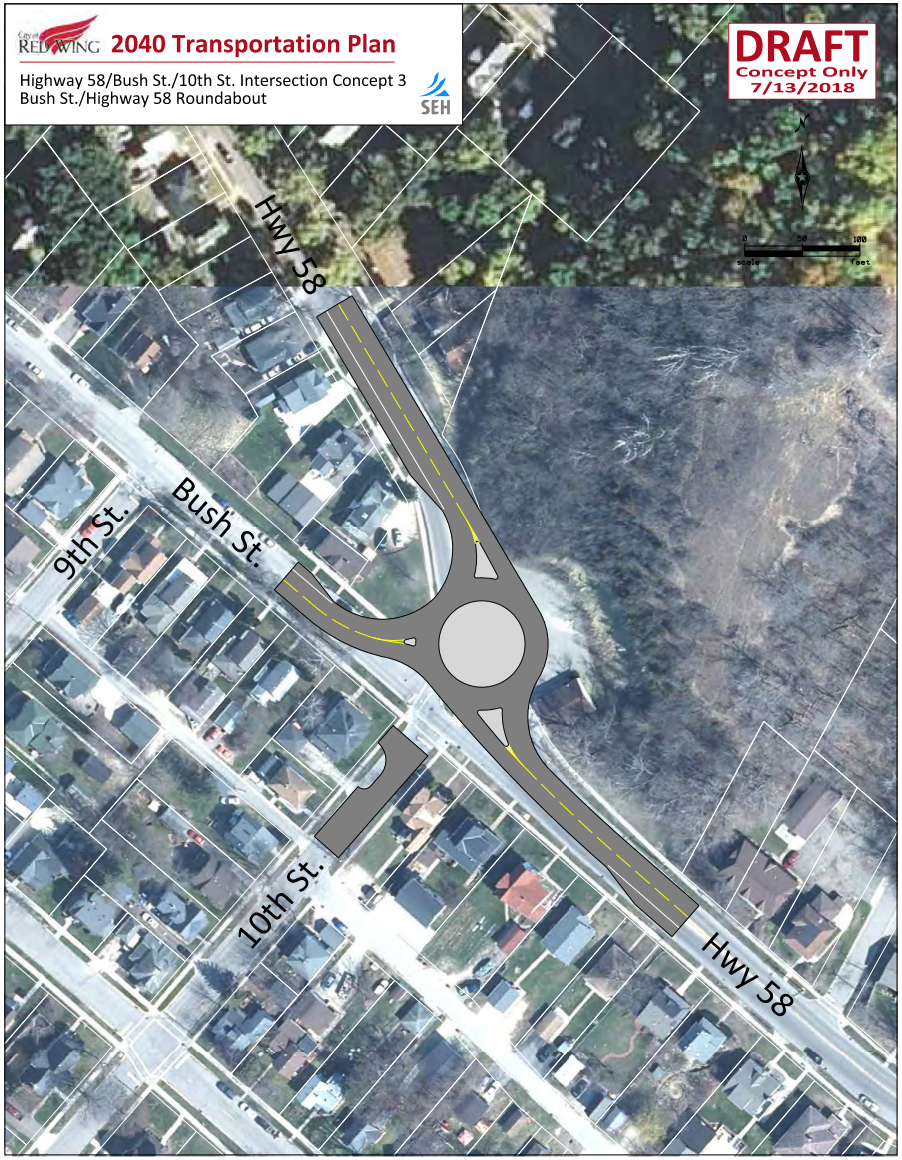

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