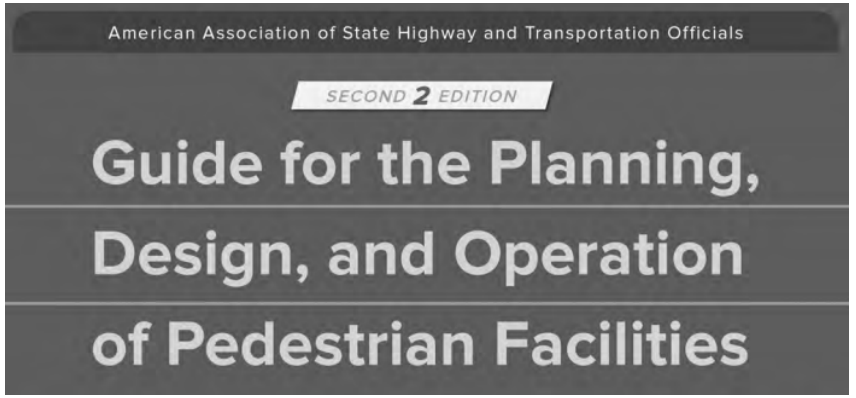
Complete Streets, Active Transportation, and Bicycle Plan Mapping

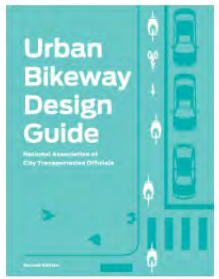
Sam Trebilcock, AICP
Fletcher Lacock, AICP
Kristen Benidt

SDPA – October 2023

What is Complete Streets?

- Planning, designing, building, operating, and maintaining streets that enable safe access for all people who use them including pedestrians, bicyclists, motorists and transit riders of all ages and abilities *Smart Growth America





In July 2015, the Sioux Falls City Council passed a resolution approving a Complete Streets policy. Using national best practices in its development, the resolution includes a vision and intent, Complete Streets principles, implementation guidance, and a plan for performance evaluation.

Planning and design of street projects will give due consideration to:

- Bicycles, pedestrians, motorists, transit facilities, and persons of all abilities.
- Innovative or nontraditional design guidance issued by AASHTO, ITE, NACTCO, and the Architectural and Transportation Barriers Compliance Board.
- Important land use and transportation connections.
- The identification of gaps or deficiencies in the network for various user groups.
- Balancing the needs of all users.

Why Complete Streets?

- The Governor's Highway Safety Association (GHSA) projects that 7,508 pedestrians were killed in traffic crashes in 2022 in the United States.
- Highest number of pedestrian deaths since 1981. (42 years)
- A 1% increase from 2021.
- Causes include dangerous driving, heavier and larger cars, roadway designs that prioritize vehicle speed over safety.

Table 1 **Pedestrian Fatalities and Percent of All Traffic Fatalities, 2010-2021**

Year	Pedestrian Fatalities	All Other Traffic Fatalities Combined	Total Traffic Fatalities	Pedestrian Deaths as a Percentage of All Traffic Fatalities
2010	4,302	28,697	32,999	13.0%
2011	4,457	28,022	32,479	13.7%
2012	4,818	28,964	33,782	14.3%
2013	4,779	28,114	32,893	14.5%
2014	4,910	27,834	32,744	15.0%
2015	5,494	29,990	35,484	15.5%
2016	6,080	31,726	37,806	16.1%
2017	6,075	31,398	37,473	16.2%
2018	6,374	30,461	36,835	17.3%
2019	6,272	30,083	36,355	17.3%
2020	6,565	32,442	39,007	16.8%
2021[1]	7,624	35,729	43,353	17.6%
% Change from 2010 to 2021	+77%	+25%	+31%	

Sources: FARS

National Statistics and Issues…

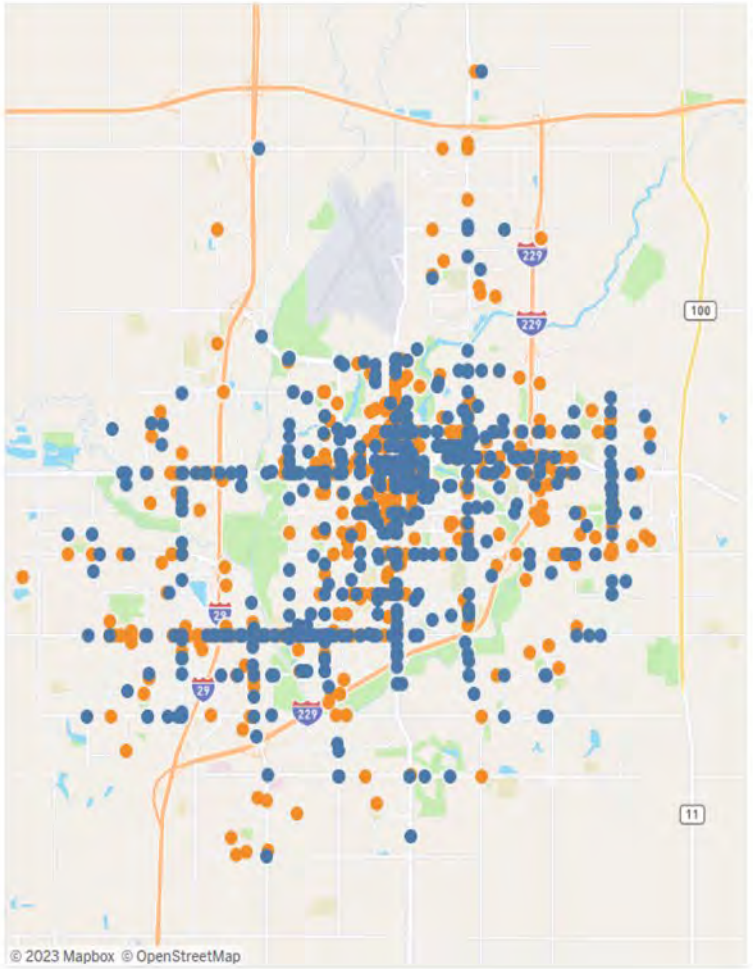
Why Complete Streets is important…

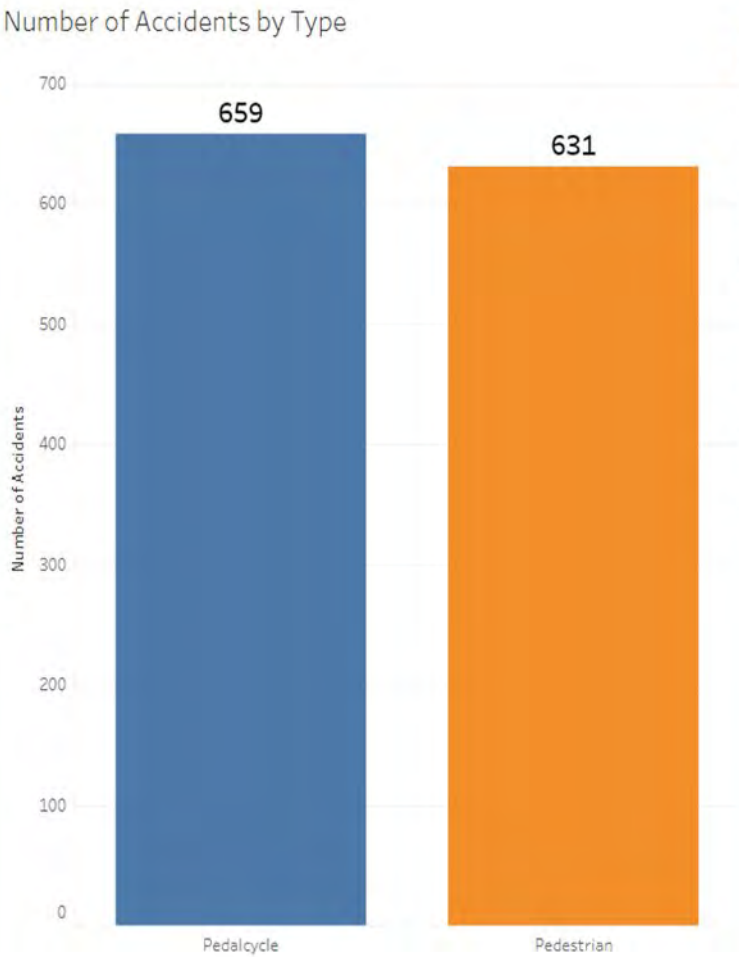
Fatalities in traffic crashes involving bicyclists and other cyclists continue to rise. From 2011 to 2020, bicyclist and other cyclist fatalities increased by 38% from 682 in 2011 to 938 in 2020 (Stewart, 2022). In 2020, 26% of bicyclist and other cyclist fatalities occurred at intersections, which are extremely hazardous for bicyclists and present a high risk for crashes where bicyclists cross paths with motorists (NHTSA, 2022).

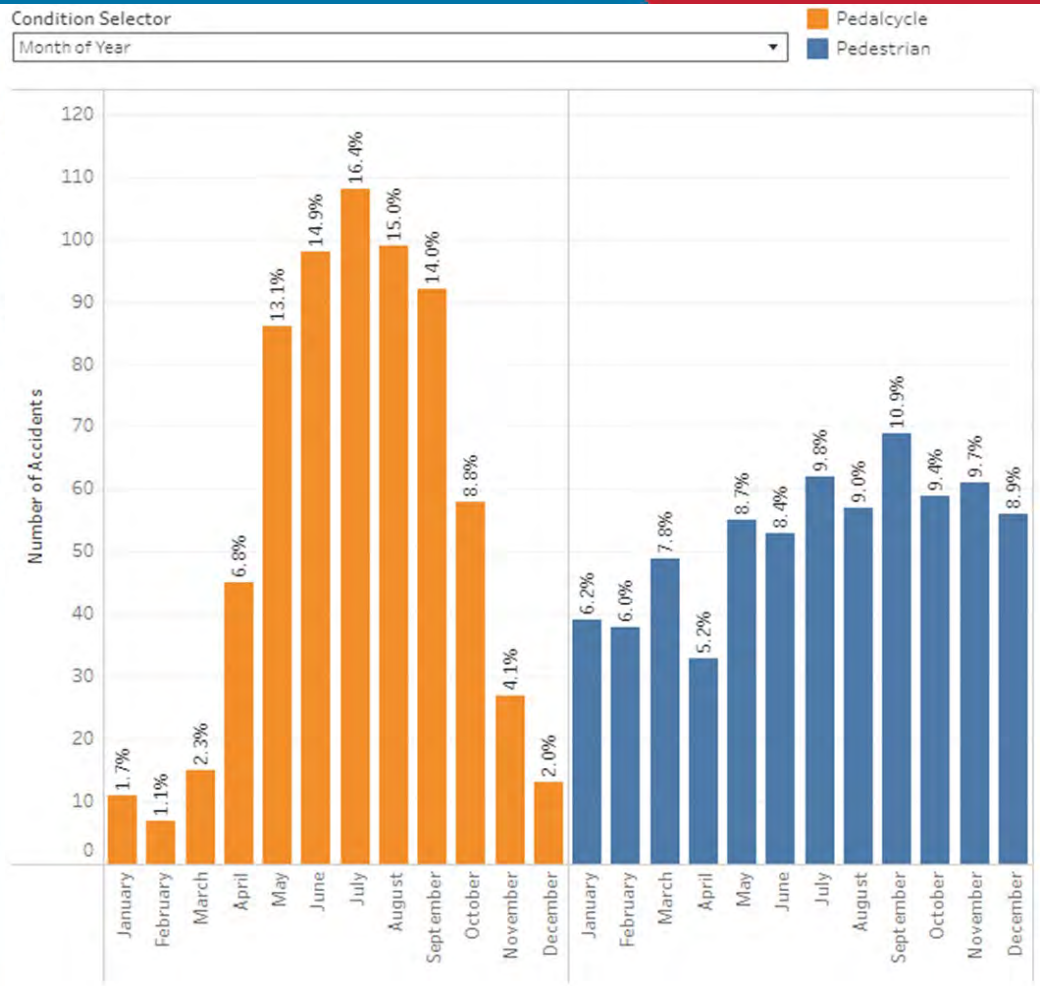
Although a significant drop off since the 1970's

- 938 in 2020
- 966 in 2021 Insurance Institute for Highway Safety

18 Years of SDDOT bicycle and pedestrian crash data







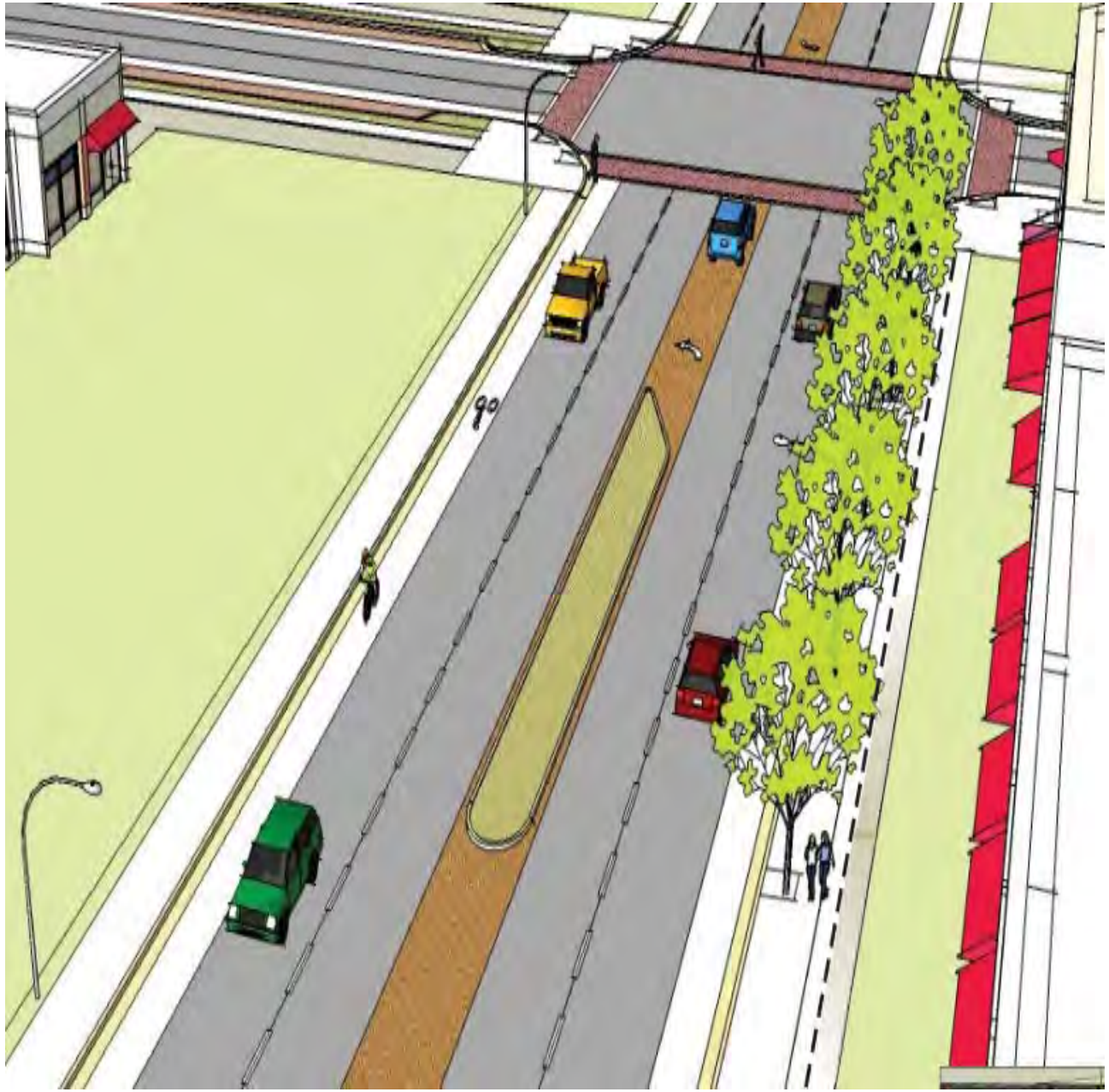
What does the data tell us:

- There are defined corridors where there are conflicts between pedestrians and vehicles – downtown and east to west and north to south arterials and collectors. 67% of all pedestrian crashes happen on Collector Streets and Arterial Streets. (425/631)

- The number of pedestrian crashes happening each year is increasing even though the average number of crashes per 100,000 population is decreasing.

- Bicycle and Pedestrian crashes have significant differences including the time of year, the type of intersection (94.5% intersection related for bicycles), and the average number of yearly accidents over time (going down for bicycles). Strategy for pedestrians may not work for bicycle crashes.

- Vehicle speeds increase chance of a crash and probability that a crash will be fatal. Crashes on roads with higher speeds and higher volumes



Complete Street Design Elements

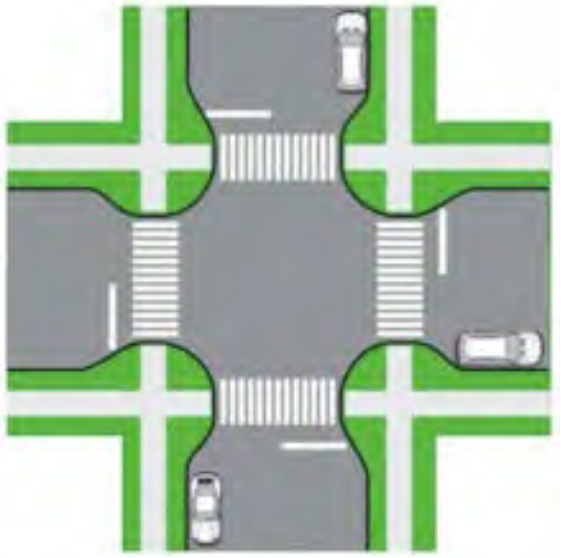
OPTIONS FOR BICYCLE AND PEDESTRIAN FACILITY IMPROVEMENTS

Design Elements

Traffic Circle

Neck Down

Shared Lane Marking



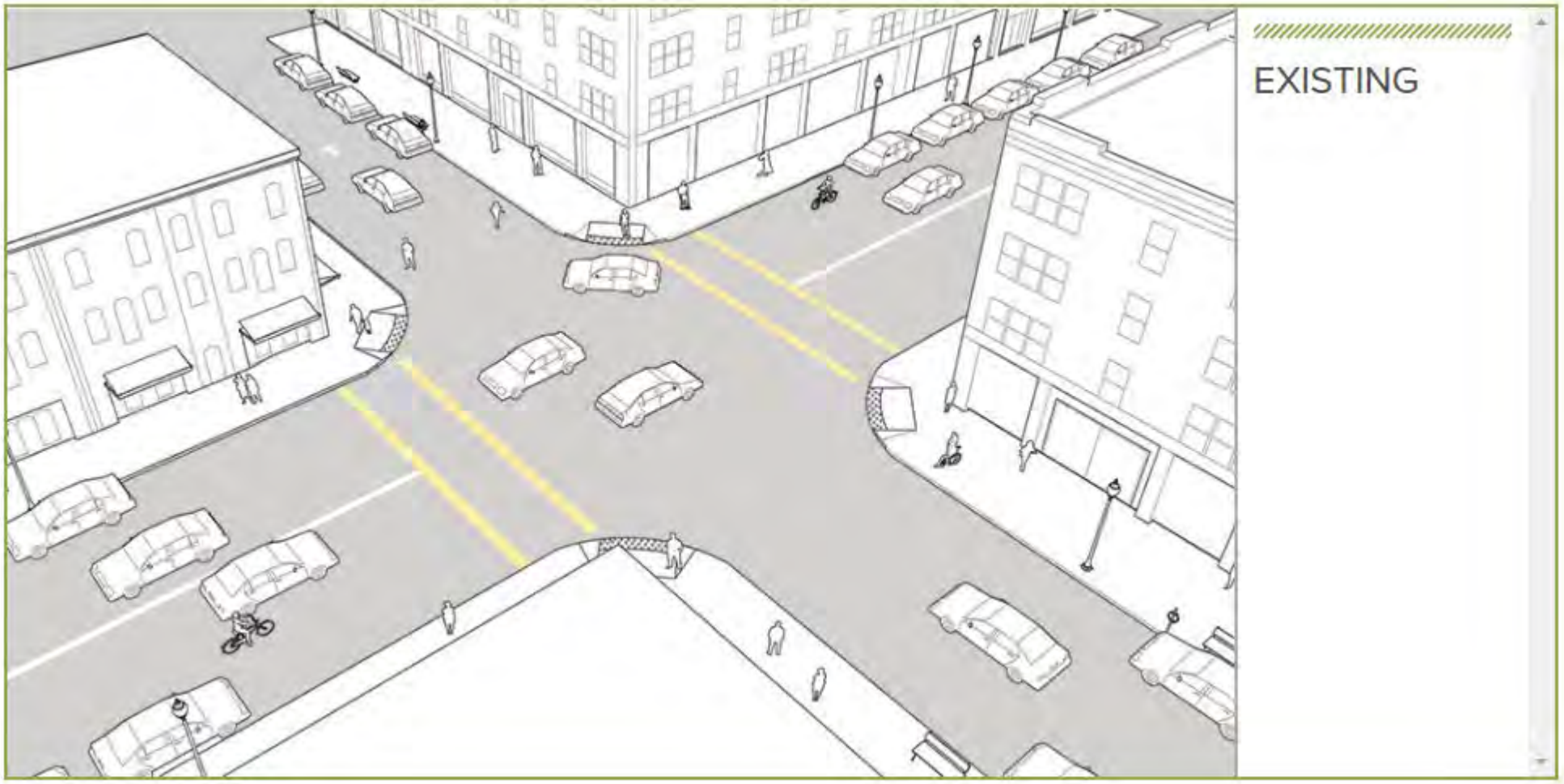
Design Elements

Pedestrian Actuated
Rapid Flashing Beacon

HAWK Signal

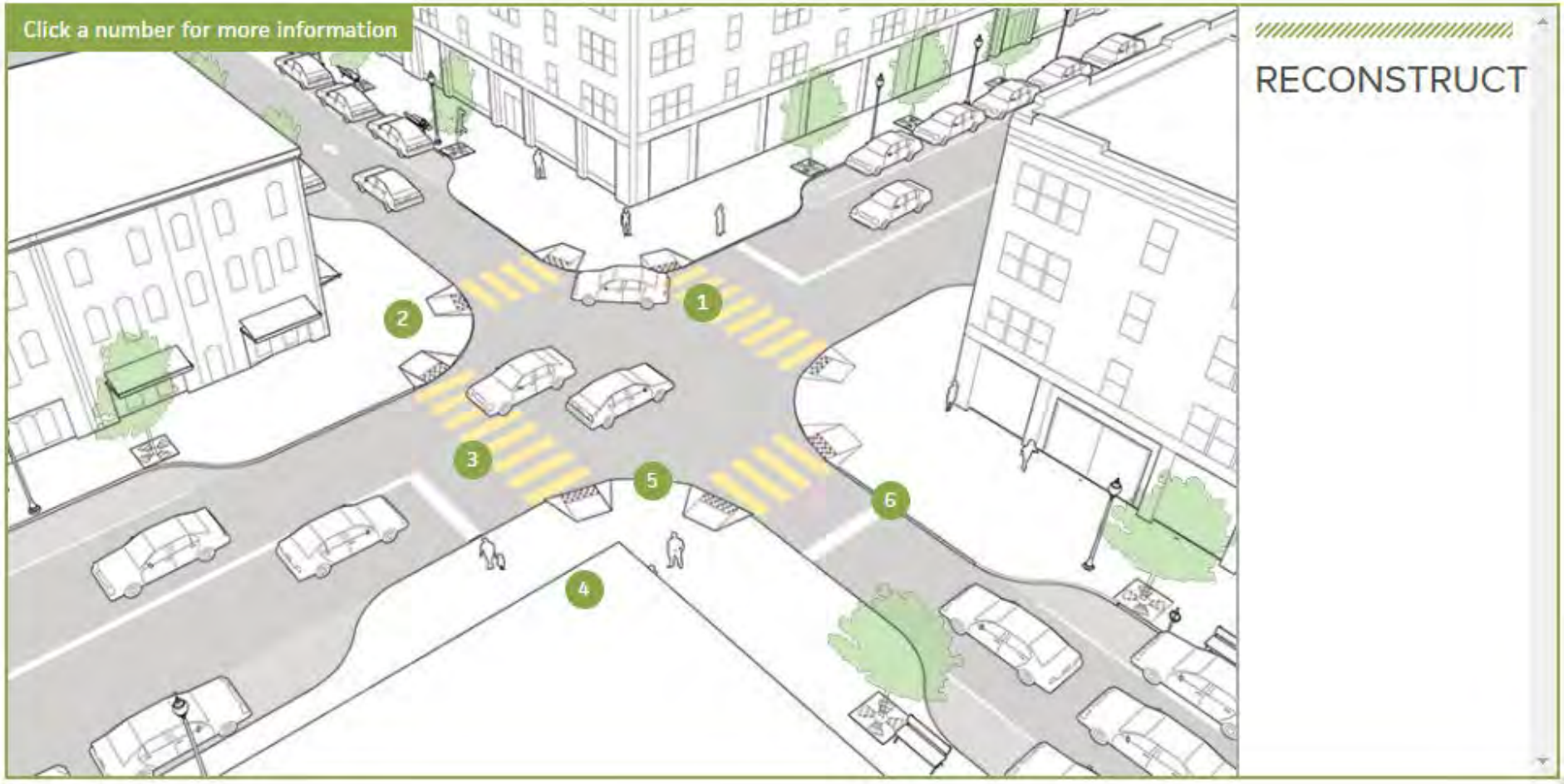
		
1. Dark until activated	2. Flashing yellow light for 3–6 s	3. Steady yellow light for 3–6 s
		
4. Steady red light during pedestrian interval	5. Alternating flashing red lights during pedestrian clearance interval	

Typical Street Intersection



Source: NACTO Urban Street Design Guide

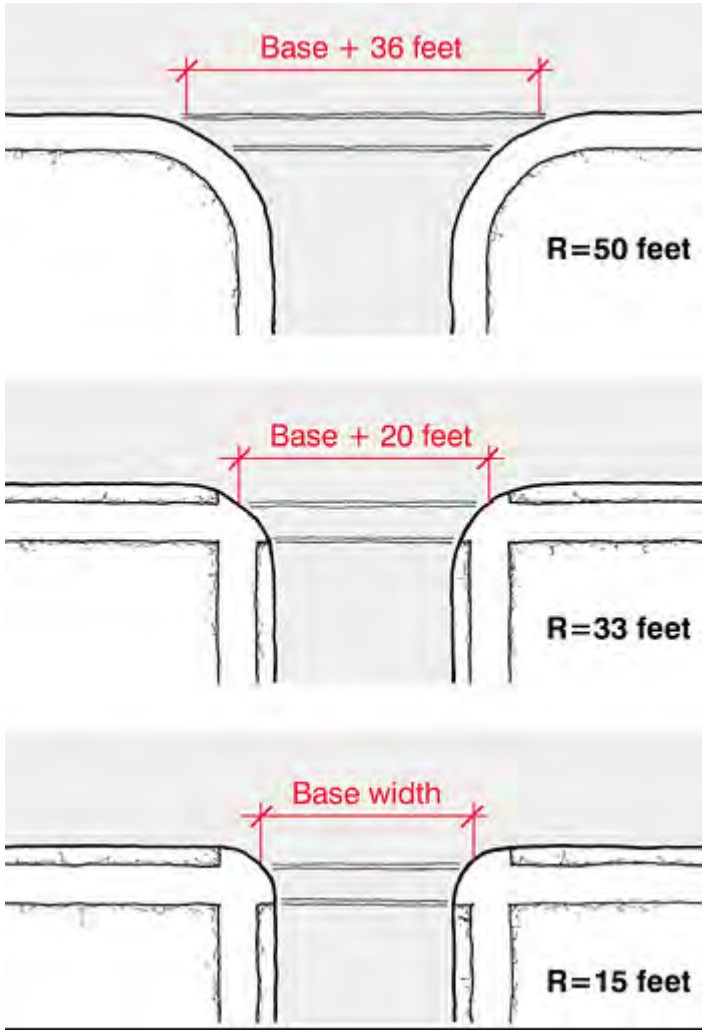
Complete Street Intersection Example



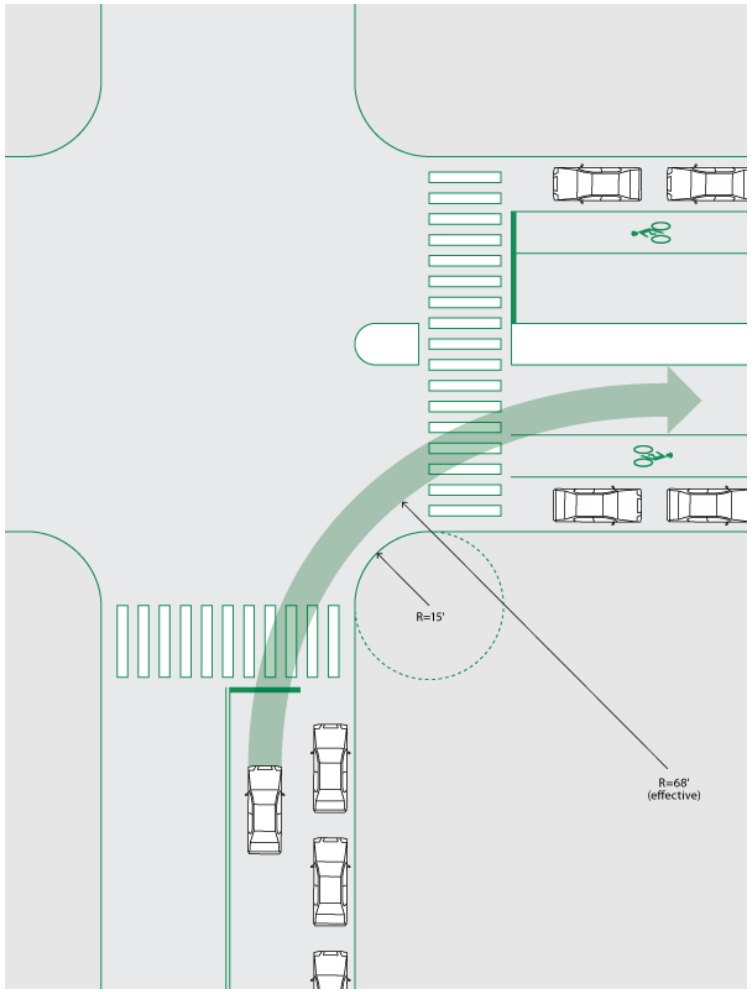
Source: NACTO Urban Street Design Guide

- Stripe all signalized crossings to reinforce yielding of vehicles turning during a green signal phase. The majority of vehicle-pedestrian incidents involve a driver who is turning.
- Keep crossing distances as short as possible using tight corner radii, curb extensions, and medians. Interim curb extensions may be incorporated using flexible posts and epoxied gravel.

Curb Return Radii



Effective Turning Radius



Source: NACTO Urban Street Design Guide

Bicycle Boulevards

MIXED TRAFFIC
Bicycle Boulevard

A **bicycle boulevard** is a low-stress shared roadway bicycle facility, designed to offer priority for bicyclists operating within a roadway shared with motor vehicle traffic.

Where: Local Streets

When: Low Speed/
Low Volumes

Parallel to Major Street

Add significant Traffic Calming

Source: Facilities for Walking and Biking – Small Town And Rural Design Guide

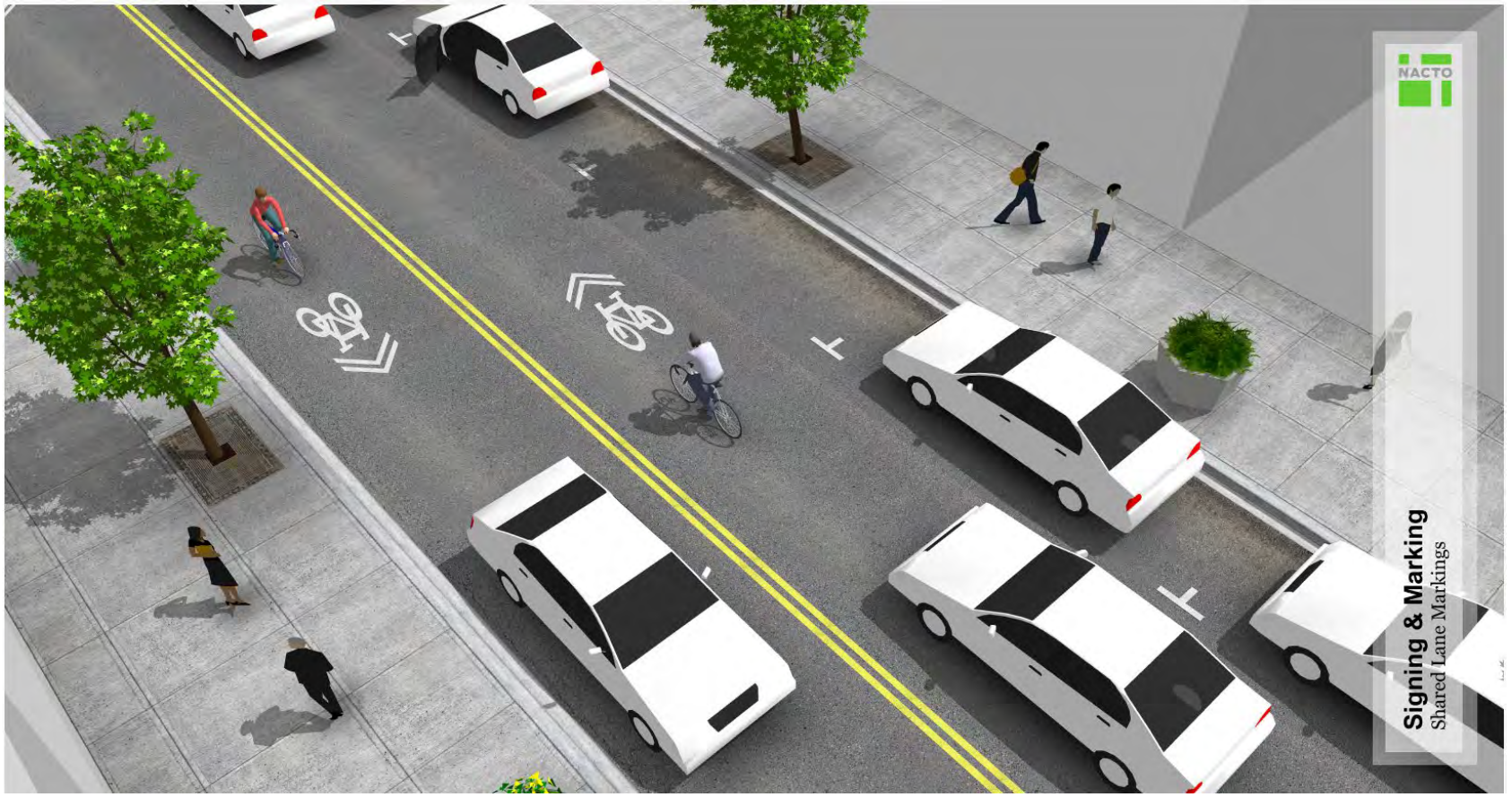
APPLICATION

Sharrows

Where: Collector Streets

When: Moderate Speed/
Moderate Volumes

Parking On-Street



Source: NACTO Urban Street Design Guide

Bicycle Lane

Where: Major Streets

When: Moderate Speed/
Moderate Volumes

ROW available

With and Without
Parking

Source: NACTO Urban Street Design Guide

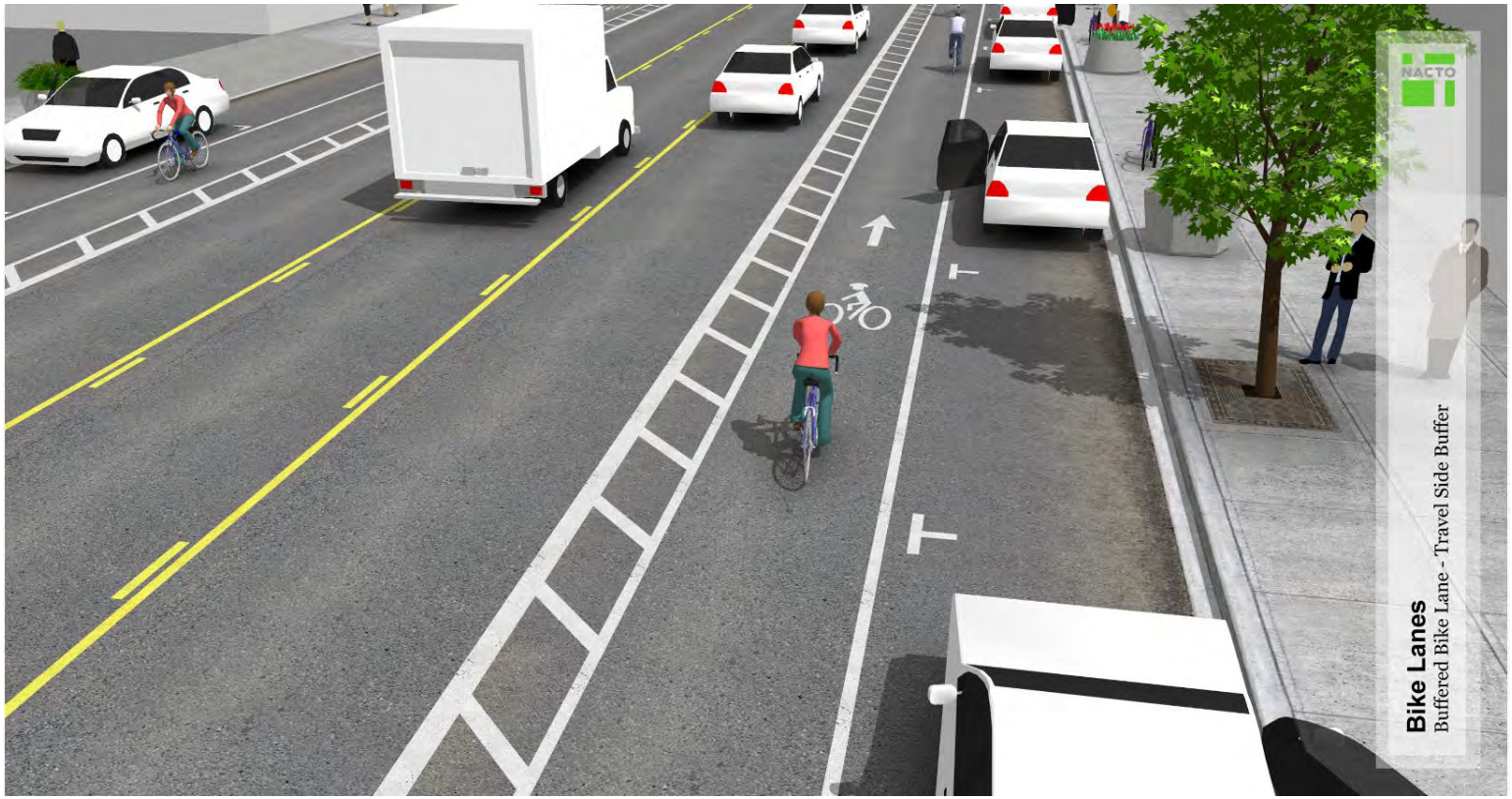
Buffered Bike Lane

Where: Major Streets

When: High Speed/
High Volumes

ROW available

With and Without
Parking



Source: NACTO Urban Street Design Guide

Cycle Track

Where: Major Streets

When: High Speed/High Volumes

Limited ROW

Curbside sidewalk planned

Source: NACTO Urban Street Design Guide

Protected Bicycle Lane/Cycle Track

Where: Major Streets

When: High Speed/High Volumes

Adequate ROW

Source: NACTO Urban Street Design Guide

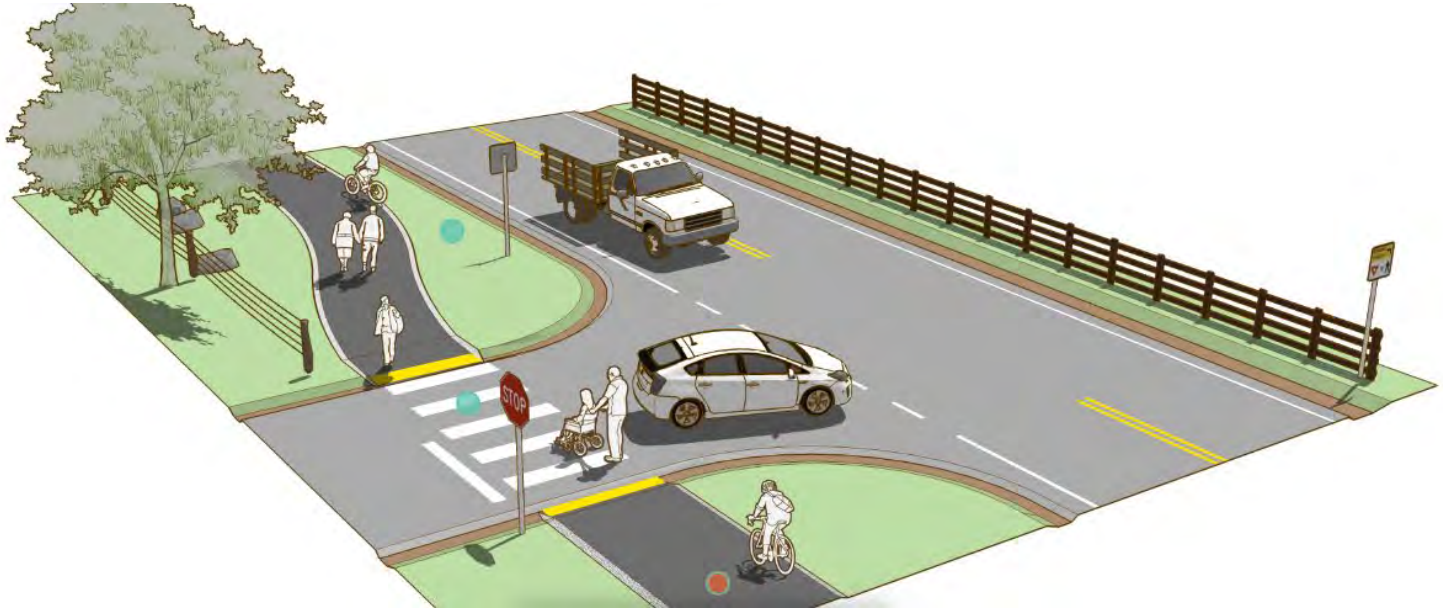
Sidepath

Where: Major Streets

When: High Speed/High Volumes

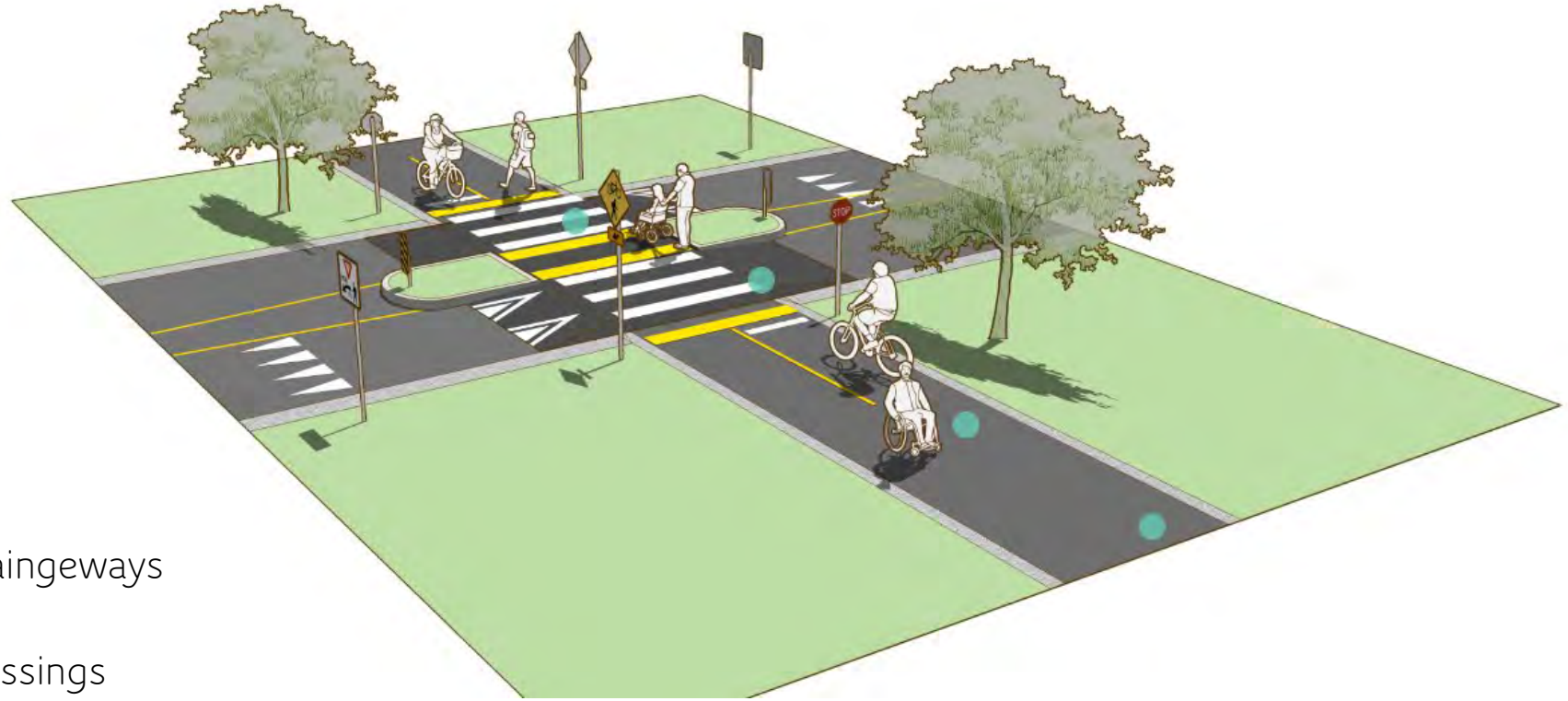
Access every ¼ mile

At least 8 feet in width



Source: Facilities for Walking and Biking – Small Town And Rural Design Guide

Shared Use Path/Bike Trail



Where: Off-Street
Adjacent to Rivers/Draingeways

When: Very limited street crossings

Source: Facilities for Walking and Biking – Small Town And Rural Design Guide

Paved Shoulder

Where: Rural Section Roadway

When: Shoulder at least 8 feet

Faster Speeds

Enhanced buffer and rumble strips help increase safety and comfort

How can you implement Complete Streets?

Sioux Falls Compete Streets Two-Phase Checklist

HOME / Planning & Development Services / Planning / Complete Streets

Complete Streets

COMPLETE STREETS

The City of Sioux Falls promotes a comprehensive, integrated transportation network with infrastructure and design that allows safe and convenient travel along and across streets for users of all ages and abilities, including pedestrians, bicyclists, transit riders, and motorists.

The Complete Streets approach prioritizes early consideration of pedestrian, bicycle, and transit accommodations in planning for roadway projects. This includes the use of a Complete Streets Checklist.

COMPLETE STREETS PRIORITIES

- Results include decreased travel speeds, improved mobility, and enhanced quality of life.
- Identifies opportunities for improvements in safety for all road users.

Resources

National Complete Streets Coalition

Complete Streets Checklist - Phase 1

Complete Streets Checklist - Phase 2

Complete Streets New Design

Resolution 53-15

2015 Complete Streets Annual Report

Complete Streets Review:

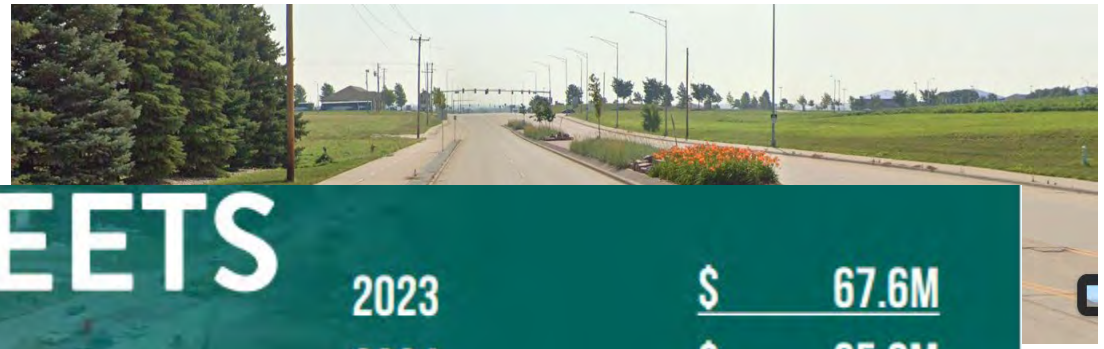
Table 2: Use of Complete Streets Checklist

Projects Where:	2015	2016	2017	2018	2019	2020	2021	2022	Total
CS elements included in original plans	4	3	2	1	0	0	1	3	14
CS elements added after review	2	4	3	6	0	5	9	5	34
CS review with no/limited additions	3	4	7	6	8	6	7	1	42
Total	9	11	12	13	8	11	17	9	90

What are the Issues?

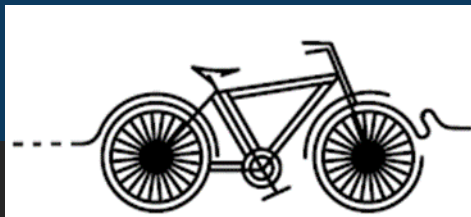
- Funding
- Evaluation Criteria
- Limited right-of-way
- Prioritization

Moving Forward: Complete Streets 2.0



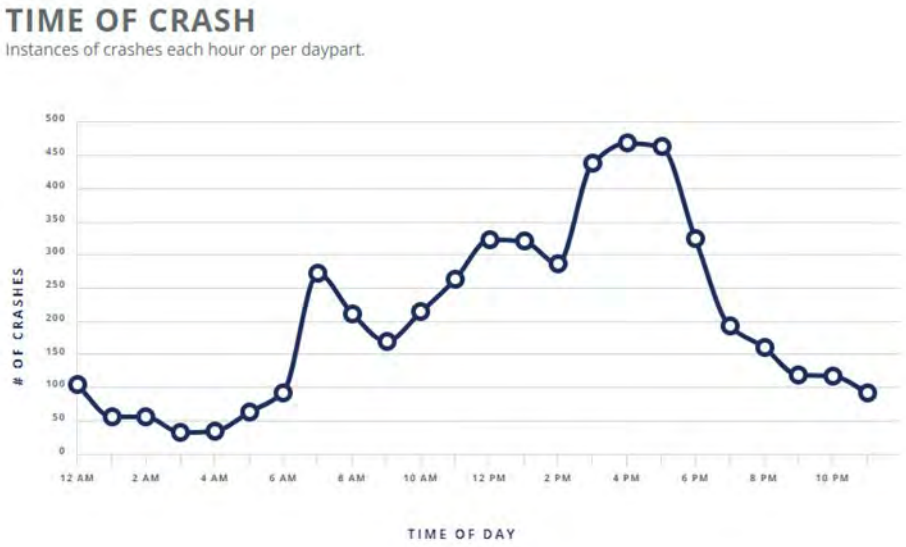
31	*Street Lights in Newly Developed Areas*	*370,000*	*470,000*	*470,000*	*500,000*	*530,000*
32	*Pedestrian and Bicycle Improvements*	*375,000*	*325,000*	*325,000*	*325,000*	*350,000*
33	*LED Street Light Upgrade Program*	*565,000*	*675,000*	*675,000*	*775,000*	*825,000*

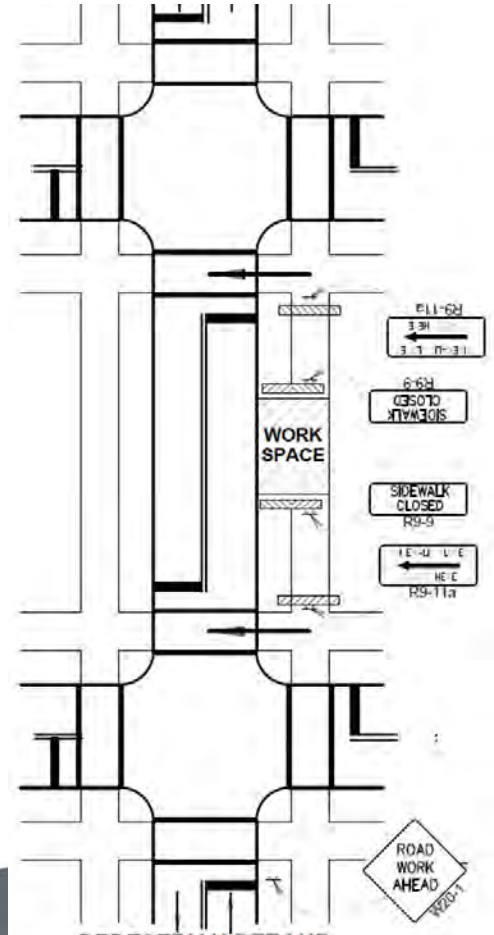
- Why? – 44% increase in bicycle and pedestrian deaths in the last decade
- Combine Bicycle Committee, Pedestrian Committee, and School Traffic Safety Advisory Committee (PATH)
- Reduce transportation fatalities and injuries while increasing safe, comfortable, healthy, and equitable mobility
- Represent the values and needs of all people who walk, bike, use transit, drive, and use other mobility devices
- 9-member board

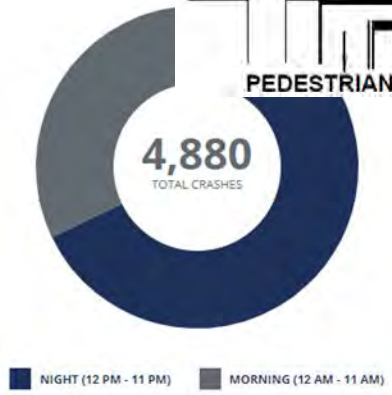


Active Transportation Board –

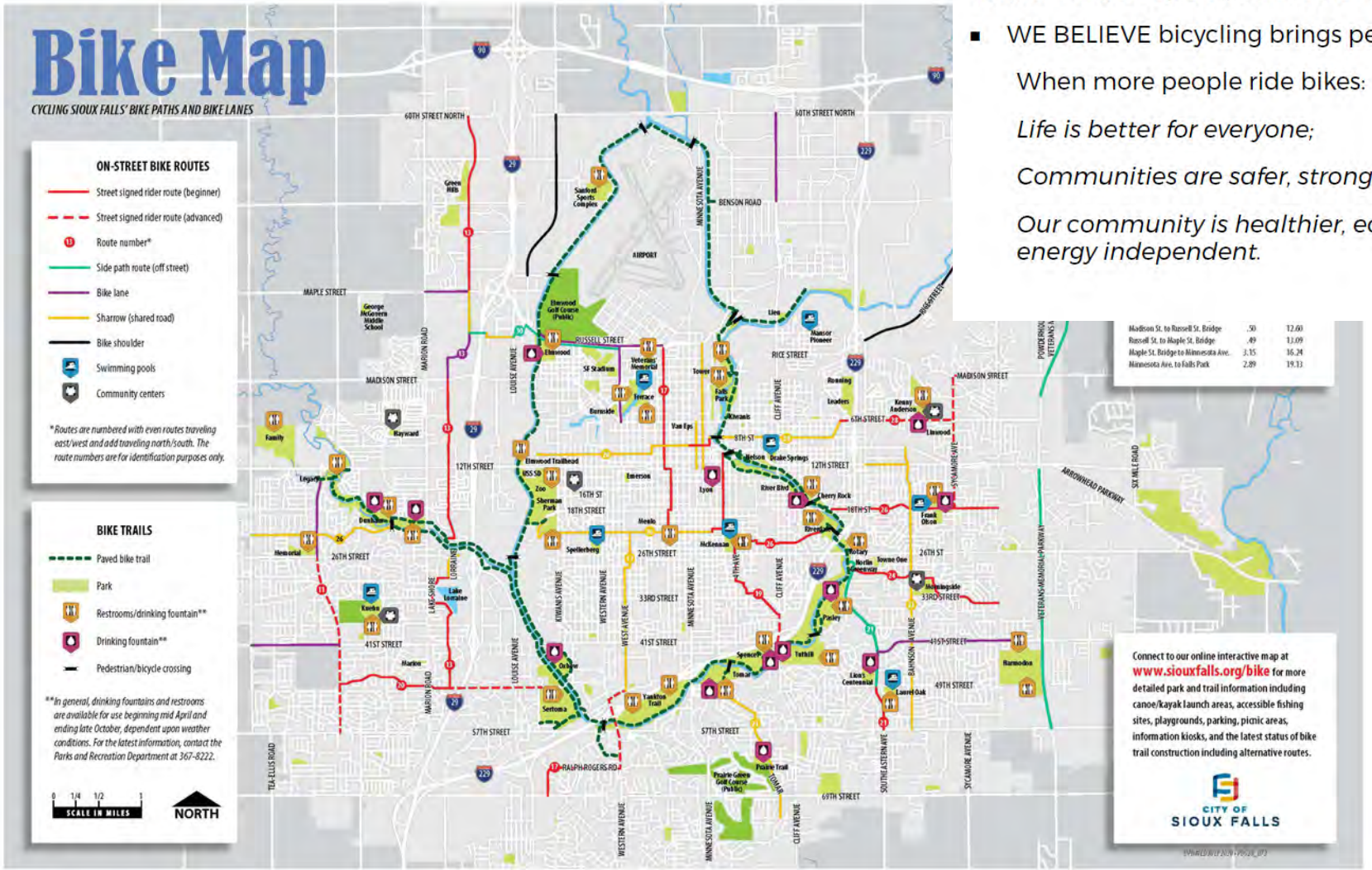
- Class 2 Electric bicycles on the trail
- Bicycle Plan
- Pedestrian Plan
- Complete Streets Review
- Construction Detours and standards
- Traffic Calming standards
- Crash data analysis







Sioux Falls 2023 Bicycle Plan



Why is Bicycling Important in Sioux Falls?

- WE BELIEVE bicycling brings people together.

  When more people ride bikes:

  Life is better for everyone;

  Communities are safer, stronger and better connected;

  Our community is healthier, economically stronger, environmentally cleaner and more energy independent.

  —League of American Bicyclists

Formative base of the plan

2015 Sioux Falls Bicycle Plan

Shape Sioux Falls Comprehensive Plan

Sioux Falls MPO Long Range Transportation Plan

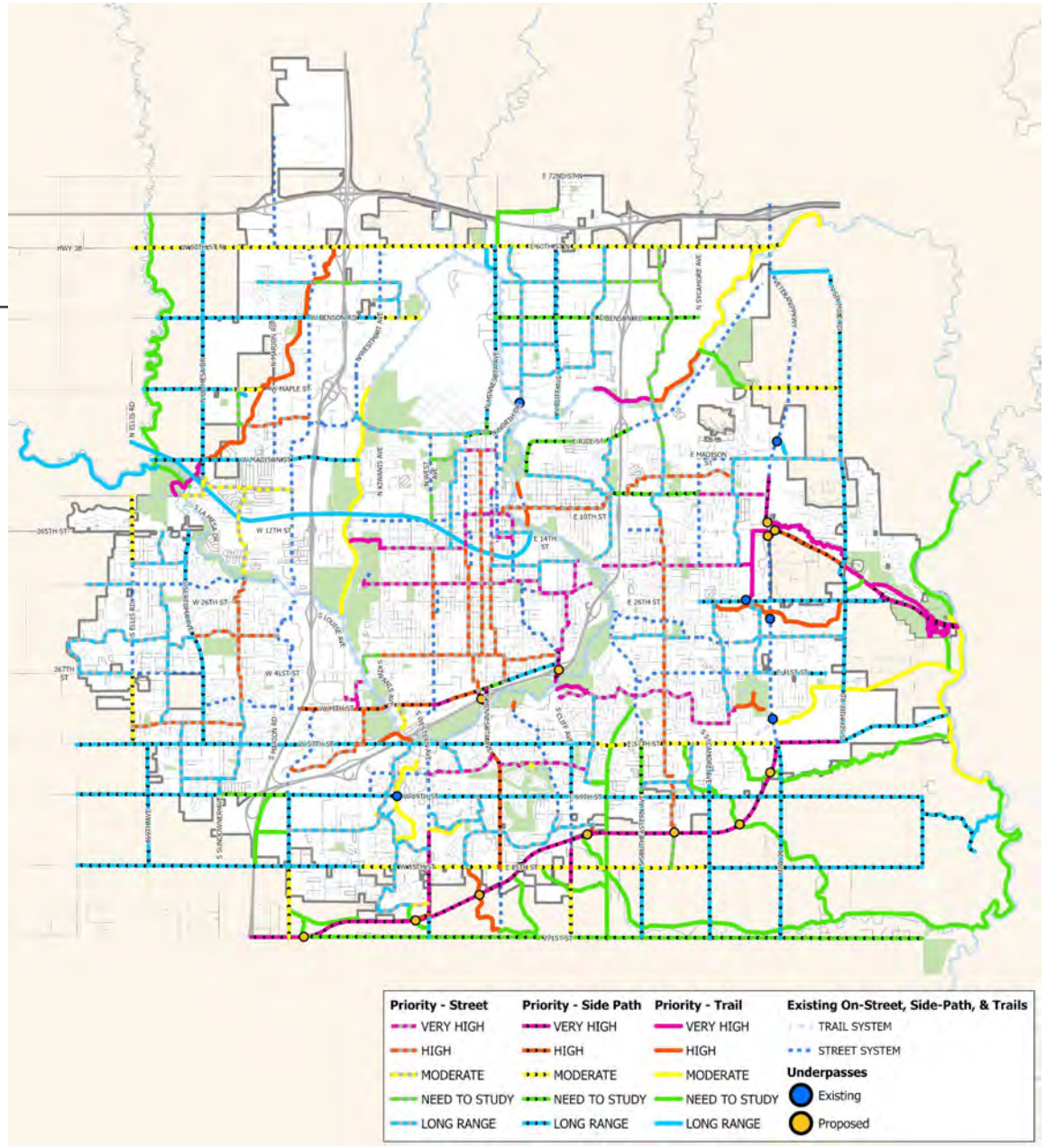
Downtown 2035 Plan process

2021 Bicycle Plan Survey

2023 South Dakota Bicycle Summit

Bicycle Committee

Active Transportation Board



Bicycle Plan Vision

To construct a comprehensive network of bicycle lanes and trails that are safe and accessible to all.

Very High Priority Goals

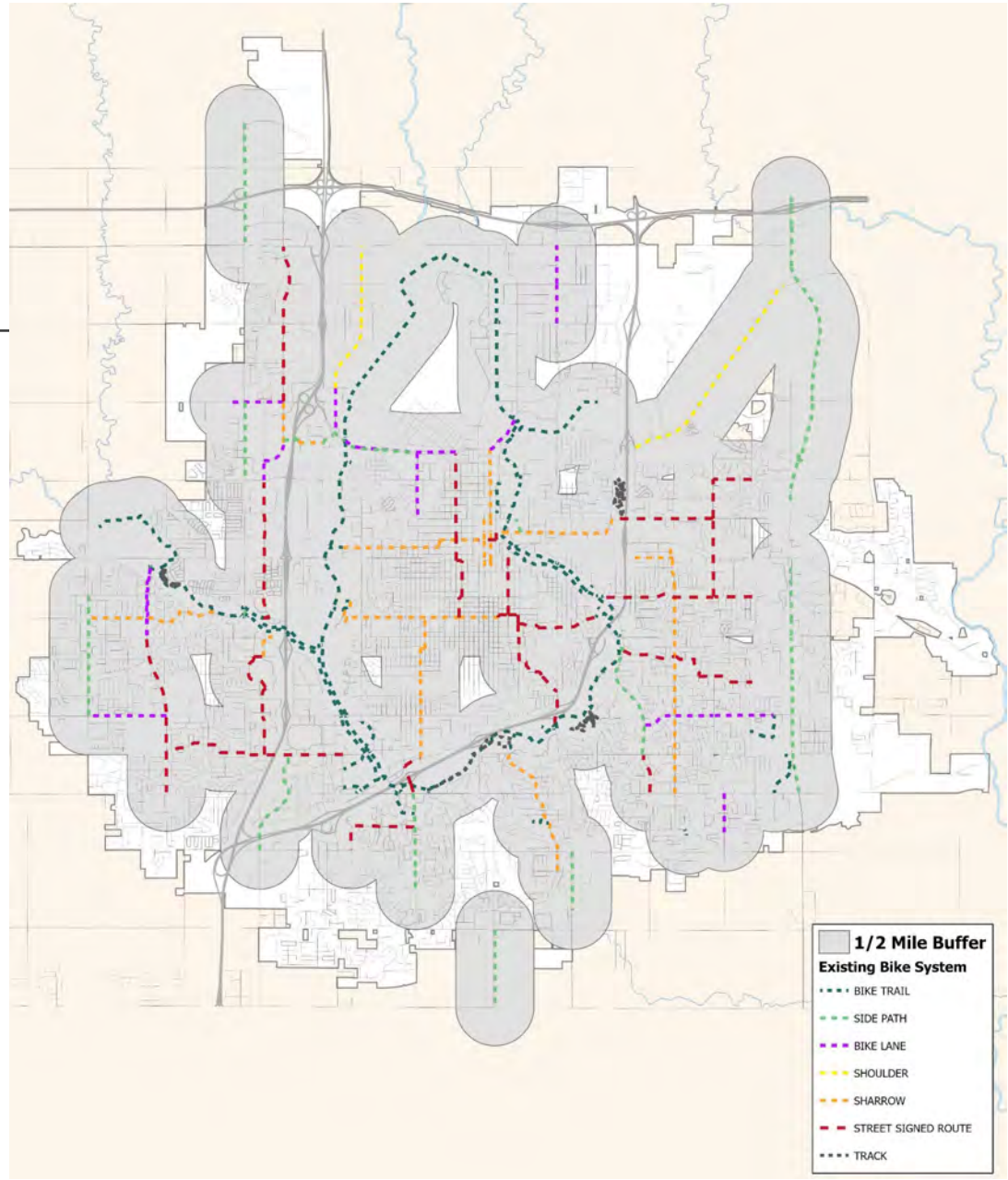
- Develop a complete bicycle network that is both comfortable and safe for all level of bicyclists through the addition of new on-street and trail facilities as identified in the Bicycle Plan.
- Expand the trail so that any origin or destination in the city is located no more than one-mile from the trail.
- Ensure that safe and comfortable bicycle routes exist for all schools and employment centers.

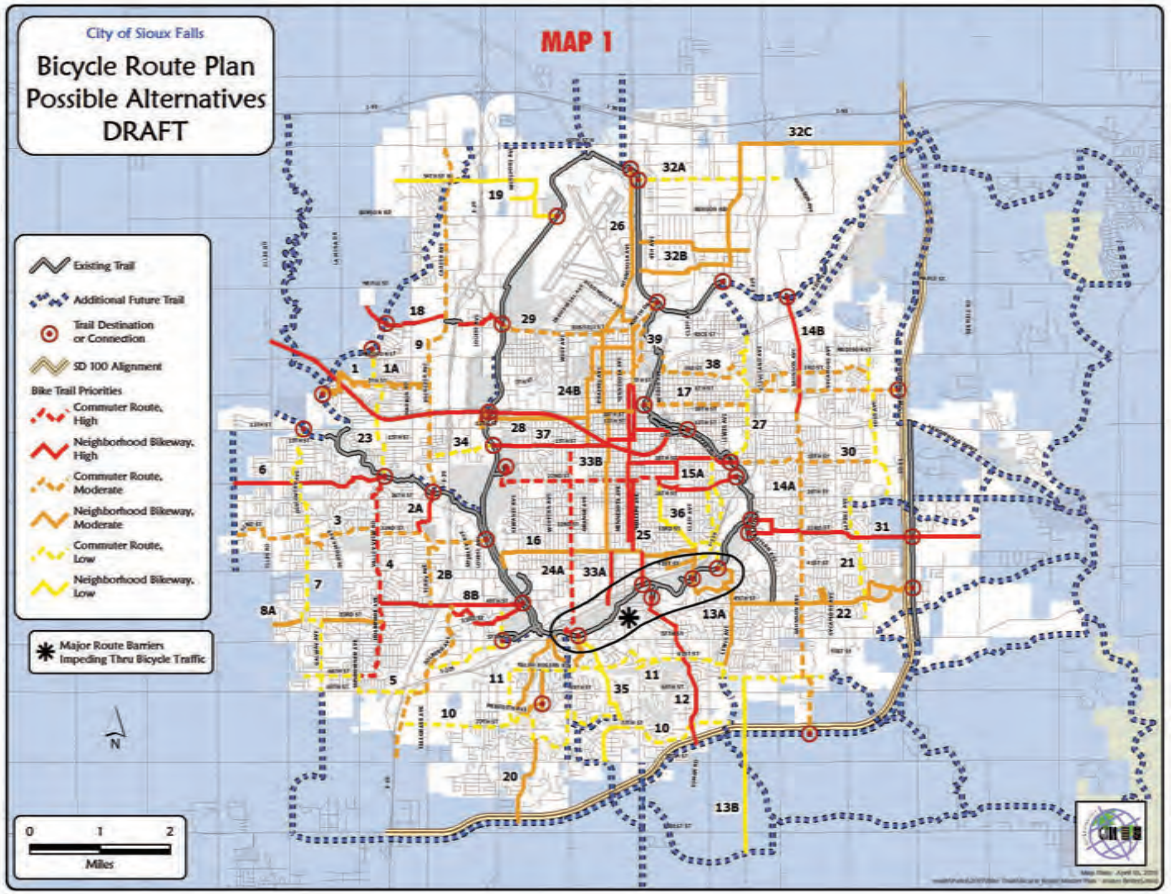
High Priority Goals

- Develop a bicycle public education campaign.
- Continue to implement the city "complete street" resolution to accommodate all forms of transportation within each street right-of-way for all roadway or development projects.
- Add bicycle safety and Bike 101 programs.

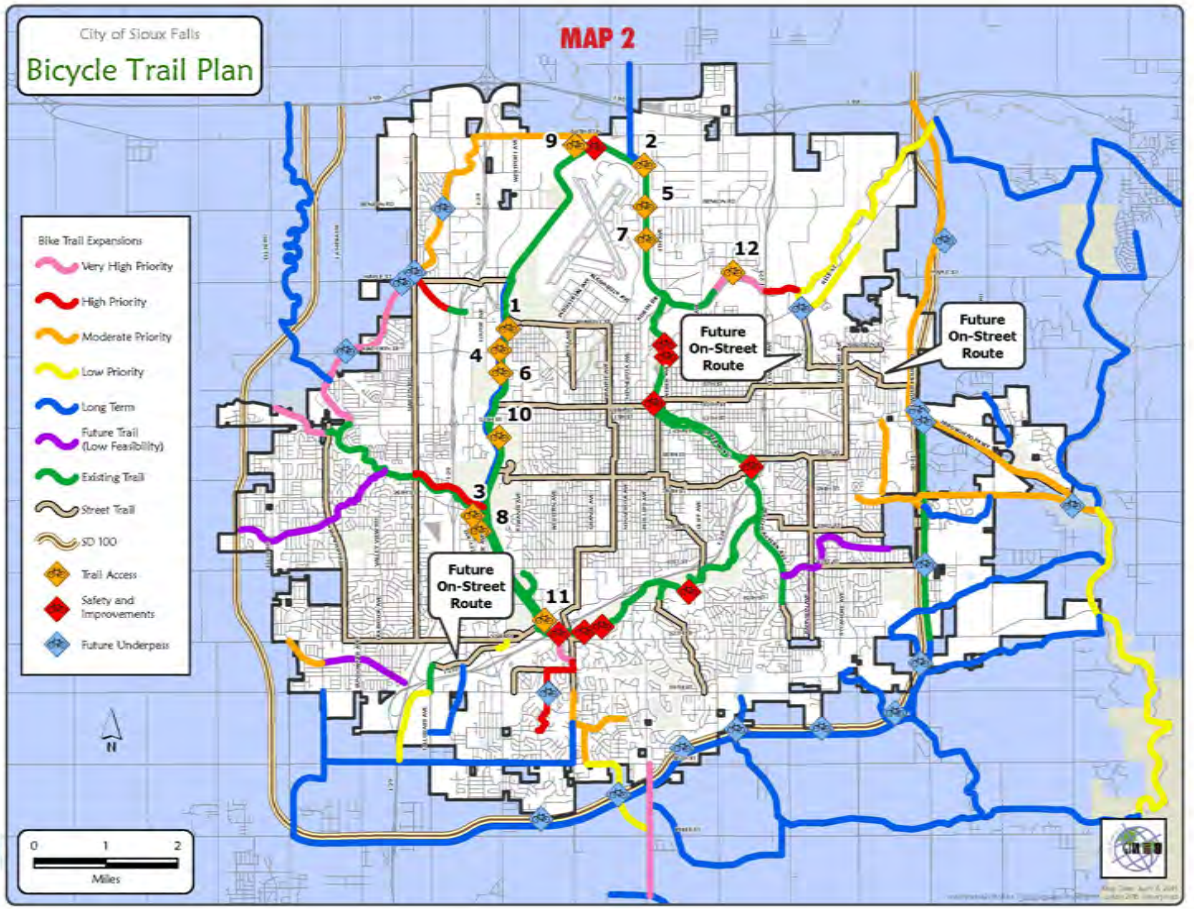
Moderate Priority Goals

- Complete bicycle projects by leveraging private resources with public dollars to maximize funding.
- City funding and staffing for bicycle planning should be a priority.

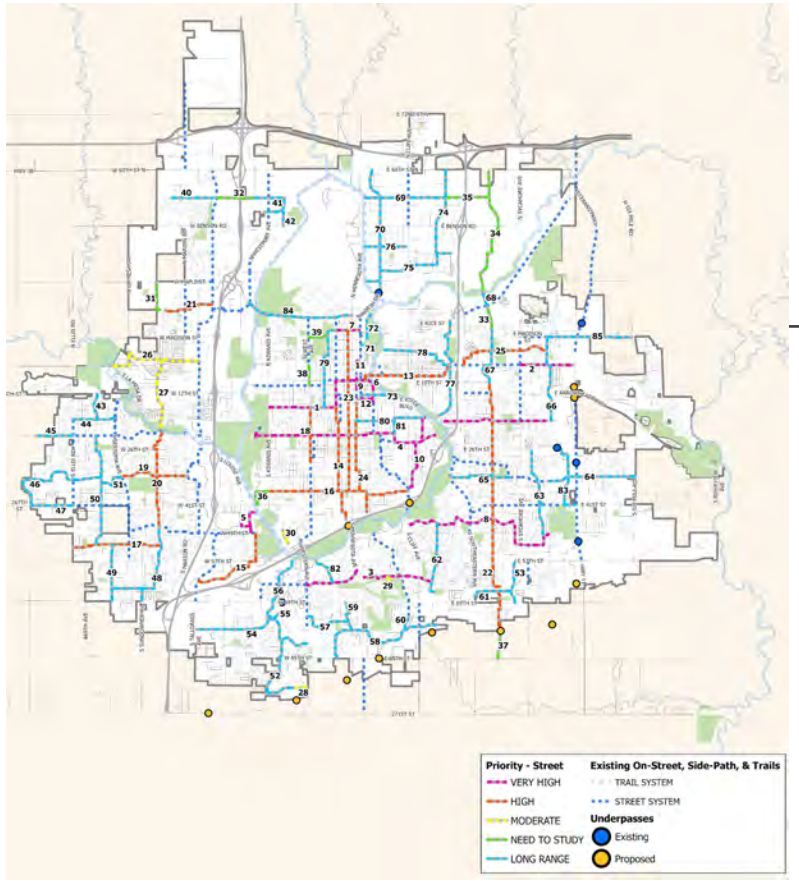




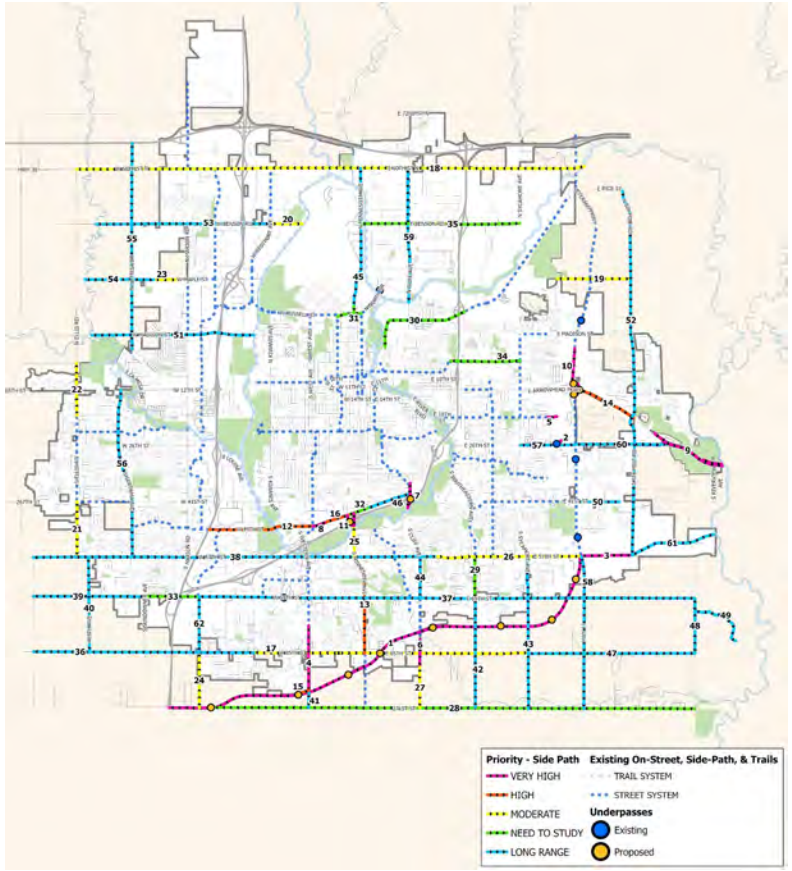
Starting from the plan adopted in 2015

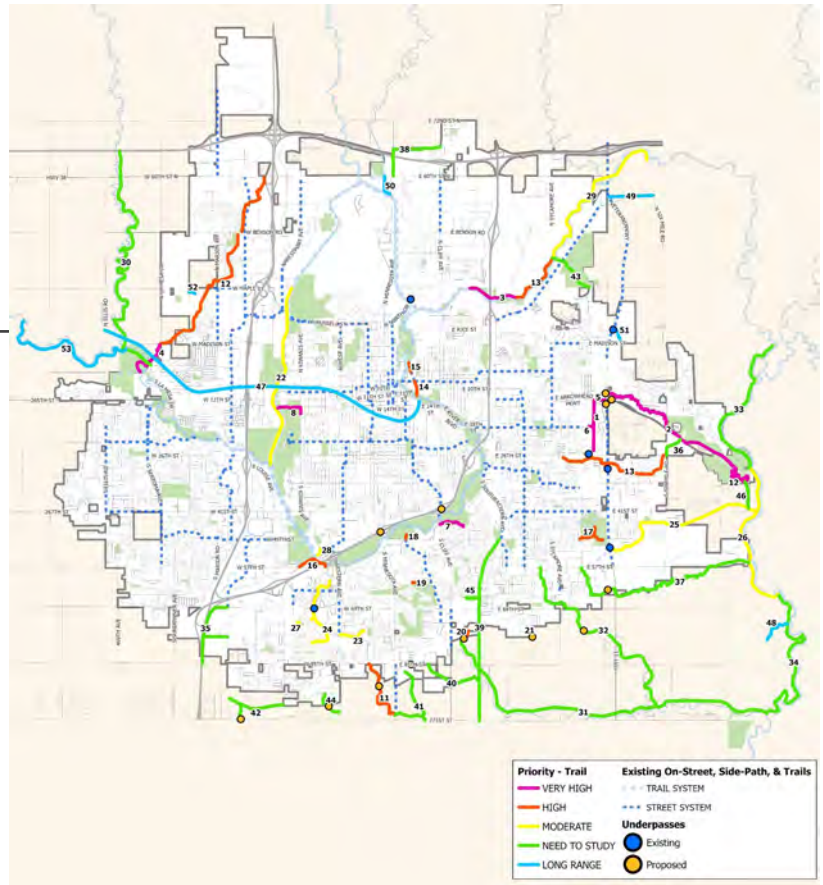


Internal Communication and Collaboration



Document a product of the Planning Department

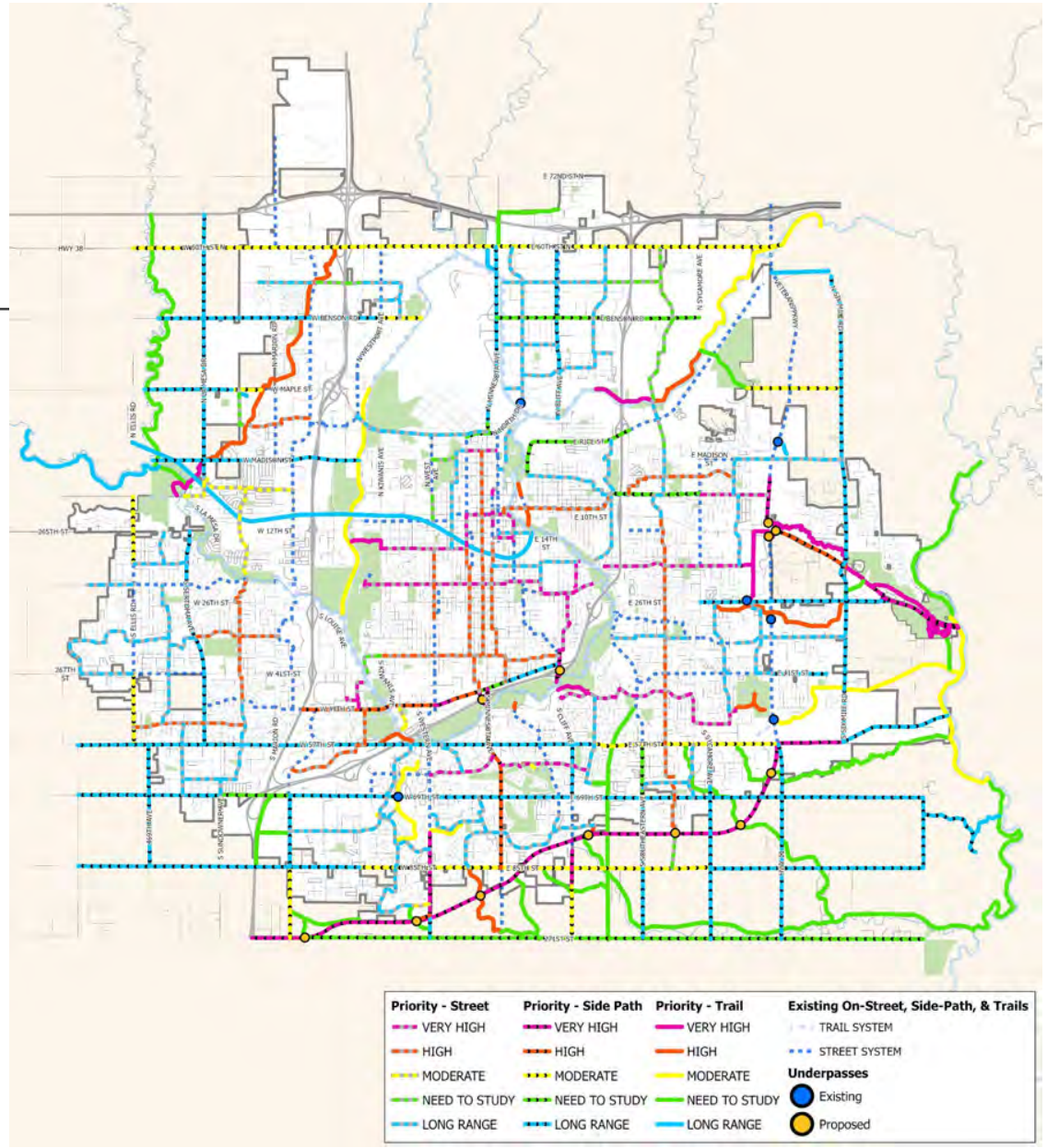




Funding and construction the responsibility of Public Works or Parks and Recreation

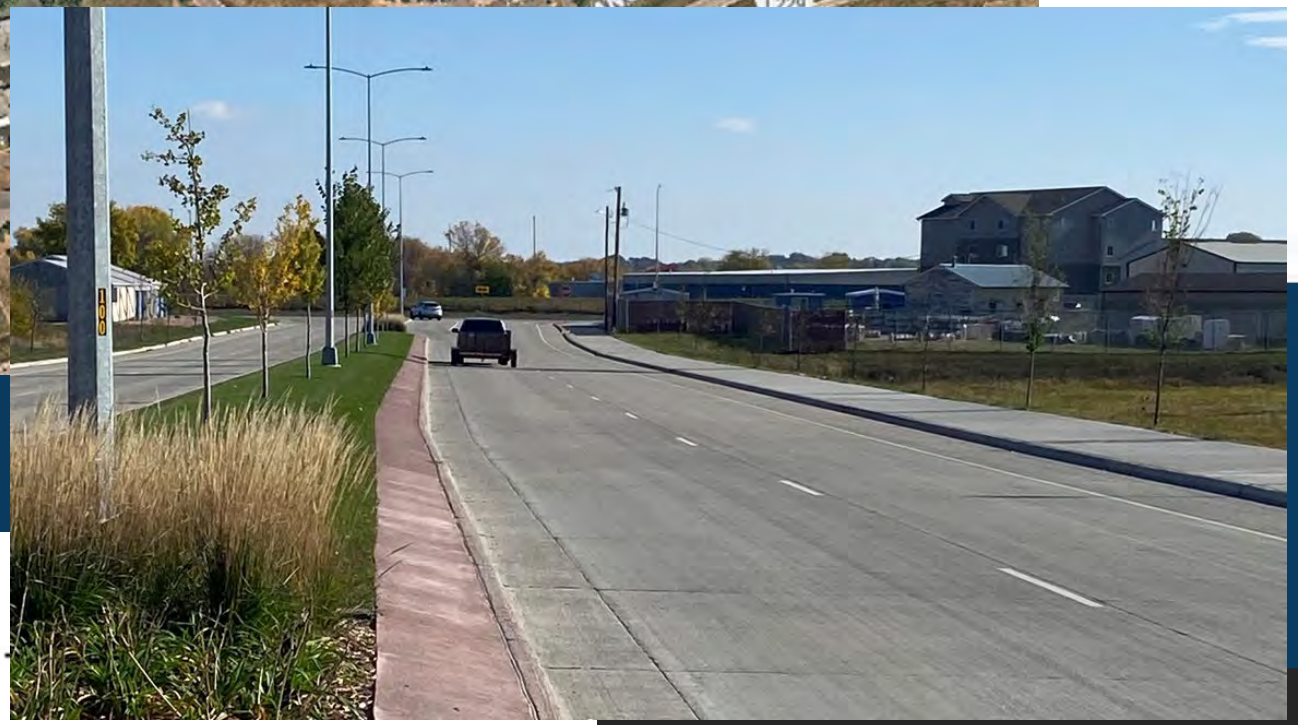
Bicycle Plan Action Items

Trail Priorities	Implement top ten list - Construct very high priority trails (See Trail Priority Map Page 42)
Trail Access Connections	Construct / pave all identified trail connections (See Trail Connections Map Page 46).
On-Street Priorities	Implement top-ten list – Completing 15th Street Bicycle Boulevard is priority with Bahnson Avenue connection second.
Side Path Priorities	Implement the top-ten list. South Veterans Parkway, portions of Tallgrass Avenue, Arrowhead Parkway, 57th Street, 85th Street, and Sertoma Avenue are identified in the five-year Capital Improvement Plan as upcoming projects. (See Side Path Priority Map Page 33)
Trail Preservation	Coordinate with Parks Department to purchase right-of-way and easements for future trail expansion
E-Bikes	Update e-bike laws / education. Review best practices and statistics.
On-Line Maps	Regularly update on-line map layers and maintain a database of new side path, on-street routes, and trail construction.
Bicycle Education	FAB, Parks, Police, Public Works, Bicycle Subcommittee – Coordinate on implementing an education campaign geared to all modes.
Downtown Parking	Inventory, identify new locations, design new bicycle parking for downtown. Bicycle parking should be as ubiquitous as car parking
Pilot Projects	Identify opportunities for more pilot projects in neighborhoods and around schools to slow traffic and increase safety
Bicycle Rodeo	Coordinate with schools and PATH subcommittee to plan and begin implementing yearly bicycle rodeo.
Destination Signage	Identify destinations and routes that need signage. Coordinate with Public Works Department to develop
ATB Updates	Identify information that needs to be collected and presented to Active Transportation Board on a yearly basis. Complete Street reviews, new trails constructed, new side path constructed, new on-street routes completed.
Complete Streets	Continue to implement complete streets resolution including updates to City Engineering Design Standards. Complete Street 2.0 is an opportunity to implement multi-modal planning in new development.
Grants Opportunities	Identify future grant opportunities and high priority projects. Need design plans and cost estimate for new trails



Completed Projects:

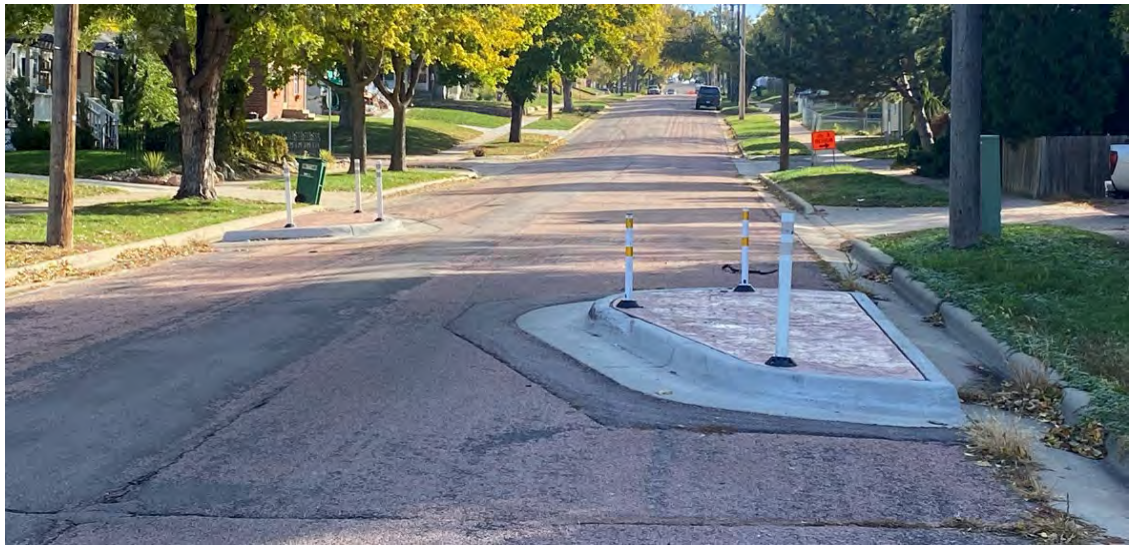
- 49th Street – West Avenue to Western Avenue – Side path and bike lanes



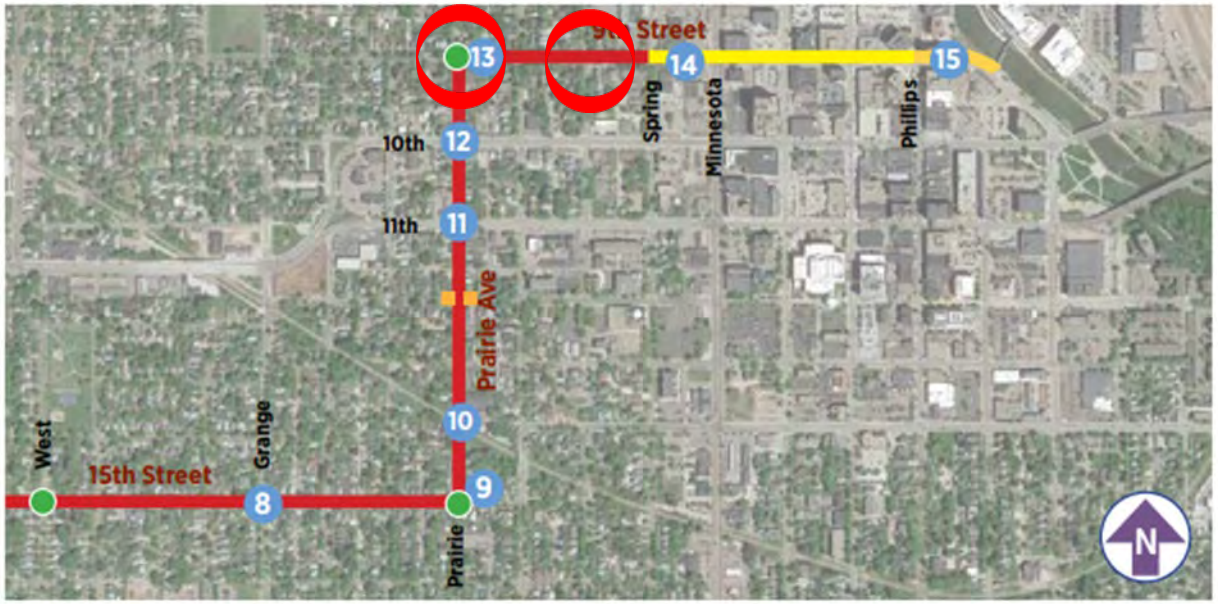
Fami

Sioux Falls hosts Family Park Master Plan public input session

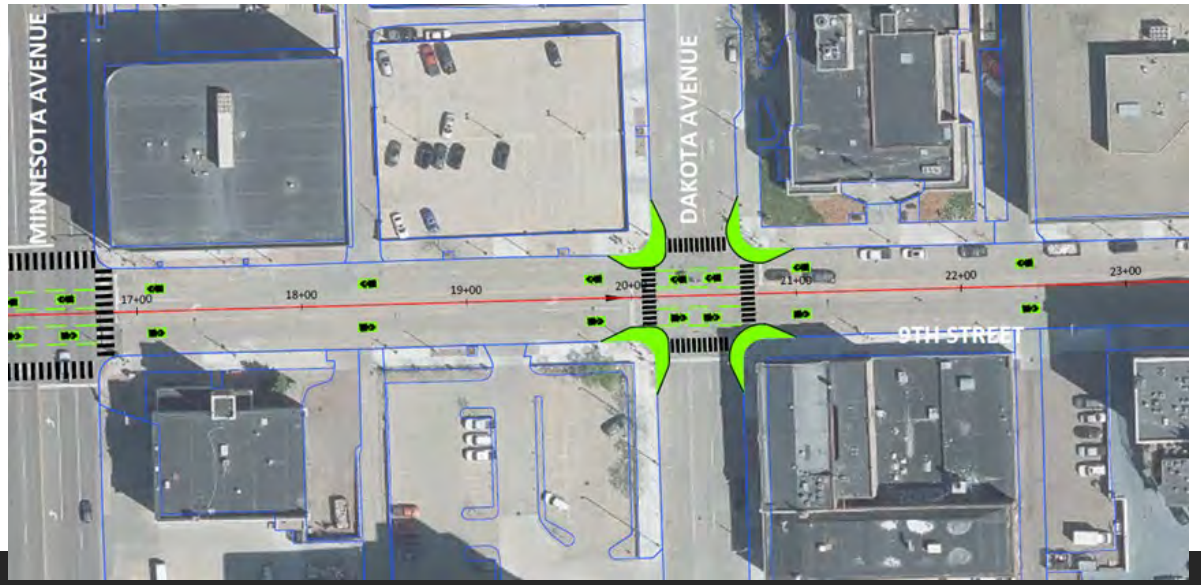
Upcoming Projects: 15th Street Boulevard

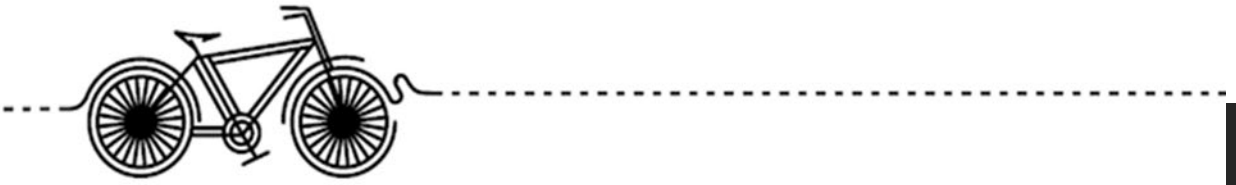


15th Street Boulevard



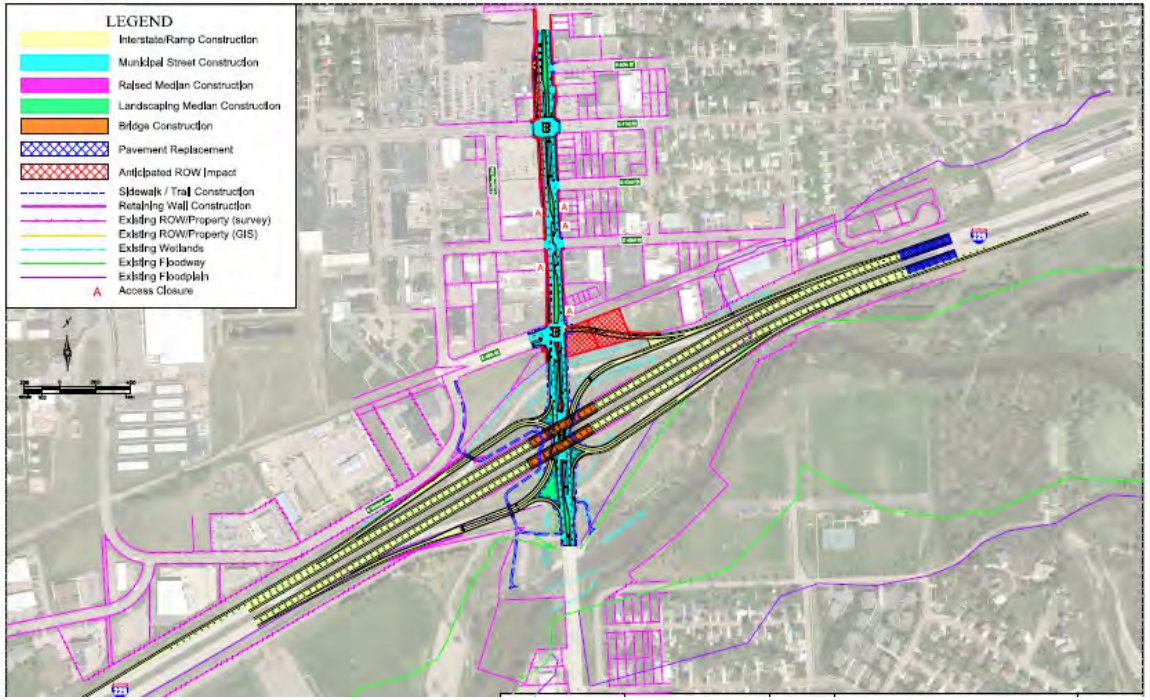
15th Street Boulevard

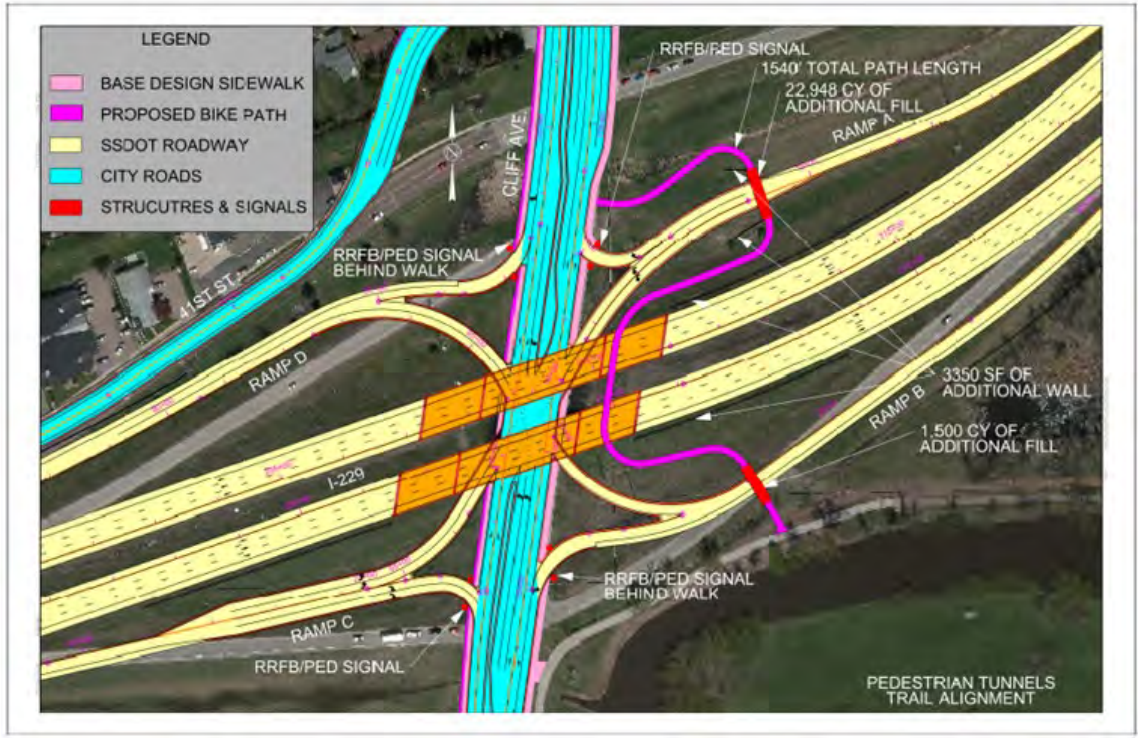




Minnesota Ave and Cliff Ave underpasses:

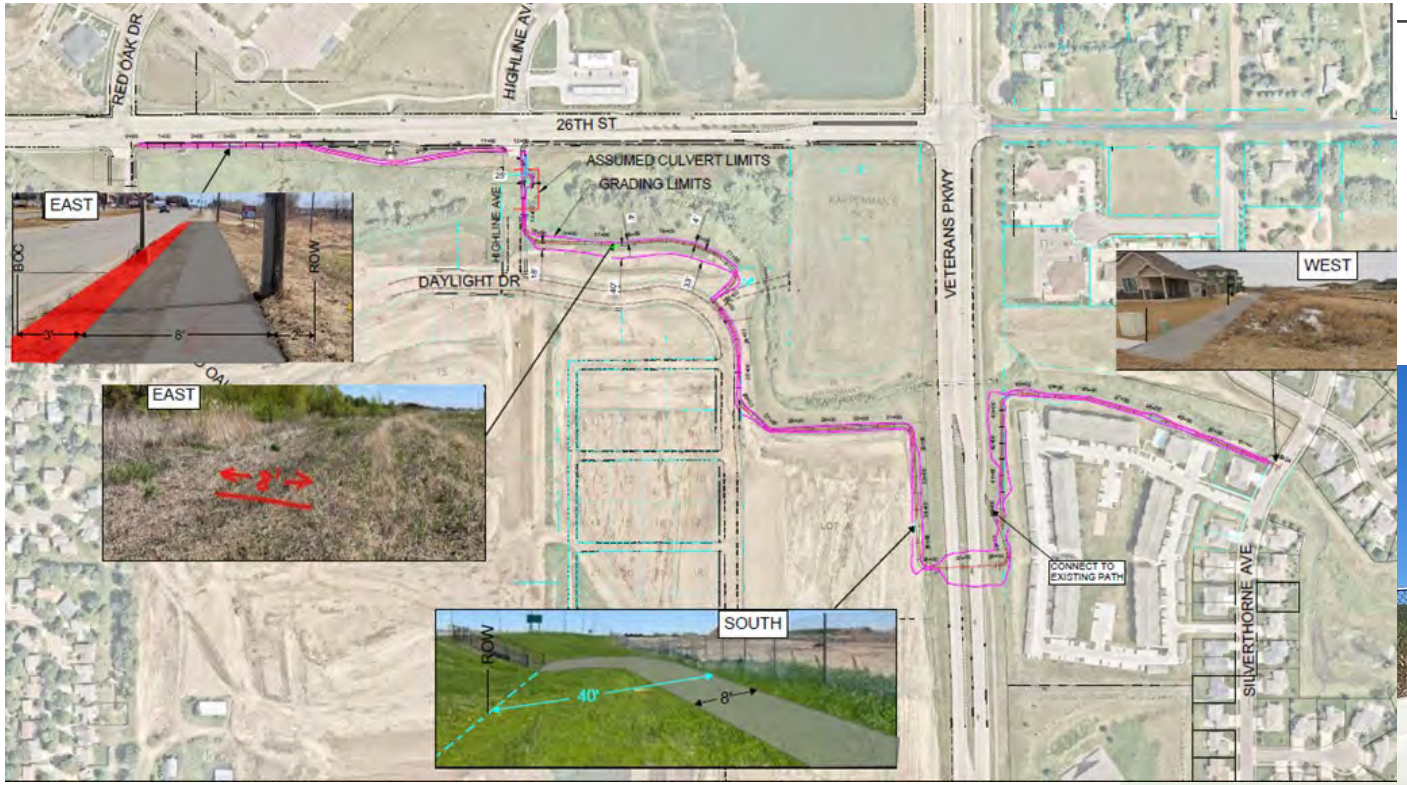
- Current plans show underpasses
- Also show 8-foot wide sidewalks





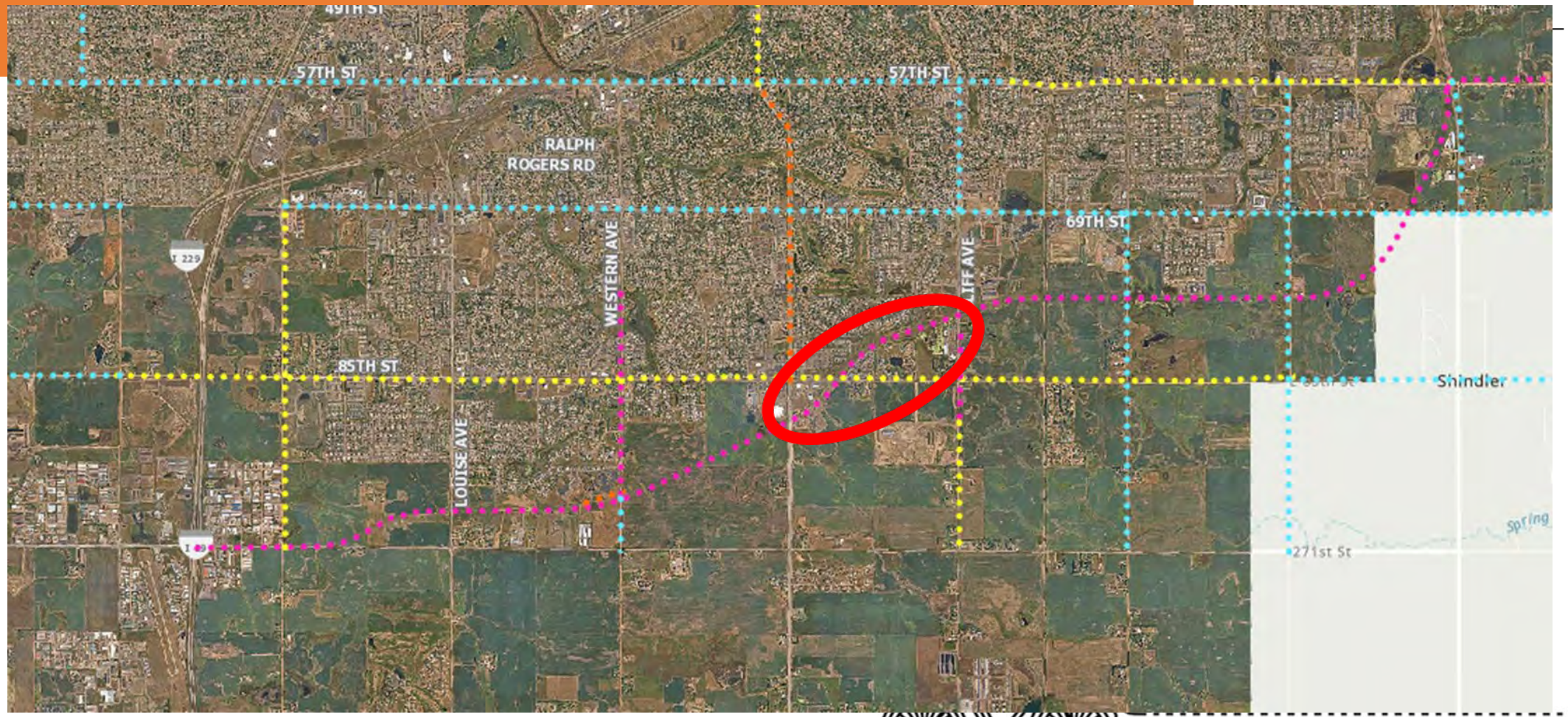
26th Street Trail Connection:

- TAP grant application
- Connecting 26th Street underpass to Veterans Parkway underpass



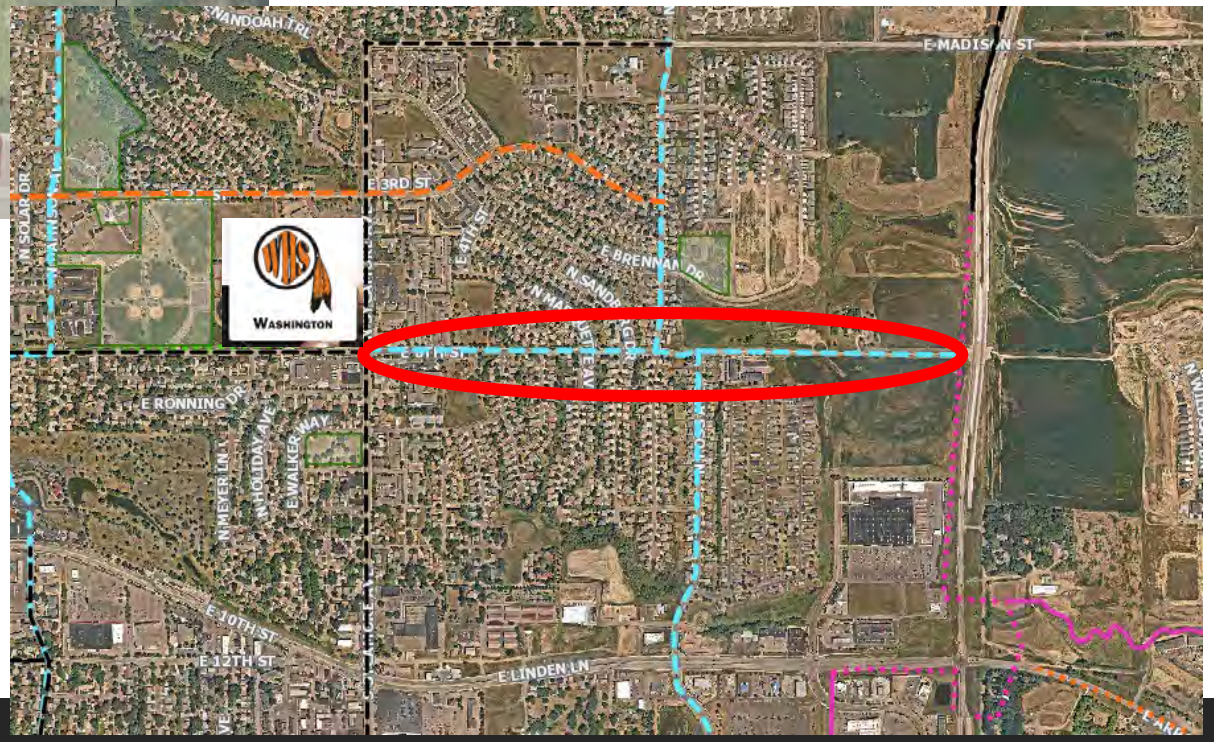
South Veterans Parkway:

- Multiple phases of development – Phase I – Cliff Ave to Minnesota Ave
- Majority of survey respondents don't feel safe riding with traffic
- Side paths work best on roads with higher speeds and more limited access



Upcoming Project:

6th Street form Sycamore Avenue to Veterans Parkway



Maple Street – Cycle Track

Downtown – Road Diet

Questions