

BROOKINGS AREA

TRANSPORTATION PLAN



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AREA TRANSPORTATION PLAN

June 2026

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Study Advisory Team

Ryan Miller – City of Brookings – Community Development
Charlie Richter – City of Brookings – Engineering Division
John Thompson – City of Brookings – Public Works
Charlie Schnabel – Brookings Area Resident
Brian Gustad – Brookings County – Highway Department
Ryan Thompson – Brookings Municipal Utilities
Josh Jones – City of Aurora – Mayor
Katrina Burckhard – SDDOT – Project Development
Steve Gramm – SDDOT – Project Development
Thomas Lindstrom – SDDOT – Watertown Area
Dan Martell – SDDOT – Aberdeen Region
Mark Peterson – SDDOT – Aberdeen Region
Joseph Updike – SDDOT – Traffic
Tanner Aiken – SDSU – Facilities and Services

Consultant

HDR

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Executive Summary

The City of Brookings completed the [City of Brookings 2040 Comprehensive Plan](#) in 2018 to provide a shared vision for future growth and development within Brookings and the surrounding area. Five key plan elements were established and focused on:

- Housing and Neighborhoods
- Transportation
- Municipal Services
- Quality of Life
- Strategic Development Areas

Transportation plays a critical role in supporting these key plan elements and highlights the importance of providing safe, efficient, and connected mobility for all users throughout the community. The Brookings Area Transportation Plan (BATP) focuses on transportation improvements in the current Brookings city limits and surrounding growth areas. The BATP reflects an updated set of transportation improvements and priorities that considers the notable growth and transportation network changes that have occurred since the adoption of the [2011 Brookings Area Master Transportation Plan](#).

The BATP vision was developed through input received from the community and stakeholders and guidance from the Study Advisory Team. This vision, along with the BATP goals and objectives, establishes future transportation decisions based on the values of the community.

A Study Advisory Team was organized to guide the study and provide incremental input and feedback at key study milestones. This team consisted of representatives from City of Brookings, City of Aurora, Brookings Municipal Utilities (BMU), Brookings County, South Dakota Department of Transportation (SDDOT), South Dakota State University (SDSU), and the community.

The purpose of the Brookings Area Transportation Plan is to:

- **Establish an updated snapshot of baseline conditions.** This identifies transportation issues and needs the study area currently faces through data collection, analysis, and public input.
- **Establish new recommendations for future improvements.** This includes a revised set of recommended street, bicycle, pedestrian, and safety improvement projects and a set of standards and policy recommendations to provide for safe and efficient management and growth of the transportation system based on current issues and needs.

Brookings Area Transportation Plan Vision:

The BATP provides a refreshed guide for a safe, efficient, and reliable transportation system that is accessible for all users and supports a growing community by promoting local economic development.

Plan Components

The BATP focuses on three key elements:

1. Gaining an **understanding** of Brookings area transportation issues and needs through public engagement and review of existing and future conditions
2. Developing **standards, guidance, and projects** through a series of 'plans' to address the identified issues and needs
3. Developing an **Implementation Plan** to present a feasible path to implement BATP recommendations

Findings and Recommendations

Each chapter of the BATP is an integral part in shaping findings, guidance, and long-range recommendations for the Brookings area transportation network. Each sub-plan within the Standards and Project Development lays the foundation for various modes of travel and managing the existing road network. From there, the Implementation Plan brings everything together as an implementable long-range plan. The Implementation Plan recommendations include a prioritized list of multimodal transportation projects, additional considerations, and next steps to help guide the City of Brookings and other area agencies in long-range transportation planning and decision-making.

A funding analysis was developed to assess historical transportation funding by the City of Brookings and prepare planning-level costs associated with projects developed to address identified transportation-related issues and needs. While this plan is unconstrained, the importance of external funding sources to help fill any potential gaps and spread transportation dollars across projects for all travel modes is highlighted. This showcases the benefit of completing the Brookings Area Safety Action Plan (SAP) as part of the BATP. The Brookings Area SAP is a comprehensive safety plan that meets all requirements for the U.S. Department of Transportation's (USDOT) Safe Streets and Roads for All (SS4A) grant program and will strongly position the City of Brookings to seek these funding opportunities for the implementation of safety, bicycle, and pedestrian projects in the future.

Fostering partnerships with other area agencies and supporting a collaborative process with organizations, community groups, and transportation stakeholders will be important when pursuing external grant funding sources such as SS4A, State of South Dakota, or other USDOT grants. The BATP provides the framework to support this process and ultimately help the City of Brookings reach their vision of the future transportation network.

Key elements and associated sections of the BATP include:

1. Understanding

- a. Public Engagement
- b. Community Profile
- c. Baseline Conditions
- d. Issues and Needs

2. Standards and Project Development

- a. Major Roads Plan
- b. Roadway Standards and Guidelines
- c. Bicycle and Pedestrian Plan
- d. Safety Action Plan
- e. Build Conditions and Supplemental Scenarios

3. Implementation Plan

- a. Funding Analysis
- b. Prioritized Project Recommendations

1 Introduction

The City of Brookings completed the [City of Brookings 2040 Comprehensive Plan](#) in 2018 to provide a shared vision for future growth and development within Brookings and the surrounding area. Five key plan elements were established through this study and include (paraphrased):

- **Housing and Neighborhoods:** Create healthy neighborhoods with housing options, character and quality, and connections to community destinations for jobs, commerce, and recreation
- **Transportation:** Establish a transportation network that provides a safe and efficient means for all users and supports community and economic development
- **Municipal Services:** Strengthen existing public facilities and guide future infrastructure to support effective delivery of emergency services, encourage economic development, job creation, and quality of life improvements, and implement sustainable initiatives in Brookings
- **Quality of Life:** Provide well-connected and accessible park and recreation facilities, programs, and services to foster community, promote art into public amenities, and encourage sustainable construction materials and practices
- **Strategic Development Areas:** Follow recommendations for strategic development areas including South Main Avenue Corridor, 6th Street Corridor, Planning for the Future of Aging Mobile Home Parks, Bridging the Interstate Divide, and Strengthening Downtown



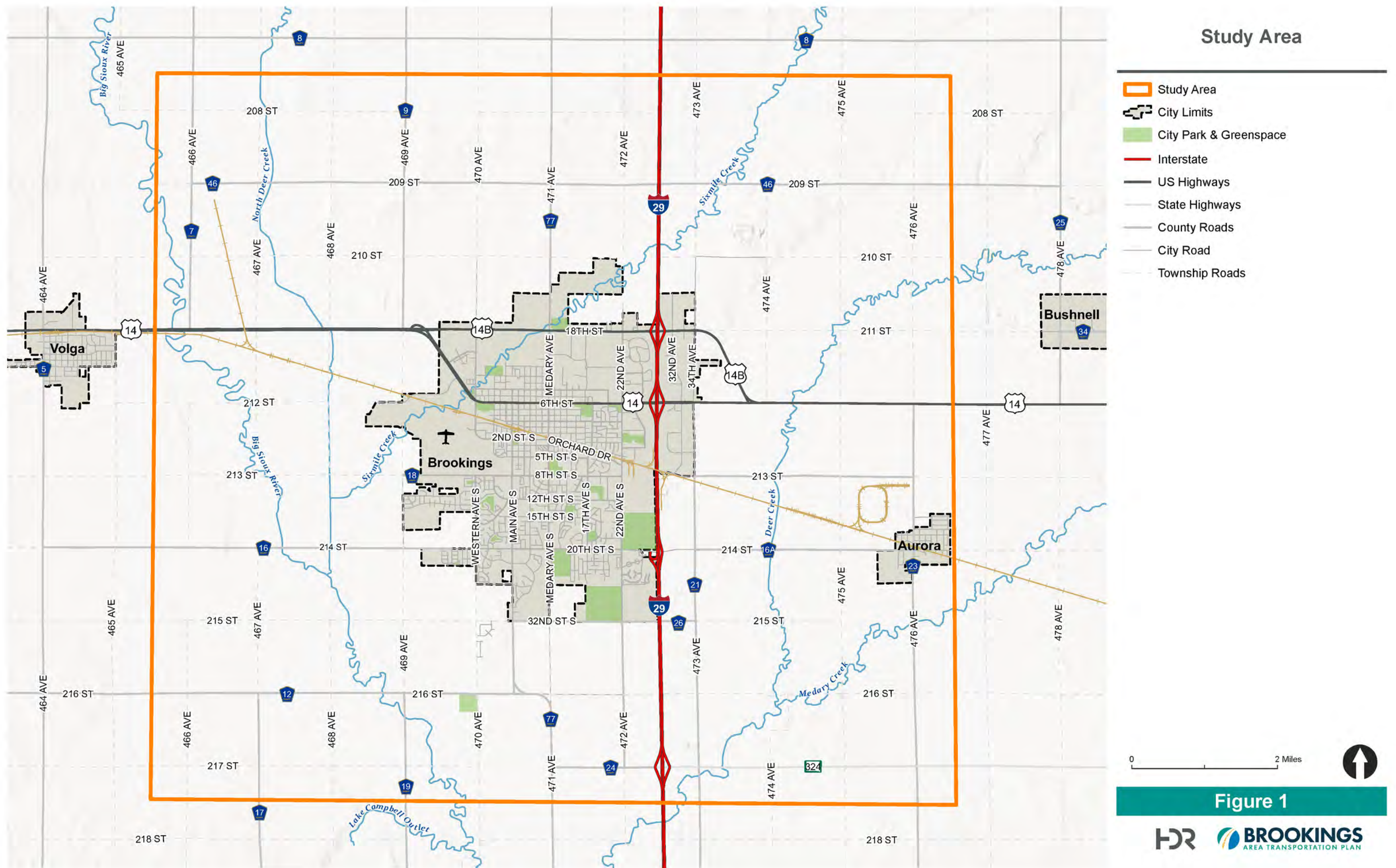
Transportation plays a key role in supporting each of these plan elements, which highlights the importance of providing safe, efficient, and connected mobility for all users within the community.

The Brookings Area Transportation Plan (BATP) focuses on improvements which encompass the City of Brookings current city limits and future growth areas in the Brookings Joint Jurisdictional Area, as shown in **Figure 1**. The BATP reflects an updated set of transportation improvements and priorities that considers the notable growth and transportation network changes that have occurred since the adoption of the [2011 Brookings Area Master Transportation Plan](#).

A Study Advisory Team was organized to guide the study and provide input and feedback at key milestones. The team consisted of representatives from the City of Brookings, City of Aurora, Brookings County, South Dakota Department of Transportation (SDDOT), Brookings Municipal Utilities (BMU), South Dakota State University (SDSU), and the community.

The purpose of the Brookings Area Transportation Plan is to:

- **Establish an updated snapshot of baseline conditions.** This identifies transportation issues and needs the study area currently faces through data collection, analysis, and public input.
- **Establish new recommendations for future improvements.** This includes a revised set of recommended street, bicycle, pedestrian, and safety improvement projects and a set of standards and policy recommendations to provide for safe and efficient management and growth of the transportation system based on current issues and needs.



2 Brookings Area Transportation Plan Foundational Elements

2.1 Vision, Goals, and Objectives

The BATP vision was developed through guidance from the Study Advisory Team and input received from the community and stakeholders during engagement activities. The vision, along with the plan's goals and objectives, will guide future transportation decisions based on the values of the community.

Brookings Area Transportation Plan Vision:

The BATP provides a refreshed guide for a safe, efficient, and reliable transportation system that is accessible for all users and supports a growing community by promoting local economic development.

Table 1 presents BATP goals and objectives. The goals articulate important emphasis areas for the BATP to address. Objectives are specific and actionable items that the BATP should promote.

Table 1: Area Transportation Plan Goals and Objectives

GOAL	OBJECTIVE
Economic	Improve multimodal connectivity and reliability to commercial, industrial, and recreational land uses to support the economic vitality of the area
Accessibility	Provide for multimodal travel through a connected transportation network
Efficiency and Reliability	Limit recurring congestion and provide reliable transportation corridors
Safety	Reduce the frequency and severity of vehicle, bicycle, and pedestrian crashes
Bicycle and Pedestrian Connectivity	Improve bicycle and pedestrian connectivity and route continuity
Maintaining the Current System	Devote sufficient resources and plan for maintaining the transportation system in a state of good repair
Placemaking	Support city development goals through street network improvements and proposed policies and standards
Resiliency	Develop a transportation system that is adaptable and provides service when significant impactful events occur

2.2 Relevant Plans

Existing and past plans establish a foundation for the BATP. The Brookings Comprehensive Plan, Downtown Master Plan, Economic Development Master Plan, Area Housing Study, Bicycle Master Plan, and the prior Master Transportation Plan provide a vision for the community in which the transportation network is a key element. The Brookings County Comprehensive Land Use Plan and Master Transportation Plan coordinate the growth of cities within the county and transportation connections between them.

2040 City of Brookings Comprehensive Plan (2018)

The 2018 update to the [Brookings Comprehensive Plan](#) discusses the notable growth Brookings experienced in the recent decades and sets forth a vision for development and planning policies to achieve the community's vision for 2040.



Brookings County Comprehensive Land Use Plan Update (2016)

The latest [Brookings County Comprehensive Land Use Plan](#) update was adopted in February 2016. The plan recognizes the continued growth and associated challenges of the City of Brookings and other municipalities within the County. The comprehensive plan provides direction for growth and strategies to address the needs associated with growth through 2031.

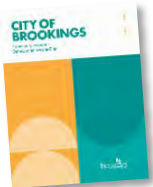
Downtown Brookings Master Plan (2024)

The [Downtown Brookings Master Plan](#) was adopted in October 2024. The plan creates a framework to shape the future of Downtown Brookings through intentional and strategic recommendations to build on existing strengths of the area, adapt to changing times, and update infrastructure for continued economic and community vitality of the downtown area.



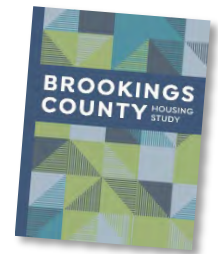
City of Brookings Community Economic Development Master Plan (2023)

The latest [Community Economic Development Master Plan](#) update was completed in August 2023. The plan conducted extensive research to confirm community facts and trends, identify opportunities, allocate resources, and recruit businesses to spur continued growth in Brookings between 2023 and 2027 and beyond.



Brookings County Housing Study (2022)

The [Brookings County Housing Study](#), completed in June 2022, conducted extensive research on the existing Brookings County housing market and potential future housing needs in the area. Based on anticipated trends and public engagement, recommended strategies were put forth for the county, cities, and community partners to help build an affordable, safe, and sustainable housing market for all.



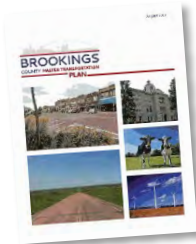


City of Brookings Parks & Recreation Master Plan (2022)

The latest [*City of Brookings Parks & Recreation Master Plan*](#) was adopted in 2022 and lays out a 10-year road map for the City of Brookings Parks, Recreation & Forestry Department to follow. This plan establishes a long-term plan focusing on sustainability and maximizing resources while providing a balance of facilities and amenities throughout the community.

City of Brookings Bicycle Master Plan (2017)

The [*City of Brookings Bicycle Master Plan*](#) was adopted in February 2017. This plan reviewed existing bicycle and pedestrian infrastructure, sought public input, and devised a bicycle facility plan through 2040. Goals for the plan include development of a connected and comfortable bicycle network for all users, adopting policies and programs that support bicycling, and implementing the plan efficiently and effectively.

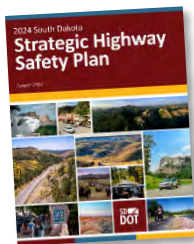


Brookings County Master Transportation Plan (2013)

The [*Brookings County Master Transportation Plan*](#) was adopted in August 2013. The plan examined transportation facility needs, potential solutions, and prioritization of future projects throughout the county transportation network outside of the City of Brookings.

Previous Brookings Area Master Transportation Plan (2011)

The previous [*Brookings Area Master Transportation Plan*](#) was adopted in June 2011 with cooperation and participation of the City of Brookings, City of Aurora, and Brookings County. The plan assessed existing (in 2010) and future transportation needs in the years 2020 and 2035, updated design standards, and compiled a list of future infrastructure projects. Since adoption, major changes have occurred to the Brookings area transportation network, including the I-29 Exit 130 (20th Street S) interchange, which necessitated updates to the plan.

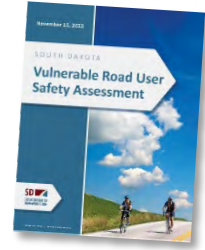


2024 South Dakota Strategic Highway Safety Plan (SHSP)

The [*2024 South Dakota Strategic Highway Safety Plan \(SHSP\)*](#) is a multi-disciplinary statewide plan which aims to reduce fatalities and serious injuries and improve safety on South Dakota's public roadways. Through data-driven analysis and stakeholder feedback from key safety representatives, nine areas of concern were selected as South Dakota's safety emphasis areas to concentrate efforts to reduce traffic-related deaths and serious injuries. Ultimately, the SHSP is intended to guide South Dakota's infrastructure investments through the Highway Safety Improvement Program (HSIP) and behavioral safety programing through the Highway Safety Plan (HSP).

2023 South Dakota Vulnerable Road User Safety Assessment (VRUSA)

The [2023 South Dakota Vulnerable Road User Assessment \(VRUSA\)](#) is an addendum to South Dakota's SHSP. The VRUSA consists of an overview of the state's safety performance regarding vulnerable road users (VRU) based on historical crash data, identifies high-risk areas in the state for VRUs, summarizes consultation meetings with high-risk VRU safety areas, and presents programs, resources, and strategies that may be implemented to improve future VRU transportation in South Dakota.



Relevant area interchange and corridor studies include:

- **I-29 Exit 133 Interchange Modification Study (2024)**
- **214th Street Feasibility and Hydrology & Hydraulics Study (2024)**
- **US14-US14 Bypass Corridor Study (2020)**
- **I-29 Exit 130 (20th Street South) Interchange Justification Study (2020)**
- **22nd Avenue Corridor Study (2018)**



20th Street South Interchange (I-29 Exit 130)

3 Community Profile

3.1 Population Growth

The population of Brookings has experienced notable growth since 1990, averaging a growth rate of 6.8 percent per year, as shown in **Table 2**. The fastest period of growth in Brookings was between 2000 and 2010, when the City added approximately 3,600 residents. On average, Brookings gained around 2,400 residents each decade between 1990 and 2020.

Table 2: Brookings Population Growth, 1990 – 2024

YEAR	POPULATION	PERCENT CHANGE
1990	16,270	-
2000	18,504	+13.7%
2010	22,056	+19.2%
2020	23,377	+6.0%
2024	24,555	+5.0%

Source: U.S. Census Bureau Decennial Census, 1990 – 2020; 2024 Population Estimates

The City of Brookings 2040 Comprehensive Plan update estimates the 2035 population to reach approximately 28,200 to 31,000 residents. These estimates are based on simple linear growth rate estimates ranging from 0.5 percent annual population growth (28,200 residents) to 1.5 percent annual population growth (31,000 residents).

3.2 Race and Ethnicity

As shown in **Table 3**, 85.9 percent of the Brookings population identifies as white, while 4.2 percent identify as Hispanic or Latino, 3.8 percent identifies as Asian, 2.5 percent identify as Black or African American, and 1.4 percent identify as Native Hawaiian or Pacific Islander.

Table 3: Population of Brookings by Race/Ethnicity, 2023

RACE/ETHNICITY	PEOPLE	PERCENT
White	20,087	85.93%
Hispanic or Latino	970	4.15%
Asian	882	3.77%
Black or African American	574	2.46%
American Indian or Alaska Native	324	1.39%
Native Hawaiian or Pacific Islander	12	0.05%
Two or More Races	1,122	4.80%

Source: American Community Survey, 2023 5-Year Estimates

3.3 Housing Characteristics

Housing is a key determinant of future scenarios, such as travel demand, housing type demand, and future travel needs based on spatial distribution of residents. An overview of housing characteristics is shown in **Table 4**. Further information regarding housing characteristics for the City of Brookings and Brookings County is available in the [2022 Brookings County Housing Study](#).

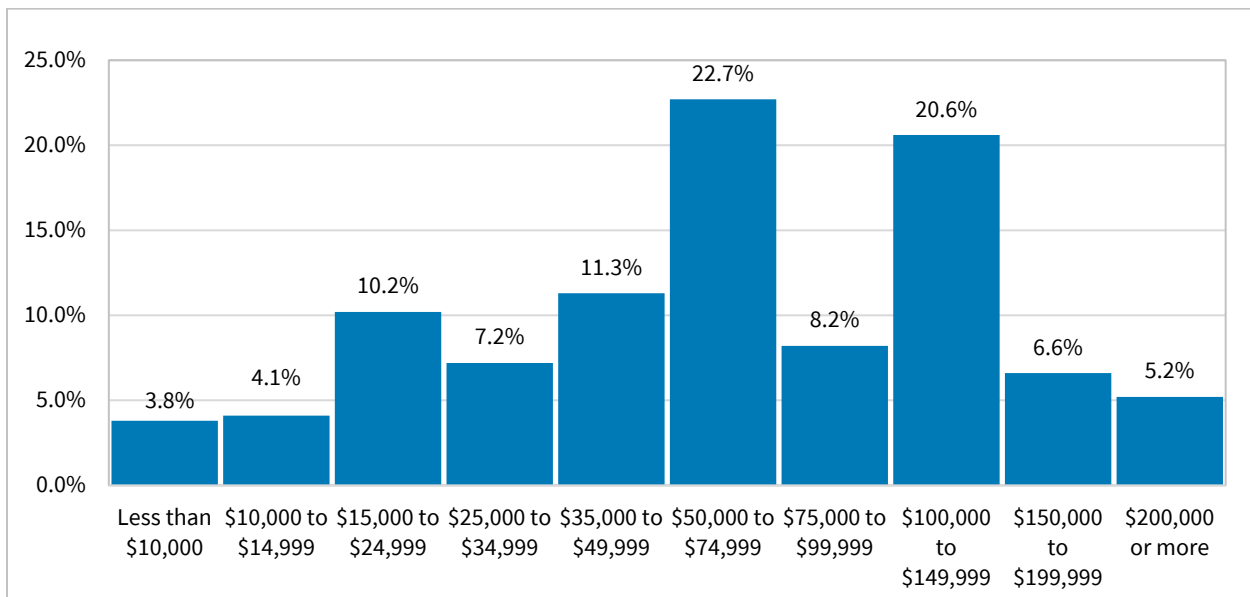
Table 4: Housing Characteristics for Brookings Residents

HOUSING CHARACTERISTIC	
Households	8,860
Average Household Size	2.31
Percent Owner-Occupied	48.5%
Percent Renter-Occupied	51.5%

Source: American Community Survey 2023 5-Year Estimates

3.4 Household Income

The median household income for Brookings residents in 2023 was \$61,979, while the median family income was \$102,159. For the state of South Dakota, median household income in 2023 was \$71,810, and the median family income was \$94,560. **Figure 3** shows the proportion of Brookings households by income in 2023. More than 50 percent of households in Brookings have an income between \$50,000 and \$150,000. **Table 5** shows percentage of age cohorts living below poverty level. The poverty threshold is determined by the U.S. Census Bureau which considers pre-tax income and adjusted annually for inflation. In 2023, the average poverty threshold was \$29,678, calculated on a per household basis.



Source: American Community Survey 2023 5-Year Estimates

Figure 2: Brookings Household Incomes by Bracket

Table 5: Percent of Population Below Poverty Level

AGE COHORT	POPULATION BELOW POVERTY LEVEL	PERCENT BELOW PROPERTY LEVEL
Under 18 Years	4,442	8.7%
18 to 64 Years	2,662	19.7%
65 and Over	262	10.0%

Source: American Community Survey 2023 5-Year Estimates

3.5 Employment Characteristics

In addition to housing, employment trends can influence travel demand as well as support the economic region of Brookings. A summary of employment by industry is shown below in **Table 6**.

Table 6: Employment by Industry (Top 6)

INDUSTRY	PERCENT OF WORKERS
Educational services, and health care and social assistance	30.6%
Manufacturing	19.6%
Retail trade	11.0%
Arts, entertainment, and recreation, and accommodation and food services	9.3%
Professional, scientific, and management, and administrative services	8.8%
Finance, insurance, and real estate	5.0%

Source: American Community Survey 2023 5-Year Estimates

3.6 Commuting Characteristics

Brookings area commuting characteristics from the American Community Survey 2023 are summarized in the following tables:

- Means of travel to/from work (**Table 7**)
- Vehicles available to Brookings workers (**Table 8**)
- Time of commute departures (**Table 9**)
- Travel time to work (**Table 10**)

This data highlights the importance of vehicular transportation throughout the Brookings area as well as opportunities to improve multimodal transportation elements such as public transportation and facilities for people to walk and bike. There are 12,780 people aged 16 and over in Brookings that equate to workers. The U.S. Census defines a “worker” as someone aged 16 and who worked within the last week of the time the survey was taken.¹ Generally, the commute windows are short with approximately 77 percent of Brookings workers having commute times of less than 15 minutes.

¹ U.S. Census Bureau, [U.S. Census Bureau Class of Worker Data](#)

However, there is a greater distribution of when workers depart for work with roughly 56 percent departing for work between 6 a.m. and 9 a.m. and 31 percent between 9 a.m. and 12 a.m.

From a regional perspective, the U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) Program provides inflow and outflow travel for employment within Brookings city limits. For 2021 (**Figure 4**), there were more than double the amount of people commuting into Brookings for employment (9,595) than those commuting outside of Brookings for employment (4,343). In addition, a notable share of Brookings workers (6,643) live and work within Brookings. This indicates that overall, Brookings is a regional employment center that attracts workers from the surrounding region.

Table 7: Means of Travel to/from Work

MEANS OF TRAVEL	PERCENT OF WORKERS
Personal Vehicle	83.8%
Drove Alone	74.6%
Carpool	9.2%
Public Transportation	0.6%
Walk	4.4%
Bicycle	1.0%
Other	0.1%
Worked from Home	10.1%

Source: American Community Survey 2023 5-Year Estimates

Table 8: Vehicles Available to Brookings Workers

VEHICLES AVAILABLE	PERCENT OF WORKERS
None	2.9%
1	22.7%
2	33.5%
3 or more	40.9%

Source: American Community Survey 2023 5-Year Estimates

Table 9: Time of Commute Departures (Home to Work)

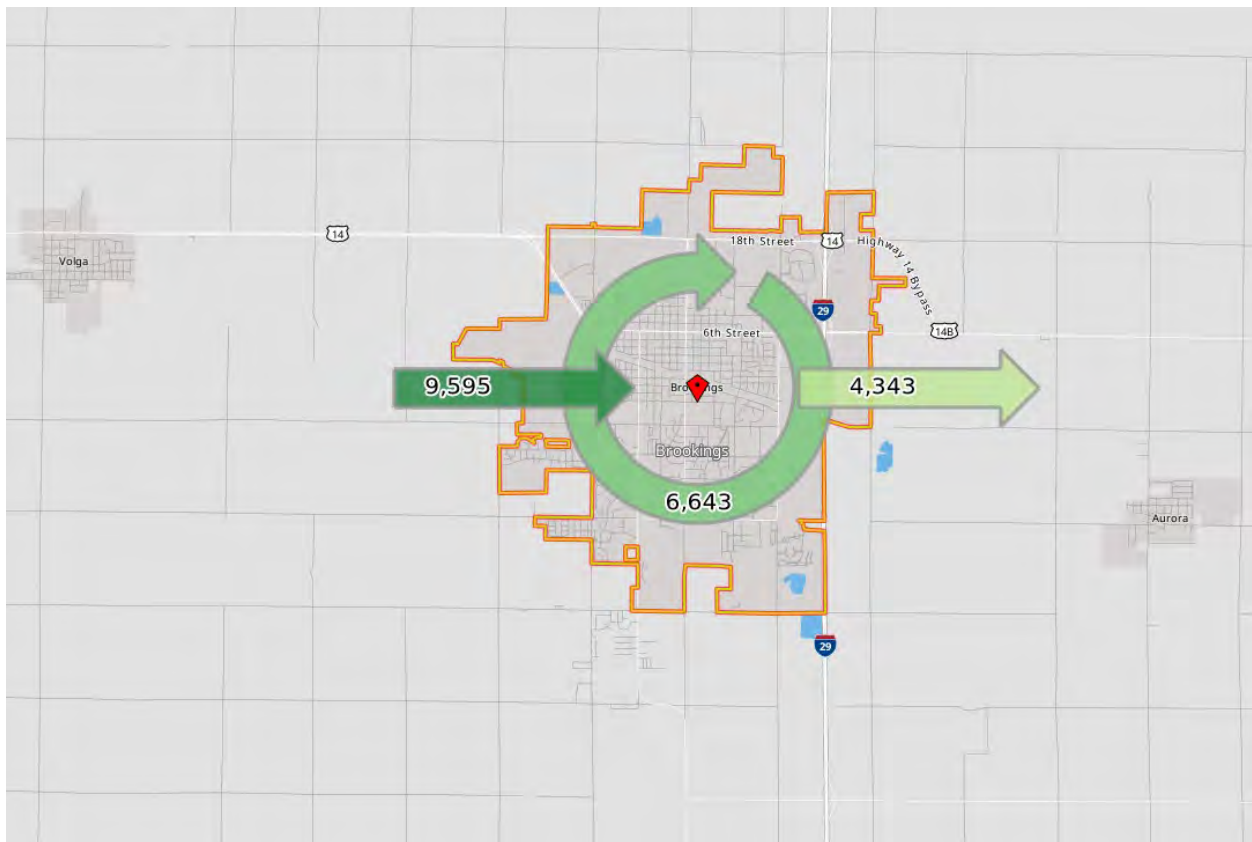
TIME OF DEPARTURE	PERCENT OF WORKERS
12 a.m. - 6 a.m.	12.6%
6 a.m. - 7 a.m.	11.3%
7 a.m. - 8 a.m.	30.2%
8 a.m. - 9 a.m.	14.7%
9 a.m. - 12 a.m.	31.2%

Source: American Community Survey 2023 5-Year Estimates

Table 10: Travel Time to Work

TRAVEL TIME TO WORK	PERCENT OF WORKERS
Less than 10 minutes	48.4%
10 to 14 minutes	28.1%
15 to 19 minutes	10.6%
20 to 59 minutes	11.7%
60 or more minutes	1.3%

Source: American Community Survey 2022 5-Year Estimates



Source: 2022 Longitudinal Employer-Household Dynamics <https://onthemap.ces.census.gov/>

Figure 3: Commuting Inflow and Outflow for Brookings (Year 2022)

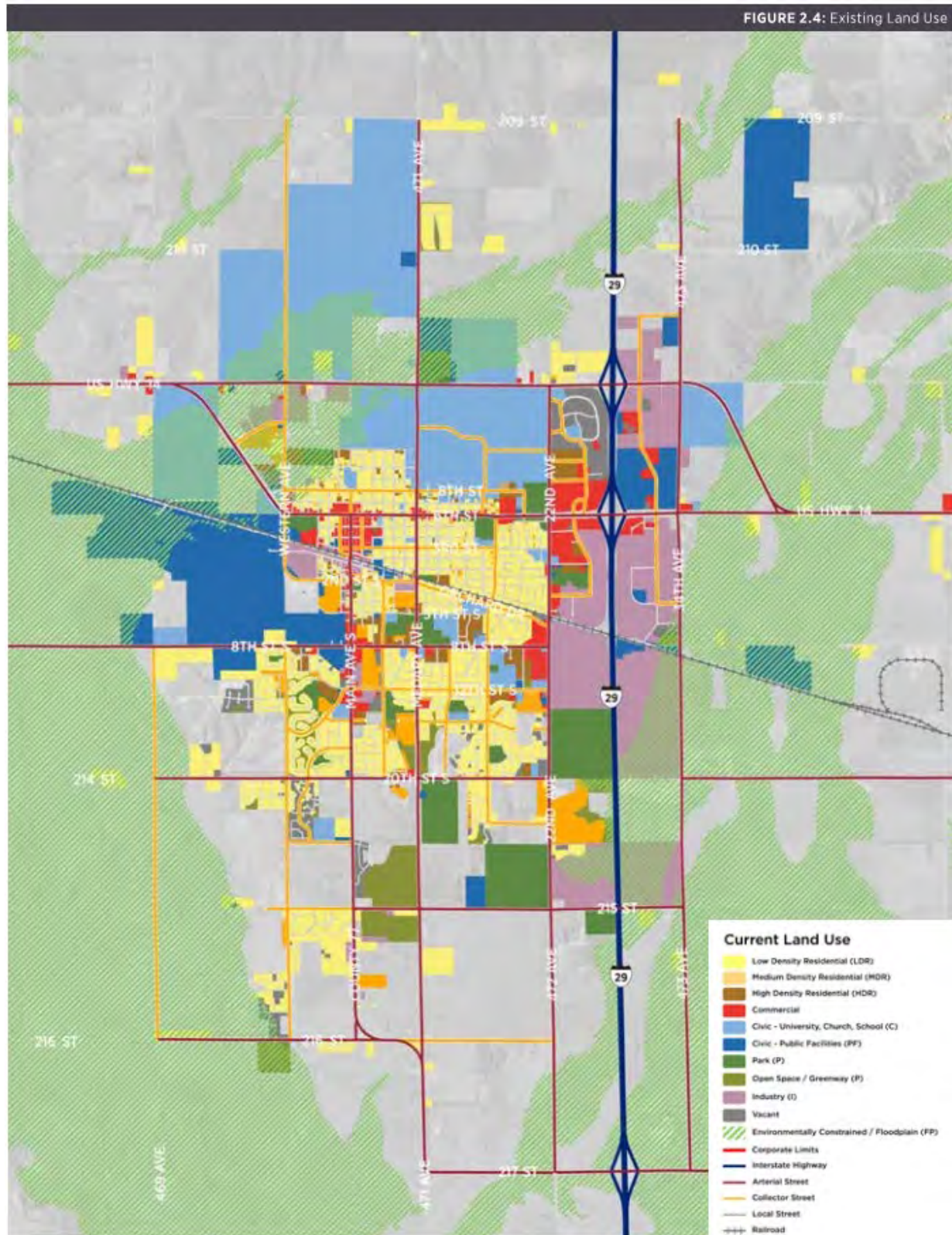
3.7 Existing and Future Land Use

The [City of Brookings 2040 Comprehensive Plan](#) identifies seven key land use features that influence future growth and long-term development: historic incremental growth, growth pressure, limited growth areas, reinvestment, community design and appearance, and growing within environmental constraints. These features are integral with the existing Brookings area land uses, shown in **Figure 5**, and the planning area's future land use plan shown in **Figure 6**.

Collectively, these elements are important considerations with infrastructure readiness, including the transportation network. Build-out, timelines, and subsequent maintenance and preservation of streets and multimodal elements required to support this growth are key considerations within the BATP.



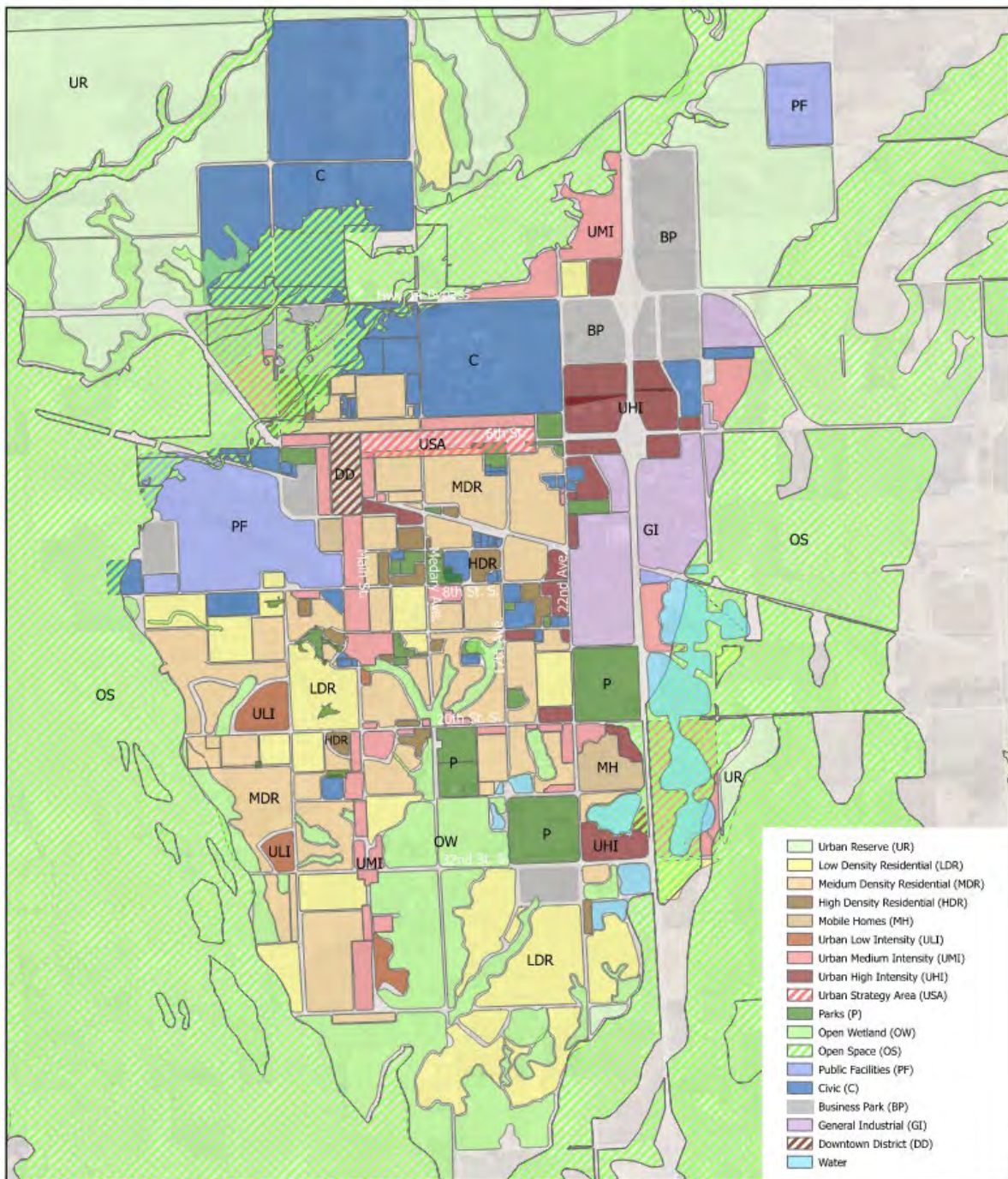
20th Street South (Southwest Brookings Growth Area)



Source: City of Brookings 2040 Comprehensive Plan (2018)

Figure 4: Brookings Existing Land Uses (2018)

Future Land Use Plan Amended: 12/17/24



Source: City of Brookings 2040 Comprehensive Plan (2018; Amended December 2024)

Figure 5: Brookings Future Land Use Plan

4 Public Engagement

Two sets of stakeholder meetings and public open house events were held during the BATP development process. Each set of meetings and open houses included study information presented through display boards, maps, and online content to support discussion and input. The study website, www.brookingsatp.com, provided a virtual option for review and comment on public open house materials.

Feedback received during these events guided development of BATP goals, objectives, and recommendations. A summary of each public engagement event is provided in **Appendix A**.

4.1 Stakeholders

Stakeholders included City of Brookings and Brookings County departments not represented on the Study Advisory Team, business owners, property owners, multimodal transportation advocates, and community leaders interested in the area's transportation network. Small-group stakeholder meetings aligned with the purpose of the evening's public open house and provided an opportunity for informal discussion with the Study Advisory Team.

4.2 Stakeholder Meetings and Open House #1

The first set of afternoon stakeholder meetings and evening public open house was held on Wednesday, February 19, 2025, at the Brookings City-County Government Center. The purpose of these first meetings was to introduce the study and gather public feedback on transportation-related issues and needs to be addressed by the study, the study's goals and objectives, and priorities for the Brookings area transportation network. In total, there were 61 attendees at the day's meetings, 17 at the stakeholder meetings and 44 at the public open house.

Opportunities to provide comments and input included an online travel survey, a budget priorities marble jar voting activity, and issues mapping.

The 16-question online travel survey gathered responses from approximately 470 unique respondents. The question "What goals or characteristics of the area's transportation system should the Transportation Plan focus on" pointed towards safety, efficiency and reliability, maintenance, and bicycle and pedestrian connectivity as the top four priorities as shown in **Table 11**.



Public Open House #1: February 19, 2025

Additional findings related to questions on street network enhancements and budget strategy priorities, where respondents could select up to three options for each question, are provided in **Table 12** and **Table 13** respectively.

Table 11: Transportation Plan Goals and Objectives

GOAL	PERCENT SELECTED
Safety	23%
Efficiency & Reliability	15%
Maintenance	14%
Bicycle and Pedestrian Connectivity	13%
Accessibility	13%
Economic	11%
Placemaking	6%
Resiliency	5%
Total responses: 468	

Totals may not equal 100% due to rounding.

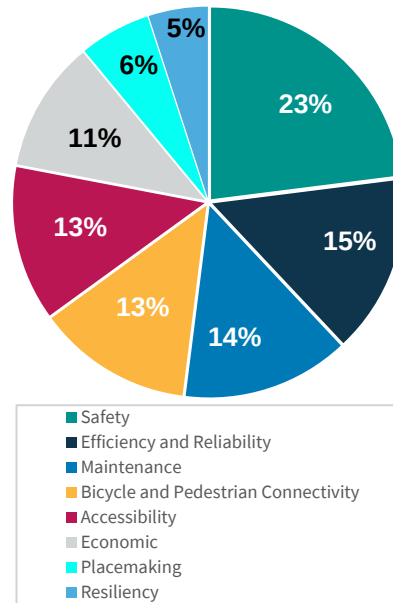


Table 12: Street Network Enhancements

ENHANCEMENTS	PERCENT SELECTED
Updated Traffic Signal Timing	18%
More Travel Lanes	17%
Turn Lanes	17%
Better Pavement Condition	16%
Roundabouts	10%
Other	22%
Total responses: 1,071	

Totals may not equal 100% due to rounding.

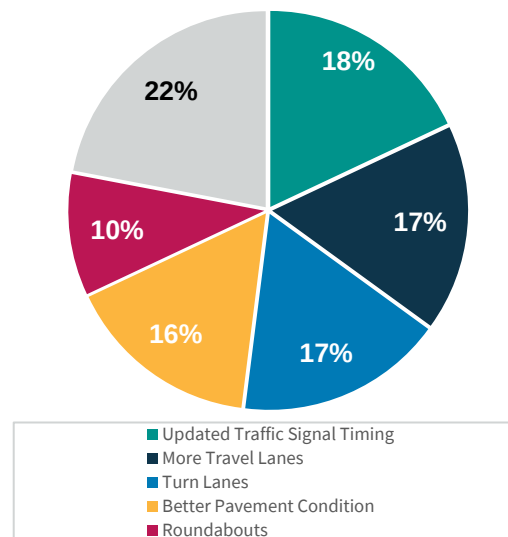
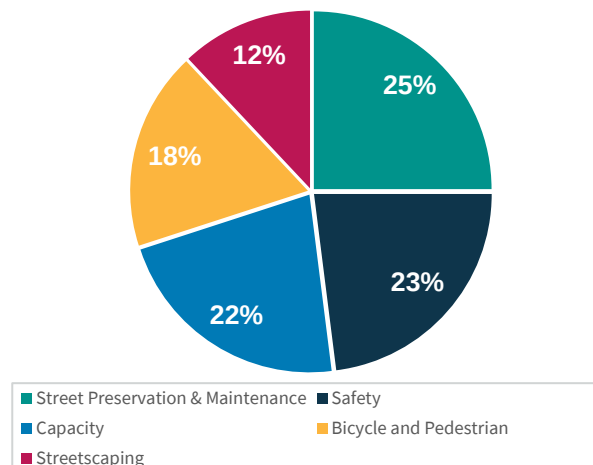


Table 13: Budget Strategy Priorities

STRATEGY	PERCENT SELECTED
Street Preservation & Maintenance	25%
Safety	23%
Capacity	22%
Bicycle & Pedestrian	18%
Streetscaping	12%
Total responses: 1,086	

Totals may not equal 100% due to rounding.

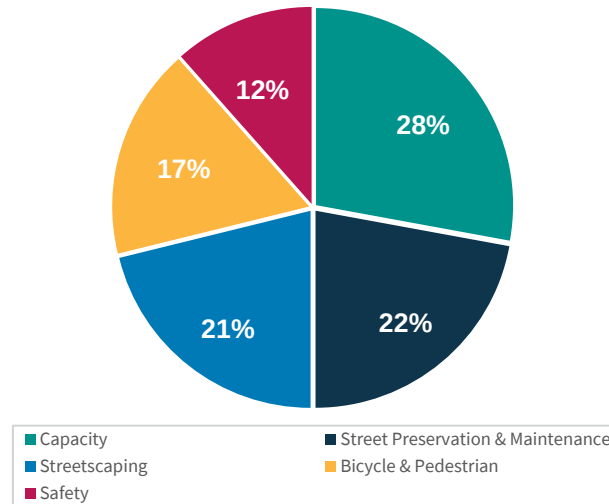


In-person attendee budget priorities were generally evenly split across capacity, safety, bicycle and pedestrian, and street preservation and maintenance improvements, as shown in **Table 14**. This activity differed from the online survey question in that respondents weighted their preference by importance (from least to most important), instead of top three.

Table 14: Budget Strategy Priorities (In-Person Voting)

STRATEGY	PERCENT SELECTED
Capacity	28%
Street Preservation & Maintenance	22%
Streetscaping	21%
Bicycle & Pedestrian	18%
Safety	12%
Total votes: 79	

Totals may not equal 100% due to rounding.



The travel survey also included several questions focused on the safety of the Brookings area transportation network. Two of the questions centered on general safety concerns and approaches to improve safety generated roughly 1,000 unique responses from survey participants. These results, along with specific locations identified for safety improvements through other survey questions and comment maps, were used to inform the issues and needs incorporated into the BATP and the related safety action plan (SAP).

Top concerns about safety on streets within Brookings?

- Turning across heavy vehicle traffic
- Missing sidewalk, bike lane, or trail connections
- Poor lighting or visibility
- Lack of safe bicycle and pedestrian crossing opportunities
- Driver speeds

Top approaches to improve safety?

- More separated bicyclist and pedestrian facilities like shared use paths or bike lanes
- Improved pedestrian crosswalk visibility with pavement markings, signage, and/or lighting
- Additional lighting and enhancements to visibility
- Traffic calming to manage vehicle speeds and aggressive driving
- Alternative intersections like roundabouts

The issues mapping activity identified several location-specific transportation related issues and needs consistent with the top transportation plan goals and objectives and budget strategy priorities. In general, these issues and needs focus on the following key areas:

- Bicycle and pedestrian infrastructure improvements
- Safety enhancements related to pedestrian and cyclist concerns at specific intersections and crossing locations
- Pedestrian crossings and connectivity and improved multimodal separation
- Complete street elements and streetscaping
- Roadway surfacing
- Traffic control modifications (e.g., stop signs, traffic signals, roundabouts)
- Long-range transportation planning goals (e.g. public transit, maintenance, priorities)

4.3 Stakeholder Meetings and Open House #2

The second set of stakeholder and public open house meetings occurred on Wednesday, February 25, 2026, at the Brookings City-County Government Center. The purpose of these open houses was to share BATP preliminary recommendations for stakeholder and public feedback. In total, there were 64 attendees at the day's meeting, 20 at the stakeholder meetings and 44 at the public open house. Feedback received through these engagement opportunities was considered as part of the process to refine and finalize recommendations.



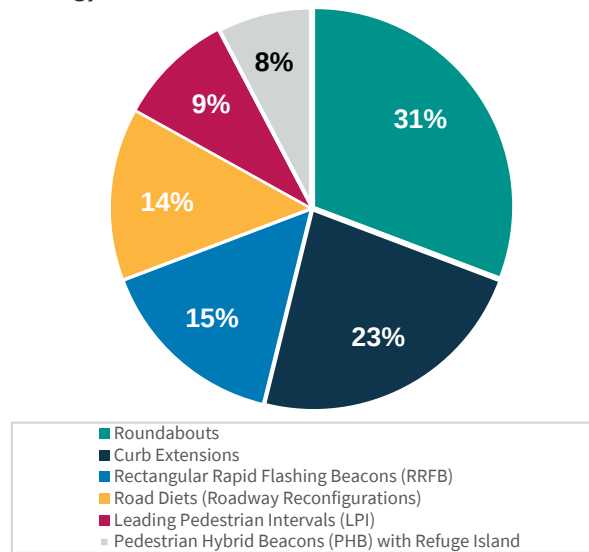
Public Open House #2: February 25, 2026

Presented preliminary recommendations focused on:

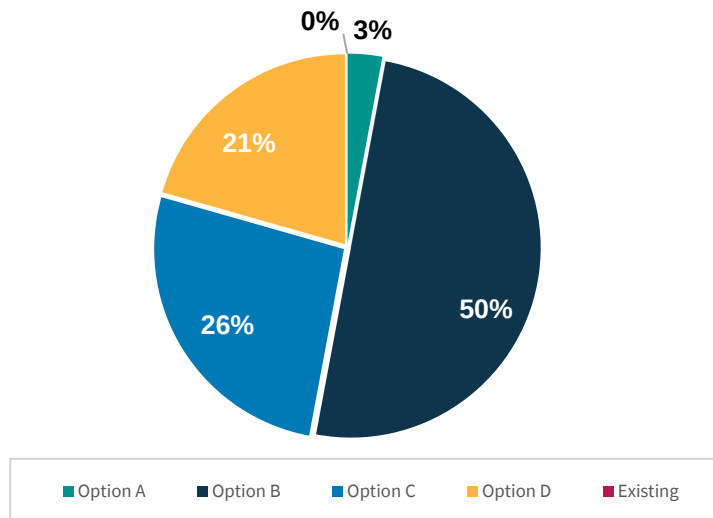
- **Major Roads Plan**, including the recommended Major Roads Plan, candidate roadways for future jurisdictional transfer, and street typical sections
- **Bicycle and Pedestrian Plan**, including recommended network and crossing improvements
- **Intersection and Roadway Corridor Projects**
- **Safety Action Plan**, including recommended safety projects and strategies activity (**Table 15**)
- **Illustrative Road Diet Corridor** activity boards for potential road diet typical section concepts for feedback on Medary Avenue, Main Avenue S, 15th Street S, and Summit Pass (**Figure 6 through Figure 9**)
- **Illustrative Downtown Complete Streets Corridor** activity boards for potential typical section concepts that include bicycle and pedestrian improvements for feedback and polling on Main Avenue, 3rd Avenue, and 5th Avenue (**Figure 10 through Figure 12**)

Table 15: Safety Strategy Priorities (In-Person Voting)

STRATEGY	PERCENT SELECTED
Roundabouts	31%
Curb Extensions	23%
Rectangular Rapid Flashing Beacons (RRFB)	15%
Road Diets (Roadway Reconfigurations)	14%
Leading Pedestrian Intervals (LPI)	9%
Pedestrian Hybrid Beacons (PHB) with Refuge Island	8%
Total votes: 65	



Totals may not equal 100% due to rounding.



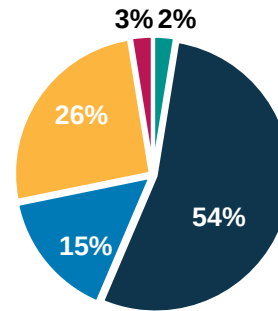
Illustrative Concept Comments:

- Consider right turn lanes where needed along illustrative road diet corridor concepts
- Option C (Raised Separated Bike Lanes) provides plenty of space between bicyclists and pedestrians
- Consider tree preservation in illustrative road diet corridor concepts

Figure 6: Illustrative Road Diet Corridor Medary Avenue (US14 / 6th St to 8th St) Feedback



Figure 7: Illustrative Road Diet Corridor Main Avenue S (8th St S to 20th St S) Feedback

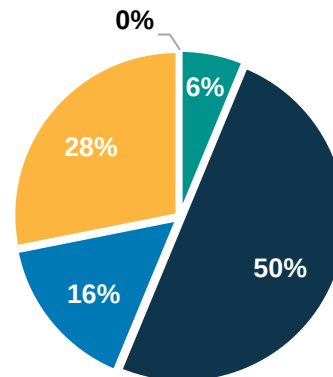


Illustrative Concept Comments:

- Main Avenue S traffic in the outer lane, particularly trucks, often slow to crawl while determining their turning route
- Buffers should include plantings such as trees or grasses
- Prefer concepts with greater degree of separation between bicyclists, pedestrians, and motorists

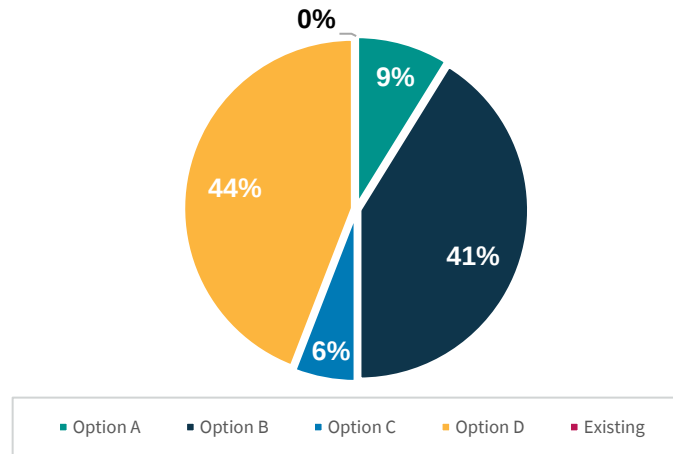


Figure 8: Illustrative Road Diet Corridor 15th Street S (Medary Ave S to 17th Ave S) Feedback



Illustrative Concept Comments:

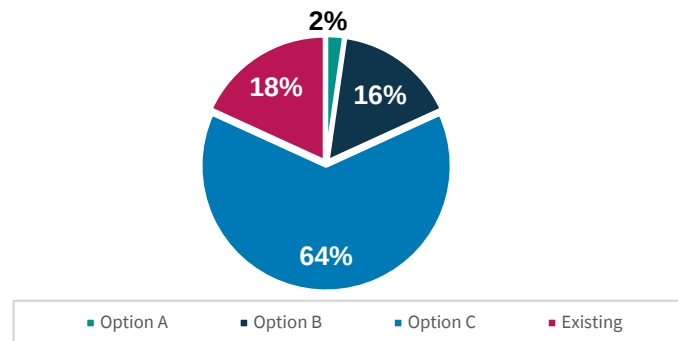
- Speeding issues have been observed along 15th Street S
- Prefer wider sidewalks near schools
- Consider curb extensions at intersection crossings along this corridor



Illustrative Concept Comments:

- Consider alternatives that avoid motorists crossing bike lanes to park
- Prefer concepts with greater degree of separation between bicyclists, pedestrians, and motorists

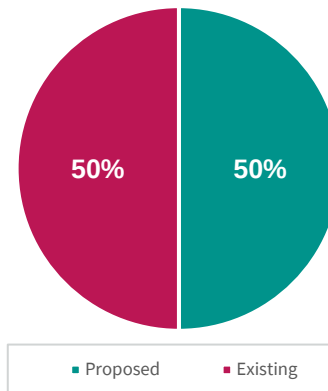
Figure 9: Illustrative Road Diet Corridor Summit Pass (16th Ave S to Western Ave S) Feedback



Illustrative Concept Comments:

- Mixed preferences for keeping the existing street section or Option C
- Prefer bike lane concepts with greater degree of separation between bicyclists, pedestrians, and motorists
- Add diagonal crosswalks at the 3rd Street & Main Avenue pedestrian scramble

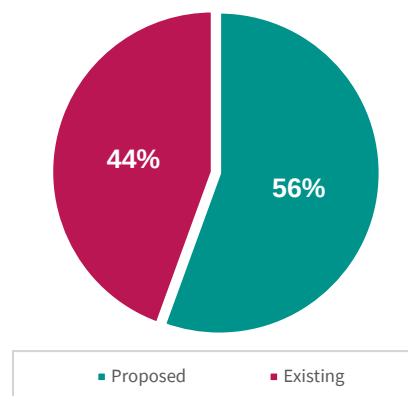
Figure 10: Illustrative Downtown Complete Streets Corridor Main Avenue Feedback



Illustrative Concept Comments:

- Consider bike lanes on one adjacent Downtown corridor but not both (either 3rd Avenue or 5th Avenue)
- Prefer bike lane concepts with on-street parking lanes between travel lanes and bike lanes

Figure 11: Illustrative Downtown Complete Streets Corridor 3rd Avenue Feedback



Illustrative Concept Comments:

- Consider bike lanes on one adjacent Downtown corridor but not both (either 3rd Avenue or 5th Avenue)
- Prefer bike lane concepts with on-street parking lanes between travel lanes and bike lanes

Figure 12: Illustrative Downtown Complete Streets Corridor 5th Avenue Feedback

4.4 Additional Outreach Opportunities (February 2025)

During the first period of public engagement, an additional BATP open house was held in conjunction with the South Dakota State University (SDSU) Institute of Transportation Engineers (ITE) student chapter. This open house was held in the evening on Wednesday, February 5, 2025 at Crothers Engineering Hall on the SDSU campus. This event gave SDSU civil engineering students an opportunity to experience an open house meeting and provide input on Brookings area transportation issues and needs and goals for the study. Overall, there were 49 students in attendance at this meeting.



SDSU ITE Open House #1: February 5, 2025

Similar to the stakeholder and public open house, the opportunities to provide comments and input included the travel survey, the budget priorities marble jar voting activity, and issues mapping. Frequent comments on issues and needs centered on the following items:

- Bicycle and pedestrian facility and crossing improvements along US14 / 6th Street with expanded connectivity to the SDSU Campus
- Safety enhancements for select intersections throughout the city
- Improve roadway lighting at select locations near the SDSU Campus
- Road maintenance

4.5 Additional Outreach Opportunities (March 2026)

Similar to the first round of public engagement, a second additional BATP open house was held at an SDSU ITE student chapter meeting on Wednesday, March 4, 2026 at Crothers Engineering Hall on the SDSU Campus. This event provided SDSU civil engineering students another opportunity to follow-up on the study, review preliminary recommendations, and provide feedback. Overall, there were 40 students in attendance at this meeting.



SDSU ITE Open House #2: March 4, 2026

The same materials presented at the February 2026 public and stakeholder open house meetings were shared at this additional open house. Feedback on the preliminary study recommendations included suggested locations for traffic control, turn lane, and signal improvements. Illustrative concept feedback was incorporated into the results previously reported.

5 Baseline Conditions

5.1 Existing Road Network

The Brookings area's existing road network shown in **Figure 13** depicts existing roads, bridges, and culverts (**Figure 13a**) and traffic signals, all-way stop control, and roundabout intersections (**Figure 13b**) with the current roadway jurisdiction and surface type (**Figure 13c**). The City of Brookings currently owns approximately 313 lane miles of roadway.

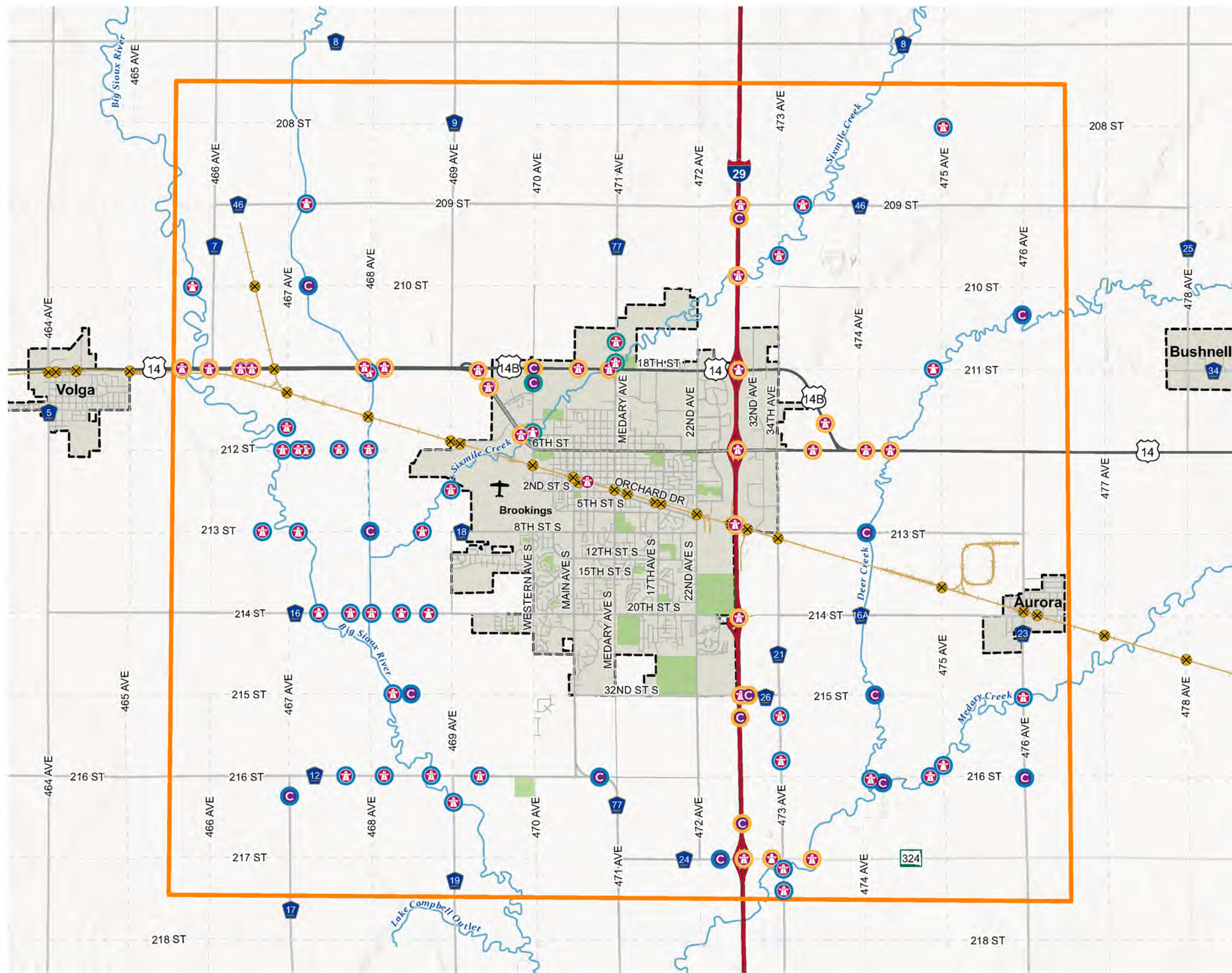
Federal Functional Classification is a system to classify public roadways based on their purpose, and access and mobility functions. The classification system is used to set design standards of roadways and monitor performance. Classification and subsequent changes are approved by the Federal Highway Administration (FHWA). The existing Federal Functional Classification of Brookings area roadways is shown in **Figure 14**.

Mobility refers to the efficiency of vehicular and freight movement.

Accessibility refers to the degree to which adjacent property can be accessed by vehicles, bicyclists, and pedestrians.



U.S. Highway 14 / 6th Street (between 17th Avenue and 20th Avenue)

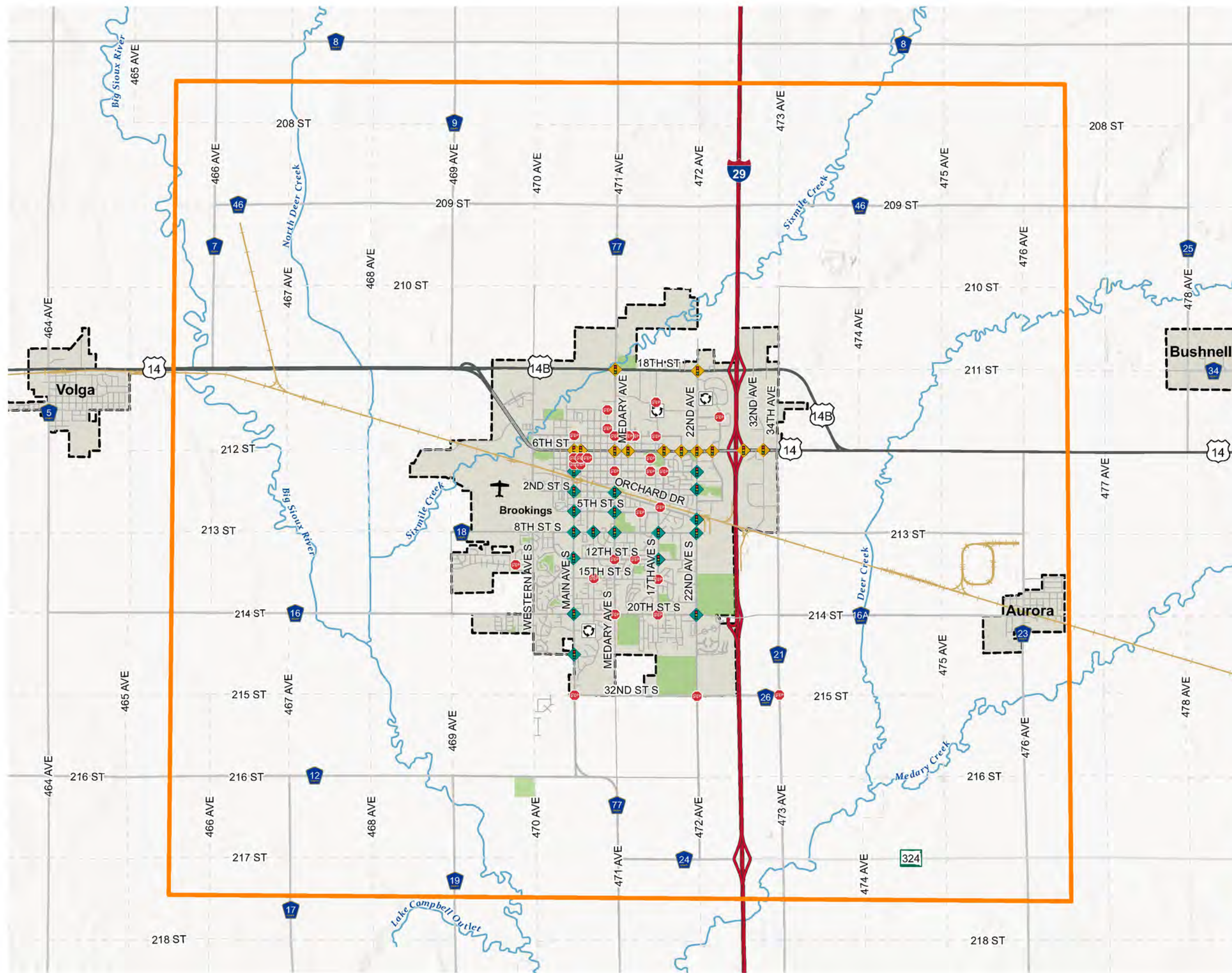


Existing Road Network (Jurisdiction & Structures)

- City Limits
- City Park & Greenspace
- Interstate
- US Highways
- State Highways
- County Roads
- City Road
- Township Roads
- At-Grade Railroad Crossing
- Bridge
- Culvert

Structure Owner

- State of South Dakota
- Brookings County
- City of Brookings

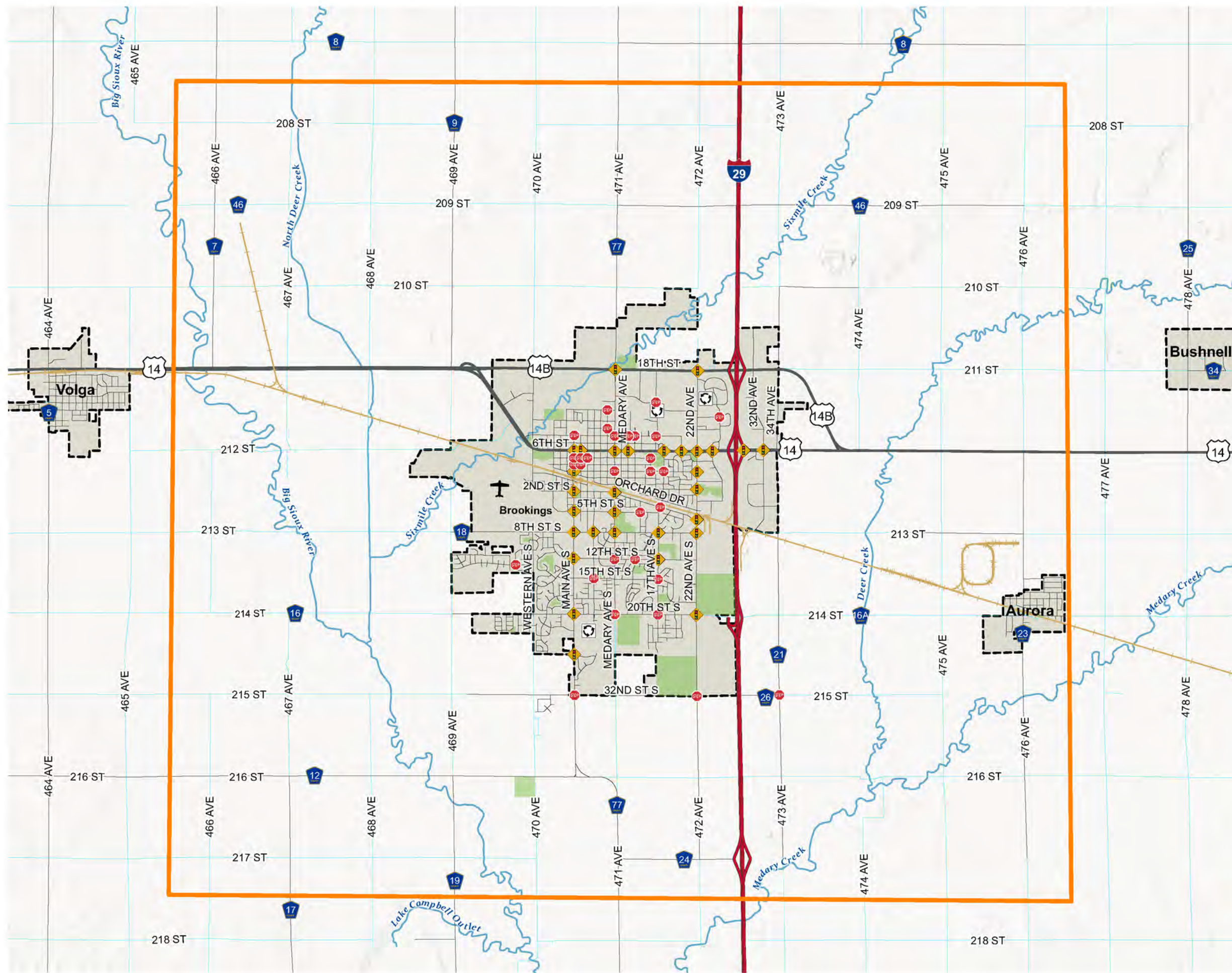


Existing Road Network (Jurisdiction & Intersections)

- City Limits
- City Park & Greenspace
- Interstate
- US Highways
- State Highways
- County Roads
- City Road
- Township Roads
- Roundabout Intersections
- All Way Stop-Control Intersections
- Signal Owned / Maintained**
 - City Owned and Maintained
 - State Owned / City Maintained



Figure 13b



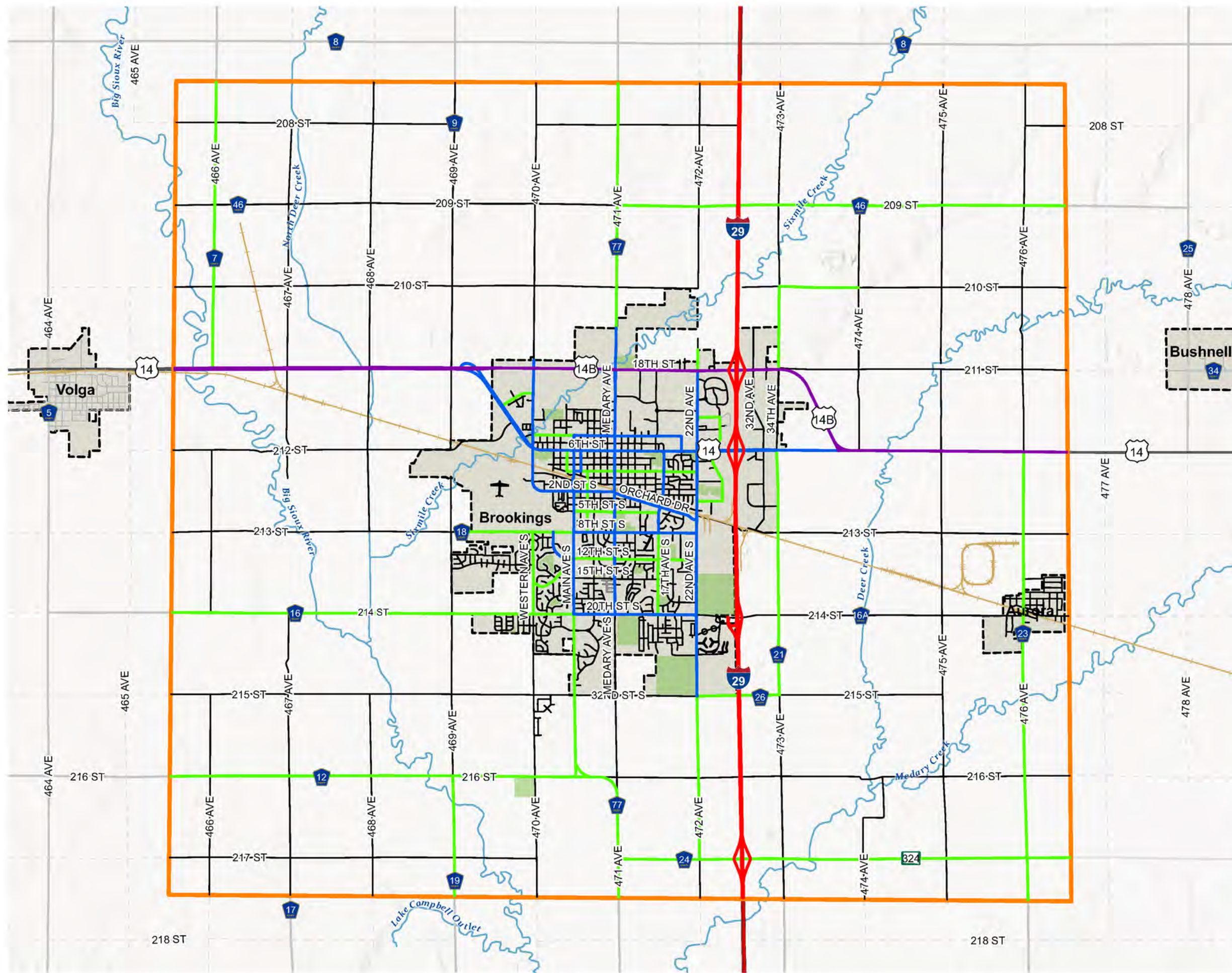
Existing Road Network (Surface Type)

- City Limits
- City Park & Greenspace
- Interstate
- Gravel
- Paved
- Roundabout Intersections
- All Way Stop-Control Intersections
- Signalized Intersections

0 2 Miles



Figure 13c



Federal Functional Classification

- Study Area
- City Limits
- City Park & Greenspace
- Functional Classification**
 - Interstate
 - Other Freeways and Expressways
 - Arterials
 - Collectors
 - Local Streets

0 2 Miles



Figure 14



5.2 Safety Review

A crash history review was conducted to evaluate transportation safety performance within the City of Brookings and throughout the BATP study area. The safety review examined crashes associated with intersections, corridor segments, fatal and serious injuries, vulnerable road users (VRUs) (bicyclists and pedestrians), and 2024 South Dakota Strategic Highway Safety Plan (SHSP) safety emphasis areas. While all reported crashes were investigated, crashes that resulted in an injury were prioritized throughout the analysis in accordance with the Safe System Approach (SSA).

The analysis used data sourced from the State of South Dakota crash database of reported crashes from January 2019 through June 2024 (5 ½ years). Additional information is provided in the *Crash History Review Memo* in **Appendix B**. This review focused on the local area road network and does not include crashes along Interstate 29 freeway or ramp segments present in the study area. Crashes occurring prior to or during roadway reconstruction projects in the study area were also excluded from the data selection.

Brookings Area and City of Brookings Crash Summary

A total of 1,447 crashes and 259 injury crashes were reported on local roads between January 2019 and June 2024 within the BATP study area. Total crashes saw a notable 18 percent decline in 2020 but steadily increased in subsequent years to a similar amount by 2023, as shown in **Figure 15**. Injury crashes continually declined from 2019 to 2022 although a 75 percent increase was observed in 2023. It should be noted that 2020 coincided with the COVID-19 Public Health Pandemic that saw shelter-in-place orders and changes in daily work and travel habits.

Crashes by month are summarized in **Figure 16**. The fall and winter months of October through January exhibited the highest total crash frequencies with August and September observing the highest injury crashes. Winter weather is a time of heightened crash risk due to snow and ice road conditions and shortened daylight hours. The months with the lowest total crash frequency were April through July.

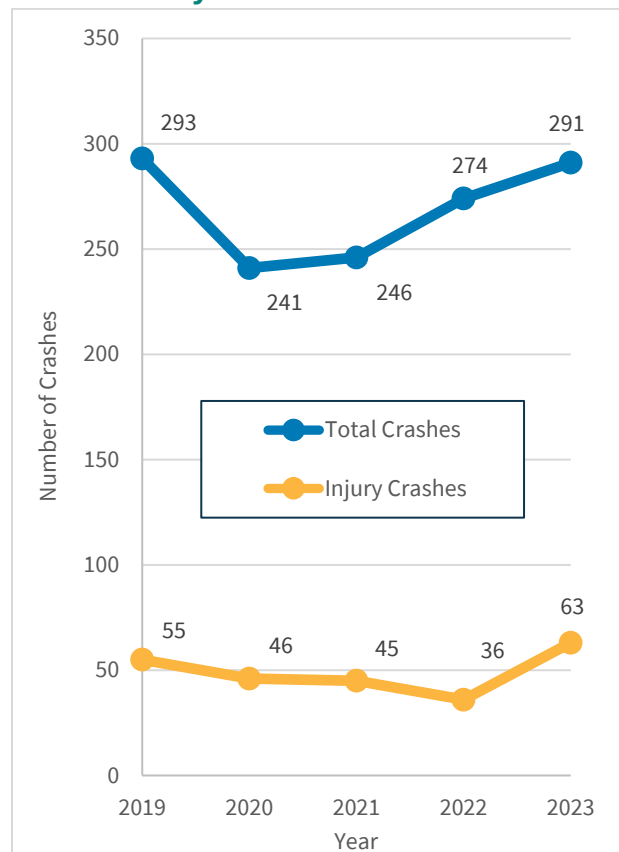


Figure 15: Brookings Area Annual Crashes (2019 – 2023)

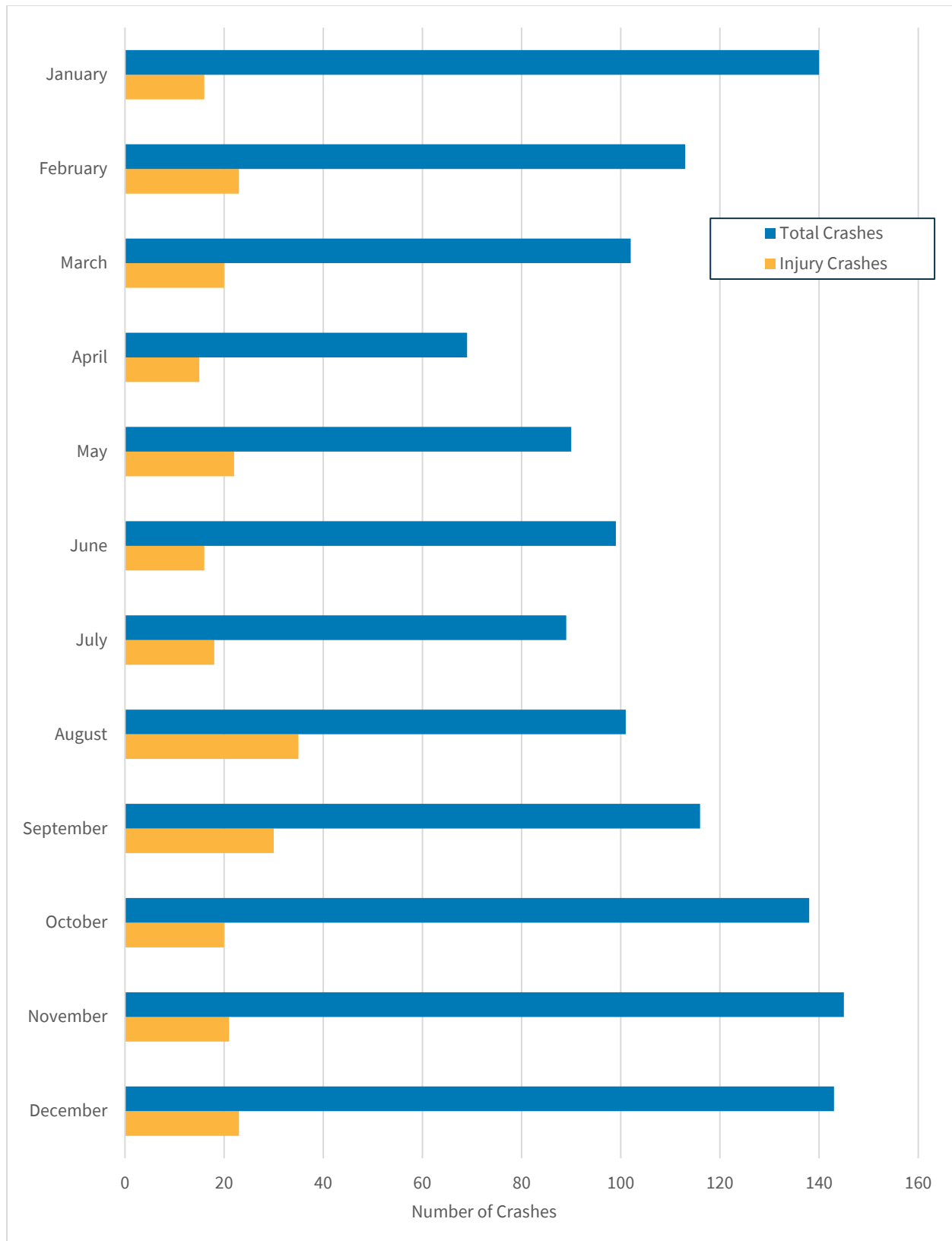


Figure 16: Brookings Area Crashes by Month (2019 – 2023)

Weighted crash density for the study area, which accounts for injury severity levels, is shown in **Figure 17**. Areas with higher crash density are consistent with high volumes and levels of conflict, such as I-29 interchanges and intersections along US14 / 6th Street, U14 Bypass / 18th Street, 22nd Avenue, Medary Avenue, Main Avenue, 8th Street S, and 17th Avenue corridors. Weighted crash density is depicted at for both the BATP study area (**Figure 17a**) and current City of Brookings limits (**Figure 17b**).

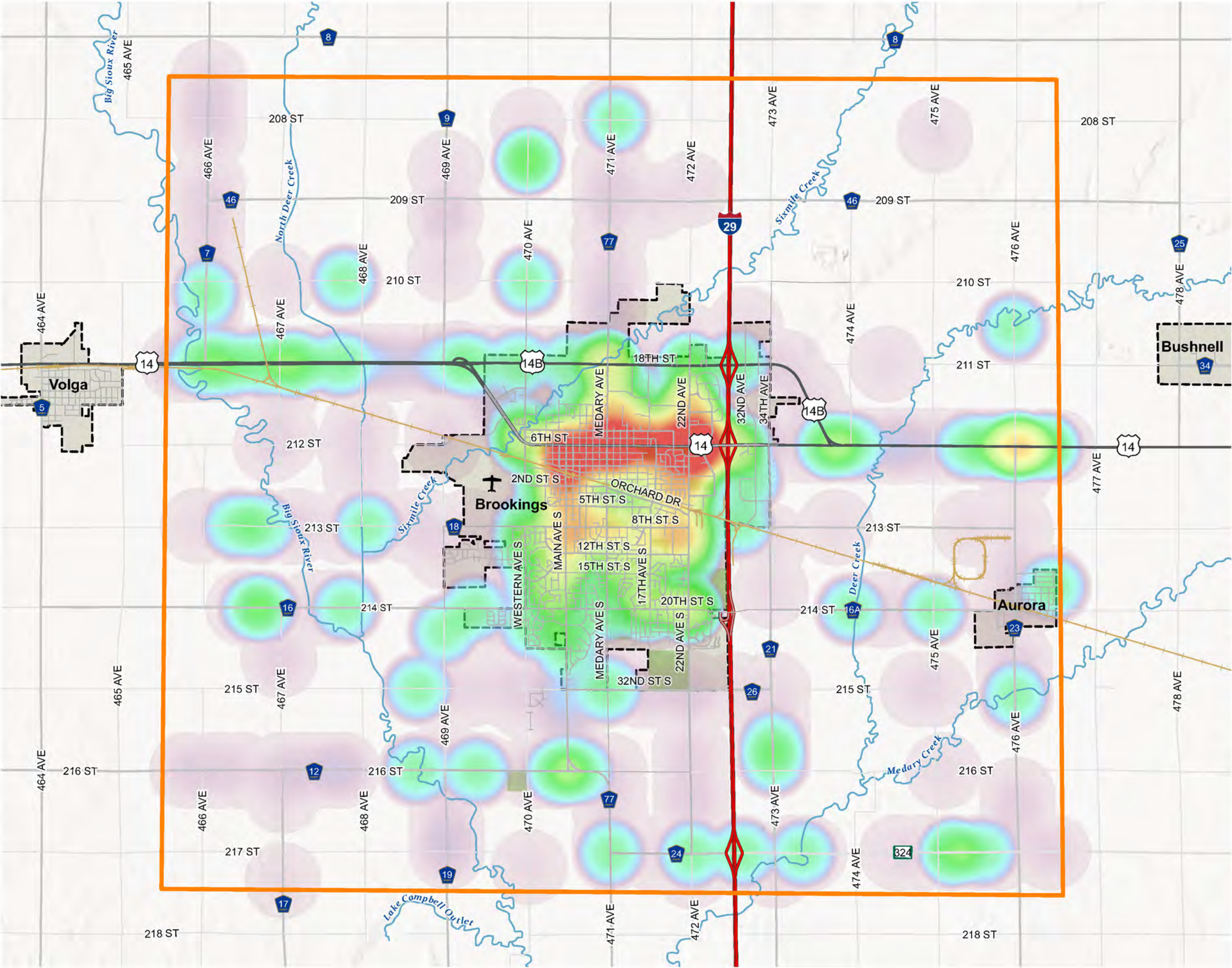
Study area crashes sorted by injury severity and type (manner) of crash are shown in **Table 16** and **Table 17** respectively. Approximately 18 percent of the reported crashes resulted in an injury while the remaining 82 percent were property damage only (PDO). The most common crash types were single vehicle (34 percent), angle (33 percent), and rear-end (20 percent). Compared to 2024 South Dakota SHSP safety emphasis areas, crashes at intersections (38 percent), crashes involving young drivers (age 20 and younger) (33 percent), lane departures (23 percent), aggressive and speed-related crashes (16 percent), and crashes involving older drivers (15 percent) were the most frequent emphasis area crash types in the study area.

Table 16: Brookings Area Crashes by Severity (January 2019 – June 2024)

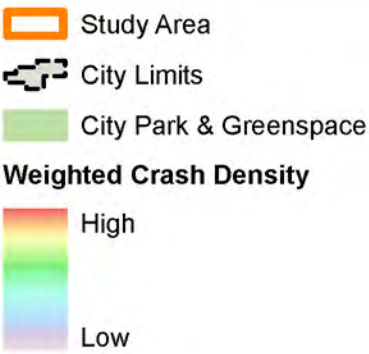
INJURY SEVERITY	CRASHES	PERCENT OF CRASHES
Fatal Injury	4	<0.3%
Serious Injury	17	1.2%
Minor Injury	105	7.3%
Possible Injury	133	9.2%
No Injury	945	65.3%
Wild Animal-Related	240	16.6%
Other	3	<0.3%
Total Crashes	1,447	

Table 17: Brookings Area Crashes by Manner of Crash (January 2019 – June 2024)

MANNER OF CRASHES	CRASHES	PERCENT OF CRASHES
Single Vehicle	493	34.1%
Angle	474	32.8%
Rear End	290	20.0%
Wild Animal-Related	106	7.3%
Sideswipe	64	4.4%
Head-on	20	1.4%
Total Crashes	1,447	



Weighted Crash Density
Brookings ATP Study Area
(January 2019 - June 2024)



Injury Severity	Crashes		Persons Involved	
Fatal Injury	4	<1%	4	<1%
Serious Injury	17	1%	23	1%
Minor Injury	105	7%	129	5%
Possible Injury	133	9%	165	7%
No Injury	945	65%	1,912	76%
Wild Animal Hit	240	17%	235	9%
Other	3	<1%	55	2%
Total	1,447		2,369	

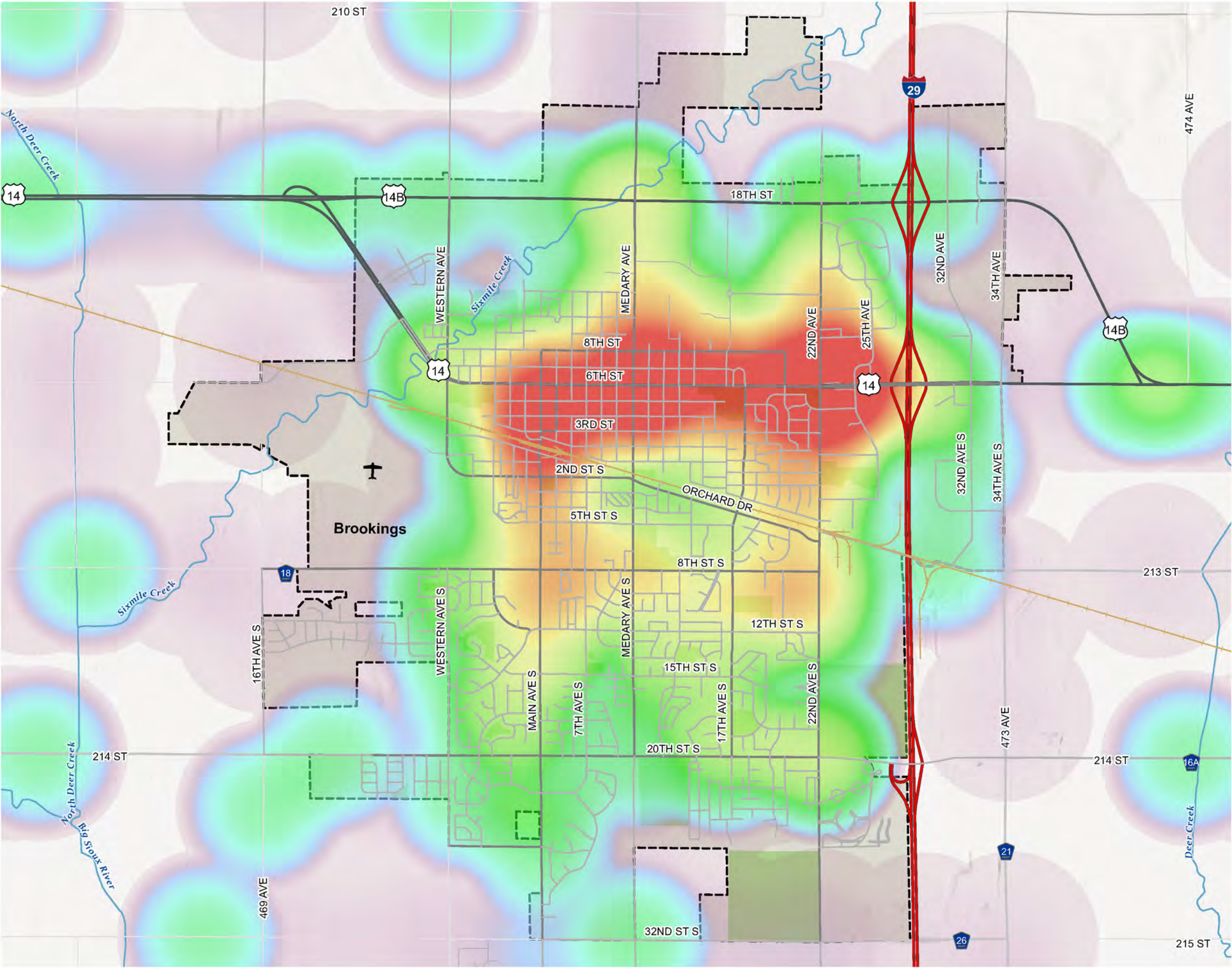
Crash and persons involved frequencies reflect those reported within the Brookings ATP study area (except along I-29 mainline and ramp segments and locations that were reconstructed during the observation period).

Note: Weighted crash density accounts for crash frequency and severity by applying weighting factors related to injury severity.

0 2 Miles



Figure 17a



Weighted Crash Density
City of Brookings
(January 2019 - June 2024)

- City Limits
- City Park & Greenspace
- Weighted Crash Density
 - High
 - Low

Injury Severity	Crashes		Persons Involved	
Fatal Injury	1	<1%	1	<1%
Serious Injury	11	1%	12	<1%
Minor Injury	72	7%	86	4%
Possible Injury	121	12%	141	7%
No Injury	780	76%	1,668	84%
Wild Animal Hit	38	4%	38	2%
Other	3	<1%	51	3%
Total	1,026		1,997	

Crash and persons involved frequencies reflect those reported within City of Brookings limits (except along I-29 mainline and ramp segments and locations that were reconstructed during the observation period).

Note: Weighted crash density accounts for crash frequency and severity by applying weighting factors related to injury severity.



Figure 17b

Downtown Brookings Crash Summary

Similar to the overall study area, crashes were summarized for the Downtown Brookings area. A total of 49 crashes and 10 injury crashes were reported on downtown roads between January 2019 and June 2024. Total crashes, although relatively low, tripled between 2020 and 2021 and then started to decline in 2023, as shown in **Figure 18**. Injury crashes also increased from 1 to 5 crashes between 2020 and 2021 and returned to the pre-2021 average following that period.

Downtown area crashes by month are summarized in **Figure 19**. The months of October, December, January, February, and May exhibited the highest total crash frequencies. In addition to winter weather considerations with this time, several of these months correspond to when more SDSU college students are back on campus, the SDSU football season, end of the semester, Hobo Day, or spring graduation which typically involve more college student traffic downtown.

Like the study area, weighted crash density was reviewed for Downtown Brookings and is depicted in **Figure 20**. Areas with higher crash density are consistent with high vehicle and pedestrian volumes and levels of conflict, such as along Main Avenue and portions of 3rd Avenue and 5th Avenue corridors. Intersections with higher crash densities include Main Avenue & 3rd Street and Main Avenue & 4th Street, where notably a bicyclist crash occurred in April 2024 which resulted in fatal injuries.

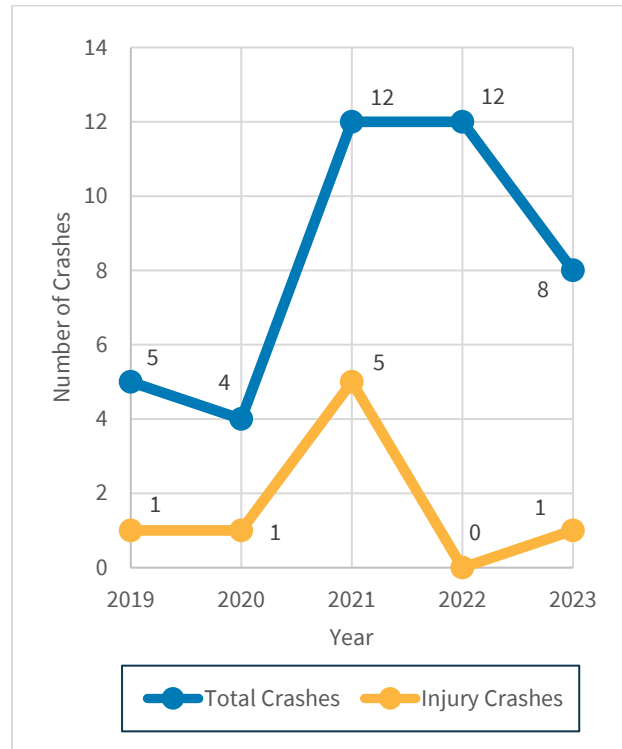


Figure 18: Downtown Brookings Annual Crashes (2019 – 2023)

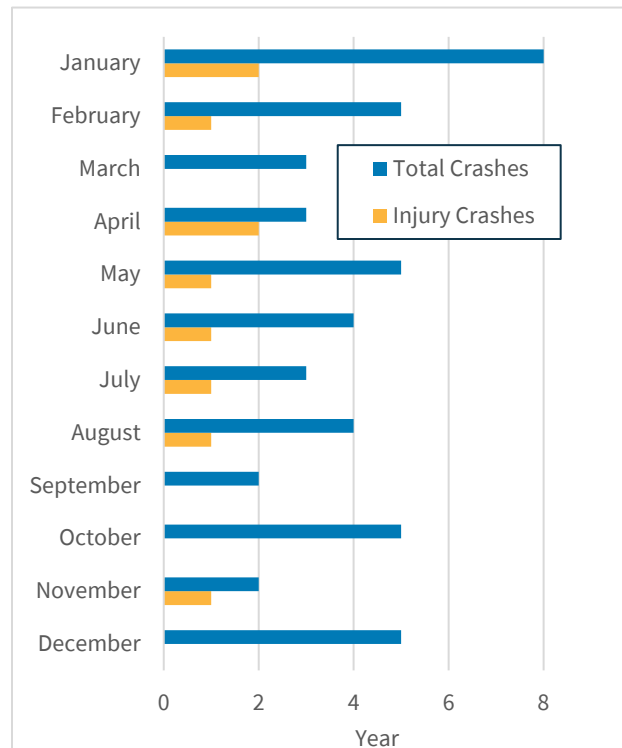
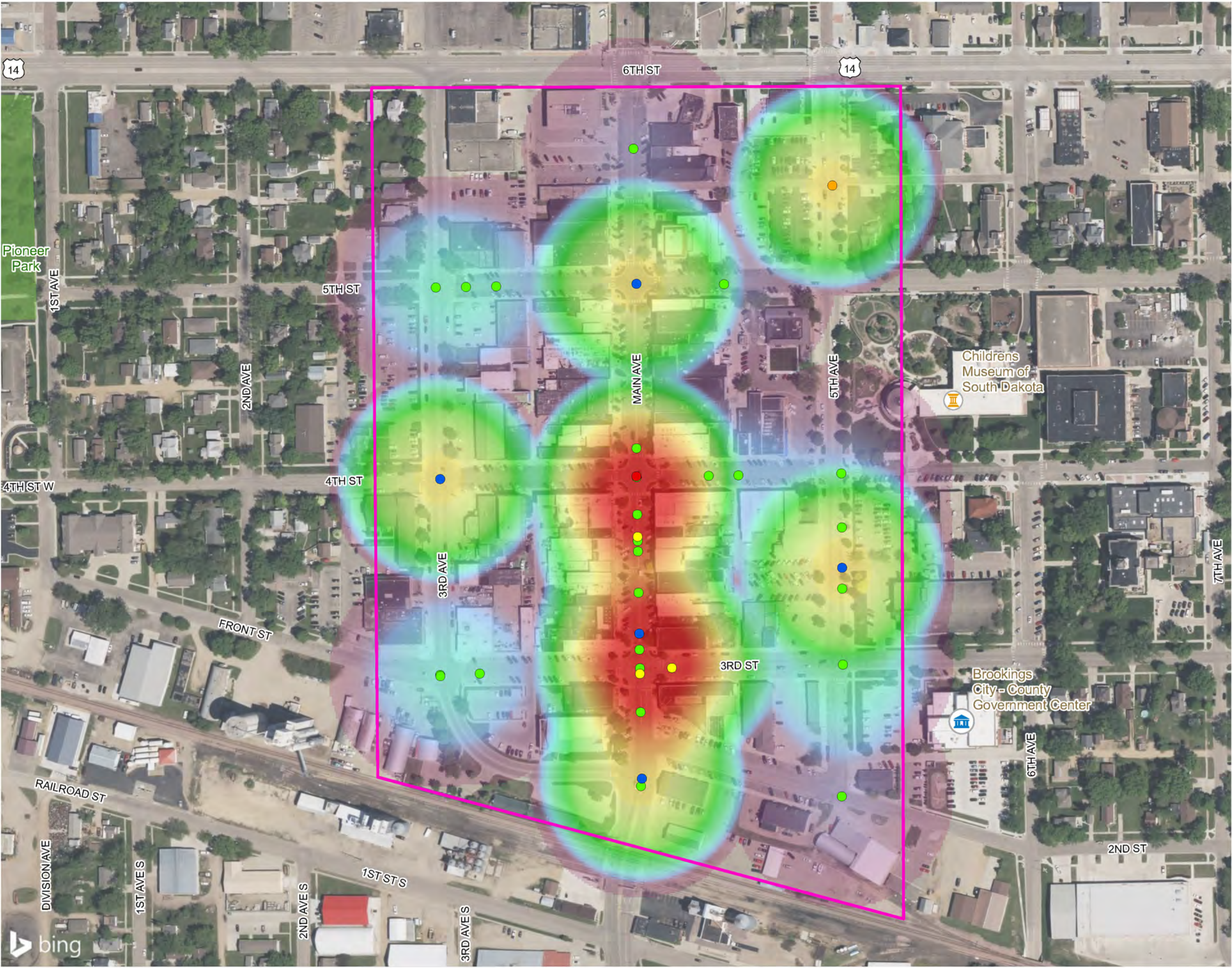


Figure 19: Downtown Brookings Crashes by Month (2019 – 2023)



Weighted Crash Density
Downtown Brookings
(January 2019 - June 2024)

- Downtown Study Area
 - City Park & Greenspace
- Injury Severity**
- Fatal
 - Serious
 - Minor
 - Possible
 - No Injury
- Weighted Crash Density**
- High
- Low

Injury Severity	Crashes		Persons Involved	
Fatal Injury	1	2%	2	2%
Serious Injury	1	2%	2	2%
Minor Injury	3	6%	7	7%
Possible Injury	5	10%	12	12%
No Injury	39	80%	79	77%
Wild Animal Hit	0	0%	0	0%
Other	0	0%	0	0%
Total	49		102	

Note: Weighted crash density accounts for crash frequency and severity by applying weighting factors related to injury severity.



Figure 20

Downtown Brookings area crashes sorted by injury severity and type (manner) of crash are shown in **Table 18** and **Table 19** respectively. Approximately 20 percent of the reported crashes resulted in an injury while the remaining 80 percent were property damage only (PDO). The most common crash types were angle (55 percent), single vehicle (25 percent), and rear-end (18 percent). Compared to 2024 South Dakota SHSP safety emphasis areas, crashes at intersections (55 percent), crashes involving young drivers (age 20 and younger) (49 percent), lane departures (27 percent), crashes involving older drivers (24 percent), and aggressive and speed-related crashes (16 percent) were the most frequent emphasis area crash types in the study area. Each of these five emphasis area groups were represented proportionally higher in downtown area compared to the study area overall.

Table 18: Downtown Brookings Crashes by Severity (January 2019 – June 2024)

INJURY SEVERITY	CRASHES	PERCENT OF CRASHES
Fatal Injury	1	2.0%
Serious Injury	1	2.0%
Minor Injury	3	6.2%
Possible Injury	5	10.2%
No Injury	39	79.6%
Total Crashes	49	

Table 19: Downtown Brookings Crashes by Manner of Crash (January 2019 – June 2024)

MANNER OF CRASHES	CRASHES	PERCENT OF CRASHES
Angle	27	55.1%
Single Vehicle	12	24.5%
Rear End	9	18.4%
Sideswipe	1	2.0%
Head-on	0	0.0%
Total Crashes	49	

Intersections

Intersection crash history was reviewed to identify locations that may benefit from safety improvements. Crashes occurring within the intersection functional area were categorized as an intersection crash for this review. Intersections were reviewed using two methods:

- **Crash frequency:** number of crashes occurring at an intersection
- **Elevated crash index tiers:** accounts for injury crash frequency and traffic volumes entering an intersection to provide a normalized measure in terms of crashes per million entering vehicles (MEV), injury severity weighting factors, relationship to area wide intersection weighted injury crash rates, and tiers that correspond to safety priority

A summary of intersections with reported injury crashes is provided in **Table 20**. Major corridors exhibiting high frequency crash intersections include US14 / 6th Street, 22nd Avenue, Medary Avenue, Main Avenue, 8th Street S, US14 Bypass / 18th Street, and 17th Avenue.

Table 20: Brookings Area Intersection Weighted Injury Crash Indexes (January 2019 – June 2024)

RANK	INTERSECTION	TRAFFIC CONTROL DEVICE	TOTAL INJURY CRASHES	INJURY SEVERITY				WEIGHTED INJURY CRASHES	DAILY ENTERING VOLUME	WEIGHTED INJURY CRASH INDEX [#]
				Fatal	Serious	Minor	Possible			
1	22nd Avenue S & 20th Street S*	Signal	4	0	1	1	2	12	6,000	4.23
2	US14 & BC Hwy 23 / 476th Avenue	TWSC	6	1	1	3	1	27	4,900	4.01
3	4th Street & 11th Avenue	None	2	0	0	1	1	6	1,000	2.39
4	Main Avenue & 4th Street	AWSC	1	1	0	0	0	12	6,200	1.51
5	US14 / 6th Street & I-29 Exit 132 NB RTI	Signal	3	0	0	1	2	9	3,500	1.45
6	22nd Avenue & University Boulevard	TWSC	5	0	0	4	1	15	9,100	1.42
7	20th Street S & 17th Avenue S*	AWSC	1	0	0	0	1	3	4,200	1.37
8	4th Street & 9th Avenue	Yield	1	0	0	0	1	3	1,000	1.20
9	US14 / 6th Street & Sunrise Ridge Road	Signal	5	0	0	0	5	15	9,300	1.18
10	5th Street & 8th Avenue	Yield	1	0	0	1	0	3	1,200	1.10
11	US14 / 6th Street & Medary Avenue	Signal	9	0	0	4	5	27	21,100	1.08
12	US14 / 6th Street & 22nd Avenue	Signal	9	0	0	5	4	27	23,000	1.01
13	US14 Bypass / 18th Street & Medary Avenue	Signal	5	0	0	1	4	15	11,900	0.97
14	BC Hwy 77 & BC Hwy 24	TWSC	1	0	0	0	1	3	1,500	0.96
15	Medary Avenue & 11th Street	TWSC	3	0	0	2	1	9	6,300	0.95
16	US14 / 6th Street & 3rd Avenue	TWSC	3	0	0	2	1	9	8,600	0.89
17	12th Street S & Main Avenue S	Signal	4	0	0	2	2	12	11,200	0.81
18	SD324 & I-29 Exit 127 NB RTI	TWSC	1	0	0	0	1	3	2,000	0.80
19	22nd Avenue & South Wal-Mart Access	TWSC	3	0	1	1	1	9	10,300	0.77

RTI: Ramp Terminal Intersection; AWSC: All-Way Stop Control; TWSC: Two-Way Stop Control

* Crash totals are revised to exclude crashes that occurred before or during a major roadway project during the crash history review period

Weighted Critical Index Ratio reflects injury crashes only[#]

Elevated Crash Index Tiers: **Tier 1 (higher priority): ≥ 1.50** , **Tier 2 (medium priority): 1.00-1.50**, **Tier 3 (lower priority): 0.75-1.00**

Brookings Area Interstate 29 Freeway and Ramp Segments

While the primary focus of the crash history review was the local roadway network, a cursory review of Brookings area I-29 freeway and ramp segment crash history was performed. This review consisted of reviewing trends at I-29 freeway and ramp segments in study area which are identified in cyan in **Figure 21**.

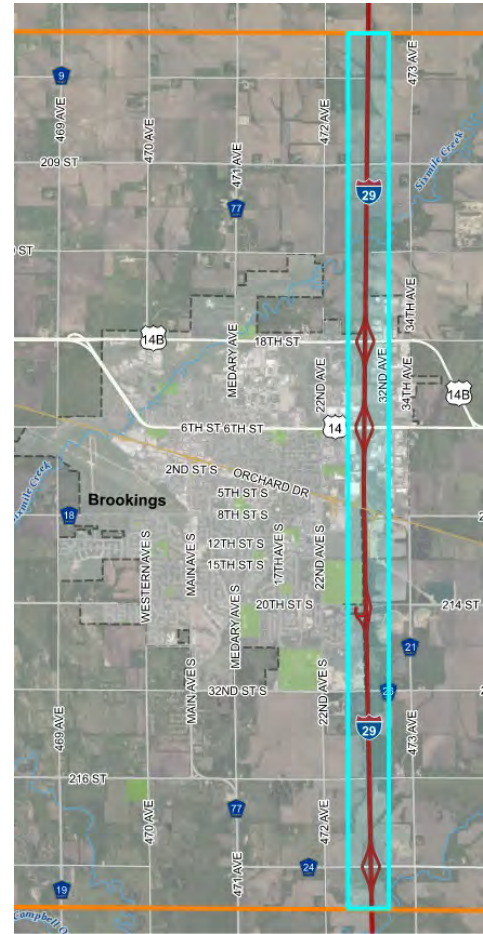
Interchange ramp terminal intersections (RTI) are summarized separately in the intersection crash summary. The following crash trends on area freeway and ramp segments were observed:

Brookings Area I-29 Freeway Segments:

- 1 fatal injury crash occurred nearly 1 mile north of I-29 Exit 130 in the northbound direction involving a rear-end collision with a tractor/semi-trailer
- 2 serious injury crashes (1 in the northbound direction and 1 in the southbound direction) involving single vehicle collisions and lane departures during winter weather conditions
- 67 percent were single vehicle collisions (141 crashes)
- 30 percent occurred on winter weather road surface conditions (63 crashes)
- 21 percent were wild animal-related (44 crashes)
- 21 percent involved speeding (43 crashes)
- 10 percent were rear-end collisions (20 crashes)

Brookings Area I-29 Ramp Segments:

- No injury crashes occurred along study area interchange ramp segments
- I-29 Exit 133 (US14 Bypass / 18th Street) interchange ramp segments: 0 crashes
- I-29 Exit 132 (US14 / 6th Street) interchange ramp segments: 3 crashes
 - All occurred on the northbound off-ramp
 - All were non-injury collisions
 - All were rear-end collisions
- I-29 Exit 130 (20th Street S) interchange ramp segments: 0 crashes (since interchange opening in August 2023)



Corridor Segments

Corridor segment crash history was reviewed to identify locations that may benefit from safety improvements. Crashes occurring outside of major intersection functional areas were categorized as a corridor segment crash for this review. Like intersections, corridor segments were reviewed using crash frequency and elevated crash index tiers.

A summary of corridor segments with reported injury crashes is provided in **Table 21**.

Fatal and Serious Injury Crashes

Crashes that resulted in either a fatality or serious injury are shown in **Figure 22** with the BATP study area depicted in **Figure 22a** and the City of Brookings limits shown in **Figure 22b**. Throughout the BATP study area, four fatal and 17 serious injury crashes occurred between January 2019 and June 2024.

The four fatal injury crashes occurred at the following locations:

- **US14 & BC Hwy 23 intersection** (involved a motorcyclist lane departure)
- **SD324 (approx. ¼ mile east of 475th Ave)** (involved a wild animal collision with two vehicles)
- **470th Avenue (approx. ½ mile north of 209th St)** (single vehicle collision)
- **Main Avenue & 4th Street intersection** (vehicle / bicyclist collision)

Overall, fatal injury crashes were mostly observed in rural areas, while serious injury crashes were largely reported within City limits. For the 17 observed serious injury crashes, most were within City limits (65 percent), occurred along corridor segments (65 percent), were single vehicle collisions (59 percent), and took place on urban arterial streets (41 percent).

Vulnerable Road Users (Bicyclists and Pedestrians)

Vulnerable road user (bicyclist and pedestrian) related crashes, categorized by injury severity, are shown in **Figure 23**. In total, 28 such crashes occurred within City of Brookings limits from January 2019 through June 2024. Nearly 61 percent of VRU crashes involved pedestrians and 50 percent occurred on urban arterial streets. These crashes were most frequent along the Medary Avenue, Main Avenue, and US14 / 6th Street corridors. All crashes resulted in an injury, highlighting the innate vulnerability of people biking and walking and the high potential for them to be injured when struck by a motor vehicle.

3 VRU crashes resulted in either a fatality or serious injury and occurred at the following locations:

- **Main Avenue & 4th Street intersection** (vehicle / bicyclist collision)
- **5th Avenue (approx. 250 ft. from US14 / 6th St near alley)** (vehicle / pedestrian collision)
- **US14 / 6th Street & Campanile Avenue intersection** (vehicle / bicyclist collision)

Locations with multiple VRU crashes include:

- **8th Street & Jackrabbit Avenue intersection** (2 VRU crashes)
- **12th Street S & Christine Avenue intersection** (2 VRU crashes)
- **US14 / 6th Street & 17th Avenue intersection** (2 VRU crashes)
- **Medary Avenue & 11th Street intersection** (2 VRU crashes)

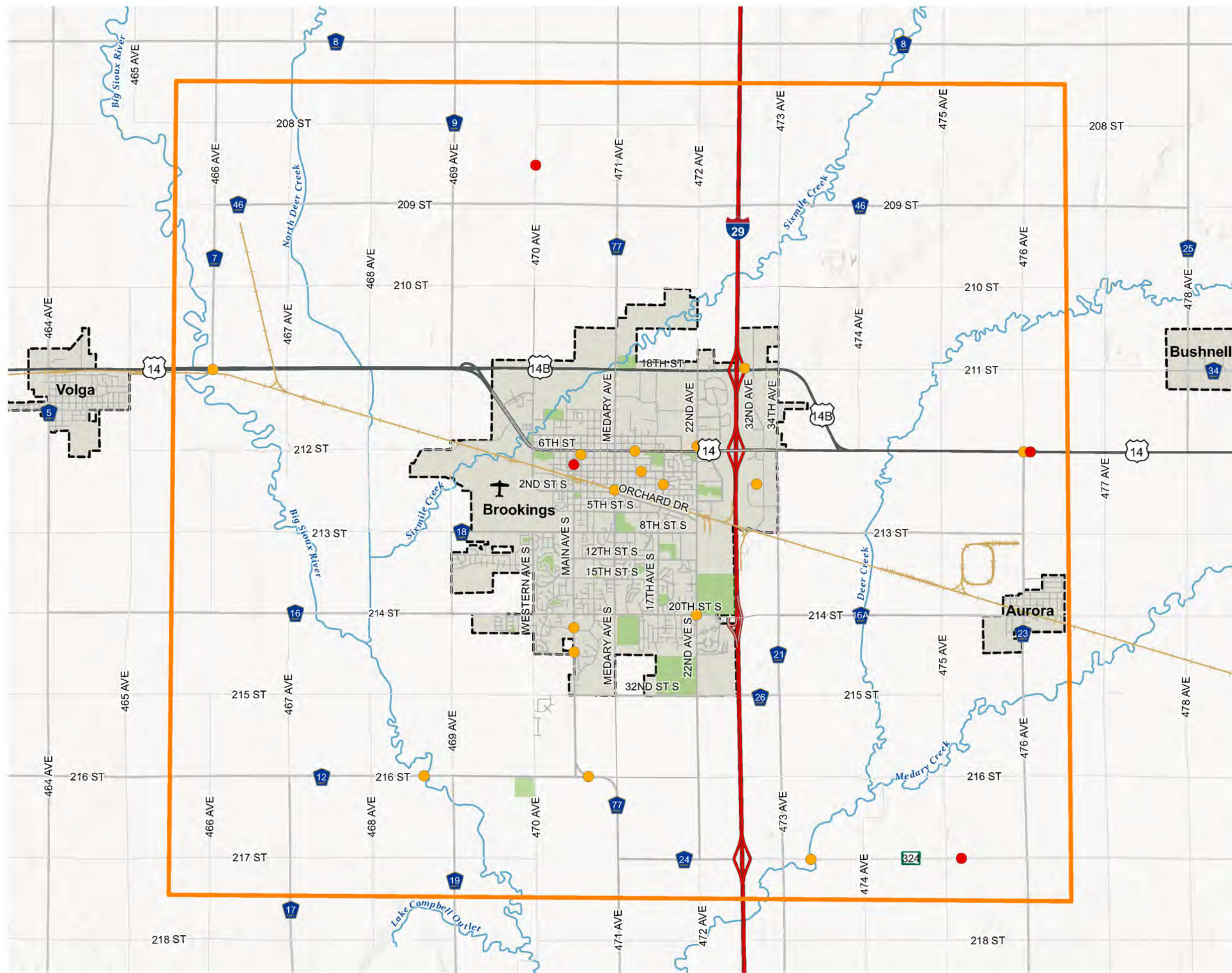
Table 21: Brookings Area Corridor Segments Weighted Injury Crash Indexes (January 2019 – June 2024)

RANK	CORRIDOR SEGMENT	TOTAL INJURY CRASHES	INJURY SEVERITY				WEIGHTED INJURY CRASHES	DAILY ENTERING VOLUME	LENGTH (MI)	WEIGHTED INJURY CRASH INDEX#
			Fatal	Serious	Minor	Possible				
1	Western Avenue: US14B / 18 th St to 208 th St	2	1	0	1	0	15	200	3.00	5.86
2	BC Hwy 21: 216 th Street to BC Hwy 26 / 32 nd St S	2	0	0	2	0	6	300	1.00	2.69
3	Southland Lane: 8 th St S to 12 th St S	2	0	0	1	1	6	1,500	0.33	2.17
4	17th Avenue S: 15 th St S to 20 th St S	2	0	0	0	2	6	1,300	0.43	2.05
5	BC Hwy 12: BC Hwy 77 to 470 th Ave	2	0	0	2	0	6	1,500	0.50	1.68
6	213th Street: 466 th Ave to W 16 th Ave S	3	0	0	3	0	9	500	3.00	1.64
7	BC Hwy 16: 466th Avenue to 469th Avenue	3	0	0	3	0	9	500	3.00	1.64
8	12th Street S: Medary Avenue S to 17th Avenue S	2	0	0	0	2	6	1,900	0.54	1.42
9	SD324: I-29 Exit 127 NB RTI to BC Hwy 23	3	1	1	1	0	18	1,400	3.39	1.40
10	5th Avenue: US14 / 6 th St to 5 th Street	1	0	1	0	0	3	3,600	0.09	1.37
11	US14 / 6th Street: 17 th Ave to 20 th Ave	4	0	0	2	2	12	14,800	0.21	1.31
12	Sunrise Ridge Road: US14 / 6 th St to 25 th Ave	1	0	0	0	1	3	2,100	0.17	1.30
13	Main Avenue: 3 rd St to 4 th St	1	0	0	1	0	3	5,300	0.08	1.18
14	472nd Avenue: BC Hwy 24 to 218 th St	1	0	1	0	0	3	500	1.00	1.08
15	8th Street S: Southland Ln to 17 th Ave S	2	0	0	0	2	6	6,800	0.27	0.95
16	Medary Avenue: 3 rd St to US14 / 6 th St	2	0	0	1	1	6	8,900	0.25	0.84
17	8th Street S: Medary Ave S to 7 th Ave S	2	0	0	1	1	6	8,600	0.26	0.83
18	17th Avenue: 3 rd St to Orchard Dr	2	0	1	0	1	6	5,200	0.44	0.82
19	Main Avenue S: Sweetgrass/Blue Bell Dr to 20 th St S	1	0	1	0	0	3	4,300	0.20	0.79
20	BC Hwy 16A: BC Hwy 21 to City of Aurora Limits	2	0	0	1	1	6	1,000	2.50	0.77
21	5th Street S: Medary Ave S to 17 th Ave S	1	0	1	0	0	3	1,700	0.54	0.75

* Crash totals are revised to exclude crashes that occurred before or during a major roadway project during the crash history review period

Weighted Critical Index Ratio reflects injury crashes only

Elevated Crash Index Tiers: **Tier 1 (higher priority): ≥ 1.50**, **Tier 2 (medium priority): 1.00-1.50**, **Tier 3 (lower priority): 0.75-1.00**



Fatal & Serious Injury Crash History Brookings ATP Study Area (January 2019 - June 2024)

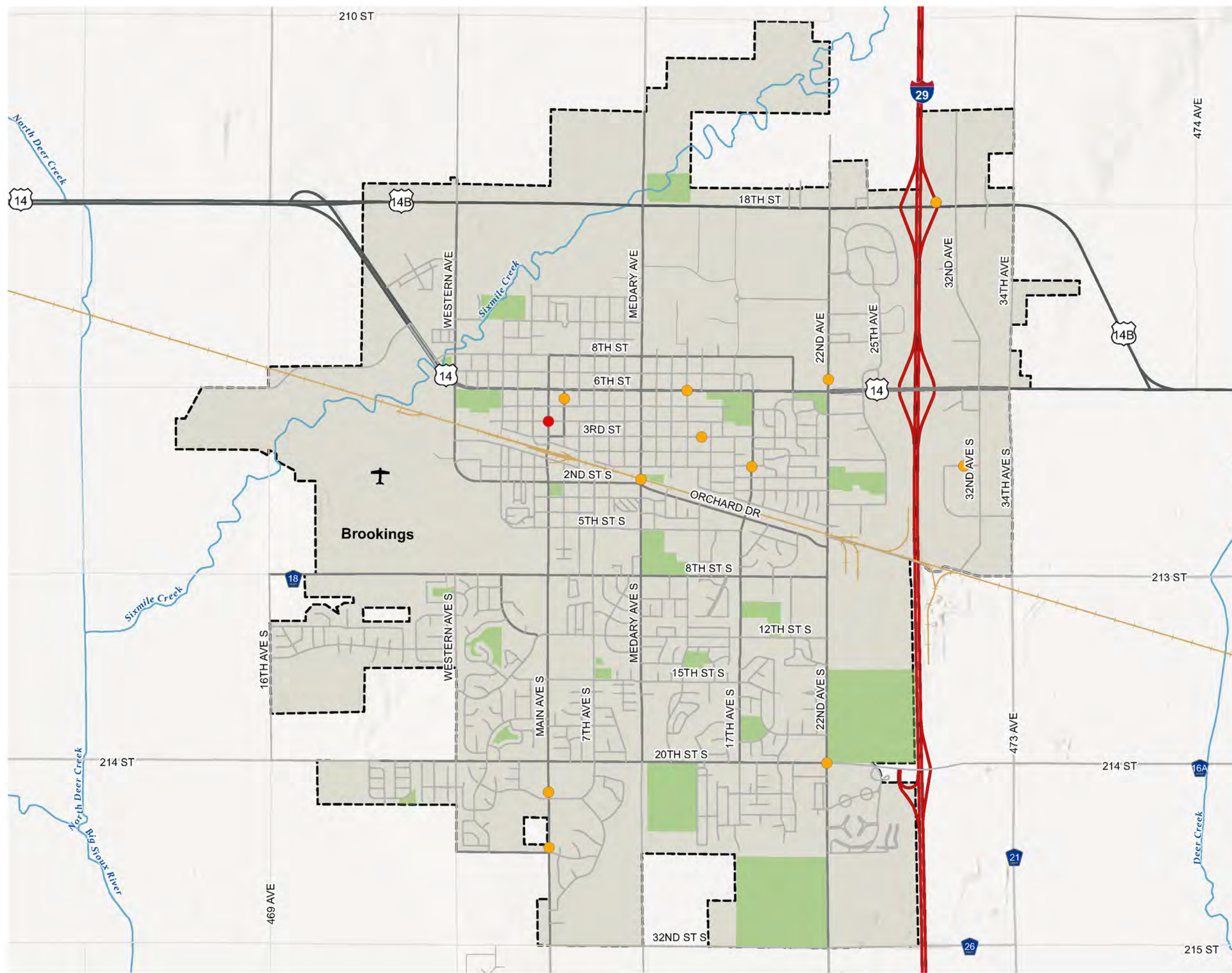
- Study Area
- City Limits
- City Park & Greenspace
- Injury Severity**
 - Fatal
 - Serious

Injury Severity	Crashes	Persons Involved
Fatal Injury	4	4
Serious Injury	17	23
Fatal & Serious Injury Total	21	27

Fatal & Serious Injury crash and persons involved frequencies reflect those reported within the Brookings ATP study area (except along I-29 mainline and ramp segments and locations that were reconstructed during the observation period).



Figure 22a



Fatal & Serious Injury Crash History City of Brookings (January 2019 - June 2024)

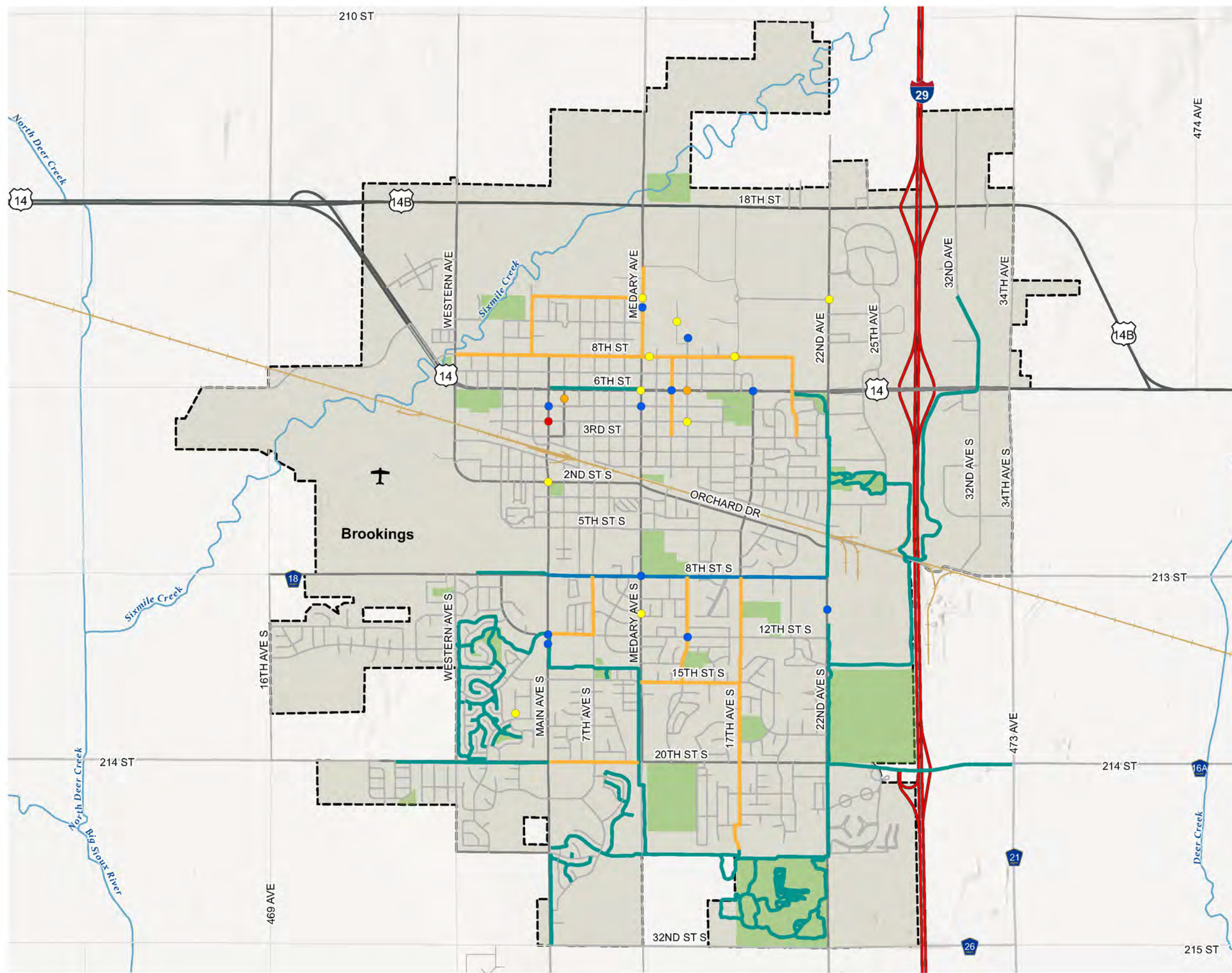
- City Limits
- City Park & Greenspace
- Injury Severity**
 - Fatal
 - Serious

Injury Severity	Crashes	Persons Involved
Fatal Injury	1	1
Serious Injury	11	12
Fatal & Serious Injury Total	12	13

Fatal & Serious Injury crash and persons involved frequencies reflect those reported within the City of Brookings limits (except along I-29 mainline and ramp segments and locations that were reconstructed during the observation period).



Figure 22b



Vulnerable Road User (Bicyclists & Pedestrians) Crash History City of Brookings (January 2019 - June 2024)

- City Limits
 - City Park & Greenspace
 - Shared-Use Path
 - Bike Lane
 - Shared Lane
- Injury Severity**
- Fatal
 - Serious
 - Minor
 - Possible
 - No Injury

Injury Severity	Crashes		Persons Involved	
	Count	Percentage	Count	Percentage
Fatal Injury	1	4%	1	2%
Serious Injury	2	7%	2	4%
Minor Injury	12	43%	14	25%
Possible Injury	13	46%	12	22%
No Injury	0	0%	26	47%
VRU Total	28		55	

Vulnerable Road User crash and persons involved frequencies reflect those reported within the City of Brookings limits (except along I-29 mainline and ramp segments and locations that were reconstructed during the observation period).



Railroad Crossings

Four crashes were reported at rail crossings from January 2019 to June 2024 and are summarized in **Table 22**. One minor injury crash occurred at the US14 railroad crossing which involved a westbound rear-end collision with another vehicle. All other crossing-related crashes were non-injury collisions. The dispersion of crashes across the three railroad crossing locations highlights the random nature of these crashes, even in urban areas with high traffic volumes. It is important to continually improve crossings through a systematic and opportunistic process of identifying and addressing potential conflicts with trains.

Table 22: Rail Crossing Crashes (January 2019 – June 2024)

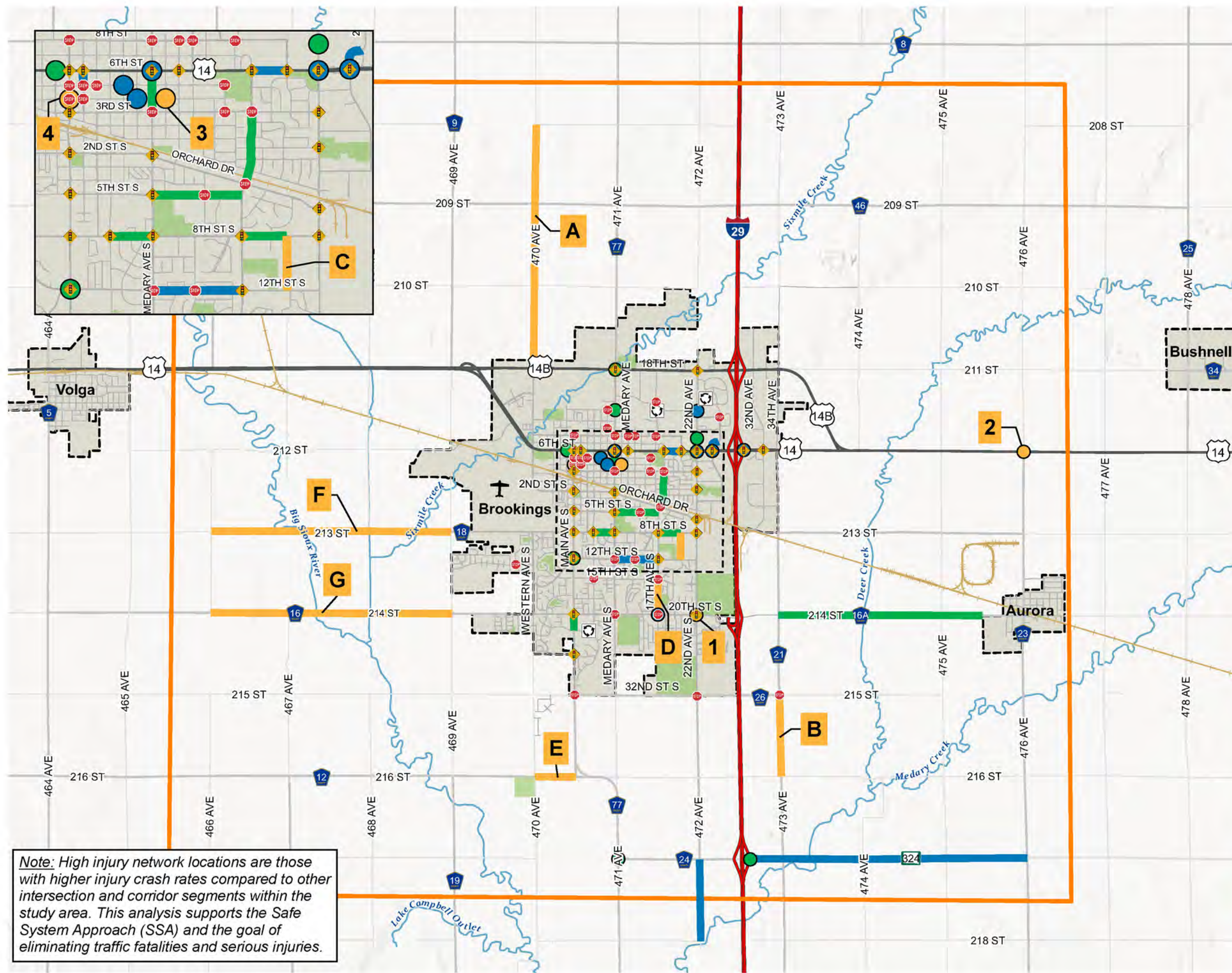
ROADWAY	CROSSING LOCATION	CROSSING NUMBER	RAILROAD	TOTAL CRASHES	TRAINS / DAY	CROSSING CONTROL
US14	West of 467 th Ave	197525N	RCPE	2	10	Active-flashing lights (mast and cantilever mounted)
Main Avenue	South of Front St	197481R	RCPE	1	10	Active-flashing lights (mast and cantilever mounted) and arm gates
Medary Avenue S	South of 1 st St	197480J	RCPE	1	10	Active-flashing lights (mast and cantilever mounted) and arm gates

High Injury Network (HIN)

Based on a compilation of the elevated injury crash index intersection and corridor segments, the Brookings area High Injury Network (HIN) was developed, as shown in **Figure 24**. HIN intersections and corridor segments are locations with injury crash rates higher than other locations when accounting for traffic exposure. These locations represent primary opportunities for safety improvement projects. HIN locations are prioritized through the following tier system:

HIN Prioritization Tier System:

- **Tier 1 (higher priority):** injury crash rate at a Brookings area intersection or corridor segment exceeds **≥ 150%** of the critical injury crash rate (**Figure 24a**)
- **Tier 2 (medium priority):** injury crash rate at a Brookings area intersection or corridor segment is **between ≥ 100% and < 150%** of the critical injury crash rate (**Figure 24b**)
- **Tier 3 (lower priority):** injury crash rate at a Brookings area intersection or corridor segment is **between ≥ 75% and < 100%** of the critical injury crash rate (**Figure 24c**)



High Injury Network Tier 1 (Higher Priority) Locations (January 2019 - June 2024)

- All Way Stop-Control Intersections
- Roundabout Intersection
- Signalized Intersections

Elevated Crash Index Intersections and Segments

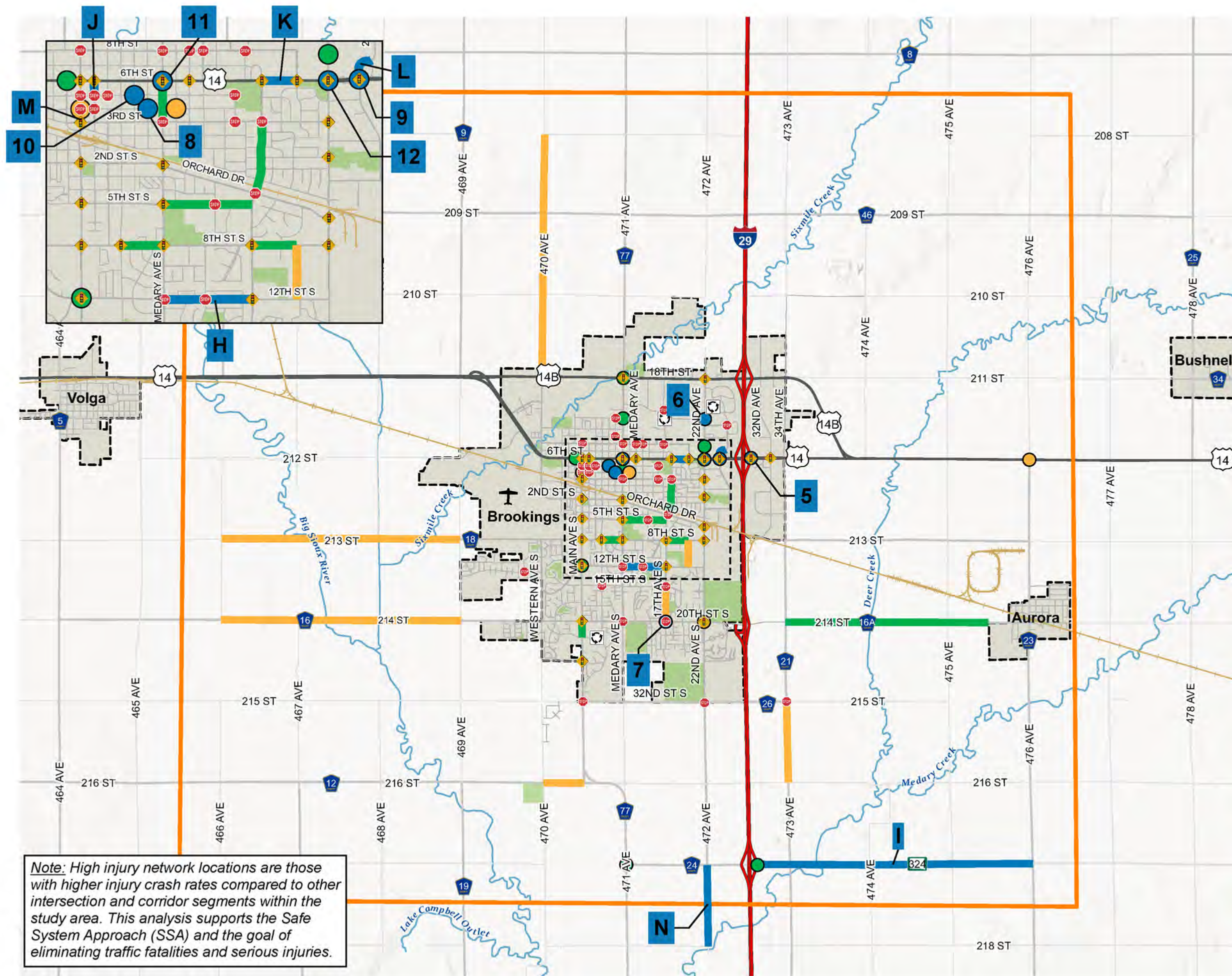
- Tier 1 - Higher Priority
- Tier 2 - Medium Priority
- Tier 3 - Lower Priority
- Study Area
- City Limits
- City Park & Greenspace

Intersection	ID
22 nd Avenue S & 20 th Street S	1
US14 & BC Hwy 23 / 476 th Avenue	2
4 th Street & 11 th Avenue	3
Main Avenue & 4 th Street	4

Corridor Segment	ID
470 th Ave: US14 Bypass to 208 th St	A
BC Hwy 21: 216 th St to 32 nd St S	B
Southland Ln: 8 th St S to 12 th St S	C
17 th Ave S: 15 th St S to 20 th St S	D
BC Hwy 12: BC Hwy 77 to 470 th Ave	E
213 th St: 466 th Ave to 16 th Ave S	F
BC Hwy 16: 466 th Ave to 469 th Ave	G

Note: High injury network locations are those with higher injury crash rates compared to other intersection and corridor segments within the study area. This analysis supports the Safe System Approach (SSA) and the goal of eliminating traffic fatalities and serious injuries.

High Injury Network Tier 2 (Medium Priority) Locations (January 2019 - June 2024)



- All Way Stop-Control Intersections
- Roundabout Intersection
- Signalized Intersections

Elevated Crash Index Intersections and Segments

- Tier 1 - Higher Priority
- Tier 2 - Medium Priority
- Tier 3 - Lower Priority
- Study Area
- City Limits
- City Park & Greenspace

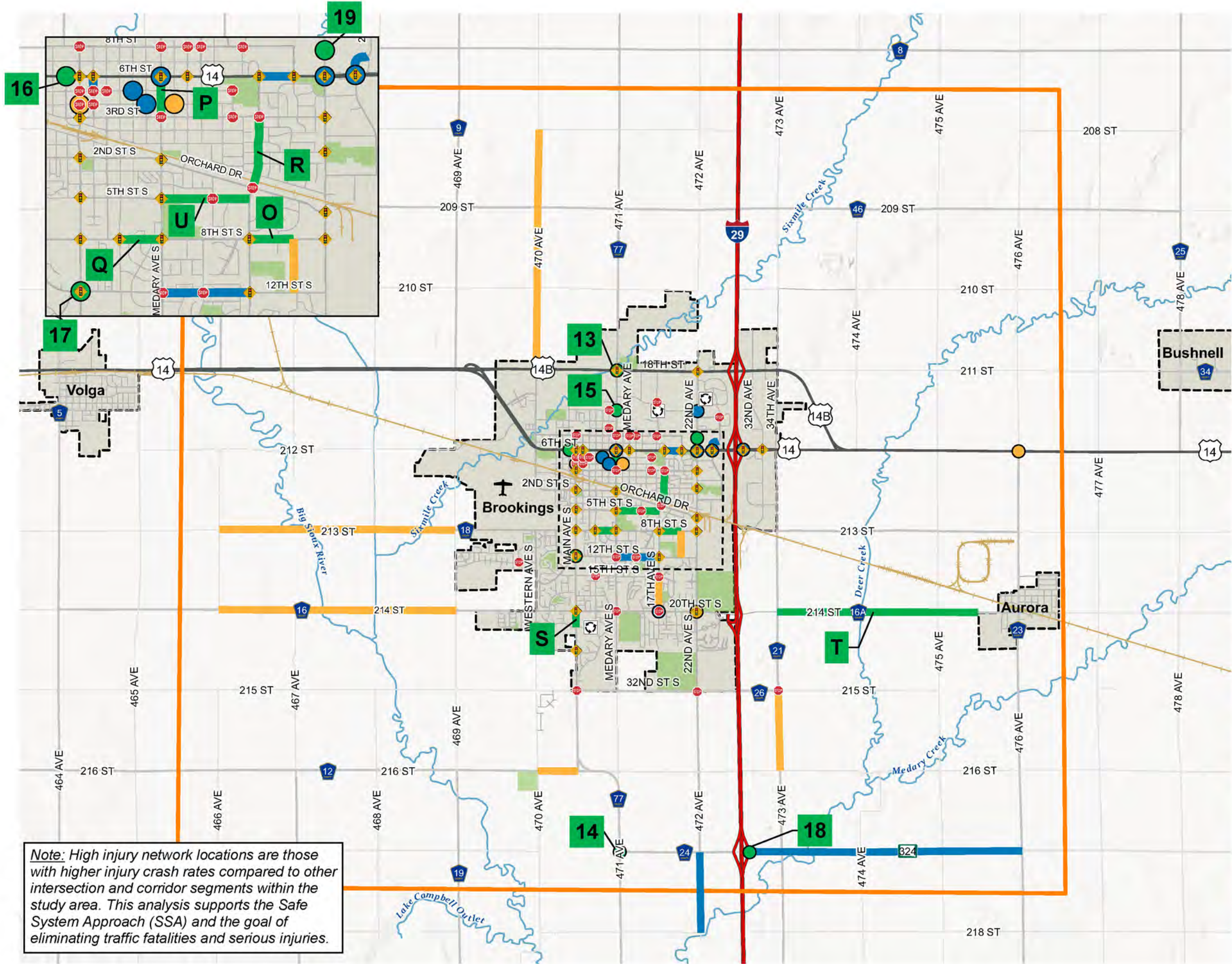
Intersection	ID
US14 / 6 th Street & I-29 Exit 132 NB RTI	5
22 nd Avenue & University Boulevard	6
20 th Street S & 17 th Avenue S	7
4 th Street & 9 th Avenue	8
US14 / 6 th Street & Sunrise Ridge Road	9
5 th Street & 8 th Avenue	10
US14 / 6 th Street & Medary Avenue	11
US14 / 6 th Street & 22 nd Avenue	12

Corridor Segment	ID
12 th St S: Medary Ave S to 17 th Ave S	H
SD324: I-29 Exit 127 NB RTI to BC Hwy 23	I
5 th Ave: US14 / 6 th St to 5 th St	J
US14 / 6 th St: 17 th Ave to 20 th Ave	K
Sunrise Ridge Rd: US14 / 6 th St to 25 th Ave	L
Main Ave: 3 rd St to 4 th St	M
472 nd Ave: BC Hwy 24 to 218 th St	N

Note: High injury network locations are those with higher injury crash rates compared to other intersection and corridor segments within the study area. This analysis supports the Safe System Approach (SSA) and the goal of eliminating traffic fatalities and serious injuries.

0 2 Miles
Figure 24b

High Injury Network
Tier 3 (Lower Priority) Locations
(January 2019 - June 2024)



- All Way Stop-Control Intersections
 - Roundabout Intersection
 - Signalized Intersections
- Elevated Crash Index Intersections and Segments**
- Tier 1 - Higher Priority
 - Tier 2 - Medium Priority
 - Tier 3 - Lower Priority
 - Study Area
 - City Limits
 - City Park & Greenspace

Intersection	ID
US14 Bypass / 18 th Street & Medary Avenue	13
BC Hwy 77 & BC Hwy 24	14
Medary Avenue & 11 th Street	15
US14 / 6 th Street & 3 rd Avenue	16
12 th Street S & Main Avenue S	17
SD324 & I-29 Exit 127 NB RTI	18
22 nd Avenue S & South Wal-Mart Access	19

Corridor Segment	ID
8 th St S: Southland Ln to 17 th Ave S	O
Medary Ave: 3 rd St to US14 / 6 th St	P
8 th St S: Medary Ave S to 7 th Ave S	Q
17 th Ave: 3 rd St to Orchard Dr	R
Main Ave S: Sweetgrass Dr to 20 th St S	S
BC Hwy 16A: BC Hwy 21 to Aurora limits	T
5 th St S: Medary Ave S to 17 th Ave S	U

Note: High injury network locations are those with higher injury crash rates compared to other intersection and corridor segments within the study area. This analysis supports the Safe System Approach (SSA) and the goal of eliminating traffic fatalities and serious injuries.

Systemic Safety Analysis

Based on the reviewed crash records, a systemic safety analysis was conducted to determine crash characteristics that may present systemic safety risks for the Brookings area roadway network. These systemic crash characteristics were utilized for a network screening analysis to ascertain at which locations these crash types were occurring and if select intersection and corridor segments had multiple observances of these notable crash characteristics. Locations with multiple safety risk characteristics were compiled and identified in the **Systemic Risk Network (SRN)** in order to recommend and further prioritize Brookings area intersections and corridor segments for proactive safety improvement projects.

To determine crash locations which present potential safety risks, Brookings area intersections and corridor segments were screened for notable crash types, referred to here as SRN crash types. These SRN crash types screened for crashes that: 1) involved either severe injuries or a VRU, 2) were included as key safety emphasis areas for statewide planning efforts such as the 2024 South Dakota SHSP, or 3) were deemed significant due to an overrepresentation in the injury crash dataset compared to total crashes. Significant increases for this review were deemed as greater than or equal to two percent. Broad categories with little potential use for this analysis, such as crashes occurring in daylight or on dry road surface conditions were removed from the dataset.

Based on this analysis, seven crash types were observed to have increased proportionality amongst injury crashes compared to total crashes which are depicted in **Figure 25**.

- Urban Arterial Crashes
- City Street Crashes
- Angle Crashes
- Single Vehicle Crashes
- August & September Crashes
- April & May Crashes
- Sand, Dirt, Mud, and Gravel Road Surface Conditions

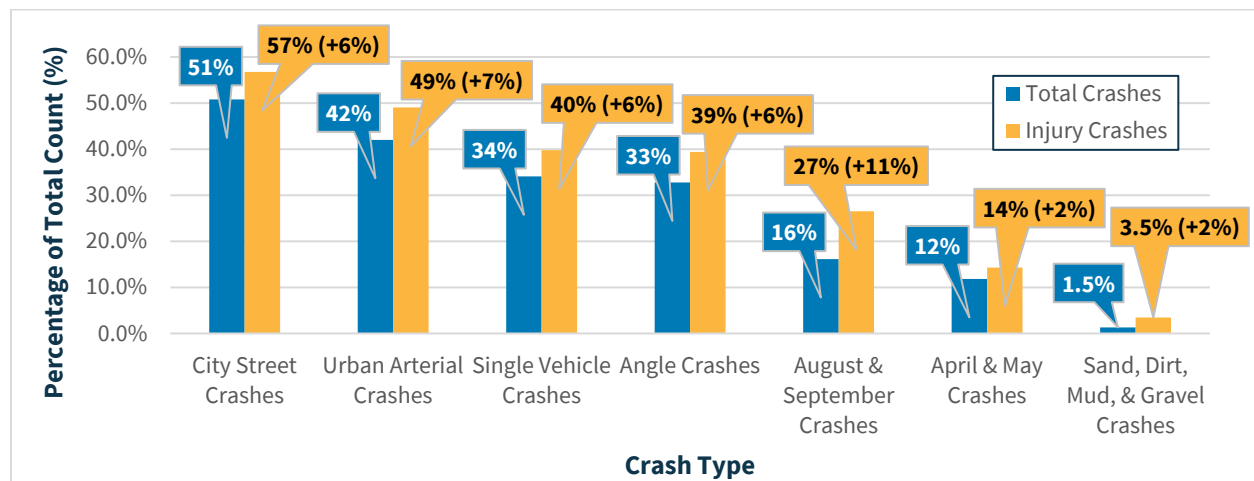


Figure 25: Crash Types with Increased Proportionality Amongst Injury Crashes

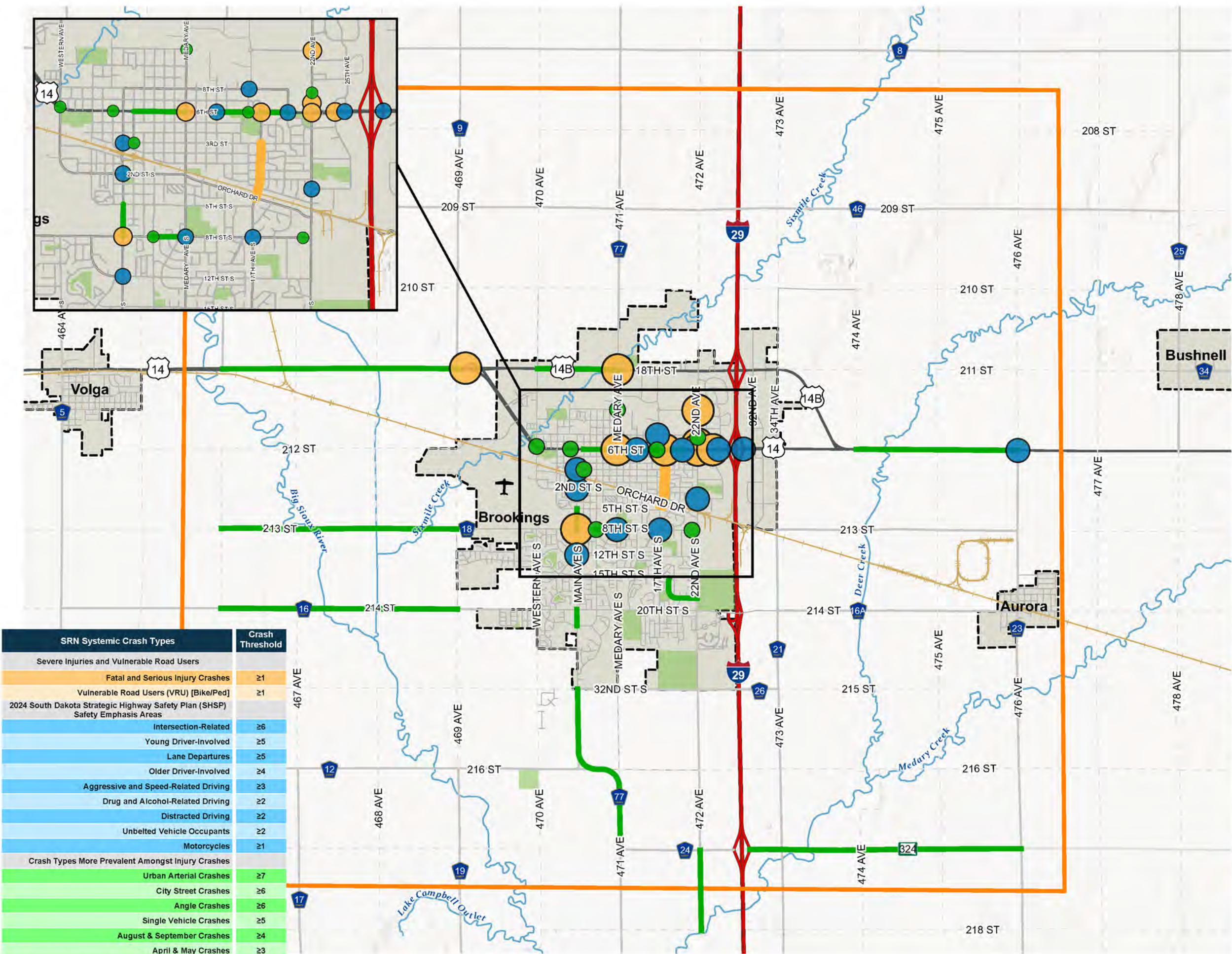
Overall, the following crash types were identified for the SRN screening process and are listed in **Table 23**. Each SRN crash type also includes a crash threshold, requiring select number of frequencies of the SRN crash type for an intersection or corridor segment to be highlighted. These thresholds ranged from greater than or equal to one through seven and were established based on the injury status, vulnerability of the SRN crash type, or the overall SRN crash type frequency pool.

Table 23: Systemic Risk Network (SRN) Crash Types and Thresholds

SRN Crash Types	Crash Threshold
Severe Injuries and Vulnerable Road Users	
Fatal & Serious Injury Crashes	≥1
Vulnerable Road Users (VRU) [Bike/Ped]	≥1
2024 South Dakota Strategic Highway Safety Plan (SHSP) Safety Emphasis Areas	
Intersection-Related	≥6
Young Drivers	≥5
Lane Departures	≥5
Older Drivers	≥4
Aggressive & Speed-Related Driving	≥3
Drug & Alcohol-Related Driving	≥2
Distracted Driving	≥2
Unbelted Vehicle Occupants	≥2
Motorcycles	≥1
Crash Types More Prevalent Amongst Injury Crashes	
Urban Arterial Crashes	≥7
City Street Crashes	≥6
Angle Crashes	≥6
Single Vehicle Crashes	≥5
August & September Crashes	≥4
April & May Crashes	≥3
Sand, Dirt, Mud, & Gravel Road Surface Condition Crashes	≥1

Systemic Risk Network (SRN)

Based on the systemic safety analysis, intersection and corridor segments with multiple systemic crash characteristics were mapped to form the Brookings area Systemic Risk Network (SRN), shown in **Figure 26**. These locations are prioritized and emphasized based on the number of multiple systemic crash characteristics (e.g., crashes involving speeding, lane departures, young drivers, and/or pedestrians) that occurred at each intersection or corridor segment regardless of injury severity. Intersections and corridor segments highlighted in this network represent opportunities for proactive safety improvements projects where risky behavior crashes have already occurred but may not have involved a fatality or severe injury.



Systemic Risk Network

- Interstate
- US Highways
- State Highways
- County Roads
- City Road
- Township Roads
- Study Area
- City Limits
- City Park & Greenspace

Systemic Risk Network (SRN)

Intersections

- 3 or more SRN types
- 5 or more SRN types
- 7 or more SRN types

Segments

- 3 or more SRN types
- 5 or more SRN types
- 7 or more SRN types

Note: Systemic Risk Network (SRN) locations are those with 3 or more SRN systemic crash types (identified in the corresponding list). The SRN analysis supports the Brookings Area Safety Action Plan (SAP) and Safe System Approach (SSA) by pro-actively identifying locations with a history of systemic crash types based on frequency thresholds, regardless of injury severity or traffic exposure.

SRN Systemic Crash Types	Crash Threshold
Severe Injuries and Vulnerable Road Users	
Fatal and Serious Injury Crashes	≥1
Vulnerable Road Users (VRU) [Bike/Ped]	≥1
2024 South Dakota Strategic Highway Safety Plan (SHSP) Safety Emphasis Areas	
Intersection-Related	≥6
Young Driver-Involved	≥5
Lane Departures	≥5
Older Driver-Involved	≥4
Aggressive and Speed-Related Driving	≥3
Drug and Alcohol-Related Driving	≥2
Distracted Driving	≥2
Unbelted Vehicle Occupants	≥2
Motorcycles	≥1
Crash Types More Prevalent Amongst Injury Crashes	
Urban Arterial Crashes	≥7
City Street Crashes	≥6
Angle Crashes	≥6
Single Vehicle Crashes	≥5
August & September Crashes	≥4
April & May Crashes	≥3
Sand, Dirt, Mud, & Gravel Road Surface Condition Crashes	≥1

0 2 Miles



Figure 26

5.3 Existing and Future Traffic Volumes

Existing daily traffic volumes were based on roadway segment counts collected by the SDDOT between 2017 and 2024. SDDOT-derived countywide growth rates and seasonal adjustment factors were used to factor all historical counts a common 2024 Existing Conditions year.

Ten 12-hour and sixteen 4-hour intersection turning movement counts were collected in 2024 based on locations identified by the Study Advisory Team. The SDDOT and City of Brookings provided intersection turning movement counts at additional study area intersections that had recently been collected. These counts followed a similar factoring process as the daily segment volumes and are the basis of morning and afternoon peak hour volumes.

Future-year traffic volumes were developed to assess future operational needs and identify potential solutions. Existing condition traffic volumes were forecasted to years 2040 and 2050 using historical count data, SDDOT-derived growth rates, future land use, anticipated development, and population trends.

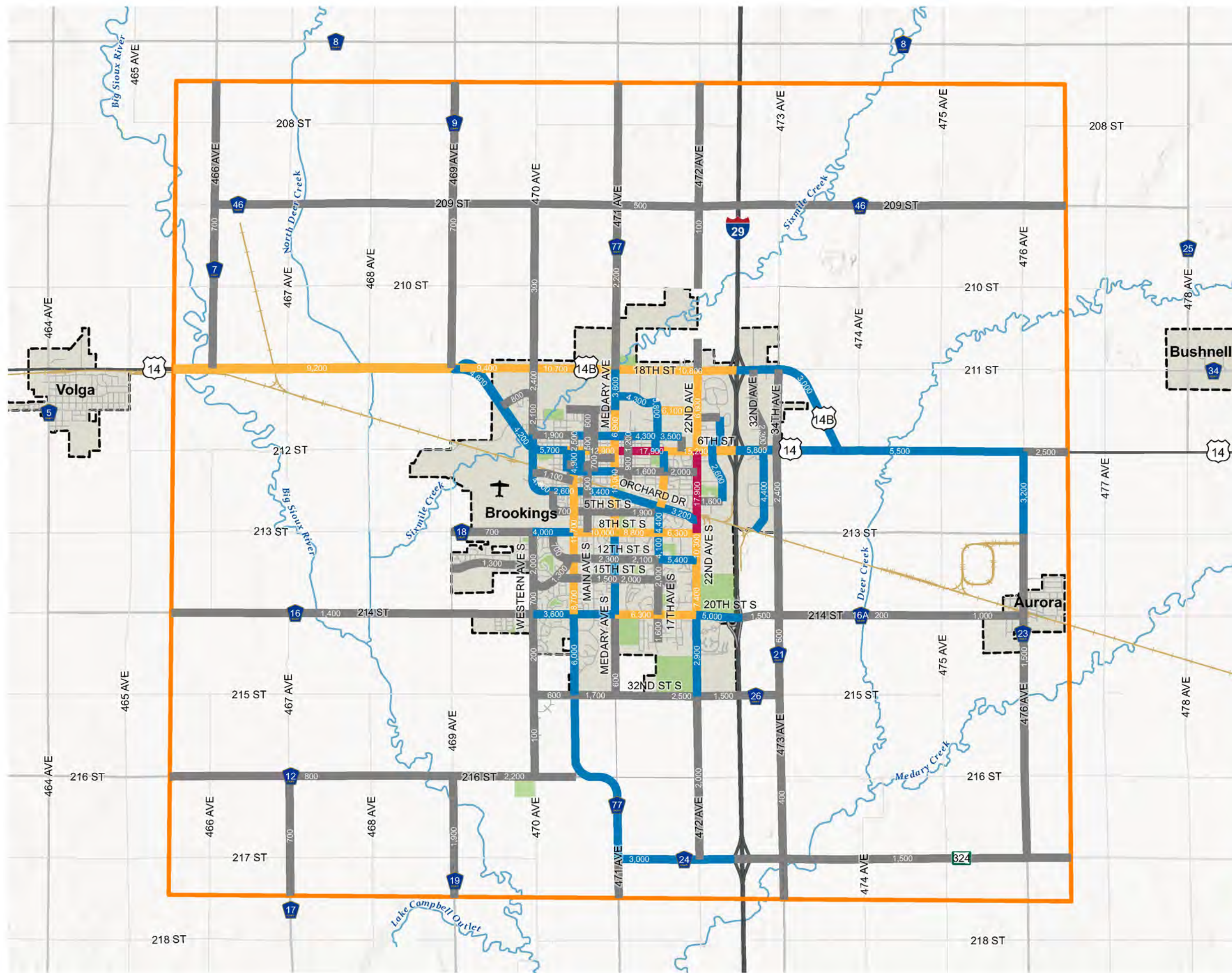
Daily segment traffic volumes are shown in the following figures:

- Existing (2024) (**Figure 27**)
- 2040 Interim Year (**Figure 28**)
- 2050 Planning Horizon (**Figure 29**)

Intersection peak hour volumes are provided in the *Traffic Forecasts Memo* in **Appendix C**.



University Boulevard



Existing (2024) Daily Traffic Volumes

- Study Area
 - City Limits
 - City Park & Greenspace
- Existing (2024) Daily Traffic Volumes
- 2,500 and Less
 - 2,501 - 6,000
 - 6,001 - 16,000
 - 16,001 and More

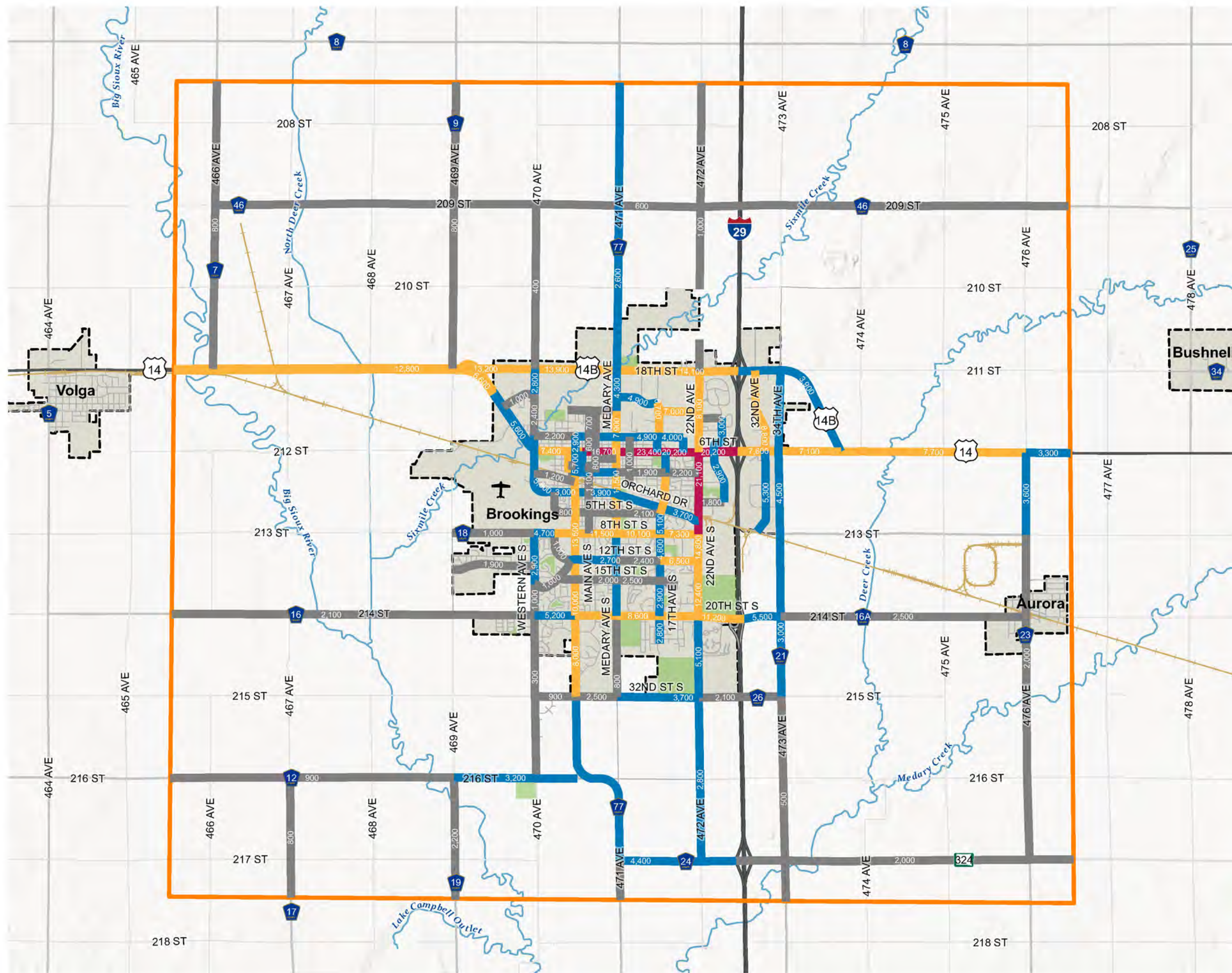
0 2 Miles



Figure 27



2040 Interim Daily Traffic Volumes



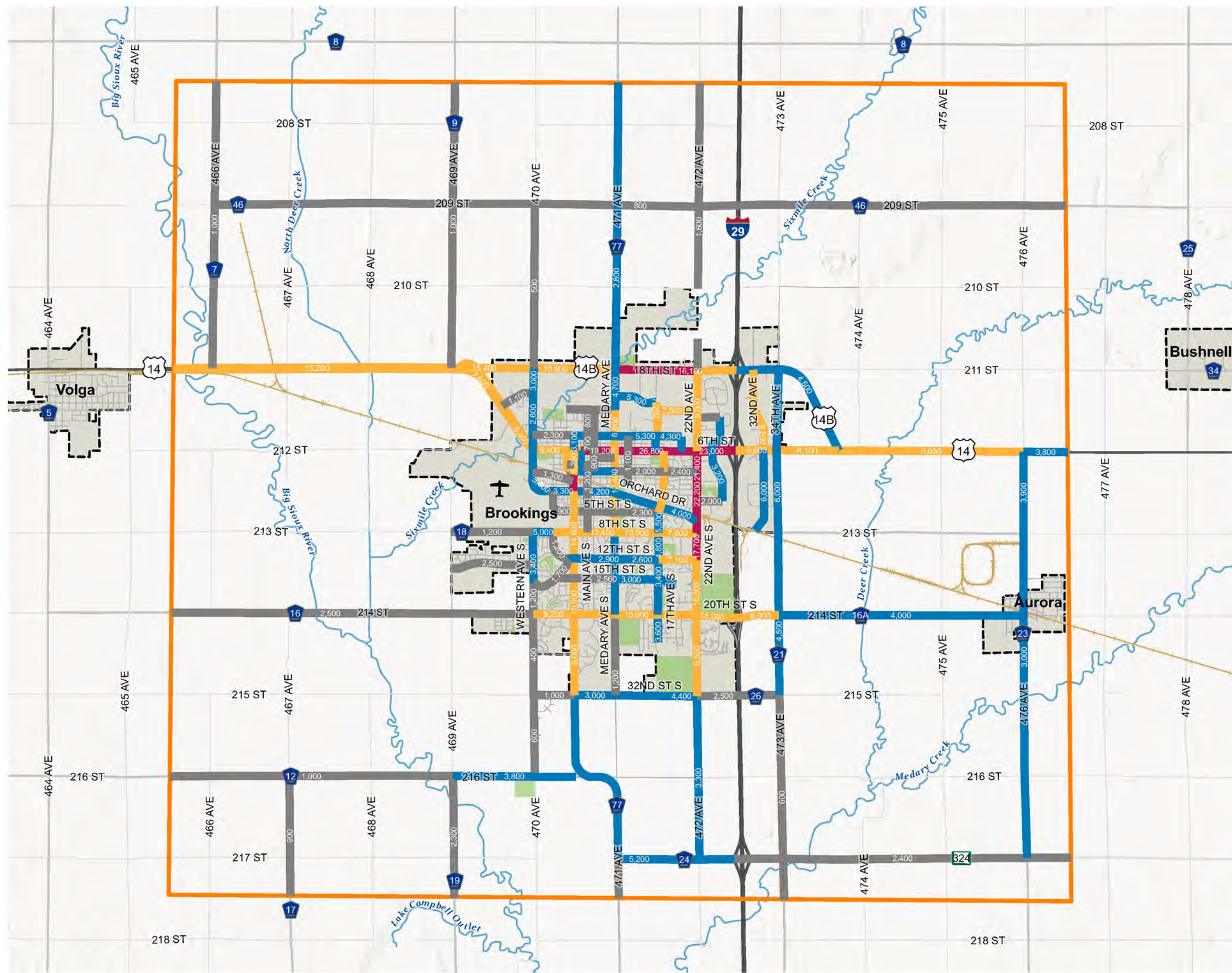
- Study Area
- City Limits
- City Park & Greenspace
- 2040 Interim Daily Traffic Volumes
 - 2,500 and Less
 - 2,501 - 6,000
 - 6,001 - 16,000
 - 16,001 and More

0 2 Miles



Figure 28





2050 Planning Horizon Daily Traffic Volumes

- Study Area
 - City Limits
 - City Park & Greenspace
- 2050 Planning Horizon Daily Traffic Volumes
- 2,500 and Less
 - 2,501 - 6,000
 - 6,001 - 16,000
 - 16,001 and More

0 2 Miles



Figure 29

5.4 Existing and Future Traffic Operations

An analysis of existing and future-year traffic volumes was conducted to identify areas of recurring peak period congestion. The analysis considered daily segment volumes along collector and arterial roadways, where data were available, and compared these volumes to design capacities of the respective roadway.

A typical measure of traffic operations, or quality of service, is Level of Service (LOS). This measure is presented by a letter grade that describes levels of congestion, ranging from LOS A (free-flowing conditions) to LOS F (stopped / heavily delayed traffic). The LOS goal for Brookings area roadways is LOS D or better, however, corridors shown to operate at LOS D are of interest when identifying future needs.

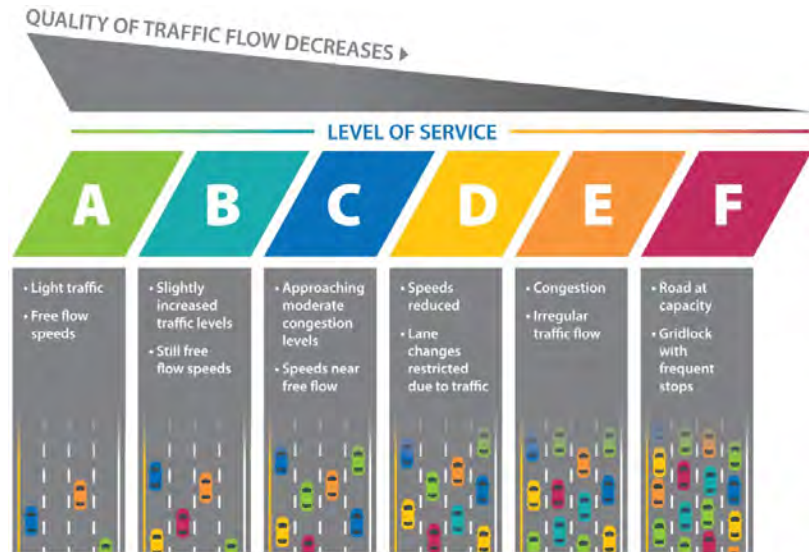


Figure 30: Level of Service Descriptions

The analysis incorporated three timeframes: 2024 Existing conditions, 2040 Interim Year conditions, and the 2050 Planning Horizon. This analysis reflects a ‘No Build’ or ‘do nothing’ condition where traffic volumes continue to grow in future years, but no capacity improvements are incorporated. Traffic operations analysis memos are provided in **Appendix C**.

Roadway Segments

The roadway segment LOS analysis was based on capacity thresholds for different roadway cross-sections presented in [SDDOT Road Design Manual, Chapter 15 Traffic](#) Table 15-10. **Table 24** shows planning-level daily volume ranges to achieve LOS C / D roadway segment operations, with the upper number in the range reflecting the transition between LOS C and LOS D.

Table 24: Total Number of Lanes and Daily Traffic Volumes (LOS C / D)

TOTAL NUMBER OF LANES	DAILY TRAFFIC VOLUME
2	< 6,000
3	6,000 to 16,000
4 (undivided)	8,000 to 20,000
5 or 4 (divided)	16,000 to 30,000
6	> 30,000

Source: Modified from SDDOT Road Design Manual, Table 15-10

The planning-level roadway segment capacity analysis is based on a volume to capacity ratio using existing/forecasted volumes and the upper values shown in **Table 24** for the applicable number of lanes. Segment LOS is provided in **Figure 31** (existing conditions), **Figure 32** (2040 Interim Year), and **Figure 33** (2050 Planning Horizon). **Table 25** summarizes the progression of major roadway segments to LOS D, LOS E, or LOS F by Year 2050.

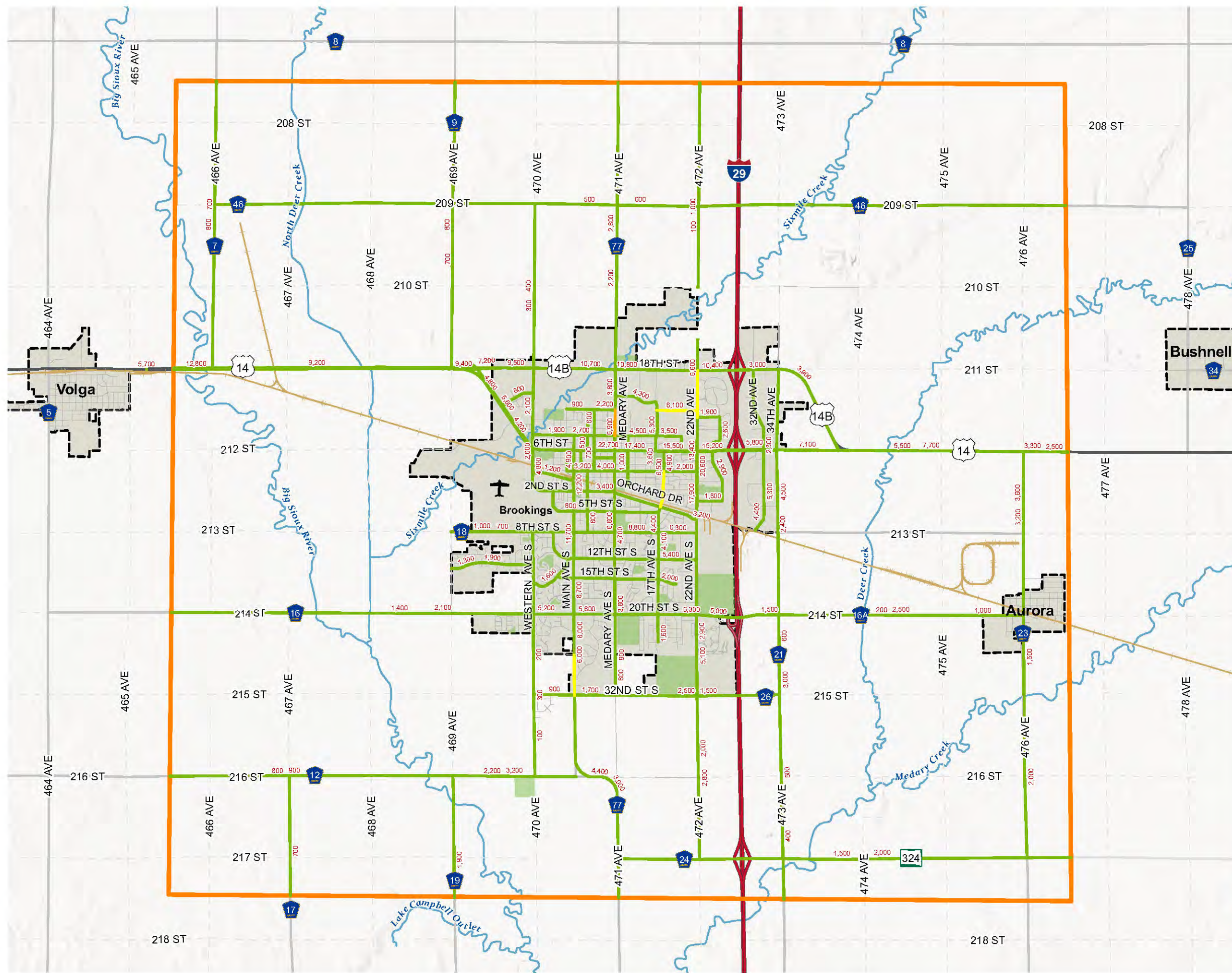
Table 25: Roadway Segments with Year 2050 LOS D – F

CORRIDOR SEGMENT	FROM	TO	EXISTING CONDITIONS	2040 INTERIM CONDITIONS	2050 PLANNING HORIZON
US14 Bypass / 18th Street	22 nd Ave	I-29	-	-	LOS D**
US14 Bypass / 18th Street	Medary Ave	22 nd Ave	-	-	LOS E
US14 Bypass / 18th Street	Western Ave	Medary Ave	-	-	LOS D**
22nd Avenue	10 th St	US14B / 18 th St	LOS D	LOS F	LOS F
22nd Avenue	US14 / 6 th St	10 th St	-	LOS D	LOS D
22nd Avenue S	32 nd St S	20 th St S	-	-	LOS D
Main Avenue	Front St	US14 / 6 th St	-	-	LOS D [#]
Main Avenue S	32 nd St S	26 th St S	LOS D	LOS F	LOS F
Medary Avenue	8 th St	11 th St	LOS E [#]	LOS F [#]	LOS F [#]
8th Street S	Crystal Ridge Rd	Main Ave S	-	LOS D	LOS E
20th Street S	22 nd Ave S	I-29	-	-	LOS D
12th Street S	17 th Ave S	22 nd Ave S	-	LOS D	LOS E
17th Avenue	3 rd St	US14 / 6 th St	LOS D	LOS E	LOS F
17th Avenue	Orchard Dr	3 rd St	LOS D	LOS E	LOS F
Jackrabbit Avenue	8 th St	North Campus Dr	-	LOS D	LOS E
University Boulevard	Jackrabbit Ave	22 nd Ave	LOS D	LOS E	LOS F

Corridor segments reflect major intersection to major intersection; intermittent segments operate better than LOS D-F

** SDDOT currently allows LOS D on state routes in urban areas

[#] Segments of Main Avenue (in downtown Brookings) and Medary Avenue (adjacent to the SDSU campus) reflect traffic conditions which may be desirable operate as a 2-lane facility (with or without left turn lanes at major intersections where applicable) with LOS D due to the greater presence of on-street parking and pedestrians, traffic calming and lower speeds, and to maintain the footprint of the existing roadway through the downtown or SDSU campus area



Existing (2024) Segment Level of Service (Existing Street Network)

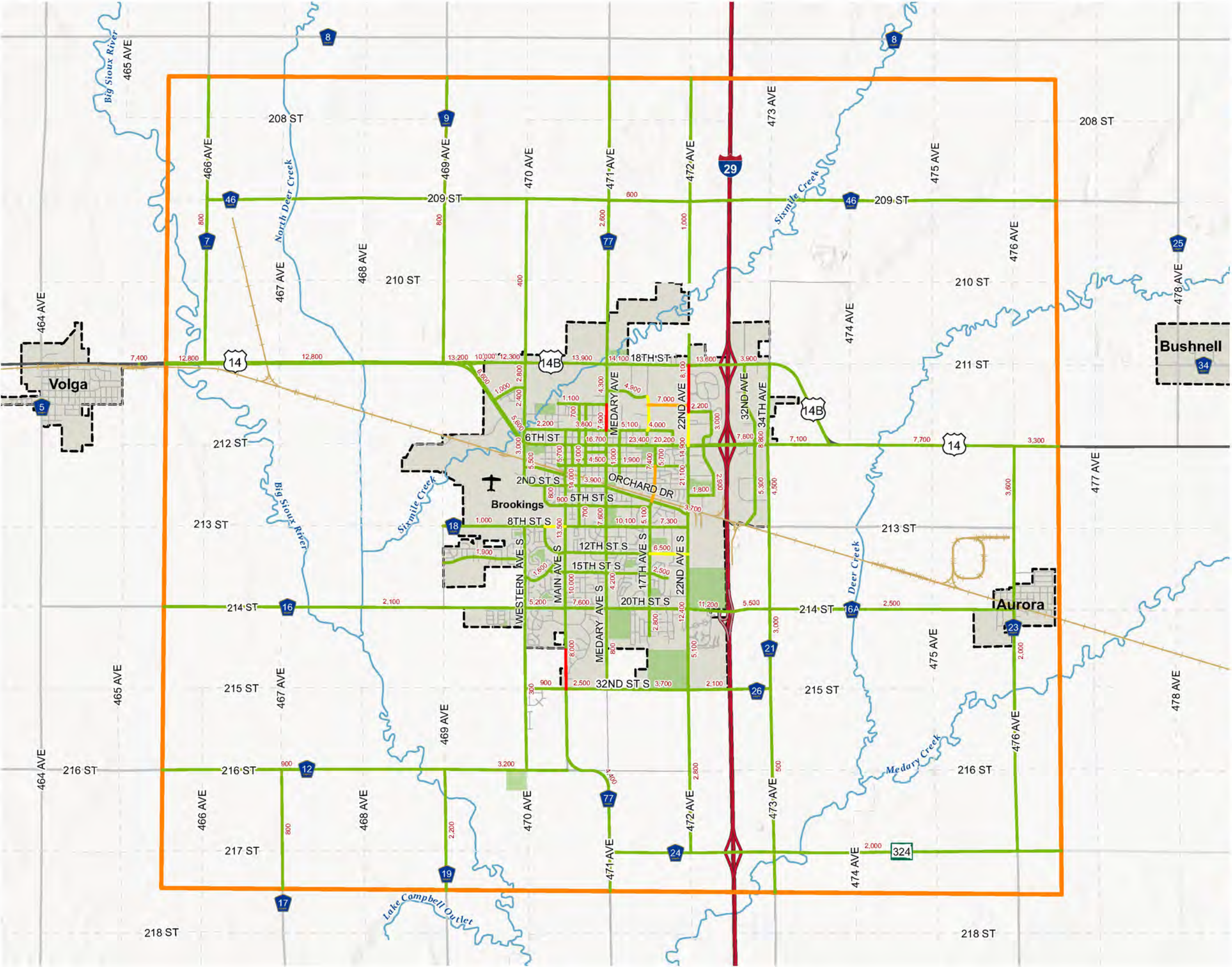
- Study Area
- City Limits
- City Park & Greenspace
- Existing (2024) Traffic Level of Service**
 - A-C
 - D
 - E
 - F
- #,### - Daily Traffic Volume



Figure 31

2040 Interim

Segment Level of Service
(Existing Street Network)



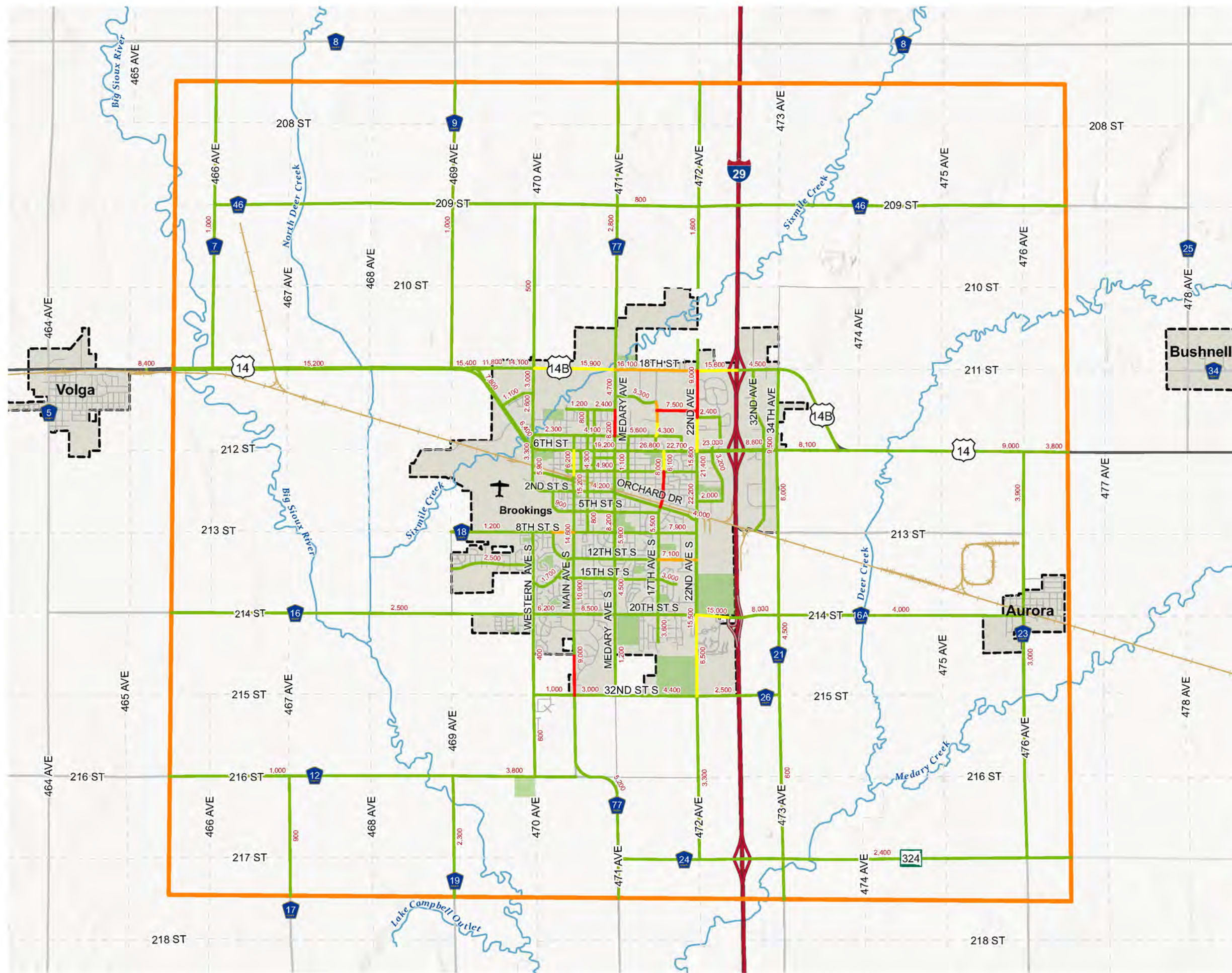
- Study Area
- City Limits
- City Park & Greenspace
- 2040 Interim Traffic Level of Service
 - A-C
 - D
 - E
 - F
- ##### - Daily Traffic Volume

0 2 Miles



Figure 32

2050 Planning Horizon Segment Level of Service (Existing Street Network)



- Study Area
- City Limits
- City Park & Greenspace
- 2050 Planning Horizon Traffic Level of Service**
- A-C
- D
- E
- F
- ### - Daily Traffic Volume

0 2 Miles



Figure 33

Intersections

Brookings area intersections identified by the Study Advisory Team were analyzed with morning and afternoon peak hour traffic volumes to identify existing and potential future-year operational deficiencies. **Table 26** summarizes the progression analyzed intersections to LOS D or worse, in terms of overall intersection delay, by year 2050.

Table 26: Analysis Intersections with Year 2050 LOS D – F

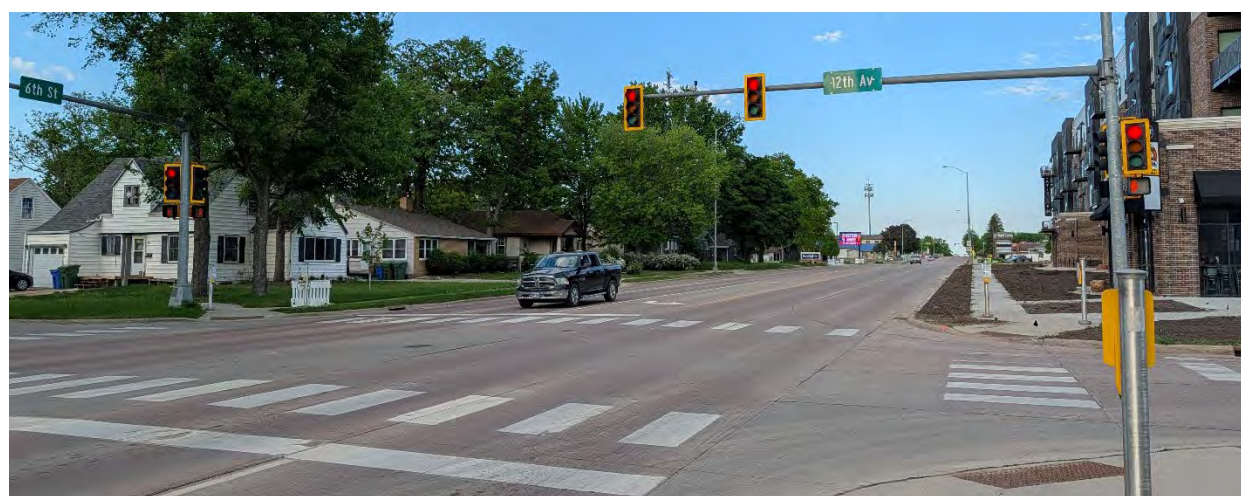
INTERSECTION	EXISTING TRAFFIC CONTROL	EXISTING CONDITIONS	2040 INTERIM CONDITIONS	2050 PLANNING HORIZON
US14 / 6 th Street & 22 nd Avenue	Signal	LOS D**	LOS D**	LOS D**
US14 / 6 th Street & Campanile Avenue	TWSC	-	LOS F*	LOS F*
US14 Bypass / 18 th Street & 22 nd Avenue	Signal	-	-	LOS D**
8 th Street S & Lewis/Hy-Vee Access	TWSC	-	LOS C*	LOS F*
22 nd Avenue S & 20 th Street S	Signal	-	-	LOS F
20 th Street S & Medary Avenue S	AWSC	-	LOS F	LOS F
20 th Street S & 17 th Avenue S	AWSC	-	LOS F	LOS F
20 th Street S & 34 th Avenue S	TWSC	-	-	LOS F*
20 th Street S & I-29 NB RTI (Exit 130)	TWSC	-	-	LOS F*
20 th Street S & I-29 SB RTI (Exit 130)	TWSC	-	-	LOS B*
Main Avenue S & Sweetgrass Drive	TWSC	-	-	LOS D*
20 th Street S & Main Avenue S	Signal	-	-	LOS D
32 nd Street S & Main Avenue S	AWSC	-	-	LOS F*

LOS based on overall intersection delay, with intersection LOS D – F in the morning and/or afternoon peak hour

TWSC: Two-way stop-control; AWSC: All-way stop control; RTI: Ramp terminal intersection

* Indicates TWSC side-street operations of LOS F

** SDDOT currently allows LOS D on state routes in urban areas



U.S. Highway 14 / 6th Street & 12th Street Intersection

22nd Avenue Corridor Traffic Operations

As part of the traffic operations review, LOS was reviewed for select intersections and segments along 22nd Avenue between 32nd Street S and US14 Bypass / 18th Street. 22nd Avenue is a key arterial route along the east portion of Brookings for commercial and residential uses and amongst commuters. This corridor was previously studied in 2018 as part of the *22nd Avenue Corridor Improvement Study* to determine future operational needs through 2045. Since this study was completed, traffic patterns in Brookings have notably shifted, which is largely related to the opening of the I-29 Exit 130 (20th Street S) interchange on southeast side of the city. This review updates the prior analysis with more recent traffic data and projects any future corridor needs through year 2050. 22nd Avenue study corridor segment and intersection LOS are reported in **Table 27** and **Table 28**, respectively.

Table 27: 22nd Avenue Corridor Analysis – Roadway Segment LOS

CORRIDOR SEGMENT	FROM	TO	EXISTING CONDITIONS	2040 INTERIM CONDITIONS	2050 PLANNING HORIZON
22 nd Avenue	10 th St	US14B / 18 th St	LOS D	LOS F	LOS F
	US14 / 6 th St	10 th St	-	LOS D	LOS D
	3 rd St	US14 / 6 th St	LOS A-C	LOS A-C	LOS A-C
	Eastbrook Dr	3 rd St	LOS A-C	LOS A-C	LOS A-C
	Orchard Dr	Eastbrook Dr	LOS A-C	LOS A-C	LOS A-C
	8 th St S	Orchard Dr	LOS A-C	LOS A-C	LOS A-C
	12 th St S	8 th St S	LOS A-C	LOS A-C	LOS A-C
	20 th St S	12 th St S	LOS A-C	LOS A-C	LOS A-C
	32 nd St S	20 th St S	LOS A-C	LOS A-C	LOS D

Corridor segments reflect major intersection to major intersection



22nd Avenue (between Orchard Drive and 8th Street S)

Table 28: 22nd Avenue Corridor Analysis – Intersection LOS

INTERSECTION	EXISTING TRAFFIC CONTROL	EXISTING CONDITIONS	2040 INTERIM CONDITIONS	2050 PLANNING HORIZON
		AM / PM	AM / PM	AM / PM
US14 Bypass / 18th Street & 22nd Avenue	Signal	B / C	B / C*	B / D**
University Boulevard & 22nd Avenue	TWSC	A / A	A / A	A / B
US14 / 6th Street & 22nd Avenue	Signal	C / D**	C / D**	C / D**
22nd Avenue & 3rd Street	Signal	A / A	B / B	B / B
22nd Avenue & Eastbrook Drive^{##}	TWSC	A / A	A / A	A / A
22nd Avenue S & Orchard Drive	Signal	C / B	B / C	B / C
22nd Avenue S & 8th Street S	Signal	B / B	B / B	B / B
22nd Avenue S & 12th Street S	TWSC	A / A	A / A	A / A
22nd Avenue & 20th Street S	Signal	B / B	C / C	F / E [#]
22nd Avenue S & 32nd Street S	AWSC	A / A	A / B	B / B

LOS based on overall intersection delay, with intersection LOS in the morning and/or afternoon peak hour

TWSC: Two-way stop-control; AWSC: All-way stop control

* Indicates TWSC side-street operations of LOS F (reporting method different than 22nd Avenue Corridor Study)

** SDDOT currently allows LOS D on state routes in urban areas

Traffic operational needs (signalization and/or additional turn lanes) are consistent with the 2025 update to the I-29 Exit 130 (20th Street S) Interchange Justification Report (IJR)

Future traffic operational needs and traffic control changes at 22nd Avenue & Eastbrook Drive should consider potential impacts and adjustments to the adjacent existing traffic signal at 22nd Avenue & Olwien Street



22nd Avenue S & Orchard Drive Intersection

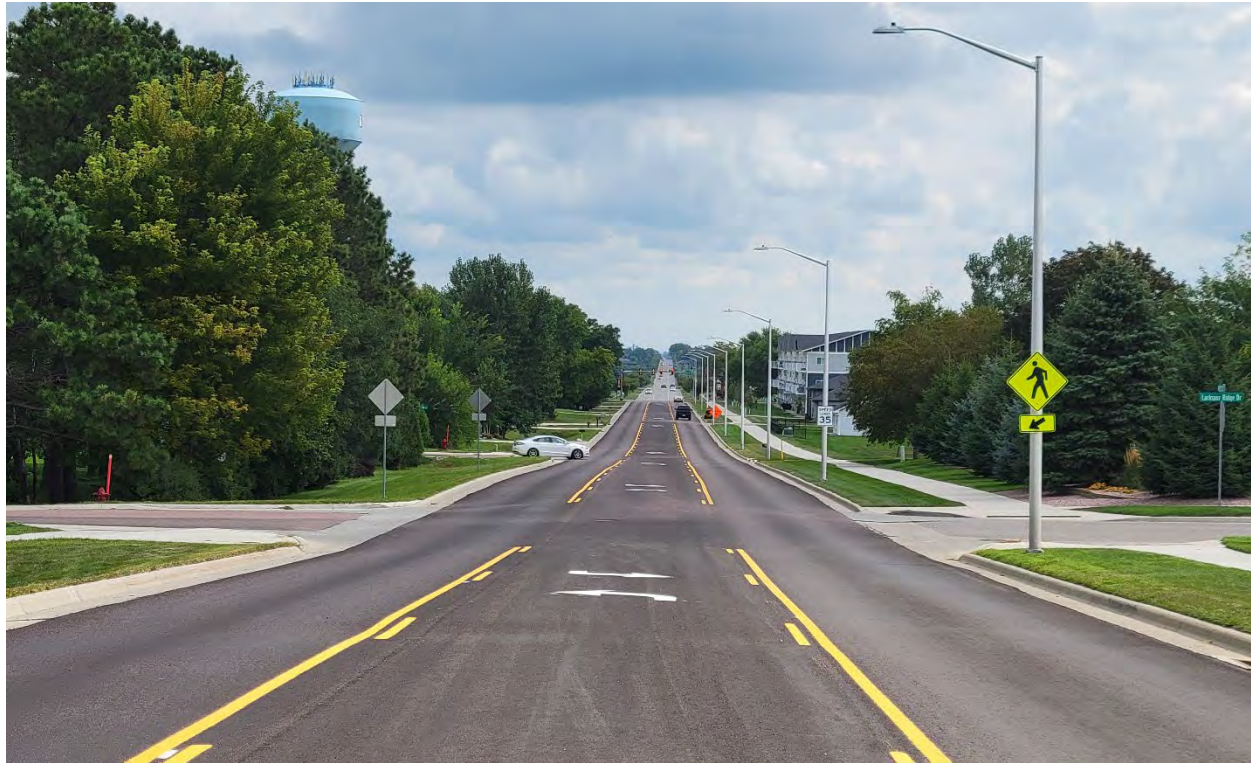
20th Street S Corridor Traffic Operations

With the opening of the I-29 Exit 130 (20th Street S) interchange and notable commercial and residential development, the 20th Street S corridor is anticipated to experience strong traffic growth through the study planning horizon. 20th Street S is proving to be a crucial arterial street for southside Brookings development, particularly for drivers now utilizing the interchange as part of their commute. Similar to the 22nd Avenue corridor, LOS was reviewed for select intersections and segments along 20th Street S between Main Avenue S and 34th Avenue S. This review utilizes recent traffic data and projects any future corridor needs through year 2050. 20th Street S study corridor segment and intersection LOS are reported in **Table 29** and **Table 30**, respectively.

Table 29: 20th Street S Corridor Analysis – Roadway Segment LOS

CORRIDOR SEGMENT	FROM	TO	EXISTING CONDITIONS	2040 INTERIM CONDITIONS	2050 PLANNING HORIZON
20 th Street S	I-29	34 th Avenue	LOS A-C	LOS A-C	LOS A-C
	22 nd Ave S	I-29	LOS A-C	LOS A-C	LOS D
	17 th Ave S	22 nd Ave S	LOS A-C	LOS A-C	LOS A-C
	Medary Ave S	17 th Ave S	LOS A-C	LOS A-C	LOS A-C
	Main Ave S	Medary Ave S	LOS A-C	LOS A-C	LOS A-C

Corridor segments reflect major intersection to major intersection



20th Street S (between Main Avenue S and Western Avenue S)

Table 30: 20th Street S Corridor Analysis – Intersection LOS

INTERSECTION	EXISTING TRAFFIC CONTROL	EXISTING CONDITIONS	2040 INTERIM CONDITIONS	2050 PLANNING HORIZON
		AM / PM	AM / PM	AM / PM
20 th Street S & Main Avenue S	Signal	B / B	C / B	D / C
20 th Street S & Medary Avenue S	AWSC	C / C	F / F	F / F
20 th Street S & 17 th Avenue S	AWSC	C / C	E / F	F / F
20 th Street S & Lucerne Avenue	TWSC	A / A	A / A	A / A
20 th Street S & Ace Avenue	TWSC	A / A	A / A	A / A
20 th Street S & 22 nd Avenue S	Signal	B / B	C / C	F / E [#]
20 th Street S & I-29 SB RTI	TWSC	A / A	A / A	A / B ^{**}
20 th Street S & I-29 NB RTI	TWSC	A / A	C / B	F [*] / F ^{*#}
20 th Street S & 34 th Avenue S	TWSC	A / A	B / A	F [*] / C [#]

LOS based on overall intersection delay, with intersection LOS in the morning and/or afternoon peak hour

TWSC: Two-way stop-control; AWSC: All-way stop control; RTI: Ramp terminal intersection

* Indicates TWSC side-street operations of LOS F

** SDDOT currently allows LOS D on state routes in urban areas

Traffic operational needs (signalization and/or additional turn lanes) are consistent with the 2025 update to the I-29 Exit 130 (20th Street S) Interchange Justification Report (IJR)



20th Street S & 22nd Avenue S Intersection

5.5 Intersection Traffic Control Evaluations

Two sets of intersections, identified by the Study Advisory Team and listed below, were evaluated intersection traffic control warrants for either all-way stop control, traffic signals under existing lane configurations. Planning-level warrants were reviewed based on Manual on Uniform Traffic Control Devices (MUTCD) guidance and with respect to existing and future-year forecasted intersection turning movements, crash history from January 2019 to June 2024, bicyclist and pedestrian considerations, and other factors. One additional intersection was also reviewed for the applicability of a roundabout. Results of the intersection traffic control evaluations are summarized in **Table 31**. Additional information is provided in the *Intersection Traffic Control Evaluations Memo* in **Appendix D**.

All-Way Stop Control Warrant Evaluations:

- 15th Street S & Medary Avenue S
- 3rd Street & 5th Avenue
- 20th Street S & 34th Avenue S
- 12th Street S & 7th Avenue S
- 7th Street & Campanile Avenue

Traffic Signal Warrant Evaluations:

- Main Avenue S & Sweetgrass Drive
- 32nd Street S & Main Avenue S
- 20th Street S & Medary Avenue S
- 22nd Avenue S & Eastbrook Drive
- 12th Street S & 22nd Avenue S
- US14 / 6th Street & Western Avenue
(also evaluated for a roundabout)

Table 31: Intersection Traffic Control Evaluation Results

INTERSECTION	EXISTING CONDITIONS	2040 INTERIM NO BUILD CONDITIONS	2050 PLANNING HORIZON NO BUILD CONDITIONS
ALL-WAY STOP CONTROL WARRANT EVALUATION LOCATIONS			
15 th Street S & Medary Avenue S	Applicable Criteria	Applicable Criteria	Approaching Warrants / Applicable Criteria
3 rd Street & 5 th Avenue	Approaching Warrants / Applicable Criteria	Approaching Warrants / Applicable Criteria	Warrants Met
20 th Street S & 34 th Avenue S	Warrants Not Met	Warrants Met	Warrants Met
12 th Street S & 7 th Avenue S	Applicable Criteria	Applicable Criteria	Applicable Criteria
7 th Street & Campanile Avenue	Applicable Criteria	Applicable Criteria	Applicable Criteria
TRAFFIC SIGNAL WARRANT EVALUATION LOCATIONS			
Main Avenue S & Sweetgrass Drive	Warrants Not Met	Warrants Not Met	Monitor Volumes
32 nd Street S & Main Avenue S	Warrants Not Met	Warrants Not Met	Warrants Met
20 th Street S & Medary Avenue S	Warrants Not Met	Warrants Met	Warrants Met
22 nd Avenue S & Eastbrook Drive	Crash Warrant Met / Monitor Volumes	Crash Warrant Met / Monitor Volumes	Warrants Met
12 th Street S & 22 nd Avenue S	Warrants Not Met	Monitor Volumes	Approaching Warrants / Monitor Volumes
ROUNDBOUT / TRAFFIC SIGNAL EVALUATION LOCATIONS			
US14 / 6 th Street & Western Avenue	Roundabout Applicable / Signal Warrant Met (Crash Warrant)		

5.6 Road Diet Evaluations

Several corridors, identified by the Study Advisory Team, were evaluated as potential road diet candidates based on safety, traffic volumes and operations, and multimodal considerations. Road diets, also known as roadway reconfigurations, are typically defined by the removal or narrowing of vehicle travel lanes and the reutilization of that space for other uses and travel modes. Road diets have a variety of benefits including decreases in rear-end, left turn, and sideswipe crashes, reduced vehicle speed differentials for more consistent traffic flow, and improved safety and facility opportunities for bicyclists and pedestrians. Potential uses of the reallocated space from a road diet could include bike lanes, shared use paths, pedestrian refuge islands, or on-street parking.

Road diet evaluation corridors included:

- **Main Avenue S:** 8th Street S to 20th Street S
- **Summit Pass:** Western Avenue to 16th Avenue SW
- **15th Street S:** 17th Avenue S to Medary Avenue S
- **Medary Avenue:** 8th Street to US14 / 6th Street

All evaluated corridors were considered suitable for a potential road diet configuration.

Recommendations for each reviewed corridor, if a road diet is considered, included:

- **Main Avenue S:** 5-Lane to 3-Lane road diet with options to reduce and narrow travel lanes and reallocate space for multimodal users
- **Summit Pass:** 2-Lane road diet with options to narrow travel lanes, provide traffic calming, and reallocate space for multimodal users
- **15th Street S:** 2-Lane road diet with options to narrow travel lanes, provide traffic calming, and reallocate space for multimodal users
- **Medary Avenue:** Undivided 4-Lane to 3-Lane road diet with options to reduce and narrow travel lanes and reallocate space for multimodal users

For each corridor evaluated for a road diet, several road diet concept typical sections were developed to showcase options for reduced or narrowed travel lanes, shared use paths, on-street or raised buffered bike lanes, and other considerations. Additional information on the road diet evaluations and concepts is provided in the *Road Diet Evaluations Memo* in **Appendix E**.

LOCAL ROAD DIET EXAMPLE (8th STREET S)

In the mid-1990s, a road diet was performed on 8th Street S, spanning from 22nd Avenue S to Main Avenue S, during a mill and overlay project. Prior to this project, the corridor was an undivided 4-lane roadway with no center left turn lanes, poor lane utilization, greater potential for rear-end collisions at signalized intersections, and minimal multimodal features. The road diet reconfigured the corridor to a 3-lane facility with a center left turn lane and on-street bike lanes to improve safety and operations for drivers, bicyclists, and pedestrians.



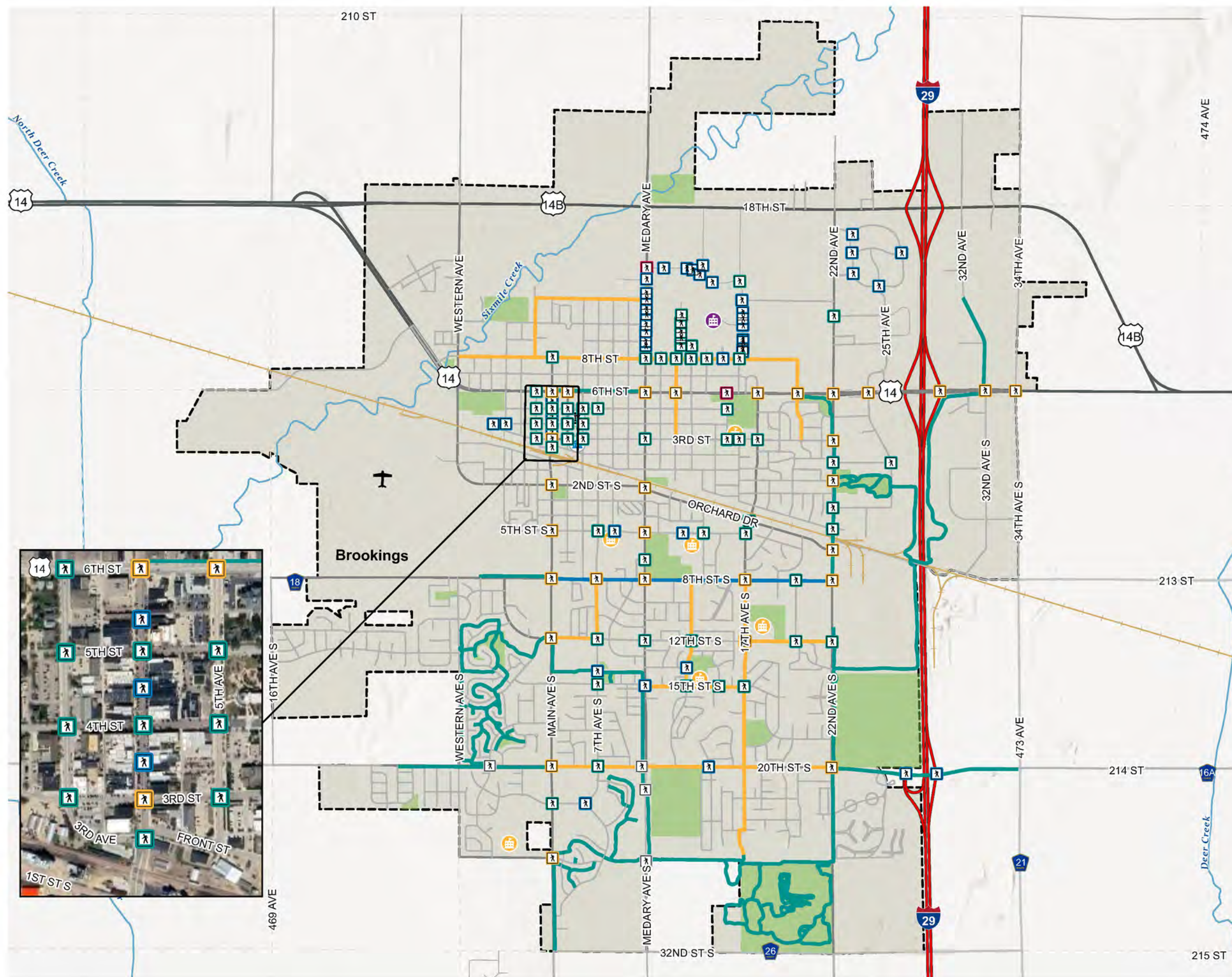
8th Street S Corridor

5.7 Multimodal Network

Bicycle and Pedestrian System

The City of Brookings has an excellent network of sidewalks and pedestrian crossings, shared use paths, and an emerging bicycling network. **Figure 34** shows the existing bicycle and pedestrian network and public amenities such as schools and parks. Further description of the existing bicycle and pedestrian facilities found in the Brookings area is below.

SIDEWALKS 	Sidewalks are typically 4-5-feet wide and designed for people walking. They must be compliant with the Americans with Disabilities Act (ADA). General sidewalk coverage within Brookings is good, but some neighborhoods have been developed without sidewalks. Some newer subdivisions, such as Sweetgrass Crossing, have prioritized sidewalks behind homes rather than in front. The Indian Hills neighborhood around Indian Hills Trail also favored sidewalk paths through greenspace in the rear of homes over sidewalks parallel to the street. Some older neighborhoods, such as Western Estates, also have not included sidewalks.
SHARED USE PATHS 	Shared use paths are multiuse facilities typically separated from the roadway and provide a low-stress route for people walking, biking, and using micromobility devices. Shared use paths are located in some parks, such as Dakota Nature Park, McCrory Gardens, and Rotary Park. Shared use paths are also located along 22nd Avenue and Medary Avenue.
NATURAL SURFACE TRAILS 	Natural surface trails are unpaved facilities used for recreational purposes, namely hiking. There are natural surface trails at Dakota Nature Park.
SHARED LANE MARKINGS 	Shared lane markings use a bicycle symbol and signage to designate a preferred route for people to bike, which is shared with vehicles. These should be low volume and low speed routes. Brookings has implemented shared lane markings on several streets including 12th Avenue and 8th Street. Some streets with shared lane markings, like 17th Avenue, experience daily traffic volumes that are considered too high to be suitable for shared lane usage between vehicles and bicyclists.
CONVENTIONAL BIKE LANES 	Conventional bike lanes are dedicated space for people to bike. They are generally 5-feet-wide and located on each side of the road to enable people biking to travel in the same direction as traffic. Brookings has conventional bike lanes on 8th Street South.



Existing Bicycle & Pedestrian Facilities

- Study Area
 - City Limits
 - City Park & Greenspace
 - City-County Government Center
 - Children's Museum
 - School
 - SDSU Campus
- ### Existing Bicycle and Pedestrian Facilities
- Shared-Use Path
 - Bike Lane
 - Shared Lane
 - X Signed Crosswalk
 - X Marked Crosswalk
 - X Marked and Signed Crosswalk
 - X Marked Crosswalk with Pedestrian Signal
 - X Marked Crosswalk with Pedestrian Flashing or Hybrid Beacon

0 1 Miles

Figure 34

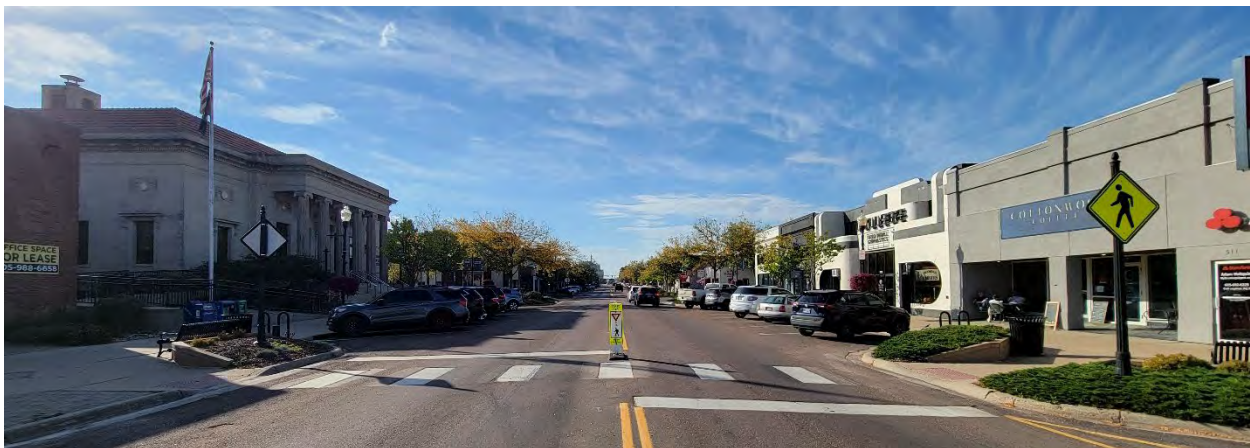
Downtown Brookings Bicycle & Pedestrian Evaluation

In the Downtown Brookings area, current bicycle and pedestrian facilities were evaluated for connectivity, safety, accessibility, and equity for multimodal users. This review focused primarily on the following downtown area corridors:

- **Main Avenue:** 3rd Avenue to US14 / 6th Street
- **3rd Avenue:** Main Avenue to US 14 / 6th Street
- **5th Avenue:** 3rd Street to US14 / 6th Street
- **Side Streets:** 3rd Street, 4th Street, and 5th Street (3rd Avenue to 5th Avenue)

Existing typical section elements, vehicle posted and observed speeds, and multimodal features for these downtown area corridors are listed in **Table 32**. Overall, the Downtown Brookings area already has many traffic calming and pedestrian-friendly elements incorporated along the Main Avenue corridor with marked crosswalks, mid-block crossing opportunities, curb extensions that narrow crossing length and encourage slower speeds, and a partial pedestrian scramble phase at the signalized intersection with 3rd Street. While these existing facilities promote safer interactions between vehicles and pedestrians in an urbanized environment, there are currently no designated bicycle facilities on Main Avenue where bicyclists are required to walk their bicycle on sidewalks or share the road with vehicles. This creates conflicts for bicyclists that want to ride downtown but do not feel comfortable sharing the road with vehicular traffic including vehicles that might back out of angle parking spots onto the street without seeing them.

Adjacent corridors like 3rd Avenue and 5th Avenue feature some of these elements including marked crosswalks or intersection curb extensions but generally lack the same extent of traffic calming features. In particular, 3rd Avenue does not include any marked or signed crosswalks or devices to cross over 3rd Avenue. The lack of designated pedestrian crossings is most concerning around the 72-hour parking lot, where people park to visit downtown shops, and 5th Street which leads to Pioneer Park west of 3rd Avenue. Similarly, 3rd and 5th Avenues, along with the east-west connecting streets, do not provide bicycle facilities for people to use when coming downtown from other areas of the city.



Main Avenue (Downtown Area)

Table 32: Downtown Brookings Area Existing Corridor Typical Section Elements

CORRIDOR	TYPICAL SECTION	ON-STREET PARKING	SPEEDS	MULTIMODAL FEATURES
Main Avenue	2-Lane Street	Angle Parking (both sides)	• <u>Posted</u>: 25 mph • <u>85th %tile</u>: 16-25 mph • <u>Average</u>: 12-22 mph • <u>Max</u>: 27-37 mph	• Wide sidewalks (approx. 14-15 ft.) • No bikes allowed on sidewalks • Marked crosswalks at signalized and AWSC intersections • Marked and signed mid-block crosswalks • Curb extensions at intersections and mid-block crosswalks • Signalized controlled crosswalks at US14 / 6th Street and 3rd Street • Partial pedestrian scramble signal crossing at 3rd Street • Bicycle parking / racks available
3rd Avenue	3-Lane Street (with center TWLTL)	Parallel Parking (both sides)	• <u>Posted</u>: 25 mph • <u>85th %tile</u>: 28-31 mph • <u>Average</u>: 24-27 mph • <u>Max</u>: 37-41 mph	• Wide sidewalks (approx. 10-11 ft.) • Marked crosswalks along minor street approaches (no major street crosswalks) • Curb extension on north corners of Front Street intersection
5th Avenue	3-Lane Street (with center TWLTL)	Parallel Parking (both sides)	• <u>Posted</u>: 25 mph • <u>85th %tile</u>: 28-31 mph • <u>Average</u>: 24-27 mph • <u>Max</u>: 37-41 mph	• Sidewalks • Marked crosswalks at intersections • Curb extensions at 4th Street intersection • Bicycle parking / racks available
Side Streets (3rd, 4th, & 5th Street)	2-Lane Street	Angle Parking (both sides) Parallel Parking (both sides) [3 rd Street]	• <u>Posted</u>: 25 mph • <u>85th %tile</u>: 27 mph • <u>Average</u>: 23 mph • <u>Max</u>: 39-44 mph <u>Note</u>: Based on data collected along 3rd Street (east of Main Avenue)	• Sidewalk • Marked crosswalks at intersections • Curb extensions at intersections with Main Avenue (and 5th Avenue for 4th Street)

TWLTL: Two-Way Left Turn Lane; AWSC: All-Way Stop Control

Transit

The [Brookings Area Transit Authority \(BATA\)](#) provides advance-reservation transit service to the City of Brookings and Brookings County area as well as extended rides to Sioux Falls and other communities outside of the county. This is a curb-to-curb service where trips typically need to be scheduled at least by 5 p.m. the day prior for a ride. BATA operations information is summarized in **Table 33**. BATA also provides an additional on-demand service for students and visitors during the SDSU academic year, known as Rabbit Ride, which runs on Friday and Saturday evenings.

Table 33: BATA Operations Information

Operating Hours	General Operating Hours: - Monday through Friday: 7:00 a.m. – 6:00 p.m. (excluding holidays) - Saturday and Sunday: No Service Rabbit Ride Operating Hours: - Friday and Saturday Nights: 9:00 p.m. – 2:30 a.m. (during SDSU academic calendar)
Trip Scheduling	General Rides: Monday through Friday: 7:00 a.m. – 6:00 p.m. Pre-scheduled rides: <u>Within City of Brookings limits</u>: Reservations typically required by 5:00 p.m. the day prior to a ride. Same-day reservations may be available <u>Outside of Brookings County</u>: Reservations required 48 hours in advance <u>Sioux Falls Shuttle Service</u>: Reservations typically required by 5:00 p.m. the day prior to a ride. Shuttle makes 3 round trips per day with regular departure times from Brookings (7:30 a.m., 11:00 a.m., and 2:30 p.m.) and Sioux Falls (9:00 a.m., 1:00 p.m., and 4:00 p.m.) <u>Rabbit Ride</u>: Schedule ride in advance (9:00 p.m. – 2:30 a.m.)
Fare	<u>Brookings Rides (within City limits) [pre-scheduled]</u>: \$4 per ride <u>Brookings Same-Day Reservations (within City limits) [if available]</u>: \$10 per ride <u>Outside of Brookings County</u>: Call dispatch office for rates (605) 692-2222 <u>Sioux Falls Shuttle Service</u>: \$40 per person (one-way or round-trip within the same day) <u>Rabbit Ride</u>: Students or visitors ride for free <u>School-Year Passes</u>: <u>Brookings City Limits</u>: 2 rides/day - \$400 per semester or \$800 per year <u>Brookings to/from Sioux Valley/Volga Christian</u>: 2 rides per day - \$650 per semester or \$1,300 per year <u>Preschool</u>: 5 days per week - \$380 per semester or \$760 per year 3 days per week - \$220 per semester or \$440 per year 2 days per week - \$160 per semester or \$320 per year

Source: BATA

Airport

The [Brookings Regional Airport](#) (BKK) is located on the west side of Brookings, south of US14 / 6th Street and southwest of Western Avenue. The airport is owned by the City of Brookings and operated through the City-appointed Airport Board. It is classified as a Large General Aviation airport by the SDDOT Office of Air, Rail, and Transit and as a regional airport by the Federal Aviation Administration. The general aviation services are provided through a fixed-base operator and the airport has 59 based aircraft. The airport works collaboratively with the [SDSU Aviation Program](#) to provide students the opportunity to complete necessary pilot training hours and to become certified flight instructors and professional pilots. The nearest commercial airports are Joe Foss Regional Airport (FSD) in Sioux Falls (small hub) and Watertown Regional Airport (ATY) in Watertown (non-hub).

Rail

One primary rail line crosses through Brookings in a northwest/southeast direction in the central portion of the city. This line is owned and operated by Rapid City, Pierre and Eastern Railroad (RCPE) as part of connections to Tracy, MN (to the east) and Huron, Pierre, and Rapid City, SD (to the west). Existing at-grade railroad crossings within the Brookings area, previously shown in **Figure 13a**, were reviewed to understand current conditions.

Intercity Bus Service

In addition to BATA, the Brookings region has an intercity bus service operated by Jefferson Lines, with passenger pick-ups and drop-offs conducted at the Brookings/Jefferson Lines Curbside Bus Stop adjacent to the Cenex Zip Trip convenience store/gas station located at 3045 Lefevre Drive. Jefferson Lines serves as the regional intercity bus carrier, connecting Brookings with other communities in South Dakota, along the I-29 and I-90 corridors as well as communities in North Dakota, Minnesota, Iowa, and Nebraska. Jefferson Lines main service area includes the central and northwest United States, from Arkansas to Washington state.

5.8 Parking

Parking issues have been raised in several locations around Brookings, particularly in the downtown area, surrounding multifamily land uses around the city, and with respect to street width when on-street parking lanes are present. Several studies, including the [2024 Downtown Brookings Master Plan](#), the 2024 Downtown Parking Study, and BATP public engagement have indicated these needs and included several recommendations for further consideration.

In 2024, SDSU students conducted a downtown parking study to determine parking occupancy rates, survey the public to garner impressions of the current conditions of downtown area parking, and review potential changes from parallel parking lanes to diagonal parking on downtown corridors. Occupancy rates and the percentage of parking stalls in use for on-street parking and select parking lots (shown in **Figure 35**) are summarized in **Table 34** and **Table 35**, respectively. Main Avenue and 3rd Street experienced the highest occupancy rates for on-street parking during noon and evening hours while the Parks & Recreation and Activity Center saw the highest occupancy rates for parking lots during the same timeframes. Overall, the study concluded that sufficient parking is currently available in the downtown area although there are several key opportunities for improvements.

Survey results from the study, largely derived from downtown-targeted audience, indicated there are opportunities to improve public parking lot signage and wayfinding, add additional on-street parking stalls and public parking lots, and further evaluate the feasibility of converting parallel parking stalls to angle parking. Further reviews of parking stall conversions on 3rd Avenue, 5th Avenue, and 3rd Street determined that up to 135 parking stalls could be added to the downtown area if these corridors are converted to angle parking. The [2024 Downtown Brookings Master Plan](#) also included recommendations to evaluate angle parking on corridors such as 3rd Avenue during future redesign efforts.

During the first phase of BATP public engagement, several comments pertaining to on-street parking adjacent to multifamily land uses throughout the city were received. Some multifamily areas tend to experience a lack of available on-street parking due to higher utilization from property owners and tenants and because of driveway density in these areas. Higher on-street parking occupancy rates in these areas, such as around the SDSU campus, indicate additional parking demand and can create issues such as limited travel lane space and potential sight distance issues at adjacent intersections.

While some BATP public engagement comments mentioned expanded on-street parking opportunities, several comments expressed a desire for complete streets throughout the city that account for all modes of travel. As standards and design concepts are developed with respect to on-street parking, multimodal users (including bicyclists and pedestrians) should be fully considered and incorporated into all related future recommendations.

Table 34: Downtown Brookings Average Occupancy Rates for On-Street Parking

OCCUPANCY RATES	MAIN AVENUE	3 RD AVENUE	5 TH AVENUE	5 TH STREET	4 TH STREET	3 RD STREET	FRONT STREET
Average	70%	35%	32%	54%	53%	67%	37%
Morning	40%	31%	35%	41%	26%	42%	45%
Noon	84%	44%	49%	75%	63%	76%	38%
Evening	86%	31%	11%	46%	69%	82%	29%
Handicap	50% (10 Stalls)	0% (1 Stall)	n/a	0% (2 Stalls)	0% (4 Stalls)	0% (1 Stall)	0% (1 Stall)
Total Number of Spaces	129	49	55	73	82	63	32

Source: 2024 Downtown Parking Study

Table 35: Downtown Brookings Average Occupancy Rates for Public Parking Lots

OCCUPANCY RATES	DEPOT LOT	PARKS & RECREATION LOT	72 HOUR LOT	24 HOUR LOT	ACTIVITY CENTER LOT	LIBRARY LOT	CITY / COUNTY GOVERNMENT CENTER LOT
Average	16%	70%	38%	66%	48%	17%	12%
Morning	9%	49%	45%	60%	35%	24%	16%
Noon	17%	73%	34%	73%	75%	16%	17%
Evening	22%	89%	34%	56%	35%	12%	4%
Handicap	0% (1 Stall)	33% (3 Stalls)	0% (2 Stalls)	n/a	57% (7 Stalls)	33% (3 Stalls)	0% (4 Stalls)
Electric Vehicle	n/a	n/a	n/a	n/a	4	n/a	2
Total Number Of Spaces	24	40	125	45	51	28	106

Source: 2024 Downtown Parking Study



3rd Avenue (Downtown Area)



Source: 2024 Downtown Parking Study
Figure 35: 2024 Downtown Parking Study Areas

5.9 Special Events

Several special events occur in the Brookings area every year and create notable demand on the local transportation network. These events include SDSU Football and Basketball sporting events, events/programs at the Dacotah Bank Center, and the Brookings Summer Arts Festival. Special event traffic studies were conducted to observe traffic and pedestrian operations and safety impacts for the demand created for each of the aforementioned events. Improvements implemented since the previous set of special event traffic reviews in the 2011 Brookings Area MTP and new recommendations are included in the *Special Event Assessments for Traffic Conditions and Pedestrian Safety Memo* in **Appendix D**.

5.10 Bridges and Culverts

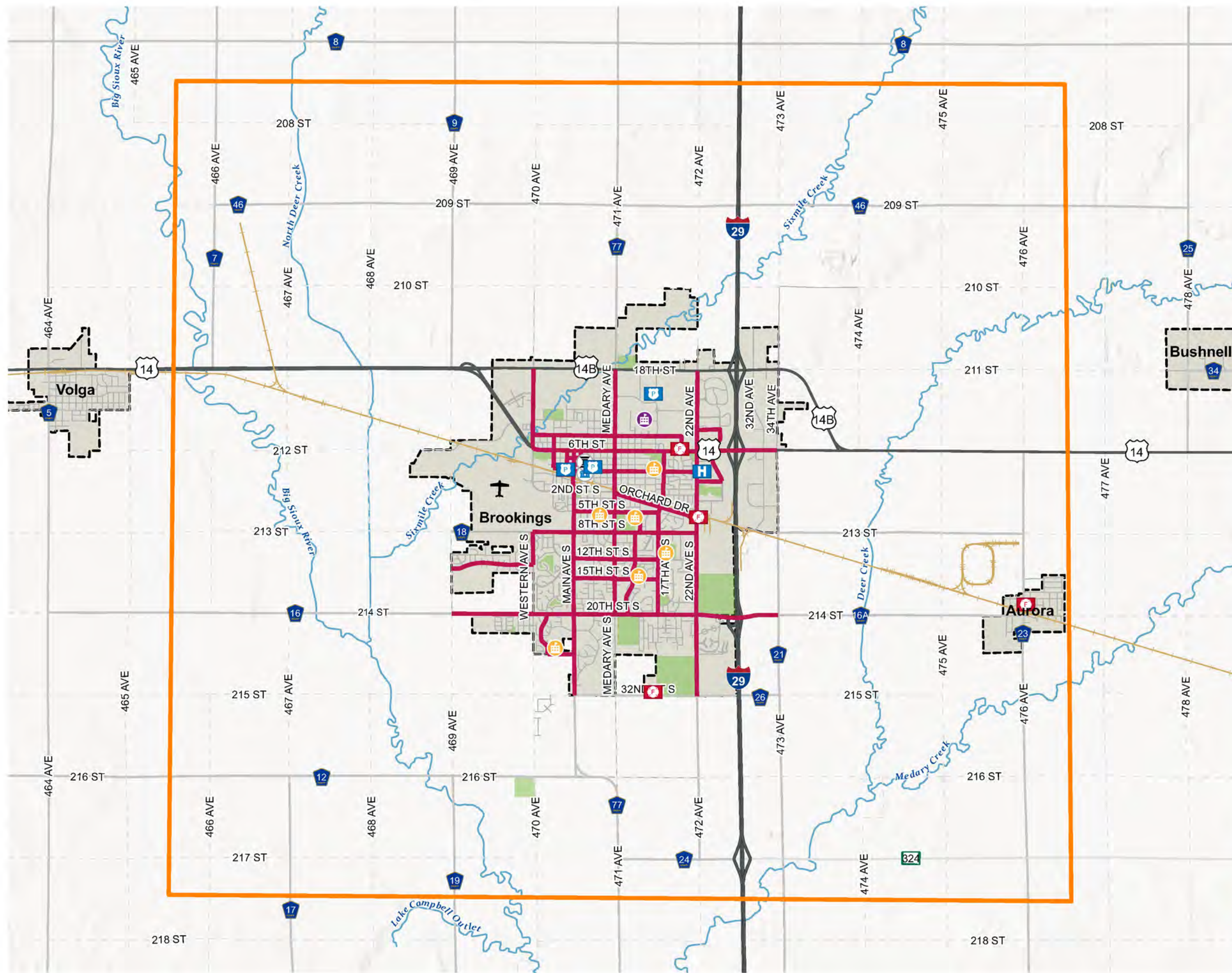
Brookings area bridges and culverts were previously shown in **Figure 13a**. Current bridge status, as of the 2024 bridge inspection reports for City of Brookings owned and maintained bridges, is provided in **Table 36**.

Table 36: Bridge Summary

BRIDGE #	TYPE	YEAR BUILT	ROUTE	CROSSING	CONDITION
06160158	Bridge	1988	Western Avenue	Sixmile Creek	Good
06170147	Bridge	1987	Medary Avenue	Sixmile Creek	Good
06170149	Bridge	1968	Medary Avenue	Sixmile Creek	Fair
06160152	Culvert	1932	Western Avenue	-	Poor

5.11 Emergency Snow Routes

The City of Brookings has developed a network of Emergency Snow Routes to provide access to critical facilities and infrastructure during adverse winter weather conditions, as shown in **Figure 36**. The current City of Brookings ordinance on parking restrictions and limitations ([Section 82-469](#)) indicates that ‘emergency snow routes be designated by appropriate signs and shall be cleared of snow at all times’. During snow event of two inches or more of snow accumulation, parking is prohibited on ‘Emergency’ routes until the accumulation ends and the street is cleared.



Emergency Snow Routes

- Study Area
- City Limits
- City Park & Greenspace
- Emergency Snow Routes
- Fire Station
- Hospital
- School
- SDSU Campus
- Law Enforcement
- City-County Government Center
- Children's Museum



Figure 36

5.12 Pavement Condition

Conditions of roadway pavement within the City of Brookings were reviewed based on pavement condition index (PCI) data collected in 2022. Roadway pavement data was reported in terms of PCI, which is a metric used to assess pavement health based on a scale of 0 to 100, with 100 being excellent condition. **Table 37** describes the PCI ratings. **Figure 37** shows the Brookings Roadway network-wide segment PCI results.

Table 37: Pavement Condition Index Descriptions

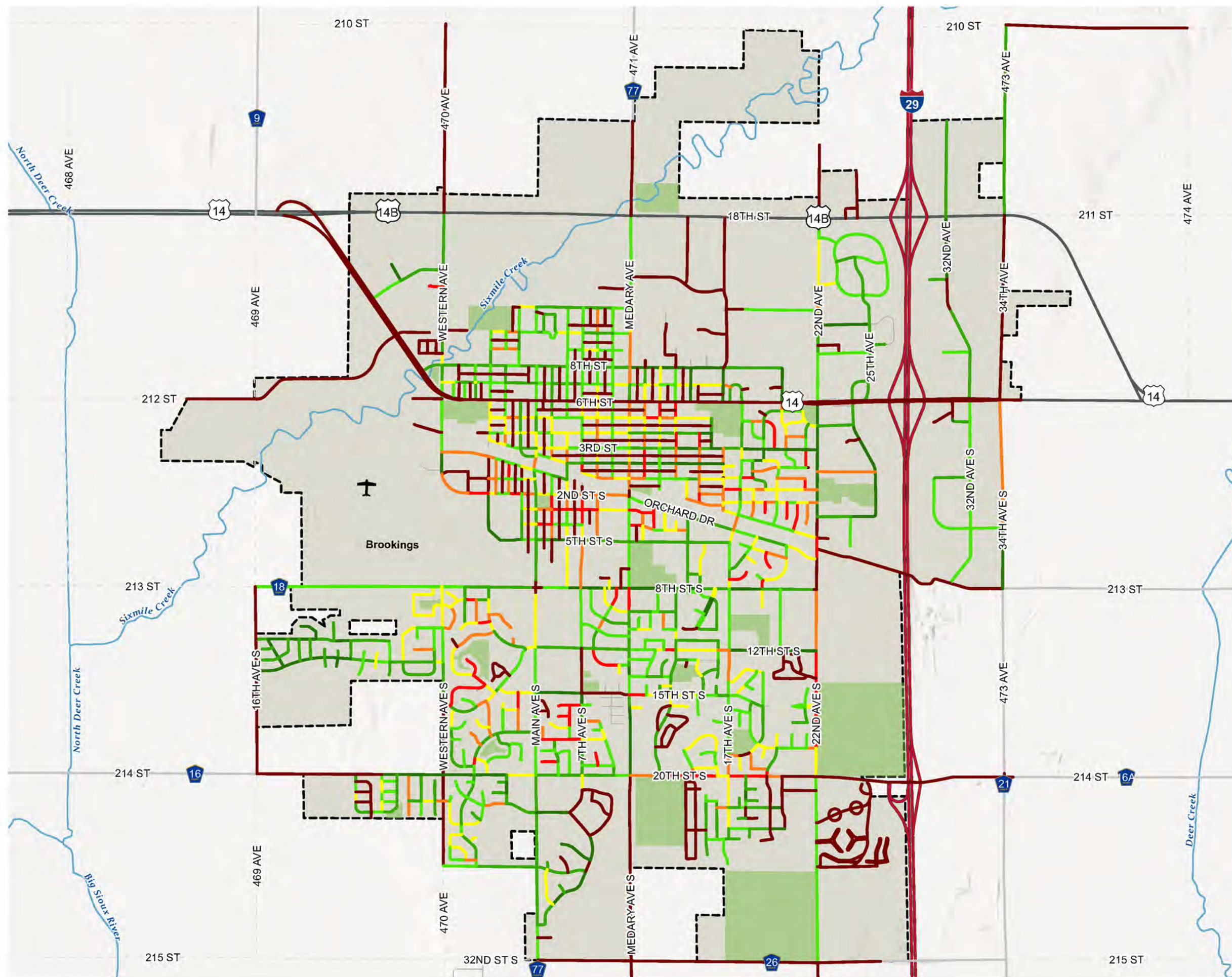
PCI RANGE	DESCRIPTION	RELATIVE REMAINING LIFE	DEFINITION
85-100	Excellent	15 to 25 Years	“Like new” condition. Little to no maintenance required when new; routine maintenance such as crack and joint sealing.
70-85	Very Good	12 to 20 Years	Routine maintenance such as patching and crack sealing with surface treatment such as seal coats or slurries.
60-70	Good	10 to 15 Years	Heavier surface treatments, chip seals, and thin overlays. Localized panel replacements for concrete.
40-60	Fair	7 to 12 Years	Heavy surface-based inlays or overlays with localized repairs. Moderate to extensive panel replacements.
25-40	Poor	5 to 10 Years	Sections will require very thick overlays, surface replacement, base reconstruction, and possible subgrade stabilization.
0-25	Very Poor	0 to 5 Years	High percentage of full reconstruction.

Source: Infrastructure Management Services (IMS)

A summary of Brookings’s major pavement maintenance and preservation activities over the last 10 years is provided in **Figure 38**. Identified activities include resurfacing projects, chip seal, and slurry seal, which are in addition to general maintenance activities and spot-modifications such as patching.



8th Street S (between 22nd Avenue S and 17th Avenue S)



Pavement Condition Index, City of Brookings (2022)

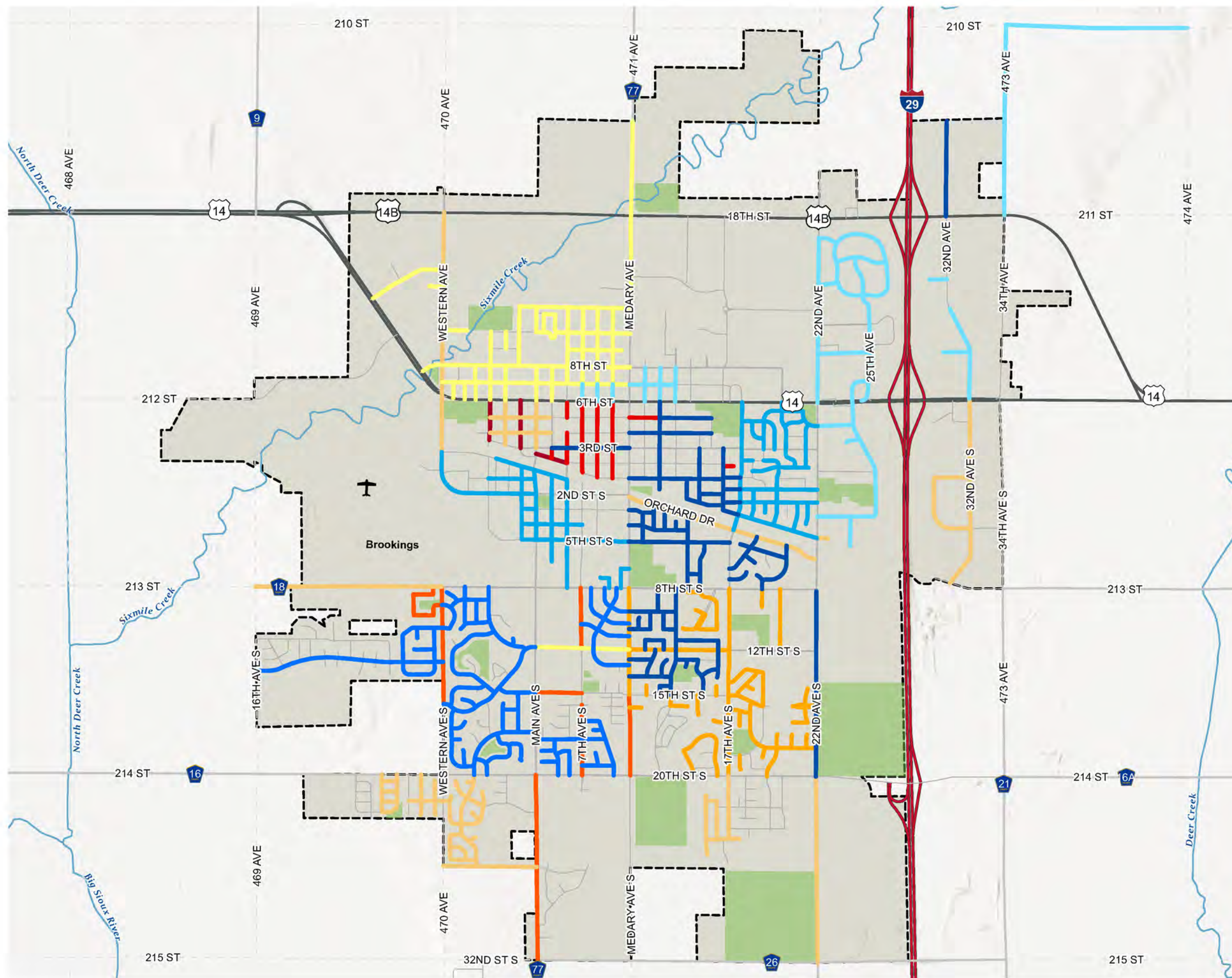
- Study Area
 - City Limits
 - City Park & Greenspace
 - Interstate
 - US Highways
 - State Highways
 - County Roads
 - City Road
 - Township Roads
- Pavement Condition**
- Very Poor (0 to 25)
 - Poor (26 to 40)
 - Marginal (41 to 50)
 - Fair (51 to 60)
 - Good (61 to 70)
 - Very Good (71 to 85)
 - Excellent (86 to 100)

0 1 Miles



Figure 37





Historical Roadway Maintenance and Preservation Activities (Chip or Slurry Seal Projects)

- Study Area
- City Limits
- City Park & Greenspace
- Interstate
- US Highways
- State Highways
- County Roads
- City Road
- Township Roads

- ### Chip or Slurry Seal Projects
- 2015
 - 2016
 - 2017
 - 2018
 - 2019
 - 2020
 - 2021
 - 2022
 - 2023
 - 2024

0 1 Miles

Figure 38b

5.13 Freight System

Highway Freight

Highway freight facilities account for a majority of freight movements in the Brookings area. The need to maintain efficient freight connections is highlighted by the proximity of I-29, US14, US14 Bypass, and SD324 to the Brookings area. According to the [2023 South Dakota Freight Plan](#), Brookings area truck routes on the South Dakota Preferential Truck Network include I-29, US14 (excluding 6th Street within the city), and US14 Bypass. These three routes are also considered long combination vehicle (LCV) routes.

Current average annual daily truck traffic (AADTT) volumes for these preferential truck routes are:

- **I-29:** 3,200 AADTT
- **US14 (excluding 6th Street):** 700 AADTT
- **US14 Bypass:** 800 AADTT

Based on the existing land use for the Brookings area (**Figure 4**), most commercial and industry land uses are located adjacent to I-29 with assumed common local truck routes to be along US14 / 6th Street, 22nd Avenue, Sunrise Ridge Road, Eastbrook Drive, 25th Avenue, 32nd Avenue, 34th Avenue. Other similar land uses are located along Western Avenue, Main Avenue, 8th Street S, and 20th Street S.

Rail Freight

Existing rail freight facilities within the Brookings area are operated by Rapid City, Pierre and Eastern Railroad (RCPE). Most commodities moved by rail are related to the notable South Dakota agricultural-based economy and include grain, cement, bentonite clay, and ethanol. These rail lines service several area ethanol and soybean facilities including Valero Renewables and Novita Aurora in Aurora and South Dakota Soybean Processors in Volga.

Air Freight

The Brookings Regional Airport (BKX) does not currently serve freight/air cargo operations as indicated in the [2020 South Dakota State Aviation Plan](#). The nearest air facilities that serve freight/air cargo operations are the Joe Foss Regional Airport (FSD), Watertown Regional Airport (ATY), and Huron Regional Airport (HON).

Pipelines

The National Pipeline Mapping System identifies one gas transmission pipeline within Brookings County near the Brookings area. This gas transmission line is operated by Northern Natural Gas Company and runs along US14 and US14 Bypass in northwest Brookings.

5.14 Environmental Considerations

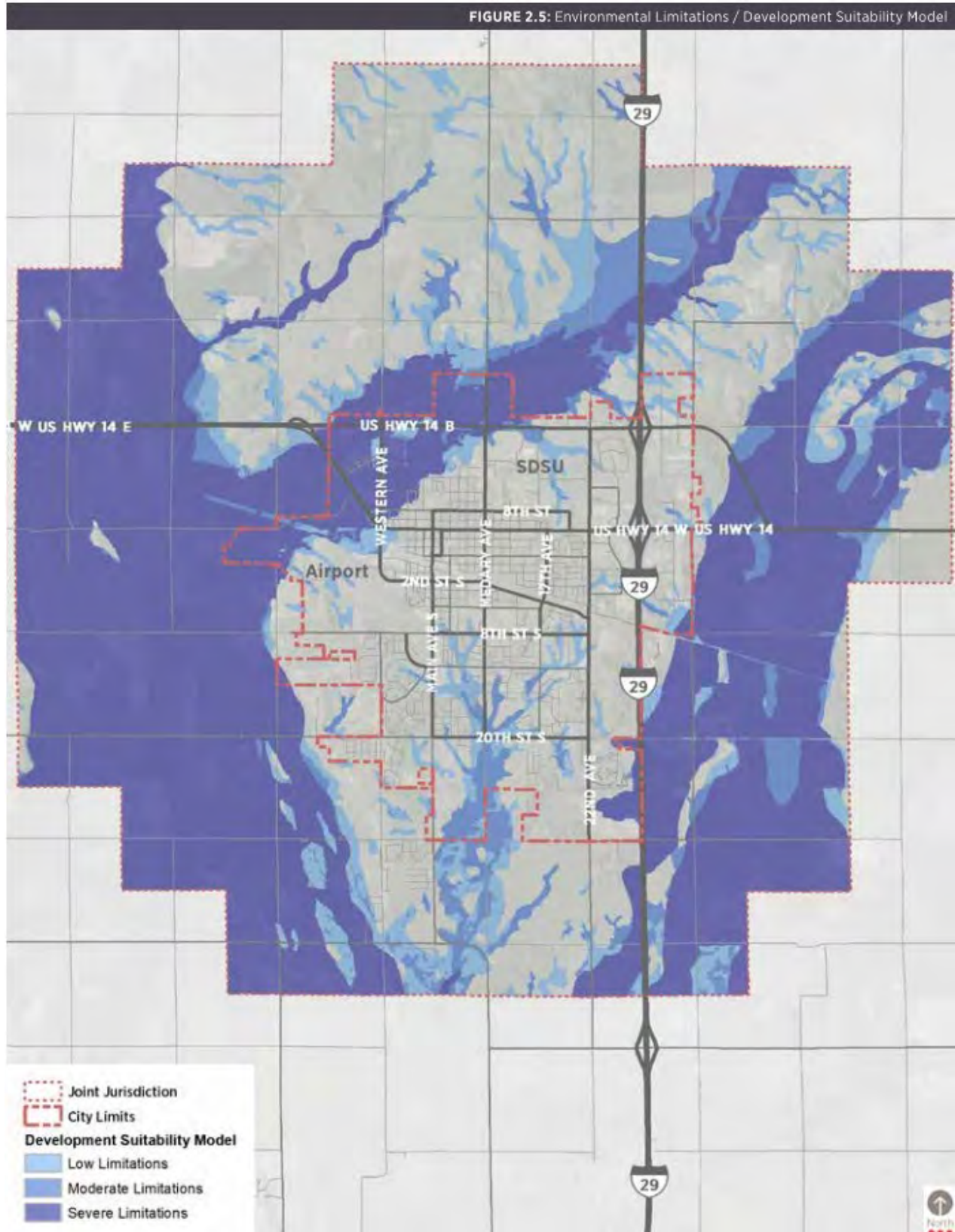
The City of Brookings transportation network reflects an environmentally constrained area due to the presence of rivers, floodplain, and wetlands which surround the city growth areas from all directions. Primary rivers include the Big Sioux River (west of Brookings), Sixmile Creek (north and west of Brookings), Deer Creek (east of Brookings), and Medary Creek (south and east of Brookings) which all generally flow north to south. These areas create barriers to transportation connectivity, may limit transportation network reliability, and limit future development.

During the development of the [City of Brookings 2040 Comprehensive Plan](#), a development suitability model was utilized to denote areas with environmental limitations from low to severe as shown in **Figure 39**. Identifying roadways that may be impacted by flooding can improve transportation network resiliency by planning for alternative routes in the event of flood hazards. Maintaining roadways enables viable options for emergency response services to respond to a variety of situations. Projects identified within mapped floodplain or floodways should be evaluated to determine if impacts to flood elevations will occur. No-rise certification may be required for fill within floodplains. Coordination with the floodplain coordinator should occur if impacts to the flood elevation are anticipated.

Parks and trails are important to the transportation network for pedestrians and bicyclists to maintain connectivity throughout the City as development continues. Several parks and trails exist within the City. Special consideration should be provided to existing and planned recreational properties during development of the transportation network. Coordination with the SD Game Fish and Parks Grants Coordinator should occur if any recreational facilities are impacted to determine if they have received Land and Water Conservation Funds (LWCF), subjecting them to Section 6(f) of the LWCF Act.



Shared Use Path Network (between Medary Avenue S and Goldenrod Trail)



Source: City of Brookings 2040 Comprehensive Plan (2018)

Figure 39: Environmental Considerations

6 Issues and Needs Summary

Overarching issues and needs, as identified through the public and stakeholder engagement and Baseline Conditions analysis, for the Brookings area transportation network are summarized as follows. Collectively, these needs establish a foundation for the BATP to proactively plan for and implement strategies to address existing and future needs through projects, design guidance, policies, and prioritized recommendations

Traffic Safety

Intersections and corridor segments with high injury crash frequency and rates tend to be located along corridors with either higher traffic volumes or adjacent rural highways or township gravel roads that are just outside the current city limits.

- Commonly identified needs at these elevated crash locations include turn lanes, intersection traffic control, vehicle speeds (traffic calming), access management, and additional crossing and linear elements for VRUs (bicyclists and pedestrians)
- Safety was an integral part of many comments geared towards specific locations or elements of the transportation network

Elevated crash index Tier 1 and Tier 2 locations from **Table 20** and **Table 21** include:

ELEVATED INJURY CRASH INTERSECTIONS

1. 22nd Avenue S & 20th Street S
2. US14 & BC Hwy 23 / 476th Avenue
3. 4th Street & 11th Avenue
4. 4th Street & Main Avenue
5. US14 / 6th Street & I-29 Exit 132 NB RTI
6. 22nd Avenue & University Boulevard
7. 20th Street S & 17th Avenue S
8. 4th Street & 9th Avenue
9. US14 / 6th Street & Sunrise Ridge Road
10. 5th Street & 8th Avenue
11. US14 / 6th Street & Medary Avenue
12. US14 / 6th Street & 22nd Avenue

ELEVATED INJURY CRASH ROADWAY SEGMENTS

1. Western Avenue: US14B / 18th St to 208th
2. BC Hwy 21: 216th St to BC Hwy 26 / 32nd St S
3. Southland Lane: 8th St S to 12th St S
4. 17th Avenue S: 15th St S to 20th St S
5. BC Hwy 12: BC Hwy 77 to 470th Ave
6. 213th Street: 466th Ave to W 16th Ave S
7. BC Hwy 16: 466th Ave to 469th Ave
8. 12th Street S: Medary Ave S to 17th Ave S
9. SD324: I-29 Exit 127 NB RTI to BC Hwy 23
10. 5th Avenue: US14 / 6th St to 5th St
11. US14 / 6th Street: 17th Ave to 20th Ave
12. Sunrise Ridge Road: US14 / 6th St to 25th Ave
13. Main Avenue: 3rd St to 4th St
14. 472nd Avenue: BC Hwy 24 to 218th St

Traffic Operations

Brookings exhibits a solid foundation of high-capacity multilane arterial streets through US14 / 6th Street, 22nd Avenue, and Main Avenue S, supported by a connected grid of collector and local streets. The long-range operational needs are most apparent in developing areas near current city limits, such as along the US14 Bypass / 18th Street, 22nd Avenue S, 20th Street S, and Main Avenue S. In addition, several central area 2-lane roadways were identified for turn lanes or intersection traffic control improvements.

Bicycle and Pedestrian Travel

Route connectivity and continuity, safety, enhanced walkability, and desire for additional and more protected biking and walking opportunities were common themes from the review of baseline conditions and public engagement feedback. All 28 of the Brookings area crashes involving people biking or walking resulted in injury, highlighting the importance of safe crossings. Bicycle and pedestrian needs include:

- Support a cohesive and active community by continuing to enhance route connectivity and continuity throughout the Brookings area via on-and off-street biking and walking facilities
 - Off-street facilities (shared use side paths or trails following their own alignment) were the preferred method to accommodate a wide range of users
- Connect with future City of Volga and City of Aurora shared use paths to enhance inter-community connectivity
- Improve roadway crossing locations through pavement markings, curb ramps, signage, and traffic control enhancements
- Integrate enhanced multimodal, complete streets design considerations with future projects to address public and stakeholder concerns such as improved street lighting, drainage, ADA-compliant sidewalk ramps, traffic calming, and designs with winter maintenance in mind
- Determine appropriate multimodal facility types based on roadway speed, volume, level of user comfort, safety, and continuity goals
- Consider strategies to improve multimodal connectivity and user comfort across US14 / 6th Street and between the SDSU campus and Downtown Brookings
- Improve bicycle and pedestrian travel to, from, and within the Downtown Brookings area

Transit

The Brookings Area Transit Authority (BATA) provides transit service to the City of Brookings and Brookings County area. This is a curb-to-curb service where most trips need to be scheduled the day prior to a ride. The public and stakeholder input expressed interest in exploring transit enhancements for the Brookings area, including, but not limited to, expanding BATA service hours and options, considering a fixed-route service throughout town (regularly scheduled buses), and dedicated routes (e.g. SDSU campus to Downtown Brookings, residential areas to grocery stores).

Transportation Planning Framework

A key element of transportation planning is establishing a framework to identify, prioritize, and implement projects to address identified needs. This was a primary need identified by the Study Advisory Team for the Brookings area, and included the development of:

- Major Roads Plan to prioritize routes throughout the Brookings Area
- Jurisdictional transfer guidance to identify candidate roadways and how/when the transfer should occur
- Design guidelines to support the Major Roads Plan
- Implementation plan that plans for and integrates multimodal elements into future projects

Parking

- Design guidelines to support the location of on-street parking facilities and related appropriate street widths, particularly with respect to higher utilization land uses such as multifamily
- Downtown Brookings:
 - Improve downtown parking wayfinding by adding public parking lots to Google and Apple Maps mapping systems
 - Restripe 24 Hour parking lot
 - Improve parking signage with 'P - Public Parking', '24 Hour Parking', '48 Hour Parking', and '72 Hour Parking' signs
 - Add or enlarge some of these signs in select locations.
 - Review sign placement to ensure optimal visibility upon entering the parking lot
 - Readjustment of general ADA parking stalls in the Library, Parks & Recreation, 72 Hour, Activity Center, and City/County Government Center parking lots based on the 2024 Downtown Parking Study
 - Discontinue the 72 hour permitted parking in the 72 Hour parking lot due to lack of need and knowledge of the program
 - Consider converting parallel parking to angle parking on select portions of 3rd Avenue, 5th Avenue, and 5th Street
 - Reconfigure and restripe the Parks & Recreation parking lot to add one additional parking stall

Other Transportation Needs

- **Pavement Management:** Conduct a pavement condition survey every 3 to 5 years to gather existing pavement condition data and develop a long-range pavement management plan



Orchard Drive (between 22nd Avenue S and 17th Avenue S)

7 Major Roads Plan

The Brookings Area Major Roads Plan provides a comprehensive, prioritized multimodal framework for improving and maintaining Brookings area roadways for the next 20+ years. The Major Roads Plan serves as a guide for future development and transportation projects to facilitate orderly growth and support multimodal travel. It is for City of Brookings use and does not replace, nor should be confused with, the federal roadway functional classification.

The Major Roads Plan provides a long-range, comprehensive vision of all public streets throughout the Brookings area. Each roadway across state, city, county, and township jurisdiction plays an important role within the collective transportation network and is categorized to establish a hierarchy for prioritization of transportation elements within the BATP.

The Major Roads Plan also identifies route priorities that build upon the categorized roadways. Each route serves a unique purpose, but when viewed collectively, they support the overarching street prioritization and play a key role in design, maintenance, and daily operations.

- **Truck Routes:** prioritized routes for regional freight movement within and through the Brookings area
- **Emergency Routes:** City of Brookings emergency snowplow routes to support emergency route prioritization and link critical infrastructure
- **Candidate Streets for Jurisdiction Realignment:** streets in transitioning areas that may benefit from a change in jurisdiction

7.1 Goals and Objectives

The Major Roads Plan was developed to address the following goals and objectives:

- Maintain and improve the overall transportation network, utilizing and building upon existing investments
- Support multimodal mobility, traffic volumes, and roadway function
- Guide planning of future roadways
- Maintain and improve route connectivity and continuity of similar facilities
- Evaluate and support route purpose and other transportation needs, such as:
 - Truck routes
 - Emergency routes
 - Mobility and land access relationships
 - Connectivity between high-demand origins and destinations
- Assign prioritization of parallel or duplicate routes
- Provide appropriate roadway jurisdiction based on traffic demand and development
- Provide appropriate roadway surfacing based on traffic demand
- Maximize benefits of the existing state highway network for local and regional trips (high-capacity corridors)
- Support on-street parking standards based on roadway function and related width

7.2 Roadway Categories

The basis for road categories within the Major Roads Plan follows similar methodology to the functional classification hierarchy. The relationship between mobility and access is the foundation of this hierarchy, with other considerations such as trip length and purpose, speed limit, traffic volumes (capacity), and vehicle mix also playing a role in the categorization. **Table 38** summarizes the following Major Roads Plan categories:

- Interstate
- Regional Arterial
- Local Arterial
- Collector
- Local

The Brookings Area Major Roads Plan is shown in **Figure 40**.

7.3 Truck Routes

The Major Roads Plan primary truck routes maintain connectivity to the regional freight system while avoiding impediments to the local street network. These routes establish corridors with special considerations associated with planning and design such as land uses served, right-of-way width, and the ability to accommodate trucks via appropriate lane widths, turning radii, traffic control, and roadway pavement section. The recommended primary truck route network includes Interstate and Regional and Local Arterial streets as shown in **Figure 41**.

7.4 Emergency Snow Routes

As development occurs, it is recommended that future arterial and collector streets are prioritized when expanding the emergency snow route network. In addition, it is recommended that [Section 82-469](#) in the City of Brookings code of ordinances be updated to reflect the current emergency snow routes depicted in **Figure 36**.

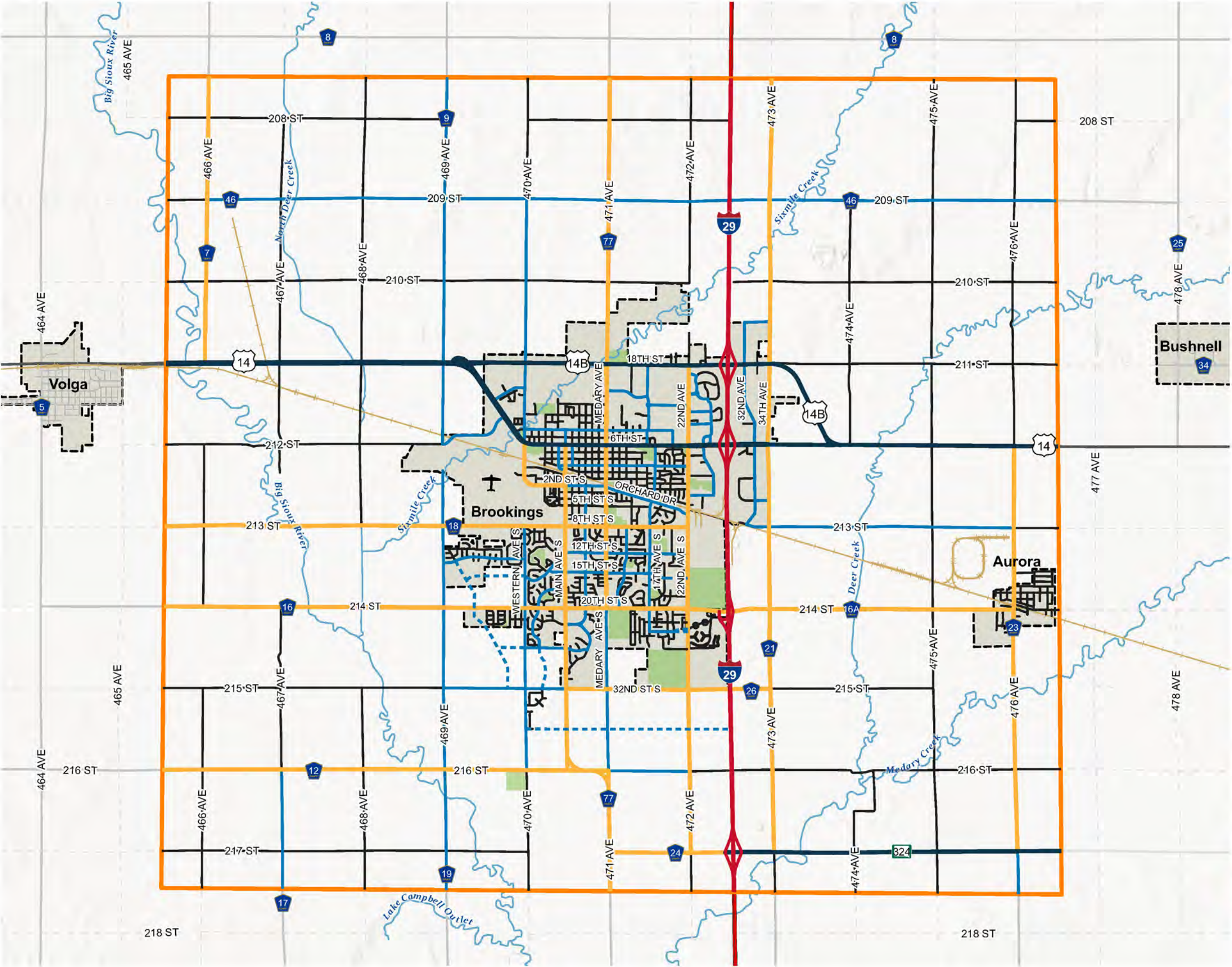


15th Street S & 7th Avenue S Intersection

Table 38: Brookings Area Major Roads Plan Categories

ROADWAY CATEGORY	MOBILITY LEVEL	CHARACTERISTICS	TRAFFIC CAPACITY	TYPICAL JURISDICTION	EXAMPLE
Interstate	Highest	- Divided, limited access facility with no direct property access and no at-grade crossings or intersections - Free-flow travel - Grade-separated interchanges - National importance with long trip lengths - High speeds	Highest	State	<i>Interstate 29</i>
Regional Arterial	High , mobility is favored over access	- Supports regional connectivity, typically extensions of state highway routes through Brookings - Part of a network to facilitate medium to longer distance inter and intra-city travel - High to moderate speeds - Supports truck and emergency routes - Cornerstone of high-capacity routes within the city	High Typically includes multiple lanes in each direction	State or Local	<i>US14 / 6th Street</i> <i>US14B / 18th Street</i>
Local Arterial	High , mobility is favored over access, but may exhibit greater access density than Regional Arterial	- Facilitates medium distance trips, primarily with origin and/or destination within Brookings - May be part of a network to facilitate medium to longer distance inter and intra-city travel - Local connectivity with Collector and Local streets - Augments the Regional Arterial system by providing additional arterial route options throughout the city - Moderate speeds - Supports truck and emergency routes	High May include multiple lanes or a single lane in each direction	Local	<i>22nd Avenue</i> <i>8th Street S</i>
Collector	Balanced access and mobility	- Prioritized link between Arterial and Local streets - Supports subarea traffic circulation and can help prioritize local routes - Moderate to low speeds - May provide direct property access	Moderate to Low Single lane in each direction	Local	<i>3rd Street</i> <i>17th Avenue</i>
Local	Low , prioritizes access over mobility	- Provides direct property access - Short trip lengths - Low speeds - Most common roadway category	Lowest	Local	<i>11th Street</i> <i>Moriarity Drive</i>

Brookings Area
Major Roads Plan

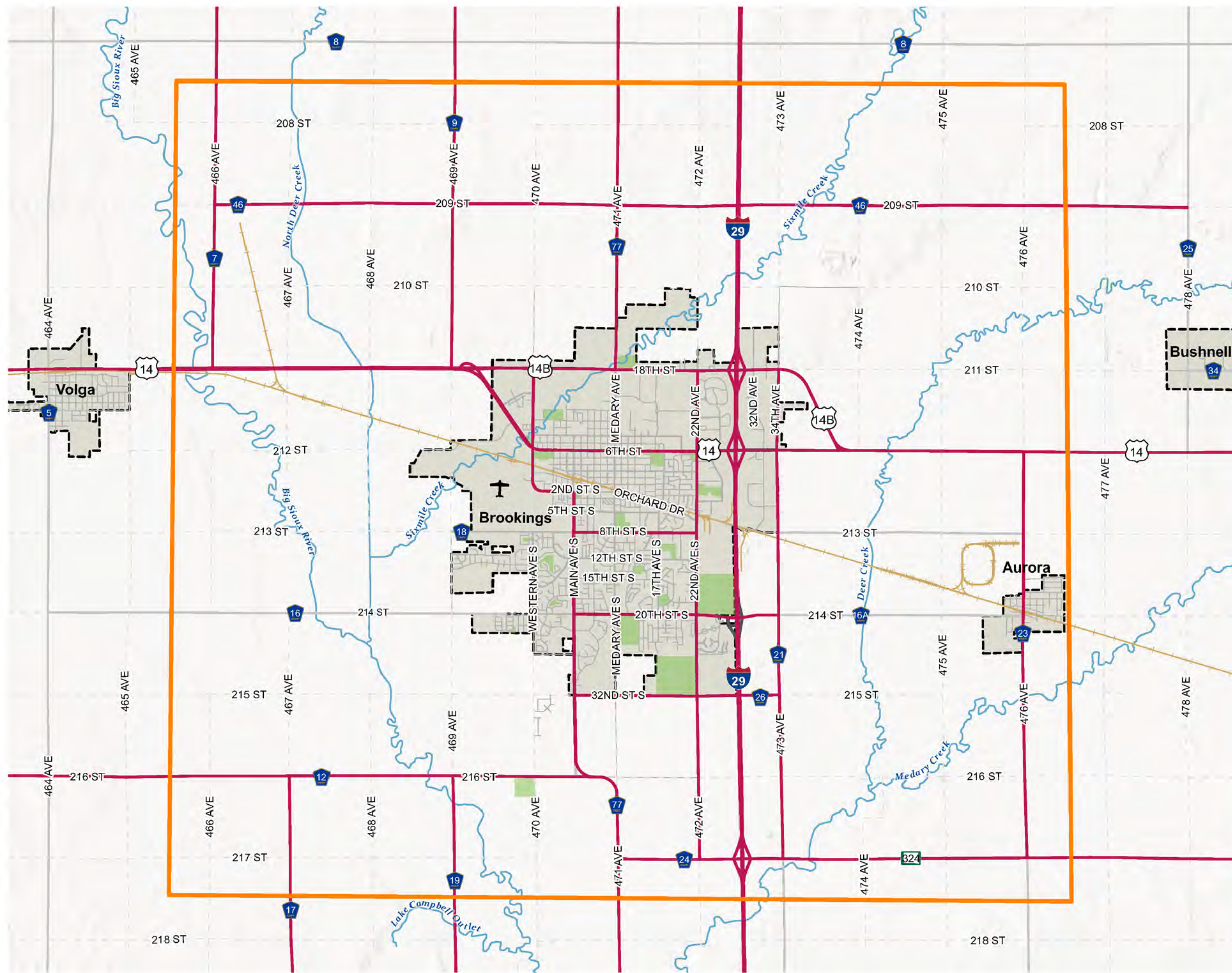


- Study Area
- City Limits
- Existing Street Classification
 - Interstate
 - Regional Arterial
 - Local Arterial
 - Collector
 - Local
- Future Street Classification
 - Local Arterial
 - Collector
 - Local

0 2 Miles



Figure 40



Recommended Major Roads Plan Primary Truck Routes

- Study Area
- City Limits
- City Park & Greenspace
- Recommended Primary Truck Routes

0 2 Miles

Figure 41

7.5 Candidate Roadways for Jurisdictional Transfer

Roadway jurisdiction determines whether a road falls under state, county, city, township, or other level of responsibility. With continued development and changing traffic patterns, it is advantageous to periodically review roadway jurisdiction throughout the Brookings area to provide the proper levels of roadway ownership, operations, and maintenance.

Candidate roadways for jurisdictional transfer within the Brookings area are shown in **Table 39** and **Figure 42**. The following priority tiers are based on Study Advisory Team input, timeline of transportation needs and potential projects, and other considerations associated with jurisdictional transfer:

- **Tier 1:** High priority to address existing needs
- **Tier 2:** Medium priority or priority based on future development timeline
- **Tier 3:** Low priority or long-range needs

Implementing a jurisdictional transfer involves several considerations. Ultimately, both the transferring and receiving agencies need to agree upon what is involved. The **Roadway Standards and Guidelines** chapter further describes these considerations and presents a recommended process to facilitate roadway jurisdictional transfer.

To help facilitate future transfers and questions on roadway jurisdiction, it is recommended that growth boundary resolutions be in place between the City of Brookings and City of Aurora and City of Brookings and City of Volga.



Western Avenue (South Brookings Growth Area)

Table 39: Brookings Area Candidate Roadways for Jurisdictional Transfer

PRIORITY TIER	MAP INDEX	SEGMENT	TRANSFER TYPE
Tier 1	A	8 th Street S: City limits to W 16 th Avenue S	County to City
	B	W 16 th Avenue S: 8 th Street S to 20 th Street S	Township to City
	C	20 th Street S: Rio Grande Avenue to W 16 th Avenue S	County to City
	D	32 nd Street S: Main Avenue S / BC Hwy 77 to W 16 th Avenue S	Township to City
	E	Western Avenue S: 26 th Street S to BC Hwy 12 / 216 th Street	Township to City
	F	Main Avenue S: 32 nd Street S to BC Hwy 12 / 216 th Street	County to City
	G	32 nd Street S: 34 th Avenue / BC Hwy 21 to Main Avenue S / BC Hwy 77	County to City
Tier 2	H	US14 / 6 th Street: US14B / 18 th St (West) to US14B / 18 th St (East)	State to City
	I	W 16 th Avenue S: 20 th Street S to 32 nd Street S	Township to City
	J	Medary Avenue S: City limits to BC Hwy 12 / 216 th Street	Township to City
	K	22 nd Avenue S: 32 nd Street S to 216 th Street	County to City
	L	34 th Avenue S: 8 th Street S to 32 nd Street S	County to City
Tier 3	M	W 16 th Avenue S: 32 nd Street S to BC Hwy 12 / 216 th Street	Township to City
	N	BC Hwy 12 / 216 th Street: Main Avenue S to W 16 th Avenue S	County to City
	O	216 th Street: ½ mile east of 472 nd Avenue to BC Hwy 77	Township to City
	P	BC Hwy 77: BC Hwy 12 / 216 th Street to BC Hwy 24 / 217 th Street	County to City
	Q	Medary Avenue S: BC Hwy 12 / 216 th Street to BC Hwy 77	Township to City
	R	22 nd Avenue S: 216 th Street to BC Hwy 24 / 217 th Street	County to City
	S	34 th Avenue S: 32 nd Street S to SD324	County to City
	T	BC Hwy 24 / 217 th Street: Medary Avenue S to I-29 SB RTI	County to City
	U	468 th Avenue: 210 th Street to 213 th Street	Township to City
	V	BC Hwy 9 / 469 th Avenue: 210 th Street to US14 Bypass / 18 th Street	County to City
	W	469 th Avenue: US14 Bypass / 18 th Street to 212 th Street	Township to City
	X	212 th Street: 468 th Avenue to 469 th Avenue	Township to City
	Y	W 16 th Avenue S: North of 8 th Street S	Township to City
	Z	Western Avenue: 210 th Street to City limits	Township to City
	AA	Medary Avenue: 210 th Street to City limits	County to City
	BB	474 th Avenue: 210 th Street to US14	Township to City
	CC	210 th Street: 472 nd Avenue to 468 th Avenue	Township to City
	DD	211 th Street: 471 st Avenue to 34 th Avenue	Township to City
	EE	216 th Street: ½ mile west of 473 rd Avenue to 473 rd Avenue	Township to City

8 Roadway Standards and Guidelines

This chapter presents design standards, guidelines for design, traffic control, traffic analysis, and access management and jurisdictional transfer guidance for the Brookings area. In most cases, the standards and guidelines presented in this section reference other documents to support applicability to Brookings area roadways. Those documents should be consulted for further information.

8.1 Design Standards

City of Brookings design standards are presented in the [City of Brookings Code of Ordinances, Chapter 51 – Subdivision Regulations](#) located on the City’s website. [Chapter 66 – Planning](#) establishes the Comprehensive Plan and Major Streets Plan, while other aspects of street development and traffic control devices are covered in [Chapter 94 – Zoning](#) and [Chapter 82 – Traffic and Vehicles](#), respectively. These standards apply to all public improvements within the City of Brookings incorporated area except where superseded by federal or state requirements.

8.2 Design Guidelines

Resources to support City of Brookings Design Standards and guide roadway design include:

- [SDDOT Road Design Manual](#)
- [City of Sioux Falls Engineering Design Standards](#)
- [SDDOT Local Roads Plan](#)
- [American Association of State Highway and Transportation Officials \(AASHTO\) A Policy on Geometric Design of Highways and Streets](#)
- [Manual on Uniform Traffic Control Devices \(MUTCD\)](#)

Typical Sections for New, Reconstructed, or Retrofitted Roadways

Typical sections corresponding to Major Roads Plan categories for new, reconstructed, or retrofitted streets are provided in **Figure 43** through **Figure 52**. Typical right-of-way (ROW) widths for City of Brookings streets are:

- Urban Arterial: 83 to 92 feet
- Urban Collector: 70 to 80 feet
- Urban Local: 60 feet
- Rural Arterial: 70 to 80 feet
- Rural Collector: 70 feet

Complete Streets

The City of Brookings' approach to roadway design centers on Complete Streets, which focuses on providing a safe roadway for all users and modes of travel, including pedestrians, bicyclists, transit users, and motorists. Key Complete Street elements incorporated into the City's typical street sections include:

- 11 foot vehicle lanes
- Shared use paths/sidewalk on both sides of the street
- Planting strip buffer between pedestrian facilities and vehicular travel lanes; may include landscaping and lighting
- Consideration to number of lanes, street width, desired vehicle speed, access, bike lanes, pedestrian crossings, and on-street parking

Coordination and planning for complete streets should start early in the development and/or transportation improvement process. High-priority factors for consideration when integrating complete street elements include²:

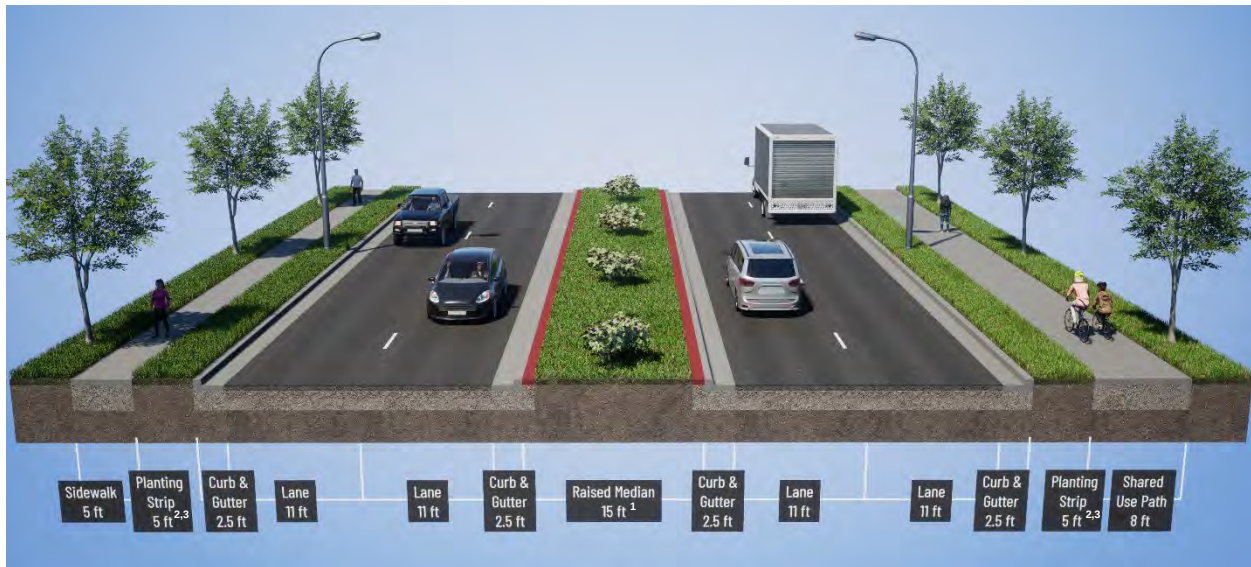
- Corridors that provide primary access to key destinations such as parks, recreational areas, schools, employment centers, social services, and retail areas
- Corridors that offer access across natural or created barriers such as a river, major drainageway, freeway, or high-volume arterial street
- Corridors where relatively high numbers of non-motorized transportation users are anticipated
- Corridors that provide connectivity and continuity links to existing or future trail and path networks
- Lack of alternate, nearby options where a complete streets corridor would address convenience, connectivity, and safe route needs in the area

WHAT IS A COMPLETE STREET?

The United States Department of Transportation (USDOT) states, "Complete Streets are streets designed and operated to enable safe use and support mobility for all users. Those include people of all ages and abilities, regardless of whether they are traveling as drivers, pedestrians, bicycles or public transportation riders. The concept of Complete Streets encompasses many approaches to planning, designing, and operating roadways and rights of way with all users in mind to make the transportation network safer and more efficient".

<https://highways.dot.gov/complete-streets/complete-streets-resources>

² Adapted from [City of Sioux Falls Complete Streets](#) priorities



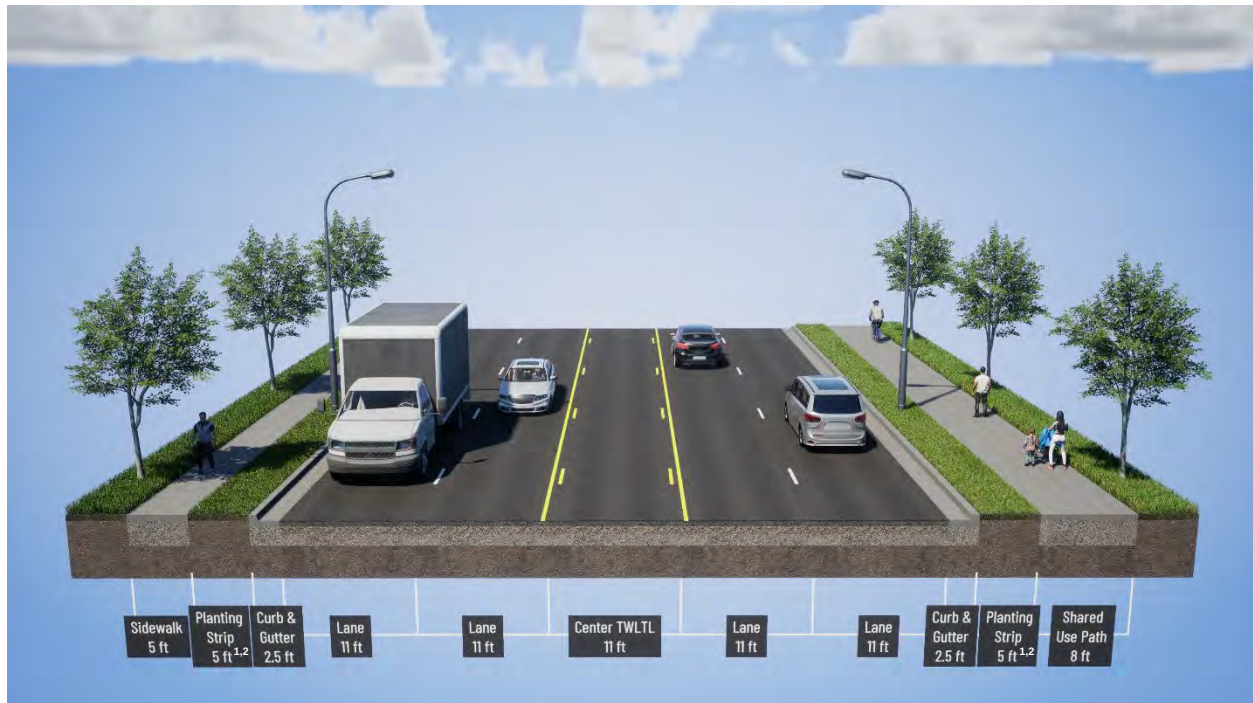
- 1 **Raised Median Width:** The full raised median width (15 ft.) includes width for a 11 ft. left turn lane and 4 ft. narrow raised median at select intersections and access locations.
- 2 **Planting Strip Surfacing:** Grass surfacing should be used for planting strip widths for 5 ft. or greater. Permeable concrete surfacing should be used for planting strip widths less than 5 ft (for areas with constrained ROW).
- 3 **Planting Strip Width:** Where possible, consider widening planting strips to provide greater separation between bicycle and pedestrian facilities (shared use paths or sidewalks) and vehicular travel lanes.

Figure 43: Urban 4-Lane Divided Arterial Typical Section with Full Raised Median (92-foot ROW)



- 1 **Raised Median Width:** The hybrid raised median width (6 ft.) includes width for a 11 ft. left turn lane (without a raised median) at select intersections and access locations.
- 2 **Planting Strip Surfacing:** Grass surfacing should be used for planting strip widths for 5 ft. or greater. Permeable concrete surfacing should be used for planting strip widths less than 5 ft (for areas with constrained ROW).
- 3 **Planting Strip Width:** Where possible, consider widening planting strips to provide greater separation between bicycle and pedestrian facilities (shared use paths / sidewalks) and vehicular travel lanes.

Figure 44: Urban 4-Lane Divided Arterial Typical Section with Hybrid Raised Median (83-foot ROW)



- 1 Planting Strip Surfacing: Grass surfacing should be used for planting strip widths for 5 ft. or greater. Permeable concrete surfacing should be used for planting strip widths less than 5 ft (for areas with constrained ROW).
- 2 Planting Strip Width: Where possible, consider widening planting strips to provide greater separation between bicycle and pedestrian facilities (shared use paths / sidewalks) and vehicular travel lanes.

Figure 45: Urban 5-Lane Arterial Typical Section with Center Two-Way Left Turn Lane (83-foot ROW)



Figure 46: Urban 3-Lane Arterial and Collector Typical Section (70 to 80-foot ROW)

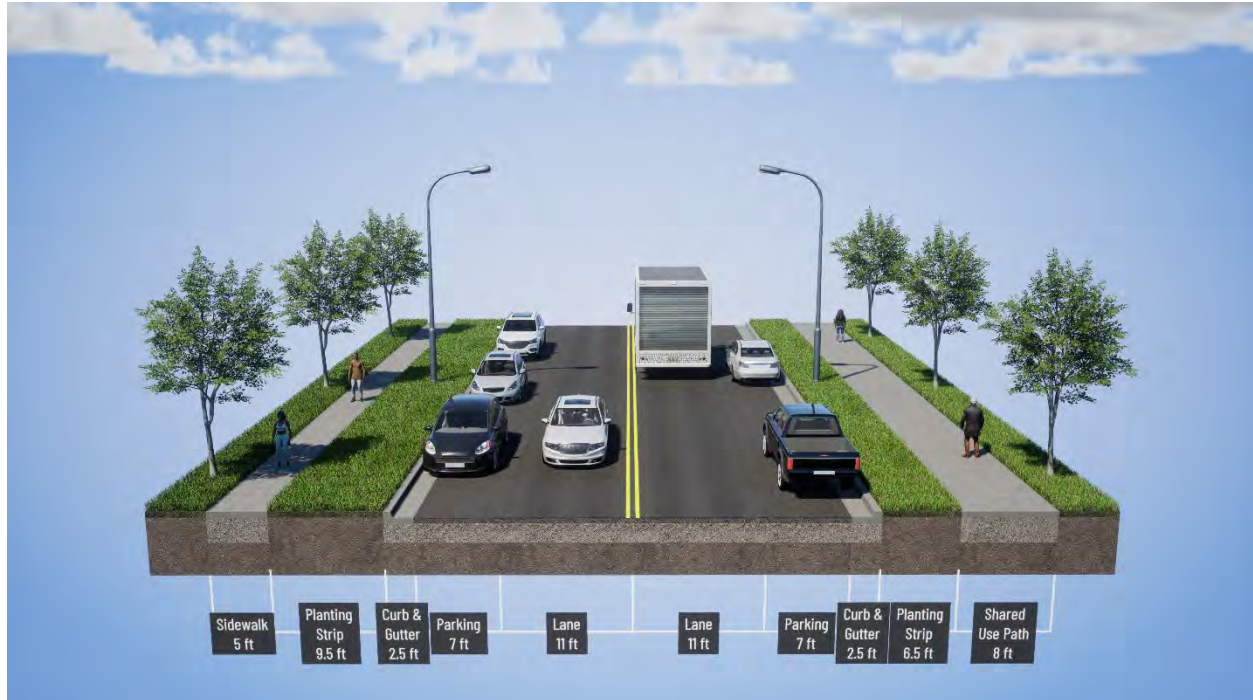
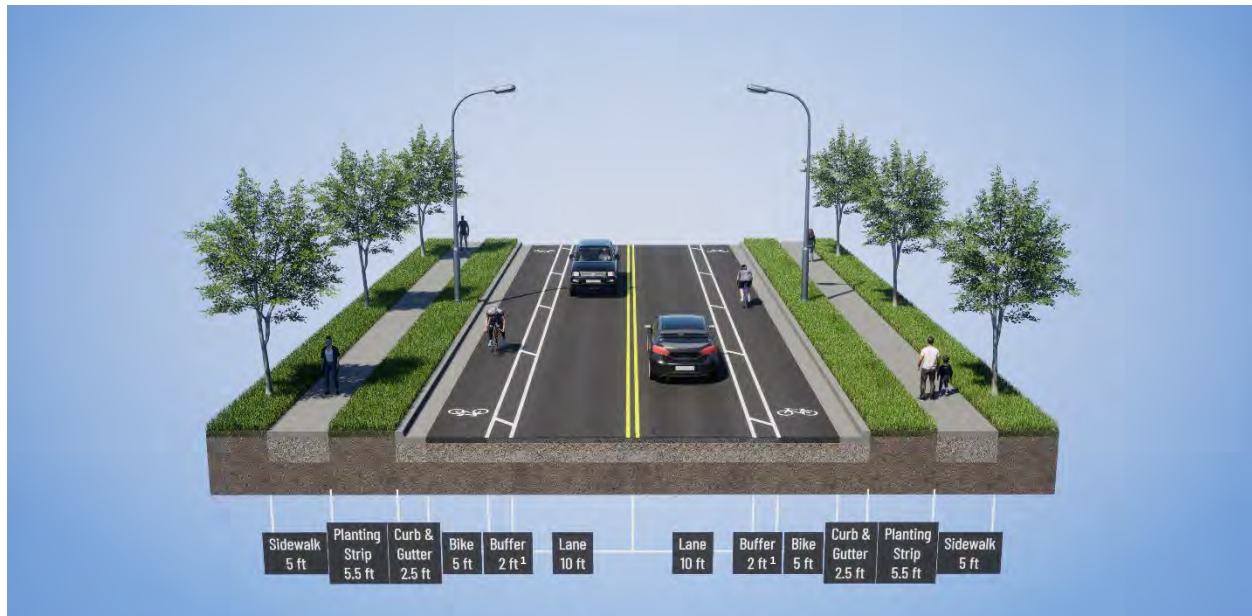


Figure 47: Urban 2-Lane Collector Typical Section with On-Street Parking (70-foot ROW)



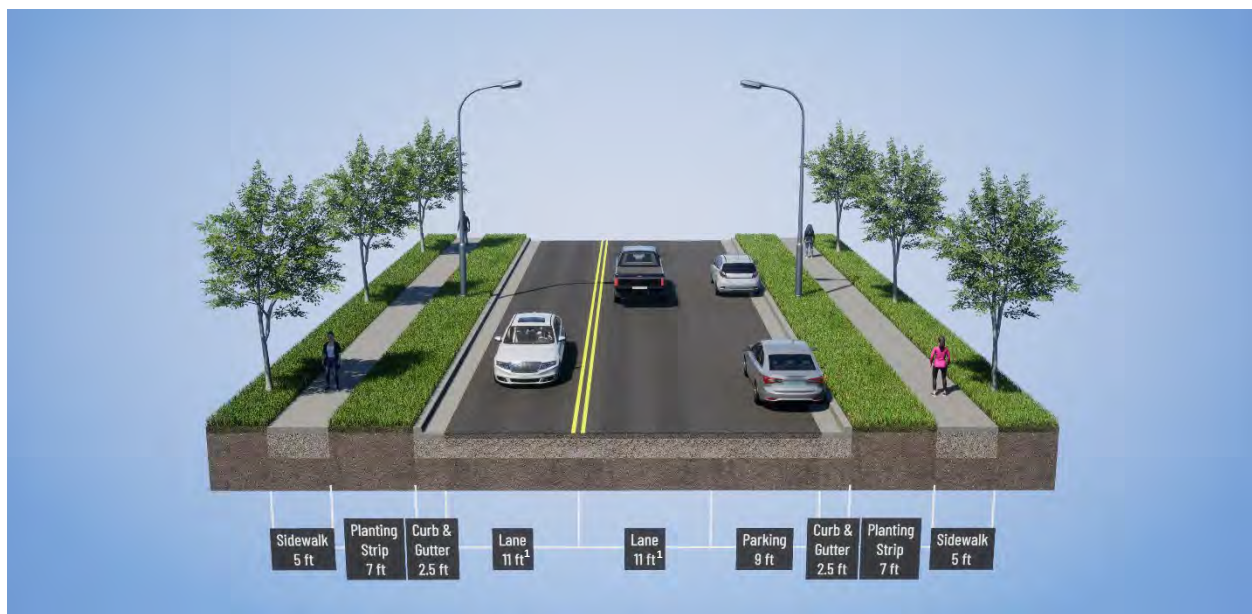
Figure 48: Urban 2-Lane Local Typical Section with On-Street Parking (60-foot ROW)



1 **Bike Lane Buffer:** For retrofitted bike lane locations, a buffer should be provided for additional separation between bicyclists and motorists and to mitigate the potential for conflicts between vehicle doors and bicyclists. Streets without on-street parking may exclude bike lane buffers in areas with constrained available street width.

2 **Variations for On-Street Parking:** Retrofitted buffered bike lanes can be considered on streets with on-street parking present on one or both sides. Ensure adequate ROW is available for the combined width of the bike lane and buffer for the parking lane. For locations with on-street parking on both sides, consider limiting on-street parking to one side.

Figure 49: Urban Retrofit 2-Lane Collector and Local Typical Section with Buffered Bike Lanes (60 to 70-foot ROW)



1 **Lane Width:** Consider 10 ft. lane widths on low volume residential local streets with one-sided on-street parking where street minimums less than 31 ft. are allowed for additional traffic calming.

Figure 50: Urban 2-Lane Local Typical Section with On-Street Parking (60-foot ROW)

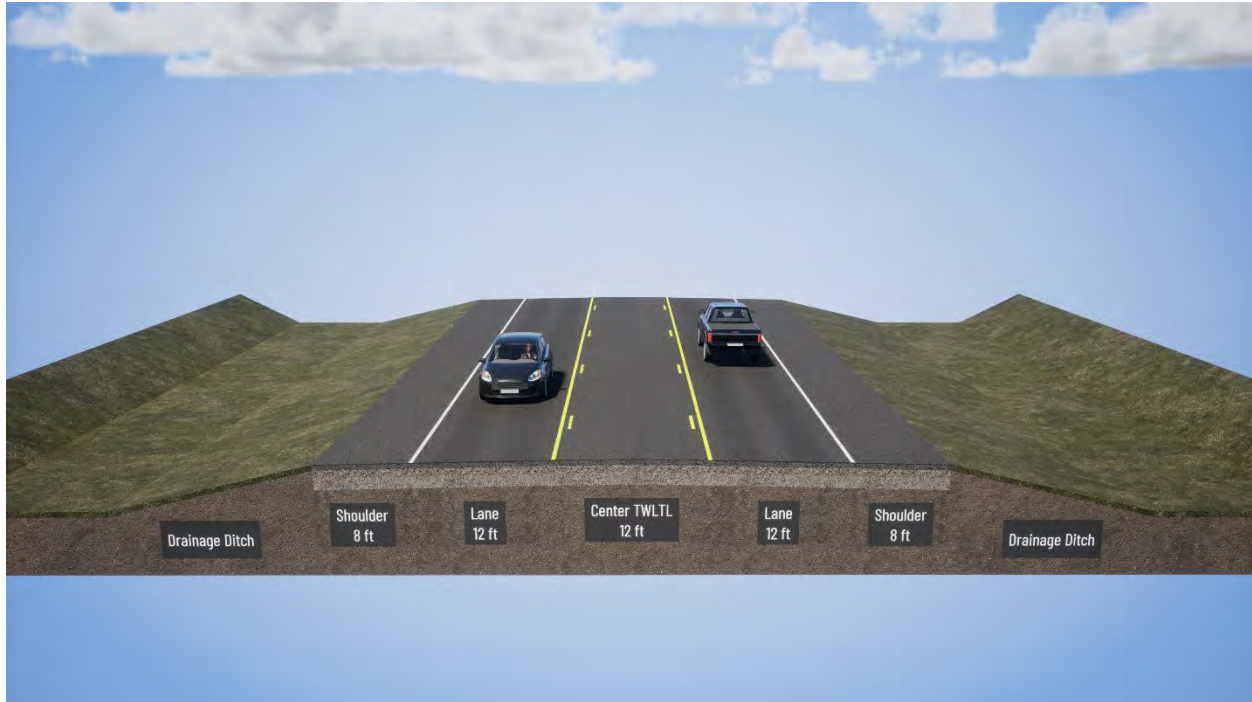


Figure 51: Rural 3-Lane Arterial Typical Section (80-foot ROW)



Figure 52: Rural 2-Lane Arterial and Collector Typical Section (70 to 80-foot ROW)

Driveway Spacing

Minimum driveway separation is an important consideration on residential collector and local streets that prioritize driveway access and the availability of on-street parking. The presence of on-street parking can provide a traffic calming effect and minimize the required amount of paved surfacing for off-street parking spaces. Minimum driveway spacing values from intersections or driveway access locations should reflect the dimensions identified below.

MINIMUM DRIVEWAY SPACING DIMENSIONS

- **Residential Driveways on Collector and Local Streets:** 35 ft. (50 ft. from intersections)
- **Commercial Driveways on Collector and Local Streets:** 50 ft. (both)

Additional recommendations to minimize driveway spacing include:

- Consolidation of access where possible (access management)
- Consideration of a revised ordinance removing the exemption of individual driveway access on townhouse and multifamily residential lots with multiple garages. A provision should be included that directs development plans to consider reconfiguration garage access via a rearage connection or alley with a singular direct access location.



12th Street S (between 22nd Avenue S and 17th Avenue S)

Traffic Calming

Traffic calming is the improvement of safety, mobility, and comfort for all street users by reducing vehicles speeds. Measures to calm traffic can increase the quality of life, create safe and attractive streets, and promote greater pedestrian and bicyclist use along residential or commercial streets. The City of Brookings has already implemented traffic calming measures such as roundabouts, raised crosswalks, road diets (e.g., 8th Street S), and curb extensions in areas with notable multimodal traffic (e.g., downtown, near the SDSU campus, residential neighborhoods).

Traffic calming strategies are generally categorized into four types, including:

- **Horizontal Deflections:** Shifts the horizontal alignment of the road to avoid straight paths which calms vehicular traffic as it navigates the alignment change.
- **Vertical Deflections:** Creates a change in the height of the roadway to slow down motorists in order to maintain an acceptable level of comfort.
- **Street Width Reduction:** Narrows the width of a vehicle travel lane or roadway to slow motorists to maintain an acceptable level of comfort and safety. This measure can also reduce pedestrian crossing distances and their exposure to vehicle conflicts.
- **Routing Restriction:** Prevents particular vehicle movements to minimize cut-through traffic.

Traffic calming countermeasures for each category are identified in **Table 40**. The applicability of each traffic calming measure based on roadway functional classification and other street functions is shown in the matrix provided in **Table 41**.

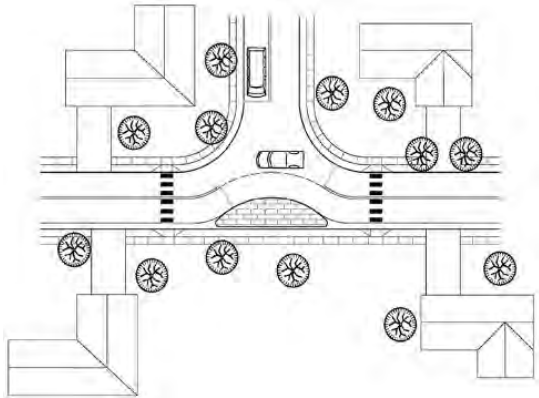
Additional information can be found in the following resources:

- [*FHWA Traffic Calming ePrimer*](#)
- [*ITE Traffic Calming Measure Fact Sheets*](#)
- [*DelDOT Traffic Calming Design Manual*](#)



3rd Avenue & 5th Street Intersection

Table 40: Toolbox for Traffic Calming Measures

TREATMENT	DESCRIPTION
HORIZONTAL DEFLECTIONS	
Lateral Shift  Source: FHWA	<u>Definition:</u> A realignment of an otherwise straight street that causes travel lanes to shift in one direction <u>Purpose:</u> Reduce vehicular speeds along a street (mid-block) <u>Considerations:</u> • A lateral shift may be supplemented to reduce the likelihood of a motorist veering into opposing traffic. • Street Type: Collector, Local, and Select Arterial Streets • Speed Limit: 35 mph or less • Traffic Volumes: appropriate for all traffic levels
Chicane  Source: City of Sioux Falls, SD (15th Street)	<u>Definition:</u> A series of alternating curves or lane shifts (multiple lateral shifts) which are positioned to force a motorist to steer back and forth out of a straight travel path <u>Purpose:</u> Reduce vehicular speeds along a street (mid-block) <u>Considerations:</u> • May reduce traffic volumes • Chicane curves or a chicane-like effect can be created with: ◦ Curb extensions alternating on each side of the street ◦ On-street parking alternating on each side of the street (assumes sufficient parking demand) • Street Type: Local or Low-Volume Collector Streets • Speed Limit: 35 mph or less • Traffic Volumes: up to 3,500 vehicles per day
Realigned Intersection  Source: Delaware Department of Transportation	<u>Definition:</u> The reconfiguration of an intersection with perpendicular angles to have skewed approaches or travel paths through the intersection <u>Purpose:</u> Reduce vehicles speeds through an intersection <u>Considerations:</u> • Most common application is converting a T-intersection with straight approaches into curving streets meeting at right angles. This removes all straight paths through the intersection. • Street Type: Collector and Local Streets • Speed Limit: 25 mph or less

TREATMENT	DESCRIPTION
Traffic Circle  Source: City of Sioux Falls, SD / Google Streetview (9th Street & Duluth Avenue)	<u>Definition:</u> A raised island placed within an unsignalized intersection around which traffic circulates <u>Purpose:</u> Reduce vehicles speeds when passing through an intersection and improve safety by minimizing angle collisions <u>Considerations:</u> • A traffic circle can have Stop or Yield signs on the intersection approaches • No splitter islands based on infrequent large vehicle left turn movements and the desire to fit within existing travel lanes • Traffic circles can be a painted area but are most effective with a raised curb and landscaping • Street Type: Intersection of two Local Streets • Speed Limit: 30 mph or less • Traffic Volumes: up to 3,500 vehicles per day for each intersection leg
Small Modern Roundabout / Mini-Roundabout  Source: FHWA	<u>Definition:</u> A raised island placed within an unsignalized intersection around which traffic circulates with splitter islands <u>Purpose:</u> Reduce vehicles speeds when passing through an intersection and improve safety by minimizing angle collisions <u>Considerations:</u> • Small Modern Roundabouts are non-traversable while Mini-Roundabouts are fully traversable • Splitter islands can be either mountable or at-grade to accommodate large vehicles • Street Type: Intersection of two Local Streets or Local and Collector Streets • Speed Limit: Relatively low speed limit • Traffic Volumes: lower traffic volumes than a full roundabout
Roundabout  Source: City of Brookings, SD / Google Streetview (Sweetgrass Drive & Tallgrass Parkway)	<u>Definition:</u> A raised island placed within an unsignalized intersection around which traffic circulates with splitter islands <u>Purpose:</u> Reduce vehicles speeds when passing through an intersection and improve safety by minimizing angle collisions <u>Considerations:</u> • Full roundabouts are designed to accommodate large vehicles circulating around the center island • Street Type: Intersection of two Arterial Streets or Arterial and Collector Streets • Speed Limit: typical urban operating speeds • Traffic Volumes: up to 60,000 entering vehicles per day

TREATMENT	DESCRIPTION
VERTICAL DEFLECTIONS	
Speed Hump  Source: FHWA	<u>Definition:</u> An elongated mound in the roadway pavement surface extending across the travel way at a right angle to the traffic flow <u>Purpose:</u> Encourages motorists to slow vehicular speeds upstream and downstream of the speed hump (mid-block) <u>Considerations:</u> • A speed hump is typically 3 inches in height and 12 feet in length along the vehicle travel path axis • Street Type: Collector and Local Streets • Appropriate adjacent to a school, park, or community center • Speed Limit: 30 mph or less • Traffic Volumes: up to 4,000 vehicles per day
Speed Cushion  Source: FHWA	<u>Definition:</u> Consists of two or more raised areas placed laterally across a roadway. Speed cushions include gaps between raised areas that enable wide track vehicles to pass through this treatment without any vertical deflection. <u>Purpose:</u> Encourages motorists to slow vehicular speeds upstream and downstream of the speed cushion (mid-block) <u>Considerations:</u> • The height and length of the raised areas are comparable to a speed hump • Preferred alternative to speed humps on primary emergency response or transit routes with frequent service • Street Type: Collector and Local Streets • Speed Limit: up to 30 mph • Traffic Volumes: up to 4,000 vehicles per day
Speed Table  Source: FHWA	<u>Definition:</u> A raised area with a longer flat top placed across the roadway designed to physically limit the speed at which a vehicle can traverse it <u>Purpose:</u> Encourages motorists to slow vehicular speeds upstream and downstream of the speed table (mid-block) <u>Considerations:</u> • When a speed table is designated as a crosswalk through the use of striping it is known as a raised crosswalk. • Street Type: Collector and Local Streets and Arterial Streets in certain circumstances • Speed Limit: up to 35 mph • Traffic Volumes: up to 4,000 vehicles per day

TREATMENT	DESCRIPTION
Raised Crosswalk  Source: City of Brookings, SD / Google Streetview (North Campus Drive)	<u>Definition:</u> A variation of a flat-topped speed table which is marked and signed as a pedestrian crossing and conforms to a desired crosswalk width <u>Purpose:</u> Reduce vehicle speeds and increase pedestrian visibility and safety <u>Considerations:</u> • Can be located at intersections or mid-block locations • Typically between 3 and 6 inches above street level • Appropriate if there is an existing crosswalk or if a crosswalk is warranted based on local standards and criteria • Street Type: Collector, Local and Commercial District Arterial Streets • Speed Limit: up to 35 mph
Raised Intersection  Source: FHWA	<u>Definition:</u> A flat, raised area covering an entire intersection with ramps on all approaches <u>Purpose:</u> Reduce vehicle speeds and increase pedestrian visibility and safety <u>Considerations:</u> • Typical applications are in dense urban areas with notable pedestrian volumes with signalized or all-way stop-control • Appropriate if there are existing crosswalks on all four legs of an intersection or if crosswalks are warranted • Street Type: Collector, Local, and Commercial District Arterial Streets • Speed Limit: up to 35 mph • Traffic Volumes: up to 10,000 entering vehicles per day on each intersection approach
STREET WIDTH REDUCTION	
Curb Extension / Bulb-Out  Source: City of Brookings, SD / Google Streetview (3rd Street & Main Avenue)	<u>Definition:</u> A horizontal extension of the sidewalk into the street at intersections or mid-block locations that results in a narrower roadway section and shorter pedestrian crossing <u>Purpose:</u> Reduce vehicle speeds, shorten pedestrian crossing distances, and increase pedestrian visibility and safety <u>Considerations:</u> • Curb extensions combined with vertical deflection traffic calming measures (e.g. a raised crosswalk) can achieve greater reductions in vehicular speed • Street Type: Arterial, Collector, and Local Streets • Speed Limit: Appropriate for any speed limit provided adequate shy distance is provided between the travel lane and curb extension • Traffic Volumes: all levels of traffic volumes

TREATMENT	DESCRIPTION
Median Island  Source: City of Brookings, SD / Google Streetview (Campanile Avenue between 7th and 8th Street)	<u>Definition:</u> A raised island located along the street centerline that narrows the travel lanes at that location and slower vehicle speeds <u>Purpose:</u> Reduce vehicle speeds and improve safety <u>Considerations:</u> • Median islands can double as a pedestrian refugee island if a cut in the island and a marked crosswalk are provided • Provide visual queues about preferred vehicle speeds when placed at neighborhood entrances • Street Type: Arterial, Collector, and Local Streets • Speed Limit: Appropriate for any speed limit provided adequate shy distance between the travel lane and median island • Traffic Volumes: all levels of traffic volumes
On-Street Parking  Source: FHWA	<u>Definition:</u> On-street parking can effectively narrow the roadway travel lanes by adding side friction (on one side, both sides, or alternating sides) to traffic flow <u>Purpose:</u> Reduce vehicle speeds <u>Considerations:</u> • On-street parking is only an effective and safe traffic calming measure when parking lanes are occupied during period when traffic calming is desired • Street Type: Arterial, Collector, or Local Streets • Speed Limit: Appropriate for any speed limit provided adequate shy distance between travel and parking lanes • Traffic Volumes: all levels of traffic volumes
Road Diet (Roadway Reconfigurations)  Source: City of Sisseton, SD / Google Streetview (SD Highway 10 / Hickory Street)	<u>Definition:</u> The conversion of an undivided roadway to a cross-section with fewer or narrower through travel lanes and the possibility of reallocated space for other facilities such as bicycle lanes or a shared use path <u>Purpose:</u> Reduce vehicle speeds, shorten pedestrian crossing distances, and increase pedestrian visibility and safety <u>Considerations:</u> • Most common application is a conversion from an undivided four-lane roadway to a three-lane roadway • Street Type: Arterial, Collector, and Local Streets • Speed Limit: Appropriate for any speed limit • Traffic Volumes: all levels of traffic volumes (higher volume locations should be examined for appropriateness)

TREATMENT	DESCRIPTION
ROUTING RESTRICTION	
Diagonal Diverter  Source: FHWA	<u>Definition:</u> A physical barrier placed diagonally across a four-legged intersection which creates two unconnected intersections. Traffic approaching the intersection is restricted to one receive leg, rather than three. <u>Purpose:</u> Reduce vehicle speeds and cut-through traffic <u>Considerations:</u> • A cutout, gap, or channel can be provided in the diagonal diverter to allow at-grade bicyclist and pedestrian movements between all legs of the intersection • Breakaway delineators can be used in the diagonal diverter to enable emergency vehicle access • Street Type: Collector and Local Streets • Speed Limit: up to 25 mph • Traffic Volumes: up to 3,500 vehicles per day
Closure / Half-Closure  Source: City of Brookings, SD Google Streetview (4th Street Half-Closure near Children's Museum)	<u>Definition:</u> A physical barrier placed across a street to fully or partially close a street to through vehicle traffic <u>Purpose:</u> Reduce vehicle speeds and cut-through traffic <u>Considerations:</u> • Full closure can be designed to allow bicyclists and pedestrians to pass through • Consider the availability, capacity, and appropriateness of other alternative routes due to potential traffic shifts • A single closure may simply shift traffic onto other local streets so clusters of closures can be considered to more effectively lead through traffic to arterial and collector streets • Street Type: Local Streets • Speed Limit: up to 30 mph • Traffic Volumes: up to 4,000 daily vehicles in residential areas and 6,000 within a central business district
Median Barrier / Forced Turn Island  Source: City of Brookings, SD Google Streetview (US14 / 6th Street & 25th Avenue)	<u>Definition:</u> Physical turn restrictions at an intersection that can be used to eliminate specific traffic movements from entering or exiting a side street <u>Purpose:</u> Reduce vehicle speeds and cut-through traffic and improve safety <u>Considerations:</u> • Raised islands are both used for median barriers (along the centerline at an intersection) and forced turn islands (at the approaches of intersections) • Street Type: Arterial, Collector, and Local Streets (to prevent movements to/from side streets) • Speed Limit: Side street speed limit of up to 25 mph

Table 41: Likelihood of Acceptability of Traffic Calming Measure³

TRAFFIC CALMING MEASURE	SEGMENT OR INTERSECTION	ROADWAY CLASSIFICATION			STREET FUNCTION	
		ARTERIAL	COLLECTOR	LOCAL	EMERGENCY ACCESS	TRANSIT ROUTE
HORIZONTAL DEFLECTION						
Lateral Shift	Segment	3	5	5	5	5
Chicane	Segment	1	5	5	3	3
Realigned Intersection	Intersection	1	5	5	5	5
Traffic Circle	Intersection	1	3	5	3	3
Small Modern & Mini-Roundabout	Intersection	3	3	5	5	5
Roundabout	Intersection	5	3	1	5	5
VERTICAL DEFLECTION						
Speed Hump	Segment	1	5	5	1	3
Speed Cushion	Segment	1	5	5	5	5
Speed Table	Segment	3	5	5	1	3
Offset Speed Table	Segment	3	5	5	5	3
Raised Crosswalk	Both	3	5	5	1	3
Raised Intersection	Intersection	3	5	5	3	3
STREET WIDTH REDUCTION						
Curb Extension / Bulb-Out	Intersection	5	5	5	5	5
Median Island	Both	5	5	5	5	5
On-Street Parking	Segment	5	5	5	5	5
Road Diet	Both	5	5	3	5	5
ROUTING RESTRICTION						
Diagonal Diverter	Intersection	1	3	3	1	3
Full Closure	Both	1	3	3	1	1
Half Closure	Intersection	1	5	5	3	3
Median Barrier	Intersection	3	5	5	1	3
Forced Turn Island	Intersection	3	5	5	3	3

5 – Traffic calming measure is likely appropriate

3 – Traffic calming measure may be appropriate in specific contexts

1 – Traffic calming measure is likely inappropriate

³ Federal Highway Administration, [Traffic Calming ePrimer](#).

Road Diet (Roadway Reconfigurations)

Road diets often describe the reconfiguration of existing streets in order to reduce the number of lanes, lane widths, and/or street widths. However, this mindset is also applicable to the design of new streets and supports the City of Brookings's desire to implement a sustainable transportation network and allocate space to all modes of travel.

Key linear elements incorporated into City of Brookings typical sections, particularly those shown in **Figure 46** through **Figure 50**, that support road diet methodology include:

- One through lane in each direction
- Continuous two-way left turn lane (TWLTL) or left turn lanes at select locations
- Bike lane
- Pedestrian refuge islands
- Boulevard space for grass, landscaping, etc.
- Wider sidewalk or share use paths

Road diet corridor segments should be considered when:

- Daily traffic volumes are less than 16,000
- Slower speeds and high level of multimodal mobility are desired
- Reallocation of available right-of-way to other transportation uses (e.g., bike lanes, wider walkways, on-street parking) is desired
- Right-of-way constraints are present
- Access density, corridor segment progression, and/or crash history would benefit from a center left turn lane (if not already present)

Additional information can be found in the following resources:

- [FHWA Road Diet Informational Guide](#)
- [NACTO Urban Street Design Guide](#)

WHAT IS A ROAD DIET?

A road diet is a technique that reconfigures existing roads, or reimagines future roads, to implement a combination of reductions to:

- Overall street width,
- Vehicle lane widths, and/or
- Number of lanes

These reductions free up space that can be reallocated to other modes of travel and roadway features.

BENEFITS OF A ROAD DIET

According to FHWA, benefits of a road diet include:

- Traffic calming
- Reduction of rear-end and left turn crashes with implementation of a center left turn lane
- Fewer lanes for pedestrians to cross
- Opportunities for pedestrian refuge islands, bicycle lanes, on-street parking, or transit stops
- Supports a complete streets environment

FHWA has found that a 4-lane to 3-lane reduction may reduce total crashes between 19 and 47 percent.

Source: FHWA Road Diets (Roadway Reconfiguration)
<https://highways.dot.gov/safety/proven-safety-countermeasures/road-diets-roadway-reconfiguration>

Turn Lanes

Installation of turn lanes at intersections and driveway access points often provide operational and safety benefits by removing turning vehicles from the through lanes. The [SDDOT Road Design Manual – Chapter 15](#), provides guidance on when and where to install turn lanes on the major roadway at unsignalized intersections, based on:

1. Vehicular volume
2. Crash experience
3. Special cases
 - a. Railroad crossings
 - b. Geometric/safety concerns
 - c. Non-traversable median (left turn lanes only)

These criteria are applicable to the unsignalized movements at a two-way stop-control intersection.

The need for turn lanes on stop-controlled approaches is typically based on operational analysis. At stop-controlled approaches where there is a high right turn volume, it is often advantageous to split left turn and right turn movements so a left turn vehicle waiting for a gap in traffic does not block right turn traffic.

Turn lanes at signalized intersections are determined by operational analysis. Installation of left turn lanes is generally advantageous to operations and safety even if not required to meet a target intersection operational measure.

8.3 Traffic Control Guidelines

The [Manual on Uniform Traffic Control Devices \(MUTCD\)](#) provides extensive guidance on the use of traffic control devices, such as signs, pavement markings, and traffic signals. An engineering study should be conducted to determine the appropriate traffic control device using methodologies and warrants outlined in the MUTCD. The following summarizes considerations for intersection and crossing control for minor street approach control, all-way stop-control, traffic signals, and roundabouts.

Yield Control

Yield control can be considered at intersections where a full stop is not necessary at all times. The installation of yield control should be considered when engineering judgement indicates that the following conditions exist:

- **Sight distance:** where sight distance is adequate on approaches designated with yield control
- **Approach configurations:** all intersection approaches are a single lane (no turn lanes)
- **Crash history:**
 - **No control to yield:** two or more reported crashes in 12 month period which are susceptible to correction with yield control
 - **Minor road stop-control to yield:** two or fewer reported crashes in 12 month period
- **Traffic volumes:** volume thresholds of either 1,800 units per day or 140 units in the peak hour that account for entering vehicles, pedestrians, and bicycles

- **Intersection skew:** angle of intersection is between 90 and 75 degrees
- **Functional classification:** functional classification of intersecting streets is either two local streets or between local and collector streets

Other considerations include divided highway crossings, channelized turn lanes, merge movements, and low-volume rural roads.

Minor Road Stop-Control

Stop-control on the minor road approach can be considered at intersections when engineering judgement indicates one or more of the following conditions exist:

- **Sight distance:** a restricted view that requires road users to stop in order to adequately observe conflicting traffic on the through street
- **Crash history:**
 - **Four-Leg intersection:** three or more reported crashes in previous 12 months or six or more reported crashes in 36 months which are susceptible to correction with minor road control
 - **Three-Leg intersection:** three or more reported crashes in previous 12 months or five or more reported crashes in 36 months which are susceptible to correction with minor road control
- **Functional classification:** the intersection is of a lower functional classification with a higher functional classification road
- **Revaluation of all-way stop-control:** conditions that previously supported all-way stop-control no longer exist

Other considerations include low-volume rural road intersections where either the functional classification or sight distance criteria are met.

All-Way Stop-Control

All-way stop control is advantageous when traffic volumes are nearly equal on the two intersecting roadways. The installation of all-way stop should be based on an engineering study with the following considerations:

- **Crash experience:** five or more crashes in a 12-month period or six or more crashes in a 36-month period that are susceptible to correction by installation of all-way stop-control
- **Sight distance:** where sight distance is not adequate for a vehicle on the minor road approach to cross or turn onto the major road
- **Interim measure:** at an intersection that is transitioning to signal control or yield control at a circular intersection
- **8-hour volumes:** volume thresholds that account for entering vehicles, pedestrians, and bicycles for an 8-hour period of the day

Other considerations include left turn conflicts, vehicle/pedestrian conflicts, and intersections of two similar streets.

Traffic Signals

In locations where traffic signals are being considered (for either installation or removal), the MUTCD presents nine traffic signal warrants for analysis:

- Warrant 1, Eight-Hour Vehicular Volume
- Warrant 2, Four-Hour Vehicular Volume
- Warrant 3, Peak Hour
- Warrant 4, Pedestrian Volume
- Warrant 5, School Crossing
- Warrant 6, Coordinated Signal System
- Warrant 7, Crash Experience
- Warrant 8, Roadway Network
- Warrant 9, Intersection Near a Grade Crossing

The installation of a traffic signal should be based on engineering judgement after a thorough evaluation of the specific installation, considering site conditions and the overall context. The MUTCD also notes that “the satisfaction of a traffic signal warrant or warrants shall not in itself require the installation of a traffic control signal” (MUTCD 11th Edition 4.C.01.03).

Protected Left Turn Phasing at Traffic Signals

There are five options for left turn phasing at a signalized intersection:

- Permitted (flashing yellow arrow)
- Protected (green arrow)
- Protected-permitted (green arrow followed by flashing yellow arrow, or vice-versa)
- Split phasing (where all movements on one approach have the right of way)
- Prohibited

Implementing the appropriate left turn phasing at a signalized intersection is important for both intersection operations and safety. [NCHRP Report 812, Signal Timing Manual, Second Edition](#), Exhibit 4-16, provides left turn phasing guidelines to help select the least-restrictive left turn phasing at a signalized intersection based on a variety of variables. It is recommended this flow-chart be reviewed when determining left turn phasing at Brookings area signalized intersections.

Roundabouts

Consideration should be given to different intersection types when planning for reconstruction, such as comparing more traditional stop-control or signalized intersection types to roundabouts. A roundabout brings several key benefits if constructed in lieu of a signalized intersection:

- No traffic signal infrastructure, installation, and maintenance costs
- Roundabouts best handle off-peak traffic volumes, as traffic signals are generally inefficient during low-volume and off-peak conditions
- Roundabouts prolong the need for signalization and can often provide similar levels of capacity as signalized intersections
- Roundabouts provide safety benefits associated with reducing fatal and injury crashes

8.4 Traffic Analysis Guidelines

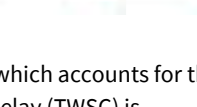
Level of Service (LOS)

Operational performance of highways is evaluated in terms of quality of service, which describes how well a transportation facility operates from a traveler's perspective. Quality of service is typically measured as 'Level of Service' (LOS), which is presented by a letter grade ranging from LOS A (free-flowing conditions) to LOS F (stopped / heavily delayed traffic). **Figure 53** provides a summary of LOS measures for different roadway facilities pertinent to the Brookings area.

Traffic operational analyses should be conducted in accordance with the current edition of:

- [SDDOT Road Design Manual](#)
- [Highway Capacity Manual \(Transportation Research Board\)](#)

The recommended minimum operating condition for Brookings area intersections and roadway segments, for both existing and future-year planning horizon traffic volumes, is LOS C.

	⚡ Unsignalized Intersection	🚦 Signalized Intersection	
A	Queuing is rare Intersection Control Delay: ≤10 seconds/vehicle	Very minimal queuing; excellent corridor progression and/or short cycle lengths Intersection Control Delay: ≤10 seconds/vehicle	
B	Occasional queuing Intersection Control Delay: >10–15 seconds/vehicle	Some queuing; good corridor progression and/or short cycle lengths Intersection Control Delay: >10–20 seconds/vehicle	
C	Regular queuing Intersection Control Delay: >15–25 seconds/vehicle	Regular queuing; not all demand may be serviced on some cycles (cycle failure) Intersection Control Delay: >20–35 seconds/vehicle	
D	Queue lengths increased Intersection Control Delay: >25–35 seconds/vehicle	Queue lengths increased; routine cycle failures Intersection Control Delay: >35–55 seconds/vehicle	
E	Significant queuing Intersection Control Delay: >35–50 seconds/vehicle	Long queues, congested conditions; majority of cycles fail Intersection Control Delay: >55–80 seconds/vehicle	
F	Volume to capacity ratio approaches 1.0; very long queues Intersection Control Delay: >50 seconds/vehicle	Volume to capacity ratio near 1.0; very long queues, almost all cycles fail Intersection Control Delay: >80 seconds/vehicle	

LOS Measures and Definitions: Highway Capacity Manual and SDDOT Road Design Manual

Note: Unsignalized intersection control delay shown for overall (or weighted) intersection delay, which accounts for the zero delay of the high-volume through movement on the major roadway. Two-way stop-control delay (TWSC) is measured from the worst-case stop-controlled approach with the same average delay (seconds/vehicle) thresholds.

Figure 53: Intersection Level of Service (LOS) Descriptions

Traffic Impact Studies

A traffic impact study (TIS) is an objective analysis of safety and operational impacts to the surrounding roadway network due to the generation of traffic or shifts in travel patterns from planned development or modified use. Information provided in a TIS aids government agencies in their decision on access permits, roadway improvement needs, and changes to traffic control within the study area associated with the proposed development.

A TIS will be required for any nonresidential development proposal when trip generation during the peak hour is expected to exceed 100 vehicles, residential development with 150 or more dwelling units, or at the discretion of the City of Brookings' City Engineer (or agency with authority to approve or deny public street access) based on a development's potential impacts to the transportation network.

When any of the required criteria are met, TIS reports will be required for the following items:

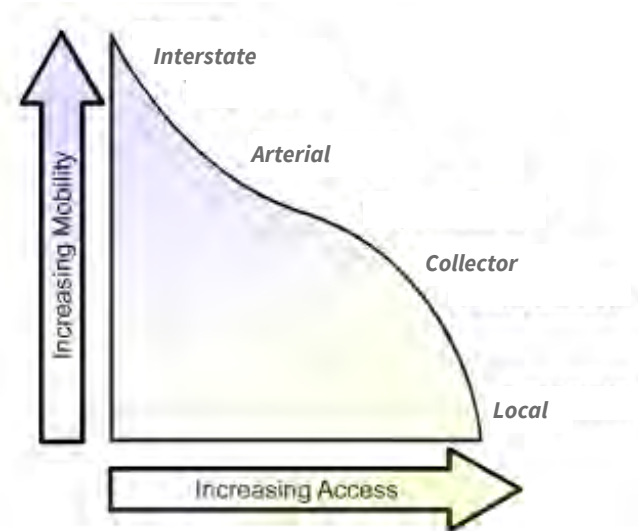
- For a Preliminary Plat
- For a Rezoning Application
- For a Final Plan or Final Development Plan if property has already been rezoned for the proposed use and no traffic report was required for rezoning
- Prior to issuance of a Building Permit, if the property has already been zoned/platted, and no previous traffic report less than two years old exists
- Additional access off an arterial street to an existing use is being requested
- Where access points are not defined or a site plan is not available at the time the traffic report is prepared, additional traffic analysis may be required when a site plan becomes available or access points are defined
- The developer will be required to submit a new traffic report if, after submitting the original traffic report, the land use intensity and traffic generation area increased
- When a new phase of a development is submitted for review, all previous traffic reports relating to the development that are more than two years old must be updated, unless it is determined by the City Engineer, that conditions have not changed to warrant an update

The preparation of a TIS is the responsibility of the developer and prepared by a licensed design professional with experience in transportation planning or traffic engineering. The recommended TIS methodology, expectations, and report format and content are presented in the [SDDOT Road Design Manual, Chapter 17 Access Management](#) and should be confirmed with the reviewing agency or agencies prior to starting the TIS. The developer will be notified at the preplanning stage if a traffic report is required. If insufficient information is available but the property appears to involve a sufficiently intense land use or at the discretion of the City of Brookings' City Engineer, the applicant will be informed that a traffic report is required.

8.5 Access Management Guidelines

Access management is an important consideration for providing safe and efficient ways of turning to and from streets and highways. The Transportation Research Board's *Access Management Manual* identifies several key access management principles applicable to the Brookings area:

1. Provide a specialized roadway system
2. Limit direct access to major roadways
3. Promote intersection hierarchy
4. Locate signals to favor through movements
5. Preserve the functional area of intersections and interchanges
6. Limit the number of conflict points
7. Separate conflict areas
8. Remove turning vehicles from through-traffic lanes



Adapted from FHWA Office of Operations – Access Management

Figure 54: Major Roads Plan Access and Mobility Relationship

Figure 54 illustrates the balance between access and mobility and the relationship with Major Roads Plan categories.

Recommended access management resources include:

- [Transportation Research Board Access Management Manual, 2nd Edition](#)
- [SDDOT Road Design Manual, Chapter 17 Access Management](#)

Jurisdictional Considerations

Access requirements for area roadways not under the City of Brookings jurisdiction should be reviewed when considering new access. Consideration should be given to both existing and future jurisdiction access requirements. If more of a regional corridor spanning multiple jurisdictions, access requirements for the corridor in neighboring jurisdictions should also be reviewed.

- State of South Dakota: [SDDOT Road Design Manual Chapter 17](#) and [South Dakota Administrative Rules Chapter 70:09:02](#)
- Brookings County: [Brookings County Master Transportation Plan](#)
- City of Aurora: [City of Aurora Code of Ordinances – Ordinance 304 – Subdivision Regulations](#)
- City of Volga: [City of Volga Code of Ordinances – Chapter 14](#)

Intersection Functional Area

A core element of access location, spacing, and management is intersection functional area

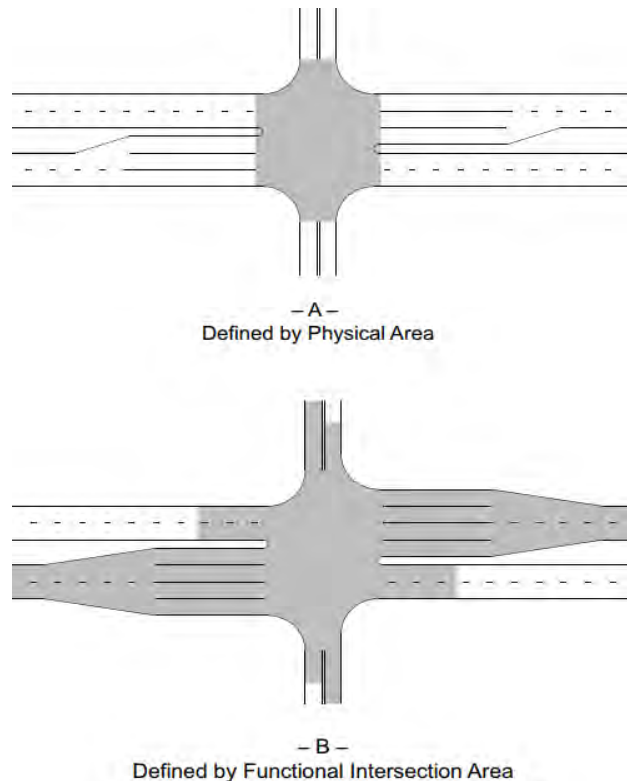
(Figure 55 and Figure 56). AASHTO states:

“Ideally, driveways should not be located within the functional area of an intersection or in the influence area of an adjacent driveway.”

It is important to manage the major intersection’s functional area by restricting access upstream and downstream of the physical intersection. This provides a more sequential order of tasks for motorists approaching and traveling through the intersection physical area by limiting conflicts and simplifying the perception–reaction–maneuver process. In situations where access within the intersection functional area cannot be avoided, movements should be restricted to right-in right-out.

Methodology and values to calculate intersection functional area are provided in [SDDOT Road Design Manual – Chapter 17 Access Management](#).

Intersection Area
Intersections consist of two components: A) physical area and B) functional area

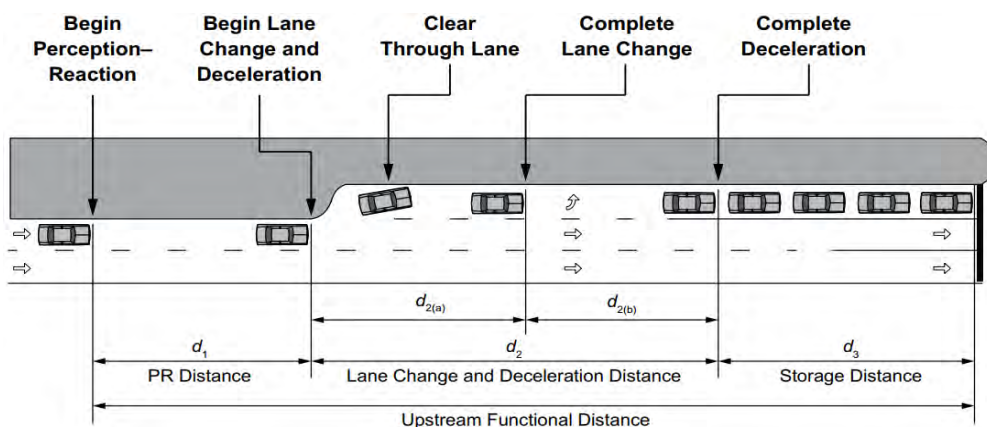


Source: AASHTO A Policy on Geometric Design of Highways and Streets, 7th Edition (2018)

Figure 55: Intersection Area

Intersection Functional Area Elements

The functional area upstream of the physical intersection accounts for 1) distance traveled during the perception–reaction time, 2) deceleration distance while the driver maneuvers to a stop, and 3) queue storage. Downstream functional area accounts for stopping sight distance and is shorter than the upstream functional area (Figure 57).



Source: AASHTO A Policy on Geometric Design of Highways and Streets, 7th Edition (2018)

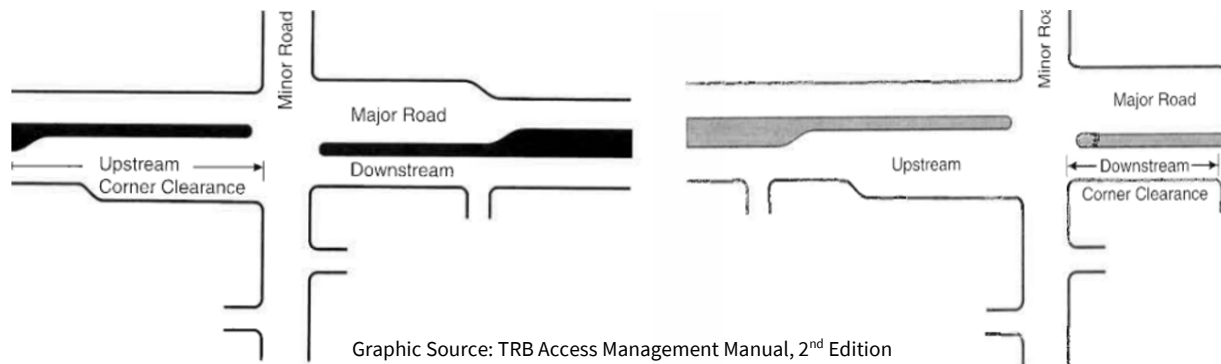
Figure 56: Intersection Functional Area Elements

Corner Clearance

Corner clearance is the minimum distance between a new access and the nearest crossroad intersection. It should provide drivers with adequate perception-reaction time to assess potential downstream conflicts and is aimed at preventing the location of driveways within the functional area of an intersection.

Upstream corner clearance is based on the upstream functional area of the intersection. Downstream corner clearance is based on stopping sight distance.

It is recommended all proposed access locations be evaluated for corner clearance. Recommended guidelines are provided in **Figure 57**.



SPEED (MPH)	UPSTREAM CORNER CLEARANCE (FEET)	DOWNSTREAM CORNER CLEARANCE (FEET) ²
20	115 + queue ¹	115
25	160 + queue ¹	155
30	215 + queue ¹	200
35	300 + queue ¹	250
40	380 + queue ¹	305
45	460 + queue ¹	360
50	550 + queue ¹	425
55	645 + queue ¹	495

See SDDOT Road Design Manual Chapter 17 for additional information

Corner clearance is measured from the closest edge of pavement (intersection) to closest edge of pavement (proposed access)

Upstream Corner Clearance: equal or exceed the upstream functional area ($d1+d2+d3$)

¹ Analysis measured queue is applicable for signalized intersections

Downstream Corner Clearance: equal or exceed the stopping sight distance

² Stopping sight distance assumes level terrain

Figure 57: Corner Clearance

City of Brookings Major Roads Plan Access Standards

Access standards for new access points within the Brookings area, by Major Roads Plan category, are shown in **Table 42** and **Table 43**. Access requirements from other agencies with jurisdiction of the respective roadway or a corridor-specific access management plan or study may supersede these access spacing standards.

Table 42: City of Brookings Access Spacing

MAJOR ROADS PLAN CATEGORY	STREETS	TRAFFIC SIGNAL SPACING	MEDIAN OPENING	UNSIGNALIZED INTERSECTION SPACING
Regional Arterials	US14 / 6 th Street, US14 Bypass / 18 th Street	See SDDOT Brookings Highway Access Classifications Map and Table 43		
Local Arterials	All local arterials (22 nd Avenue, 20 th Street S, etc.)	¼ mile	660 feet	660 feet
Collectors & Locals	All collector and local streets	-	-	300 feet

Table 43: SDDOT Access Classification Criteria

ACCESS CLASSIFICATION	SIGNAL SPACING DISTANCE (MILE)	MEDIAN OPENING SPACING (MILE)	MINIMUM UNSIGNALIZED ACCESS SPACING (FEET)	ACCESS DENSITY	DENIAL OF DIRECT ACCESS WHEN OTHER AVAILABLE
Interstate	N/A	N/A	N/A	N/A	Yes
Expressway	½	1/2 F, 1/2 D	2640	At half-mile increments	Yes
Free Flow Urban	1/2	1/2 F, 1/4 D	1320	At quarter-mile increments	Yes
Intermediate Urban	1/2	1/2 F, 1/4 D	660	1 access/block face, right in/right out preferred	Yes
Urban Developed	1/4	1/4	100	2 access/block face	Yes
Urban Fringe	1/4	1/4	1000	5 access/side/mile	Yes
Rural	N/A	N/A	1000	5 access/side/mile	Yes

Source: Figure 17-4, SDDOT Road Design Manual – Chapter 17

Notes:

1. Access to the Interstate system is governed by SDDOT interchange policy. No access shall be provided on non-interstate routes within the following distance of interstate ramp terminals: 1/8 mile directional access, 1/4 mile full access.
2. N/A = Not Applicable, F = Full Movement – all turns and through movements provided, D = Directional Only – certain turning and through movements not provided.
3. SDDOT may defer to stricter local standards.
4. SDDOT will seek opportunities to reduce access density wherever possible.
5. Rural class minimum unsignalized access spacing may be reduced to 660 feet by the Area Engineer, based on results of an engineering study as described in 70:09:01:02.
6. Unsignalized access spacing also is subject to corner clearance analysis.

All access requests will be reviewed by the City of Brookings with consideration to access category criteria, right-of-way widths, traffic operations, surrounding access points, and other information relevant to the operation of the proposed access. Turn lanes and appropriate levels of intersection traffic control should be evaluated with each access request for access points being added, or modified, through development or redevelopment. Traffic operations and mobility should be prioritized for arterial travel at each local network or development access point.

On arterial streets, an unsignalized intersection or full movement access at approximately 660 feet from a major intersection may be evaluated through traffic analysis for consideration by the City of Brookings (or agency with jurisdiction of the applicable roadway segment if not City of Brookings). On the cross-street of an arterial intersection, at minimum, no access points should be located within the corner clearance distance upstream or downstream of an arterial street.

Existing access locations on arterial streets should be reviewed in conjunction with redevelopment, projects that modify the street, or as other opportunities or needs arise. It is recommended that for:

DEVELOPMENT ACCESS LOCATED WITHIN MAJOR (ARTERIAL) INTERSECTION FUNCTIONAL AREAS:

1. Close access and connect parcel to ¼-mile intersection via frontage, rearage, or development road
2. If closure is not feasible, construct median and restrict access to right-in right-out; consolidate multiple access points

ARTERIAL SEGMENTS WITH HIGH ACCESS DENSITY (CLOSELY SPACED DEVELOPMENT ACCESS POINTS)

1. Close access and connect parcel to ¼-mile intersection via frontage, rearage, or development road
2. If closure is not feasible, consolidate access points, construct median, and restrict access to 3/4 or right-in right out



US14 / 6th Street & 25th Avenue

8.6 Jurisdictional Transfer

Jurisdictional transfer is when ownership of a roadway is transferred from one roadway agency to another. For each agency having roadway jurisdiction/ownership, there may be a significant amount of cost associated with a transfer. It is typical for a roadway to be brought ‘up to standards’ or ‘acceptable condition’ by one or both parties involved in the transfer.

The overall objective of jurisdictional transfer is to provide for roadway ownership, operations, and maintenance at the proper jurisdictional level. Properly aligned roads provide the correct level of service and better align with user expectations for maintenance, operations, safety, and ride quality. It also provides efficiencies for transportation costs associated with constructing, operating, and maintaining the transportation network.

Jurisdictional Transfer Criteria

In the Brookings area, the following criteria should be considered in determining whether a roadway jurisdictional transfer is warranted:

System Continuity

- Is the roadway currently located within the boundary of a municipality?
- Is the roadway located adjacent and parallel to the boundary of a municipality?
- Is the roadway currently located within a municipal growth area?
- Is land on both sides annexed or planned to be annexed by the municipality?

Roadway Characteristics

- Does adjacent development contain urban roadway characteristics?
- Is there a desire for additional roadway amenities (sidewalks/shared-use paths)?
- Is there a need for public utilities?
- Are traffic volumes greater than 250 ADT (for Township gravel roadway)?
- Are traffic volumes greater than 2,500 ADT (for 2-lane County asphalt roadway)?

Roadway Classification

- How is the roadway functioning?
- What types of trips is it serving?
- What types of vehicles are using the roadway?
- What jurisdiction is best equipped to maintain the roadway?

Streamlined Maintenance and Funding Opportunities

- Is the segment an island or peninsula surrounded by a different jurisdiction?
- Would efficiency in maintenance and operation be improved with a transfer?
- What is the timeline for the next major investment?

Future Planning Documents

- Is the roadway in future growth areas identified in comprehensive plans?
- What is the timeline of growth in the area and potential annexation?
- Does this align with the roadway segment's next major investment?

Political Desire

- Are there special political considerations for a jurisdictional transfer?

While not an exhaustive set of criteria to identify road jurisdiction transfers, this list provides guidance for agencies considering whether a road may be better suited to be operated and maintained by a different agency. Ultimately, each agency must be agreeable to the transfer of jurisdiction to provide a level of service that is equitable from a resource and economic perspective.

Jurisdictional Transfer Process

The transfer of jurisdiction can be formalized in multiple ways including by Memorandum of Understanding, assignment of easement or right-of-way, or by other agreement as deemed necessary by the legal counsel of the state/city/county/township and should be considered on a case-by-case basis. In all cases, the agency/jurisdiction must be agreeable for the transfer of jurisdiction of a particular road facility.

A Life-Cycle Cost Analysis spreadsheet used by the SDDOT is recommended for determining the value of a roadway segment considered for jurisdictional transfer. The spreadsheet, which can be obtained from the SDDOT, is used to determine the present worth of the roadway, accounting for future maintenance and upkeep costs over the specified analysis period.

8.7 Policy Recommendations

The City of Brookings already incorporates complete streets elements through existing design standards, development approval processes, and guidance outlined in this BATP. It is recommended the City of Brookings formalize this approach and adopt a resolution approving a Complete Streets Policy to plan for, design, and construct transportation improvement projects to promote safety and accommodate pedestrians, bicyclists, transit users, motorists, and persons of all abilities.

It is recommended the City of Brookings adopt a resolution that states the City will follow MUTCD standards for the installation of rectangular rapid flashing beacon (RRFB) and pedestrian hybrid beacon (PHB) devices. This will provide direct guidance to the public, developers, internal operations, and partnering agencies related to critical pedestrian/bicycle crossings and the associated signage and pavement markings.

9 Bicycle and Pedestrian Plan

The Bicycle and Pedestrian Plan identifies updated recommendations that improve conditions for people walking and biking throughout the Brookings Area through network continuity, connectivity, and crossing enhancements by providing a framework to address multimodal needs through strategies, standards, and projects and identifying future projects, costs, and priorities.

9.1 Framework

Brookings completed a Bicycle Master Plan in 2017 which provides an excellent framework for the BATP. The Bicycle Master Plan engaged the community and city leaders to create recommendations for policies, programs, a future bikeway network, and provided funding and implementation guidance. The plan set forth a vision that stated:

By 2040, Brookings is a Platinum Level Bicycle Friendly Community where safe and comfortable bicycling trips throughout the city are made by residents, students, and visitors. Bicycle-friendliness contributes to the community's vision, health, and economy.

To support that vision, the plan identified three goals:

- 1. Develop a connected bicycle network comfortable for everyone.** This goal includes building a trail loop around the city and an internal bikeway network.
- 2. Adopt policies and programs that support a culture of bicycling.** This goal addresses several non-infrastructure strategies, such as adoption of a complete streets policy and implementing education, engagement, and evaluation efforts.
- 3. Implement the Plan efficiently, prudently, and effectively.** This goal addresses project prioritization, funding, and coordination with other infrastructure projects.

This overall vision and goals remain valid today. The Brookings Area Transportation Plan focuses on the first goal of updating the bikeway network and what types of facilities are “comfortable” for all ages and abilities along with the third goal related to identifying priorities within that network.

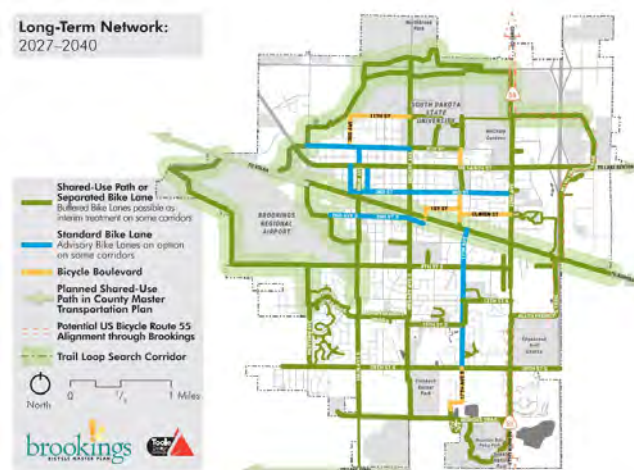


Figure 58: Long-Term Bicycle and Pedestrian Network (2017 City of Brookings Bicycle Master Plan)

9.2 Complete Streets Policy

Complete Streets policies are an approach to planning, designing, constructing, and maintaining streets that consider all modes of transportation and people all ages and abilities. Over 1,700 jurisdictions in the U.S. have created Complete Streets policies as of 2023. The result of a Complete Streets policy is that each street incorporates the facilities and treatments that are appropriate for the context and characteristics of the street. For example, to accommodate people biking, a collector street may include buffered or separated bike lanes, but a local street may only need shared lane markings or nothing at all due to the low traffic volume and low speed of the street. According to Smart Growth America, a city planning research and advocacy organization, a good complete streets policy follows ten guidelines.⁴

Table 44: Complete Streets Policy Elements⁵

COMPLETE STREET POLICY ELEMENTS	
1	Establishes commitment and vision
2	Prioritizes underinvested and underserved communities
3	Applies to all projects and phases
4	Allows only clear exceptions
5	Mandates coordination between public and private partners
6	Adopts excellent design guidance
7	Requires proactive land use planning
8	Measures progress and reports to the public
9	Sets criteria for choosing projects
10	Creates a plan for implementation

9.3 Resources

Number 6 of the complete streets policy elements refers to adopting excellent design guidance. The following design guides and manuals represent state-of-the-practice documents. The recommendations within this chapter are consistent with these documents.

- [American Association of State Highway and Transportation Officials \(AASHTO\), *Guide for the Development of Bicycle Facilities, Fifth Edition*](#)
- [National Association of City Transportation Officials \(NACTO\) *Designing for All Ages and Abilities*](#)
- [NACTO *Urban Bikeway Design Guide, Third Edition*](#)
- [FHWA *Manual on Uniform Traffic Control Devices \(MUTCD\)*](#)
- [FHWA *Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations*](#)
- [FHWA *Small Town and Rural Multimodal Networks*](#)
- [FHWA *Bikeway Selection Guide*](#)
- [U.S. Access Board *Public Right of Way Accessibility Guidelines*](#)
- [SDDOT *Road Design Manual*](#)
- [2023 South Dakota *Vulnerable Road User Safety Assessment*](#)

⁴ Smart Growth America, [Complete Streets - Smart Growth America](#). Accessed 08/29/2025.

9.4 Active Transportation Toolbox

Active transportation includes people biking, walking, and using small mobility devices (also known as “micromobility”), which may be motorized, such as electric bicycles and scooters.

The design guidance documents listed in **Section 9.3** provide an array of treatments that can be used for biking, walking and micromobility. This section presents several tools that can be found in the guidance documents and are recommended in Brookings for routes and crossings. These toolboxes are not exhaustive of all available tools, but rather, they are key tools that can be used to start to make a significant improvement in active transportation safety, connectivity, and level of user comfort in Brookings. As projects move forward, additional tools provided in current guidance documents may also be considered.

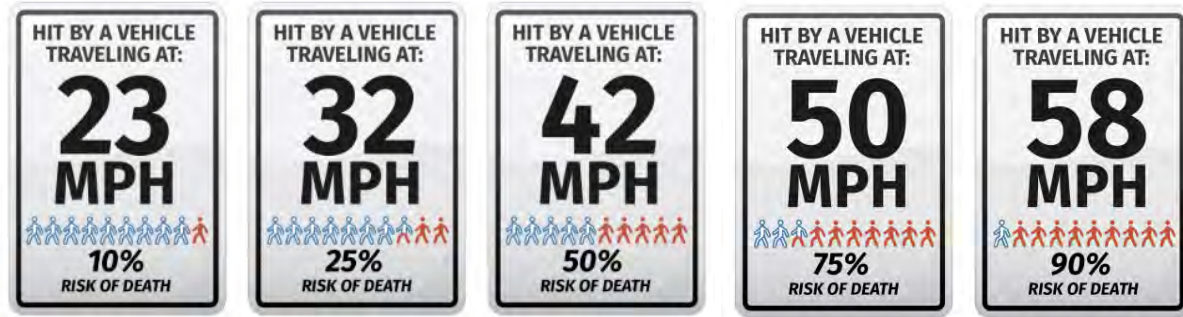
People biking are the flexible mode in the transportation system in terms of where they belong in the street right-of-way. They sometimes belong with people walking, they sometimes belong in their own space, and they sometimes belong with people driving. This is why one facility type for people biking does not fit across the entire transportation network.



Figure 59: Where do Bikes Belong?

The greater the vehicle speed, the greater the physical separation needed for people walking and biking. A shared street environment, where users are mixed, can be created for people walking, biking, and driving when target speeds are below 20 mph. In areas where vehicles travel faster, people walking and biking should be separated and protected from the vehicular traffic. The risk of death to a person who is hit by a vehicle rises exponentially as the speed of the vehicle increases, as depicted in **Figure 60**.⁵

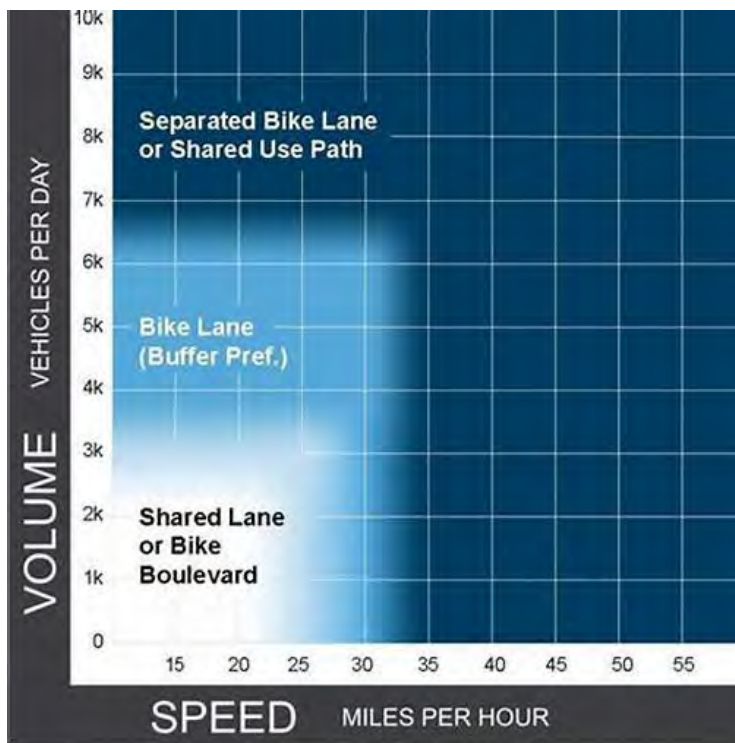
⁵ Tefft, B.C., *Impact Speed and a Pedestrian's Risk of Severe Injury or Death*. September 2011. AAA Foundation for Traffic Safety. [Impact Speed and a Pedestrian's Risk of Severe Injury or Death - AAA Foundation for Traffic Safety](#). Accessed 01/08/2024.



Source: USDOT Pedestrian Safety Action Plan

Figure 60: Increased Risk of Death by Speed

Figure 61 depicts a FHWA chart with general volume and speed guidance on where different types of bicycle facilities should be used to improve safety.⁶ Note that the transition from one type of facility to another type is a blurred line rather than a hard cutoff and engineering judgement and the types of users expected to use the facility should be considered. When available, prevailing speed should be considered rather than posted speed.



Source: FHWA

Figure 61: Bikeway Selection Guide

⁶ Schultheiss, Bill, et. al., *Bikeway Selection Guide*, FHWA. February 2019. [Bikeway Selection Guide \(dot.gov\)](https://www.fhwa.dot.gov/bicycles/bikewayselectionguide/). Accessed 01/31/2024.

Sidewalks

Sidewalks are designed for people to walk and generally parallel the city's roadways, which makes it easier for people to walk for transportation purposes. Sidewalks are included with all public street projects and when properties develop with new construction or redevelopment.

Sidewalks must be compliant with the Americans with Disabilities Act, which addresses the longitudinal and cross slope of the sidewalk and the need for detectable warnings at street crossings for people with visual impairment.

Sidewalk Design Guidance

Sidewalk Width: 5 feet (with boulevard)
or 6 feet (back of curb)



Figure 62: Sidewalk Example

Shared Use Paths (aka Trails)

Shared use paths are separated from the roadway and provide a low-stress facility for people walking, bicycling, and rolling. Many people refer to these facilities as “trails,” “bike trails,” or “bike paths.” When shared use paths are located parallel to a roadway, they may be referred to as a “sidepath.”

Standard shared use path width is 8 (minimum) to 10 feet per the SDDOT *Road Design Manual*, which references the AASHTO *Guide for the Development of Bicycle Facilities*.⁷ Shared use

paths can be attached to or detached from the curb depending on the roadway cross section.

Detached designs provide more pedestrian and bicyclist comfort and protection from roadway traffic, while also providing space for streetscape beautification. Expanding to 12-foot-wide shared use paths is recommended where there is a high volume of people biking and walking to reduce conflict and when the path is located at the back-of-curb to provide additional buffer from the roadway. Shared use paths can also be located on an independent right-of-way, such as along a former railroad grade or through a river greenway. **Figure 63** shows an example shared use path as a sidepath and **Figure 64** shows a shared use path through a greenway corridor.

Shared use paths are an attractive bikeway solution for several reasons, including:

- Provide space for people both biking and walking
- Are comfortable for most people to use, including children
- Often require minimal (or no) additional right-of-way when located parallel to a road
- Provide connections and access to adjacent land uses
- Function similarly to a sidewalk

Due to the mixed-use environment of shared use paths with people biking and walking, signage indicating that people biking must yield to people walking may be used where conflict is likely to occur. Conflicts between vehicles and people biking and walking at driveways and intersections should also be considered during design and may require additional signage or design treatments.

Shared Use Path Design Guidance

Path Width: 8-10 feet

Surfacing: Concrete or asphalt
(hard-surfaced, all-weather path)

⁷ SDDOT, [ROAD DESIGN MANUAL CHAPTER 16](#).



Figure 63: Shared Use Path as a Sidepath Example



Figure 64: Shared Use Path in a Greenway Example

Rail-With-Trails

A ‘rail-with-trail’ is a type of shared use path that is located parallel to an active railroad line. The 2017 Bicycle Master Plan proposed a ‘rail-with-trail’ corridor to parallel the railroad through town. This could potentially serve as part of a city trail loop and be part of a regional connection to the east and west to nearby towns.

One challenge with this concept in town is the inconsistent width of the railroad right-of-way. The second challenge with a rail-with-trail concept is that the railroad, as the owner of the property, must agree to use of the corridor for a trail. To support local jurisdictions’ efforts to create rails-with-trails, the Rails to Trails Conservancy has inventoried over 400 examples totaling over 1,000 miles across the United States, including over 4.5 miles in South Dakota.⁸ The Rails to Trails Conservancy has also provided abundant resources including guidance and sample easement and license agreements. In cases of successful rails with trails, the railroads and the trail managers have been able to come to an agreement about trail design, construction, maintenance, and operation. In some cases, the trail design includes a vertical barrier (e.g., fence, landscaping, wall) to be built between the trail and the railroad to discourage trail users from venturing off the trail and onto the tracks.⁹

If the rail-with-trail concept is not feasible due to these challenges, the City may consider an alternative route by establishing bikeways on 2nd Street South and Orchard Drive. Between 6th Avenue and 1st Avenue, bikeways on both the north and south sides of the railroad would facilitate access to destinations such as the park and connectivity to the rest of the on-street bikeway network.



Figure 65: Sioux Falls Rail with Trail, Source: Google Maps

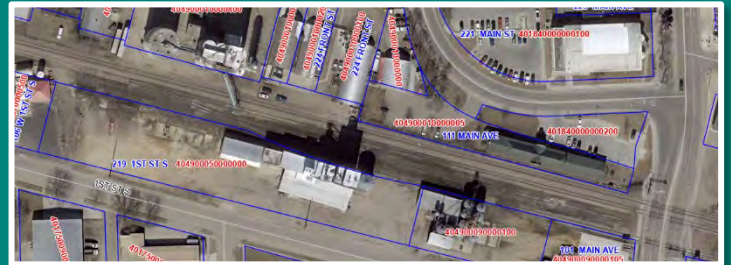
⁸ Rails to Trails Conservancy, [America's Rail-with-Trail List - Rails to Trails Conservancy | Rails to Trails Conservancy](#), September 17, 2024. Accessed September 18, 2025.

⁹ Rails to Trails Conservancy, [Rail-With-Trail: Trail-Building Toolbox - Rails to Trails Conservancy | Rails to Trails Conservancy](#), 2021. Accessed September 18, 2025.

Rails-with-Trails Concept Feasibility within Brookings

1st Avenue – 6th Avenue:

There are multiple tracks and a constrained right-of-way corridor, which narrows to only 50-feet wide in some sections. It would be difficult to design a trail in this corridor without removing some railroad tracks. An alternative on-street bikeway is recommended, which could make use of Front Street to First Avenue to access Pioneer Park. Additional walking and biking connections between Front Street and 5th Street via 5th Avenue, Main Avenue, and 3rd Avenue as described in the Downtown Street section would greatly enhance bikeability and walkability in this area.



6th Avenue – 22nd Avenue:

There appears to be a 100-foot-wide right-of-way available and few obstructions through this section. Constructing a parallel trail in this segment appears to be feasible.

22nd Avenue – 34th Avenue

This section also appears to have sufficient right-of-way; however, there are several track spurs that the trail may have to cross depending up on this location. If spur crossings are not feasible, an alternative route should be considered.



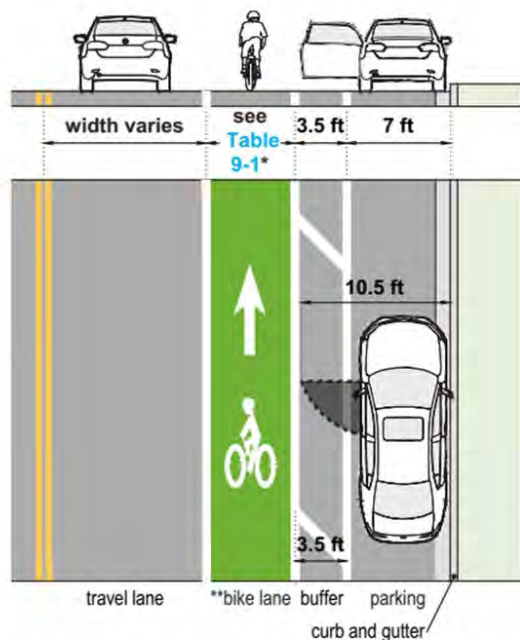
On-Street Bicycle Facilities

On-street bicycle facilities (which may be collectively referred to as “bikeways”) provide the following benefits to bicycle connectivity:

- Improves bicycle friendliness on low volume, low speed roadways
- Provides connectivity between shared use paths
- Allows people biking to access more destinations
- Enables biking as a viable mode of transportation

Different types of facilities are appropriate in different roadway contexts, based upon street and right-of-way width, traffic speeds, volumes, and land use. **Table 45** describes the toolbox of on-street bicycle facilities.

When planning for bike lanes along parallel parking, the “door zone” of the vehicles must be taken into consideration. A vehicle’s door may swing out about 3.5 feet. If the bicycle lane is adjacent to a row of parked vehicles, that door may enter the bicycle lane and hit a person biking there. To mitigate this concern, a buffer may be added between the row of parked cars and the bike lane to account for the “door zone.”



*bike lane may be a minimum of 4 ft if located adjacent to a buffer

**optional green-colored pavement

Source: AASHTO Guide for the Development of Bicycle Facilities

Figure 66: Door Zone

On-Street Bicycle Facility Design Guidance

Bike Lane Width: 6 feet (5 feet minimum)

Buffered Bike Lane Widths: 2-3 foot buffer (18-inch buffer minimum)

Paved Shoulder Width: 5-10 feet (based on speed and vehicle volume)

Shared Lane Marking Frequency:
Start of each block and intervals of 250 feet or less

Table 45: Toolbox for On-Street Bicycle Facilities

TREATMENT	DESCRIPTION
Shared Lane Markings  Source: City of Brookings, SD	• May be suitable for streets with up to 3,000 vehicles per day and speeds up to 25 mph. • Indicate where bicyclists and automobiles share travel lanes. The markings indicate proper bicycle positioning within the travel lane. • May serve as directional or wayfinding guidance between bicycle lanes and pathways. • Provide no protection to cyclists but is comfortable to most cyclists due to low traffic volume and speed. • Require maintenance to remain visible. • May use traffic calming or traffic diversion to create a “bicycle boulevard” that serves as a bicycle-friendly on-street route for all ages and abilities. • Should be accompanied by “Bikes Allowed Use of Full Lane” MUTCD signage.
Conventional Bike Lanes  Source: City of Brookings, SD	• May be suitable for streets with up to 6,500 vehicles per day and speeds up to 30 mph. • Create a visual distinction between the vehicular travel lane and the bicycle lane. • Provide no physical protection. • Require maintenance to remain visible. • Green paint may be used to call attention to conflict areas such as bike lanes through intersections or across driveways. • Should be accompanied by “Bike Lane” MUTCD signage.
Buffered Bike Lanes 	• May be suitable for streets with up to 6,500 cars per day and speeds up to 30 mph. • Adds a painted 2' to 3' buffer between the bike lane and travel lane. May also add a buffer between parked cars and the bike lane. • Should be accompanied by “Bike Lane” MUTCD signage.

TREATMENT	DESCRIPTION
Separated Bike Lanes 	• May be suitable for streets of any traffic volume or speed. • Adds a vertical element into the buffer space to improve level of comfort. • Vertical element may be a flexible delineator, low curb, concrete barriers, planters, or a customized structure. Parked cars can also serve as a vertical element. Wider and more significant separation is preferred along routes with higher speed traffic. • Must be designed to obviously deter vehicles from entering. • Should be accompanied by “Bike Lane” MUTCD signage.
Paved Shoulder 	• May be suitable for rural highways when a separated path is not possible. • Portion of the roadway contiguous with the traveled way that accommodates stopped vehicles, emergency use, maintenance activities, or avoidance and recovery maneuvers. • Typically used by “strong and fearless” cyclists due to proximity to fast-moving traffic. Not suitable for all ages and abilities. • Must NOT be signed or marked as a bike lane. • May use “Bicycle Use Shoulder Only” MUTCD signage.

¹⁰ City of Boulder, [Boulder Installs Protected Bike Lane Infrastructure New to the U.S. | City of Boulder \(bouldercolorado.gov\)](https://www.bouldercolorado.gov/news/2023/10/24/boulder-installs-protected-bike-lane-infrastructure-new-to-the-u.s.-city-of-boulder). October 24, 2023. Accessed 01/30/2024.

Front-Out Angle Parking

Many of the downtown streets in Brookings, along with a few other locations, currently provide back-out angle parking. This type of parking can be problematic for people biking in the street since motorists may have a difficult time seeing oncoming cyclists. To mitigate this concern, angle parking may be converted to front-out angle parking so that motorists have a clearer view of the road. Front-out angle parking is recommended on streets that have both recommended on-street bicycle facilities and angle parking within the street section.

Front-out angle parking has additional benefits including:

- Vehicles do not have to back into moving traffic upon departure
- Door swings point children toward the sidewalk rather than the street
- It is safer to access the trunk space from the sidewalk.



Figure 67: Example Front-Out Angle Parking

Recommendations

The following recommendations were developed using national best practice analysis of the existing active transportation network, traffic volumes, roadway speeds, and roadway context. The recommended network specifies shared use paths, shared lanes, and standard or separated bike lanes (with the optional alternative of a shared use path), with totals shown in **Table 46** (for facilities within the City of Brookings) and **Table 47** (for facilities throughout the BATP study area).

When designing for standard bike lanes, if there is room to add a painted buffer, that should also be included. The planning and design of separated bike lanes should assess the number of street crossings, driveways crossings, predicted volume and types of users, and visibility at intersections and crossings. Additionally, as new roads are built or existing roads are reconstructed, the option of a bike lane or shared use path should be evaluated. All designs should follow the best practice design guidance listed earlier in this chapter.

Table 46: Mileage of Facility Types (City of Brookings)

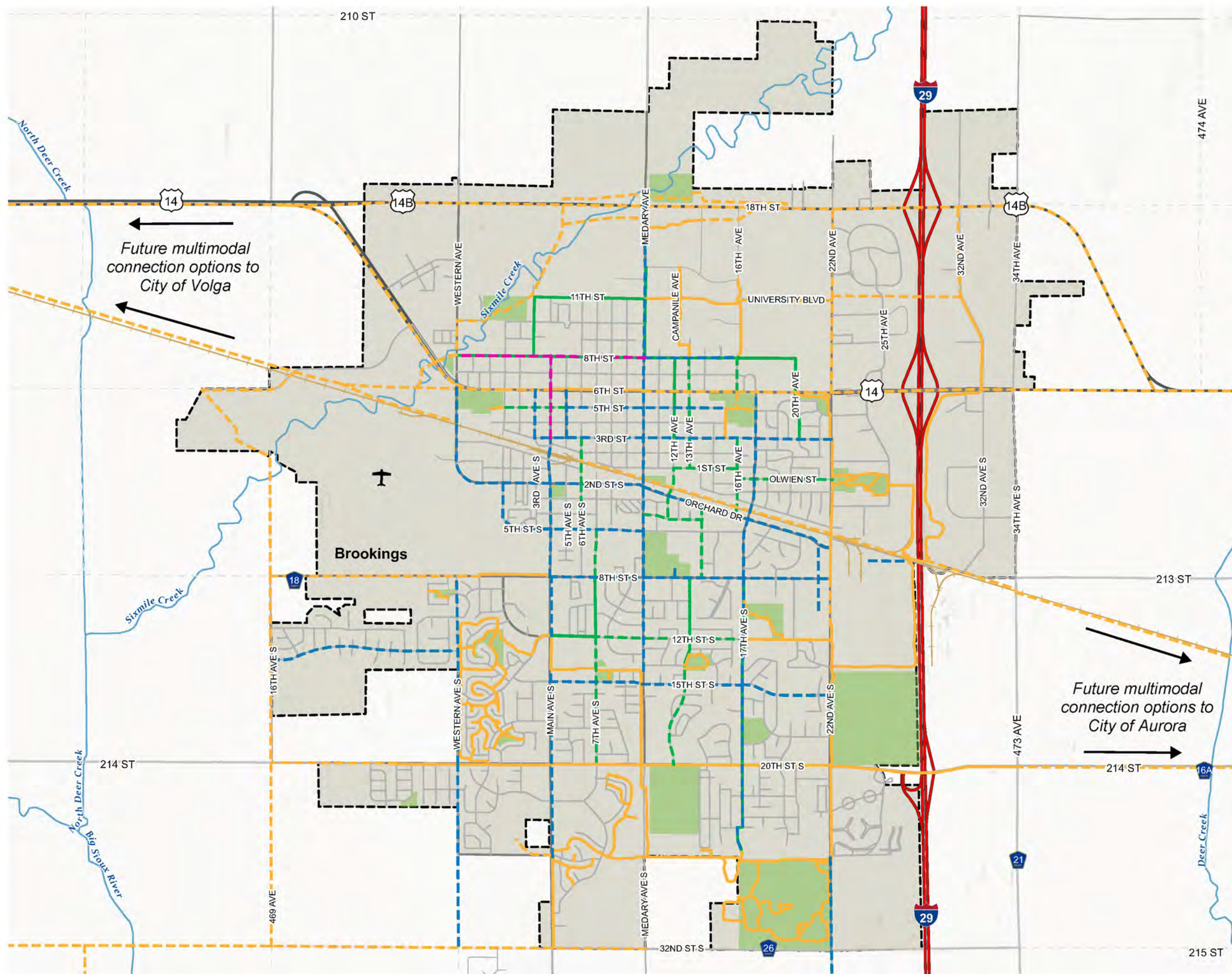
FACILITY TYPE	EXISTING	EXISTING TO BE CONVERTED	FUTURE	TOTAL
Shared Use Path	27.6	0.0	25.7	53.3
Shared Lane Markings	6.8	(-) 3.5	3.3	3.3
Standard Bike Lanes	1.5	(-) 1.5	7.5	6.0
Separated Bike Lanes (Optional Shared Use Path)	0.0	0.0	22.8	22.8

Table 47: Mileage of Facility Types (Study Area)

FACILITY TYPE	EXISTING	EXISTING TO BE CONVERTED	FUTURE	TOTAL
Shared Use Path	27.6	0.0	70.5	98.1
Shared Lane Markings	6.8	(-) 3.5	3.3	3.3
Standard Bike Lanes	1.5	(-) 1.5	7.5	6.0
Separated Bike Lanes (Optional Shared Use Path)	0.0	0.0	25.3	25.3

Figure 68 shows proposed locations for shared use paths, shared lanes, and bikeways zoomed into the city and **Figure 69** provides the regional view. Similarly, **Table 48** summarizes the City of Brookings focused-multimodal facility recommendations and **Table 49** denotes regional multimodal facility recommendations. **Table 50** details the estimated cost information for different types of biking and walking facilities.

Bicycle and Pedestrian Network Plan (City Focus)



- City Limits
- City Park & Greenspace
- Existing Shared Use Path
- Future Shared Use Path
- Existing Shared Lane
- Future Shared Lane
- Existing Bike Lane
- Future Standard Bike Lane
- Future Separated Bike Lane (Optional Shared Use Path)

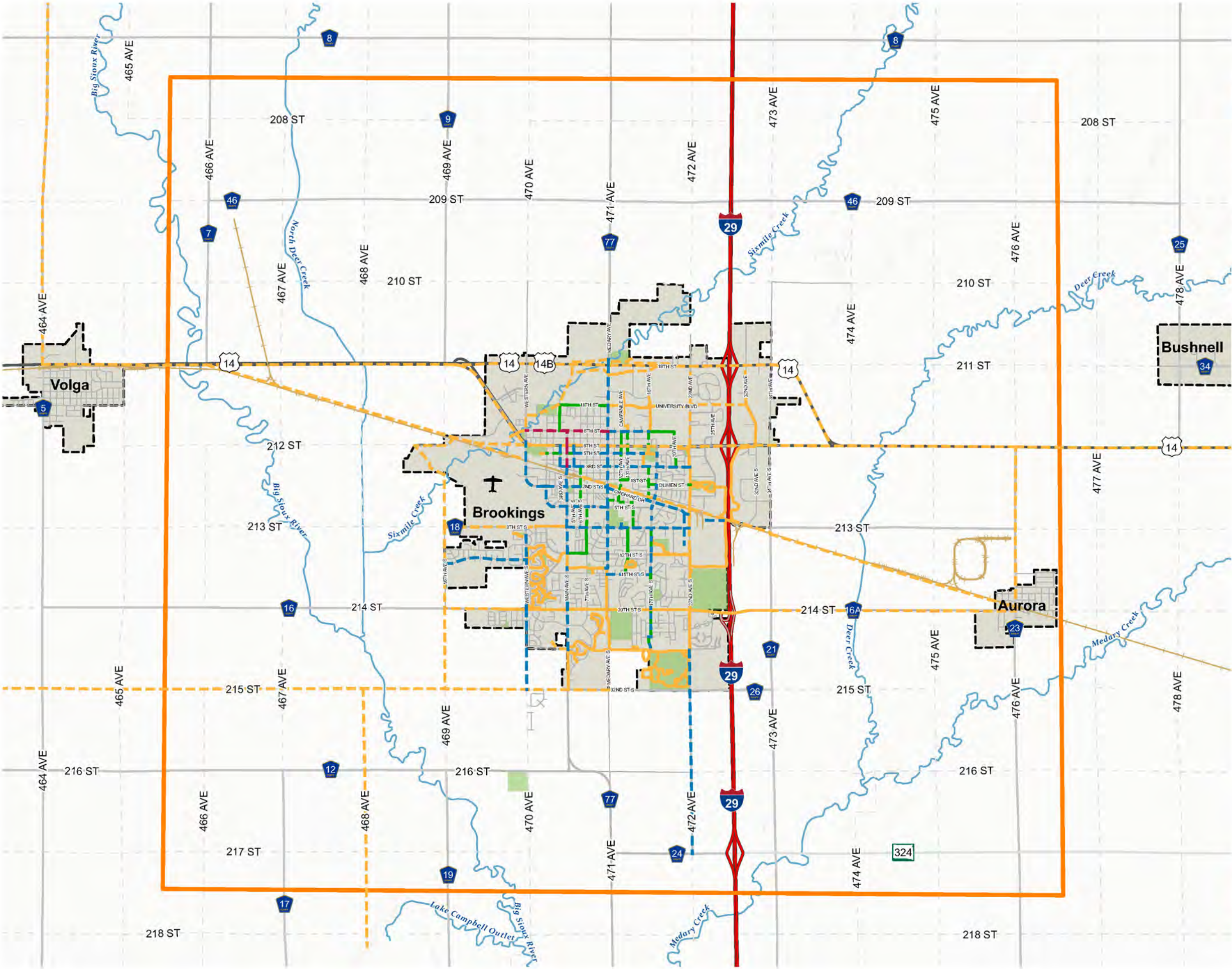
0 1 Miles



Figure 68



Bicycle and Pedestrian
Network Plan
(Study Area)



- Study Area
- City Limits
- City Park & Greenspace
- Existing Shared Use Path
- Future Shared Use Path
- Existing Shared Lane
- Future Shared Lane
- Existing Bike Lane
- Future Standard Bike Lane
- Future Separated Bike Lane (Optional Shared Use Path)

0 2 Miles



Figure 69

Table 48: Bicycle and Pedestrian Project Recommendations (Within City Limits)

ROAD NAME	FROM (WEST/NORTH)	TO (EAST/SOUTH)	FACILITY TYPE	AADT	SPEED (MPH)	LENGTH (MILES)
North Brookings Area						
Trail Loop – North Segment	US14 / 6 th St	32 nd Ave	Shared Use Path	n/a	n/a	3.2
US14 Bypass / 18th Street	US14 / 6 th St	34 th Ave	Shared Use Path	3,000 – 10,800	45 – 55	3.9
22nd Avenue	US14 / 6 th St	US14B / 18 th St	Shared Use Path	6,600 – 10,170	35	1.0
Central Brookings Area						
I-29 Pedestrian Crossing	22 nd Ave	32 nd Ave	Shared Use Path	n/a	n/a	0.7
8th Street	Western Ave	Medary Ave	Shared Use Path	1,900 – 3,500	25	1.0
8th Street	Medary Ave	Jackrabbit Ave	Separated Bike Lane (Opt. Shared Use Path)	4,300 – 4,500	25	0.5
US14 / 6th Street	US14 / US14B / 18 th St	Main Ave	Shared Use Path	4,000 – 5,700	30 – 65	1.8 – 4.5
US14 / 6th Street	Medary Ave	34 th Ave	Shared Use Path	5,300 – 16,300	30 – 35	2.0
5th Street	5 th Ave	Hillcrest Park	Separated Bike Lane (Opt. Shared Use Path)	800	25	0.9
3rd Street	3 rd Ave	22 nd Ave	Separated Bike Lane (Opt. Shared Use Path) *Requires gutter pan replacement	1,300 – 4,300	25	1.6
1st Street	12 th Ave	16 th Ave	Shared Lane	Low	25	0.3
Olwien Street	16 th Ave	22 nd Ave	Shared Lane	1,000	25	0.5
Trail Loop – Railroad Segment	6 th Ave	Allyn Frerichs Trail	Shared Use Path	n/a	n/a	1.8
Western Avenue / 2nd Street S	Railroad	Medary Ave S	Separated Bike Lane (Opt. Shared Use Path)	2,600 – 4,800	25 – 35	1.3
Orchard Drive	Medary Ave S	22 nd Ave S	Separated Bike Lane (Opt. Shared Use Path)	3,200 – 3,800	25	1.0
Division Avenue / 5th Street S	2 nd St S	Main Ave S	Separated Bike Lane (Opt. Shared Use Path)	700	25	0.5
5th Street S	Main Ave S	Medary Ave S	Separated Bike Lane (Opt. Shared Use Path)	1,200	25	0.5
3M Access Trail	3M Entrance	Allyn Frerichs Trail East	Separated Bike Lane (Opt. Shared Use Path)	n/a	n/a	0.2
8th Street S	Main Ave S	22 nd Ave S	Separated Bike Lane (Opt. Shared Use Path)	6,300 – 10,000	35	1.5
12th Street S	7 th Ave S	17 th Ave S	Shared Lanes	2,100 – 2,300	25	0.8
15th Street S	Main Ave S	22 nd Ave S	Separated Bike Lane (Opt. Shared Use Path)	2,000	25	1.5
16th Avenue S	8 th St S	20 th St S	Shared Use Path	Low	35	1.0
Western Avenue S	8 th St S	26 th St S	Separated Bike Lane (Opt. Shared Use Path)	200 – 2,000	35	1.5

ROAD NAME	FROM (WEST/NORTH)	TO (EAST/SOUTH)	FACILITY TYPE	AADT	SPEED (MPH)	LENGTH (MILES)
Main Avenue	8 th St	US14 / 6 th St	Standard Bike Lane	2,500	25	0.2
Main Avenue	3 rd St	12 th St S	Separated Bike Lane (Opt. Shared Use Path)	11,700 – 13,300	25 – 35	1.1
Main Avenue S	Allyn Frerichs Trail	26 th St S	Separated Bike Lane (Opt. Shared Use Path)	6,000	35	1.0
6 th Avenue	3 rd St	5 th St S	Shared Lane	900	25	0.5
7 th Avenue S	5 th St S	8 th St S	Share Lane	n/a	25	0.3
7 th Avenue S	12 th St S	20 th St S	Shared Lane	n/a	25	0.7
Medary Avenue	North of US14B / 18 th St	Allyn Frerichs Trail	Separated Bike Lane (Opt. Shared Use Path)	2,200 – 10,000	25 – 35	2.5
12 th Avenue	3 rd St	Orchard Dr	Shared Lane	1,000	25	0.3
Campanile / 13 th Avenue	8 th St	1 st St	Shared Lane	1,000	25	0.6
16 th Avenue	Derdall Dr	Orchard Dr	Shared Lane	Low	25	0.4
Jackrabbit Avenue	8 th St	US14 / 6 th St	Shared Lane	3,600	25	0.2
Hillcrest Park Trail	US14 / 6 th St	5 th St	Shared Use Path	n/a	n/a	0.1
17 th Avenue	US14 / 6 th St	24 th St S	Separated Bike Lane (Opt. Shared Use Path)	2,000 – 6,500	25	2.4
HyVee / Lewis Frontage Road	Orchard Dr	Lewis	Separated Bike Lane (Opt. Shared Use Path)	500 – 1,000	25	0.3
Christine Avenue	15 th St S	20 th St S	Shared Lane	n/a	25	0.5
Elm Avenue	Orchard Dr	8 th St S	Shared Lane	n/a	25	0.4
Birch Avenue	Orchard Dr	Forest St	Shared Lane	n/a	25	0.1
Forest Street	Medary Ave S	Elm Ave	Shared Lane	n/a	25	0.3
Avalon Circle	24 th St S	Allyn Frerichs Trail	Separated Bike Lane (Opt. Shared Use Path)	n/a	25	0.2
Downtown Brookings Area						
5 th Street	Pioneer Park	5 th Ave	Shared Lane	800 – 1,500	25	0.3
3 rd Avenue	US14 / 6 th St	3 rd St	Separated Bike Lane (Opt. Shared Use Path) *Consider 20 mph posted speed limit	5,300	25	0.3
Main Avenue	US14 / 6 th St	3 rd St	Standard Bike Lane (with Front-Out Angle Parking) *Consider 20 mph posted speed limit	4,900	25	0.3
5 th Avenue	US14 / 6 th St	3 rd St	Separated Bike Lane (Opt. Shared Use Path) *Consider 20 mph posted speed limit	3,500	25	0.3

ROAD NAME	FROM (WEST/NORTH)	TO (EAST/SOUTH)	FACILITY TYPE	AADT	SPEED (MPH)	LENGTH (MILES)
East Brookings Area						
32nd Avenue	US14B / 18 th St	½ mile south of US14B / 18 th St	Shared Use Path	2,300	25	0.5
South Brookings Area						
Trail Loop – West Airport Segment	Railroad	8 th St S	Shared Use Path	n/a	n/a	1.7
8th Street S	16 th Ave S	Onaka Tr	Shared Use Path	700 – 4,000	35	1.1
20th Street S	16 th Ave S	Rio Grande Ave	Shared Use Path	1,400	35	0.7
26th Street S	Dakota Prairie Elementary School	Main Ave S	Shared Use Path	Low	25	0.2
32nd Street S	Maple Dr	Medary Ave S	Shared Use Path	600	55	0.7
22nd Avenue S	26 th St S	32 nd St S	Separated Bike Lane (Opt. Shared Use Path)	2,900	35	0.5

Table 49: Bicycle and Pedestrian Project Recommendations (Outside of City Limits)

ROAD NAME	FROM (WEST/NORTH)	TO (EAST/SOUTH)	FACILITY TYPE	AADT	SPEED (MPH)	LENGTH (MILES)
Northern Study Area						
US14 (Volga Trail Option)	BC Hwy 7	US14B / 18 th St	Shared Use Path	9,200	65	3.1
US14 Railroad Trail (Volga Trail Option)	BC Hwy 7	469 th Ave	Shared Use Path	n/a	n/a	3.1
Eastern Study Area						
US14 Bypass	34 th Ave	US14	Shared Use Path	3,000	65	1.3
US14	34 th Ave	BC Hwy 23	Shared Use Path	5,500	55 – 65	3.0
Railroad Trail (Aurora Trail Option)	Allyn Frerichs Trail East	Broadway Ave	Shared Use Path	n/a	n/a	3.6
BC Hwy 16A (Aurora Trail Option)	BC Hwy 21	Broadway Ave	Shared Use Path	200 – 1,000	45	3.0
Southern Study Area						
215th Street (Lake Sanai Trail)	466 th Ave	Maple Dr	Shared Use Path	1,000	35	4.4
468th Avenue (Lake Campbell Trail)	215 th St	217 th St	Shared Use Path	Low	35	2.0
469th Avenue	BC Hwy 16	215 th St	Shared Use Path	Low	35	1.0
472nd Avenue	BC Hwy 26	BC Hwy 24	Separated Bike Lane (Opt. Shared Use Path)	2,000	55	2.0

Table 50: Estimated Facility Unit Costs

DESCRIPTION	UNIT	UNIT PRICE
8 ft. Concrete Shared Use Path	MILE	\$320,000 - \$800,000
Conventional Bike Lanes	MILE	\$135,000
Buffered Bike Lanes	MILE	\$185,000
Separated Bike Lanes	MILE	\$200,000 - \$800,000 (varies on type of separation)
Shared Lane Markings (Includes Signing and Symbols)	MILE	\$30,000
Paved Shoulder (Includes Signing)	MILE	\$5,000
5 ft. Concrete Sidewalk	LINEAR FEET	\$75

Note: Prices may vary based on the amount of ROW and existing conditions.



Allyn Frerichs Trail (near Branch Creek development)

9.5 Controlled and Uncontrolled Crossings

Locations identified for crossing improvements include key intersections of the existing multimodal network. Additionally, recommended citywide policies to upgrade pedestrian and bicycle crossings to meet best practices are outlined below. Crossing improvements should be prioritized at pedestrian and bicycle crash locations, high-volume pedestrian locations, parks, schools, city services, and the downtown. Throughout the Brookings area, crossings should be installed thoughtfully in appropriate locations to provide the greatest safety and economic benefit.

Crossing Treatments

For biking and walking to serve as viable transportation options, people need to be able to safely cross streets at intersections as well as mid-block. There are several tools that can be used to make crossing safer and more comfortable for all users. This includes strategies that make people crossing more visible, physically separate people crossing from people driving, provide dedicated time for each mode through the crossing, or slow or stop vehicular traffic near crossing points. For each tool, the tables below provide descriptions and key considerations to help provide a foundation for feasibility and understanding of benefits or drawbacks.

The list of potential crossing enhancement strategies assumes baseline implementation of curb ramps, accessible pedestrian signals at signalized intersections, lighting, crosswalk pavement markings, and signs per SDDOT standards and MUTCD guidance and only focuses on crossing enhancements beyond those items.

Lighting at crosswalks is particularly important since motorists may not be expecting a person to cross in the dark and visibility off to the sides of the road is reduced in the darkened conditions so motorists may not notice someone approaching a crossing. Lighting should be placed in advance of the crosswalk to avoid a silhouette effect of the pedestrian. **Figure 70** shows an example of this baseline intervention.



Continental Crosswalk, ADA Accessible Curb Ramps, and Detectable Warning Surfaces



Pedestrian Countdown Signal



Source: TAPCO

Figure 70: Sample Lighted Crosswalk

According to FHWA, high visibility crosswalks use patterns that are visible to both the driver and pedestrian from farther away compared to traditional transverse line crosswalks¹¹. High visibility crosswalks should be considered at all midblock pedestrian crossings and uncontrolled intersections. These crossings should utilize materials such as inlay or thermoplastic tape to provide highly reflective pavement markings. In addition, lighting and signage should be incorporated at these crossings to enhance visibility for all users.

Table 51 through **Table 54** present a compilation of crossing enhancement strategies using guidance from the following sources:

- [Pedestrian Safety Guide and Countermeasure Selection System \(PEDSAFE\)](#)
- [FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations](#)
- [National Association of City Transportation Officials \(NACTO\) Urban Street Design Guide](#)
- [NACTO Designing for All Ages and Abilities](#)
- [City of Boulder Pedestrian Crossing Treatment Installation Guidelines](#)
- [Manual on Uniform Traffic Control Devices \(MUTCD\)](#)
- [Safe Travel for Every Pedestrian Decision Guide and Best Practices – Uncontrolled Intersections and Mid-Block Crossings](#)



Source: FHWA Proven Safety Countermeasures

Figure 71: High Visibility Crosswalk Example

¹¹ [Proven Safety Countermeasures - Crosswalk Visibility Enhancements](#). Publication FHWA-SA-21-049. FHWA, U.S. Department of Transportation.

Table 51: Roadway Design Strategies

TREATMENT	DESCRIPTION	KEY CONSIDERATIONS
Curb Extension Bulb-out Bump-out 	Extension of sidewalk space into the street, narrowing the effective street width at the pedestrian crossing. Considered at intersection and midblock locations where there is high crossing activity, and no travel lane conflicts. Typical application in locations with on-street parking.	Shortens crossing distance, decreasing pedestrian exposure to vehicular conflicts. Provides opportunity to increase sidewalk space and streetscape beautification. Improves pedestrian visibility. Lowers vehicle speeds for turning and through traffic. Allows for traffic control and warning devices to be placed closer to travel lane and be more visible. Provides opportunity to store and treat stormwater runoff. May reduce available area for on-street parking.
Pedestrian Refuge Island Median / Crossing Islands  Source: NACTO Urban Street Design Guide	Raised island in the center of a street, separating opposing lanes of traffic. Cutouts for pedestrian access provides a refuge area for people crossing the street. Used in locations on single-lane or multi-lane streets where there is a defined midblock crossing desire line or at intersections.	Facilitates a two-stage crossing, where pedestrians can focus on each direction of traffic separately. Refuge area provides pedestrians with a better view of oncoming traffic and allows drivers to see pedestrians more easily. Can help split multi-lane roads into manageable crossing segments and supplement other pedestrian facility treatments.
Raised Crosswalks 	Speed tables outfitted with crosswalk markings and signage to facilitate pedestrian crossings. Crosswalk provides pedestrians with a level street crossing. Applied in locations where modal hierarchy is desired to promote better yielding compliance by drivers.	Channelizes pedestrians to an enhanced crossing location. Slows vehicular travel speeds. Improves pedestrian visibility and accessibility. Consider impacts to snowplows, emergency services, transit, and drainage.
Centerline Hardening  Source: AASHTO	Bollards and rubber curbs placed on the centerline to prevent drivers from cutting through intersections at a diagonal. Used in locations where there is a history or risk of turn-related crashes.	Forces drivers to slow down when making left turns. Improves driver reaction to pedestrians in the crosswalk. Improves visibility for pedestrians in the crosswalk.

TREATMENT	DESCRIPTION	KEY CONSIDERATIONS
Roundabouts  Source: FHWA	An intersection with a circular configuration to reduce vehicle speed and minimizes conflict points. Can replace signals, two-way stop controls, and all-way stop controls. Can be located in both single-lane and multi-lane intersections in both rural and urban areas.	Lower speeds and reduced conflict points reduce fatal and serious injury crashes substantially. Lower speeds and dedicated crosswalks and bicycle facilities create a more suitable environment for walking and biking. Can reduce delay and queuing compared to other intersection alternatives. Crosswalks can be supplemented with Rectangular Rapid Flashing Beacons or Pedestrian Hybrid Beacons. May need additional treatments to be comfortable for people with vision disabilities.
Traffic Circles Mini Roundabouts Neighborhood Traffic Circles  Source: NACTO	A type of roundabout with a smaller footprint than a typical roundabout. A suitable treatment for uncontrolled intersections. May be used in lieu of all-way or two-way stop-controlled intersections. Ideal on residential roads. Can be built within existing right-of-way.	Can be used to promote traffic calming and neighborhood beautification. Lowers speeds, which helps create a shared road for people driving and biking. Does not cause delay for people biking.

Table 52: Grade Separation Strategies

TREATMENT	DESCRIPTION	KEY CONSIDERATIONS
Grade-Separated Crossing (Overpass/Underpass) 	Pedestrian and bicycle-only overpass (bridge) or underpass (tunnel/culvert) of a street or topographical barrier. Provides separation of pedestrians and bicyclists from motor vehicle traffic, typically where no other pedestrian crossing facility is available. Typically applied in locations with defined pedestrian or bicycle route that extends across a major barrier.	Design may be dependent upon elevation of surrounding land. Out-of-direction travel or steep grades may deter people from using the designated crossing (e.g., people may choose to cross at-grade despite the provided tunnel or bridge). Can be used for public art. There may be high cost, large footprint, and visual impacts. Ongoing maintenance concerns, including potential flooding of tunnels.

Table 53: Signal and Sign Strategies

TREATMENT	DESCRIPTION	KEY CONSIDERATIONS
Rectangular Rapid Flashing Beacons (RRFB) 	Conspicuity enhancement to a marked crosswalk. RRFB supplements a crosswalk, the pavement-marked crosswalk assigns right-of-way to the pedestrian. Rapid flashing LED lights post-mounted between a pedestrian crossing warning sign and down arrow sign. Beacons may be push-button or passive pedestrian detection activated. Typically applied on two or four-lane streets at midblock or uncontrolled intersection approach crossings.	RRFBs increase driver yielding compliance. Solar panels reduce energy costs associated with the device. Wireless capabilities reduce installation cost. Signs and lights may be placed overhead to enhance visibility.
Pedestrian Hybrid Beacon (PHB) High Intensity Activated Crosswalk (HAWK)  Source: Google Street View	Pedestrian-actuated beacon used to warn and control traffic at an unsignalized, marked crosswalk. When actuated, the beacon displays a yellow indication followed by a solid red. During pedestrian clearance, the driver sees a flashing red 'wig-wag' pattern until the clearance interval has ended and the signal goes dark. Often considered along higher speed multi-lane streets.	Reduces pedestrian-vehicle conflicts and increases driver compliance to pedestrians in the crosswalk. Reduces vehicle delay when compared to a standard pedestrian traffic signal. Can be coordinated with intersection traffic signals. Compliance with pedestrians pushing the button may be an issue.
Automated Pedestrian Detection  Source: Automotive World	Detection devices sense when a pedestrian is waiting at a crosswalk and communicates with the traffic signal to actuate a pedestrian WALK phase. Some detection technology can extend a pedestrian clearance time for pedestrians that need additional time to cross.	Detection technology: microwave and infrared. Detection can operate on a delay to minimize false calls. Improves compliance with activating and/or waiting for a WALK indication or flashing beacon.
"State Law – Yield to Pedestrians Within Crosswalk" Signs 	MUTCD sign R1-6. In-street sign to remind road users of laws regarding yielding right-of-way at an unsignalized pedestrian crosswalk.	Effective in identifying crosswalk locations. Increased driver yielding compliance.

Table 54: Traffic Signal Phasing Strategies

TREATMENT	DESCRIPTION	KEY CONSIDERATIONS
Protected Left Turn or Right Turn Phasing; Prohibit Right Turn on Red 	Protected left or right turn phasing (solid turn arrow) to prohibit vehicles from turning into a crosswalk with a pedestrian-actuated WALK indication. Prohibiting right turn on red only allows right turns during a green indication. MUTCD sign R10-11.	Helps reduce conflicts between turning vehicles and pedestrians. NCHRP 812 provides protected-permitted left turn phasing guidance. Right turn on red prohibitions can help reduce conflicts, but challenges include compliance and intersection vehicular operations.
Pedestrian ‘Scramble’ Phase  Source: Google Earth	Dedicated pedestrian phase that prohibits all vehicles from entering to allow pedestrians to cross directly to any intersection quadrant (diagonally or perpendicular), instead of crossing one intersection leg at a time.	Increases pedestrian visibility. Reduces conflicts between vehicles and pedestrians. Reduces pedestrian crossing time and exposure. Can program controller to only run ‘scramble’ phase during certain times of day or special occasions.
Leading Pedestrian Interval 	Provides pedestrians a 3 to 7 second head start prior to a green indication for vehicles on the parallel street. Typically applied in locations with high pedestrian – turning vehicle conflicts or vulnerable pedestrian populations.	Increases pedestrian visibility for turning vehicles and driver yield compliance to pedestrians in the crosswalk. Helps reduce conflicts between turning vehicles and pedestrians.
Bicycle Signals  Source: Institute of Transportation Engineers	Uses three lens signal heads with green, yellow, and red bicycle signals. Applied in locations with high bicycle crossing traffic and configuration of existing bicycle facilities. Required at signalized intersections for counter-flow bike lanes and two-way bicycle lanes.	Allows safer crossings for bicyclists by clearly signaling when bicyclists should enter an intersection. May reduce stress and delays for a crossing bicyclist. Decreases conflicting bicycle and vehicle movements.

Crossing Distances

As redevelopment and new roads are constructed in Brookings, mid-block crossings should be considered when intersection spacing is larger than a quarter mile; however, crossing spacing is preferred for $1/8$ of a mile in high-pedestrian areas such as schools, parks, public services, commercial and downtown areas. Mid-block crossings should be considered when there is a significant pedestrian desire route. They should be combined with other features to promote visibility and safety, as noted in **Table 53** and **Table 54**. **Figure 72** provides a schematic showing crossing distances and types of improvements based on the roadway context.

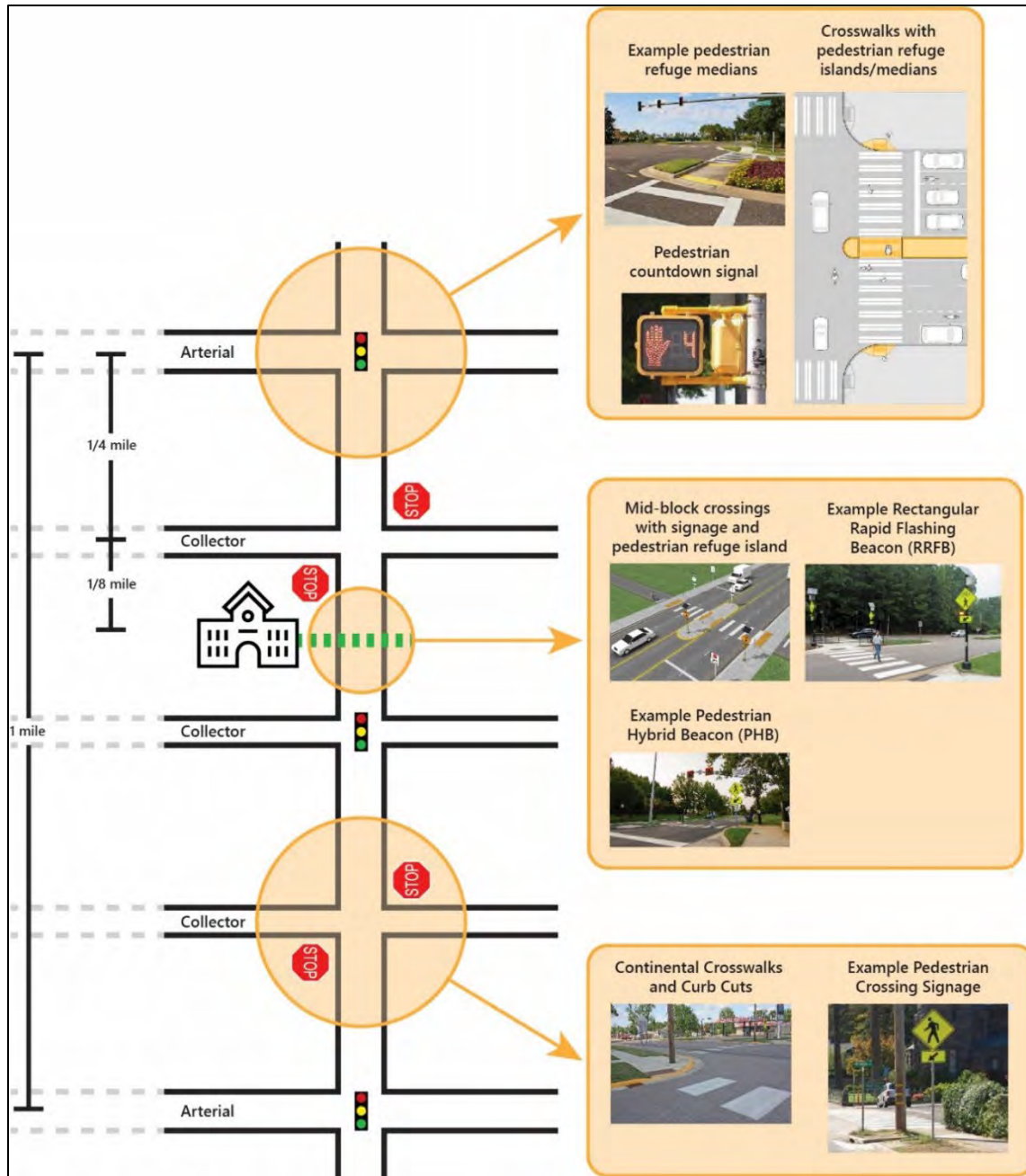


Figure 72: Recommended Crossing Spacing and Treatments

Crossing Improvements Screening

Planning-level policies and spot location improvements were determined using the [FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations](#), shown in **Figure 73**. This guide reflects candidate improvements, or countermeasures, for existing or proposed crossings at uncontrolled intersections or mid-block crosswalks. Additional study may be required prior to implementation, such as reviewing additional guidance prior to installing a pedestrian hybrid beacon or all-way stop control or traffic signals at intersections.

Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	① 2 4 5 6 7	① 5 6 7 9	① 5 6 7 9	① 4 5 6 7	① 5 6 7 9	① 5 6 7 9	① 4 5 6 7	① 5 6 7 9	① 5 6 9
3 lanes with raised median (1 lane in each direction)	① 2 3 4 5 7	① ③ 5 7 9	① ③ 5 7 9	① ③ 4 5 7	① ③ 5 7 9	① ③ 5 7 9	① ③ 4 5 7	① ③ 5 7 9	① ③ 5 9
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	① 2 3 4 5 6 7	① ③ 5 6 7 9	① ③ 5 6 9	① ③ 4 5 6 7	① ③ 5 6 7 9	① ③ 5 6 9	① ③ 4 5 6 7	① ③ 5 6 9	① ③ 5 6 9
4+ lanes with raised median (2 or more lanes in each direction)	① ③ 5 7 8 9	① ③ 5 7 8 9	① ③ 5 8 9	① ③ 5 7 8 9	① ③ 5 7 8 9	① ③ 5 8 9	① ③ 5 7 8 9	① ③ 5 8 9	① ③ 5 8 9
4+ lanes w/o raised median (2 or more lanes in each direction)	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 8 9	① ③ 5 6 7 8 9	① ③ 5 6 7 8 9	① ③ 5 6 8 9	① ③ 5 6 7 8 9	① ③ 5 6 8 9	① ③ 5 6 8 9
Given the set of conditions in a cell, # Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location. ● Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location. ○ Signifies that crosswalk visibility enhancements should always occur in conjunction with other identified countermeasures.* The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.									
1 High-visibility crosswalk markings, parking restrictions on crosswalk approach, adequate nighttime lighting levels, and crossing warning signs 2 Raised crosswalk 3 Advance Yield Here To (Stop Here For) Pedestrians sign and yield (stop) line 4 In-Street Pedestrian Crossing sign 5 Curb extension 6 Pedestrian refuge island 7 Rectangular Rapid-Flashing Beacon (RRFB)** 8 Road Diet 9 Pedestrian Hybrid Beacon (PHB)**									

AADT: Average Annual Daily Traffic

Source: [FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations](#)

Figure 73: Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations

Crossing Recommendations

Locations for crossing improvements were identified by the City of Brookings, the public, and analysis of key crossing locations along the bicycle and pedestrian network. **Table 55** describes the recommended improvements at each proposed crossing location. These locations result from public and stakeholder input. **Figure 75** shows proposed locations for these crossing improvements. **Table 56** details the estimated unit cost.

Table 55: Key Pedestrian Crossing Improvements

ID	RECOMMENDATIONS	ROAD NAMES	NO. OF LANES	SPEED (MPH)	DAILY VOLUME (VEH/DAY)
1	Add high visibility crosswalk markings on all approaches. Add crosswalk signage on east and west approaches. Add "Yield Here to Pedestrians" sign and yield pavement markings. Consider addition of RRFBs. Consider curb extensions where there is on-street parking. Consider option of a traffic circle.	8 th Street & 8 th Avenue	2 and 2	25 and 25	2,355 and Unknown
2	Add high visibility crosswalk markings on all approaches. Add crosswalk signage on east and west approaches. Add "Yield Here to Pedestrians" sign and yield pavement markings. Consider addition of RRFBs. Consider curb extensions where there is on-street parking. Consider option of a traffic circle.	8 th Street & 9 th Avenue	2 and 2	25 and 25	2,355 and Unknown
3	Add high visibility crosswalk markings. Add crosswalk signage with RRFB and advance warning signage. Add "Yield Here to Pedestrians" sign and yield pavement markings. Consider option of PHB.	Near McCrory Garden Entrance & 22 nd Avenue	2 and 3	N/A and 35	10,170
4	Add high visibility crosswalk markings. Consider adding crosswalk signage with RRFB and advance warning signage. Add "Yield Here to Pedestrians" sign and yield pavement markings. Consider option of PHB. Consider option of a road diet on Medary Avenue.	7 th Street & Medary Avenue	2 and 4	25 and 25	Unknown and 5,905
5	Evaluate options for a traffic signal, including pedestrian crossings and signals, or multilane roundabout, including pedestrian crossings and refuges in the splitter islands. RRFBs or PHBs may be added to pedestrian crossings on roundabouts.	6 th Street & Western Avenue	6 and 5	30 and 35	5,188 and 4,080
6	Add PHB with pedestrian refuge island on east approach. Include high visibility crosswalk markings and advance warning signage.	6 th Street & Henry Avenue	5 and 2	30 and 25	5,188 and Unknown

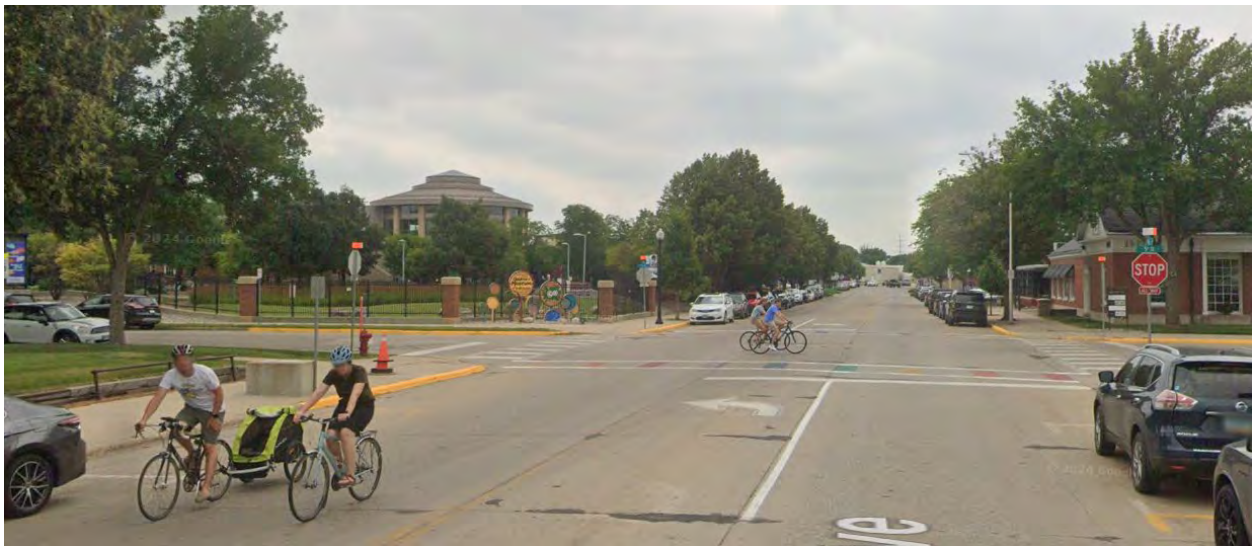
ID	RECOMMENDATIONS	ROAD NAMES	NO. OF LANES	SPEED (MPH)	DAILY VOLUME (VEH/DAY)
7	Add high visibility crosswalk markings. Add crosswalk signage and advance warning signage. Add "Yield Here to Pedestrians" sign and yield pavement markings. Consider RRFB or PHB depending upon build-out timeframe. Consider roundabout.	22 nd Avenue & University Boulevard	3 and 2	35 and 35	6,600 and 6,100
8	Add PHB on east approach with high visibility crosswalk markings and advance warning signage.	6 th Street & 7 th Avenue	5 and 2	30 and 25	11,225 and 605
9	Relocate or remove existing PHB at Hillcrest Aquatic Center.	6 th Street	5	30	15,665
10	Consider as an alternative to existing PHB at Hillcrest Aquatic Center. Add PHB with pedestrian refuge island on east approach. Include high visibility crosswalk markings, crosswalk signage, and advance warning signage.	6 th Street & 14 th Avenue	5 and 2	30 and 25	15,665 and Unknown
11	Consider as an alternative to existing PHB at Hillcrest Aquatic Center. Add PHB with pedestrian refuge island on east approach. Include high visibility crosswalk markings, crosswalk signage, and advance warning signage.	6 th Street & Jackrabbit Avenue	5 and 2	30 and 25	15,665 and Unknown
12	Add high visibility crosswalk markings on north approach. Add crosswalk signage and advance warning signage. Add PHB. Consider addition of pedestrian refuge island.	Minnesota Drive & 22 nd Avenue	2-3 and 5	25 and 35	Unknown & 14,030
13	Add curb extensions on all approaches with on-street parking. Add high visibility crosswalk marking on north and south approaches, maintain on east and west approaches. Add "Yield Here to Pedestrians" sign and yield pavement markings. Add crosswalk signage on 3 rd Avenue. Consider addition of RRFB. Consider option of a traffic circle/roundabout.	5 th Street & 3 rd Avenue	2 and 3	25 and 25	Unknown and 4,700
14	Add high visibility crosswalk markings. Add curb extensions. Consider traffic circle/roundabout.	5 th Street & 5 th Avenue	2 and 3	25 and 25	Unknown and 3,110
15	Add high visibility crosswalk markings on all approaches. Add crosswalk signage on Medary Avenue with RRFBs. Add curb extensions on 5 th Street. Consider PHB or traffic circle/roundabout.	5 th Street & Medary Avenue	2 and 3	25 and 25	Unknown and 8,185

ID	RECOMMENDATIONS	ROAD NAMES	NO. OF LANES	SPEED (MPH)	DAILY VOLUME (VEH/DAY)
16	Add curb extensions on all approaches with on-street parking. Add high visibility crosswalk marking on north and south approaches, maintain on east and west approaches. Add "Yield Here to Pedestrians" sign and yield pavement markings. Add crosswalk signage on 3 rd Avenue. Consider addition of RRFB.	4 th Street & 3 rd Avenue	2 and 3	25 and 25	745 and 4,700
17	Upgrade to full pedestrian scramble using an exclusive pedestrian phase timed for diagonal crossing. Also allow pedestrian crossing concurrent with parallel traffic. Maintain high visibility crosswalks on all approaches. Add diagonal crosswalks through intersection and break through landscaping. Add signage explaining scramble. Continue to refine signal timings as traffic patterns evolve.	3 rd Street & Main Avenue	2 and 2	25 and 25	3,045 and 11,880
18	Add high visibility crosswalk markings on east approach. Add crosswalk signage with RRFB and advance warning signage. Add "Yield Here to Pedestrians" sign and yield pavement markings. Consider curb extensions where there is on-street parking. Consider four-way stop or traffic circle/roundabout.	3 rd Street & 5 th Avenue	2 and 3	25 and 25	3,045 and 3,110
19	Add pedestrian signals on north/south crossings. Upgrade to accessible pedestrian signals with audible and vibrotactile indicators. Consider reconfigured intersection.	2 nd Street S/Orchard Drive & Medary Avenue S	3 and 3	25 and 25	3,085 and 8,905
20	Evaluate option to convert to a PHB with a pedestrian refuge island on north approach. Maintain high visibility crosswalk.	Olwien Street & 22 nd Avenue S	2 and 5	25 and 35	Unknown and 14,770
21	Evaluate need for signal or PHB.	Eastbrook Drive & 22 nd Avenue S	3 and 5	25 and 35	1,435 and 14,770
22	Evaluate need for additional crossing near high school track and ball fields along Mdary Avenue. Add high visibility crosswalk markings. Add school crosswalk signage with RRFB and advance warning signage. Add "Yield Here to Pedestrians" sign and yield pavement markings. Add pedestrian refuge island.	Near High School Track & Medary Avenue	N/A and 3	25	5,900

ID	RECOMMENDATIONS	ROAD NAMES	NO. OF LANES	SPEED (MPH)	DAILY VOLUME (VEH/DAY)
23	Evaluate crossing needs by high school. Potential additions include: high visibility crosswalk markings, school crosswalk signage with RRFB and advance warning signage, and "Yield Here to Pedestrians" signs and yield pavement markings. Add pedestrian refuge islands where left turn lanes are not needed. Add School Zone 15 mph speed limit at designated times. Consider option of PHBs.	8 th Street S and Roberts, Christine, and Elm Avenues and Heritage Drive	3 and 2	35 and 25	8,590 and Unknown
24	Evaluate crossing needs by middle school. Potential additions include: high visibility crosswalk markings, school crosswalk signage with RRFB and advance warning signage, and "Yield Here to Pedestrians" signs and yield pavement markings.	12 th Street S & TBD by Mickelson Middle School	2	25	3,005
25	Add "Yield Here to Pedestrians" sign and yield pavement markings. Extend School Zone speed limit east of this intersection.	12 th Street S & Southland Lane	2 and 2	25 and 25	3,005 and Unknown
26	Add high visibility crosswalk on either north or south approach. Add crosswalk signage and advance warning signage. Add PHBs. Consider option of Main Avenue road diet.	15 th Street S & Main Avenue S	2 and 5	25 and 35	Unknown and 8,665
27	Add high visibility crosswalk on all approaches. Add school crosswalk signage with RRFB and advance warning signage. Add "Yield Here to Pedestrians" sign and yield pavement markings. Add curb extensions. Maintain School Zone 15 mph speed limit at designated times.	15 th Street S & Christine Ave	2 and 2	25 and 25	Unknown
28	Add high visibility crosswalk markings, install crosswalk signage on both sides of road, facing both directions, change to school crosswalk signage with RRFBs and advance warning sign. Add "Yield Here to Pedestrians" sign and yield pavement markings. Consider option for advanced flashing warning beacons and PHB instead of RRFBs.	W 20 th Street S & Larkspur Ridge Drive / Half Moon Road	3 and 2	35 and 25	3,070 and Unknown
29	Add high visibility crosswalk markings, install crosswalk signage on both sides of road, facing both directions, with RRFBs and advance warning signage. Add "Yield Here to Pedestrians" sign and yield pavement markings. Consider option of PHBs.	20 th Street S & Soccer Park	3	35	4,400

ID	RECOMMENDATIONS	ROAD NAMES	NO. OF LANES	SPEED (MPH)	DAILY VOLUME (VEH/DAY)
30	Add high visibility crosswalk markings, install crosswalk signage on both sides of road, facing both directions, with RRFBs and advance warning signage. Add "Yield Here to Pedestrians" sign and yield pavement markings. Consider option of PHBs.	20 th Street S & Tanbury Lane	4 and 2	35 and 25	4,440 and Unknown
31	Maintain high visibility crosswalk markings. Consider roundabout. Consider raised crosswalks. Consider extending existing raised median (to the north) to the intersection approach.	20 th Street S & 17 th Avenue S	3 and 2	35 and 25	4,440 and 1,700
32	Add crosswalk signage and advance warning signage. Add lighting.	Trail Crossing & Medary Ave S	Trail and 2 (gravel)	35	240
33	Add high visibility crosswalk markings. Add school crosswalk signage and advance warning signage. Consider option of curb extensions.	Trail Crossing & Lakespur Ridge Drive	Trail and 2	25	Unknown
34	Revise existing mid-block crossing to meet MUTCD guidelines. Explore another location with new Medary Elementary School configuration. Add high visibility crosswalk marking to a new location. Add advancing warning signage. Consider curb extensions and an RRFB.	5 th St S & Medary Elementary School	2	25	Low
35	Implement high visibility crosswalk upgrades for the adjacent shared use path.	17 th Ave & Dakota St	2 and 2	25	4,900 and Unknown
36	Maintain high visibility crosswalks. Monitor traffic and safety records with respect to all-way stop control warrants and consider engineering judgement criteria. Consider RRFB with crossing and advanced warning signage (in lieu of all-way stop-control).	15 th St S & Medary Ave	2 and 2	25	3,600 and 2,000
37	Consider curb extensions. Evaluate future implementation of LPIs or a pedestrian scramble phase. Update signal video detection.	12 th St S & 17 th Ave S	2 and 2	25	3,005 and 4,100
38	Add Speed Limit 15 mph when flashing beacons in school zone areas throughout the City of Brookings.	School Zones	N/A	N/A	N/A
39	Implement high visibility crosswalk upgrades (as needed).	8 th St S & Main Ave S	5 and 3	35	8,400 and 11,700
40	Implement high visibility crosswalk upgrades (as needed).	26 th St S & Main Ave S	3 and 3	25 and 35	Unknown and 6,000
41	Implement high visibility crosswalk upgrades (as needed). Add school zone on 17 th Ave and school crossing signage.	3 rd St & 17 th Ave	2 and 2	25 and 25	2,000 and 4,900

ID	RECOMMENDATIONS	ROAD NAMES	NO. OF LANES	SPEED (MPH)	DAILY VOLUME (VEH/DAY)
42	Implement high visibility crosswalk upgrades (as needed). Consider crosswalk pavement markings and signage. Evaluate warrants for all-way stop-control.	Olwien St & 17 th Ave	2 and 2	25 and 25	Unknown and 4,900
43	Implement high visibility crosswalk upgrades (as needed).	5 th St S & 17 th Ave S	2 and 2	25 and 25	1,900 and 6,500
44	Implement high visibility crosswalk upgrades (as needed).	Orchard Dr & Birch Ave	2 and 2	25 and 25	3,500 and Unknown



5th Avenue & 5th Street Intersection

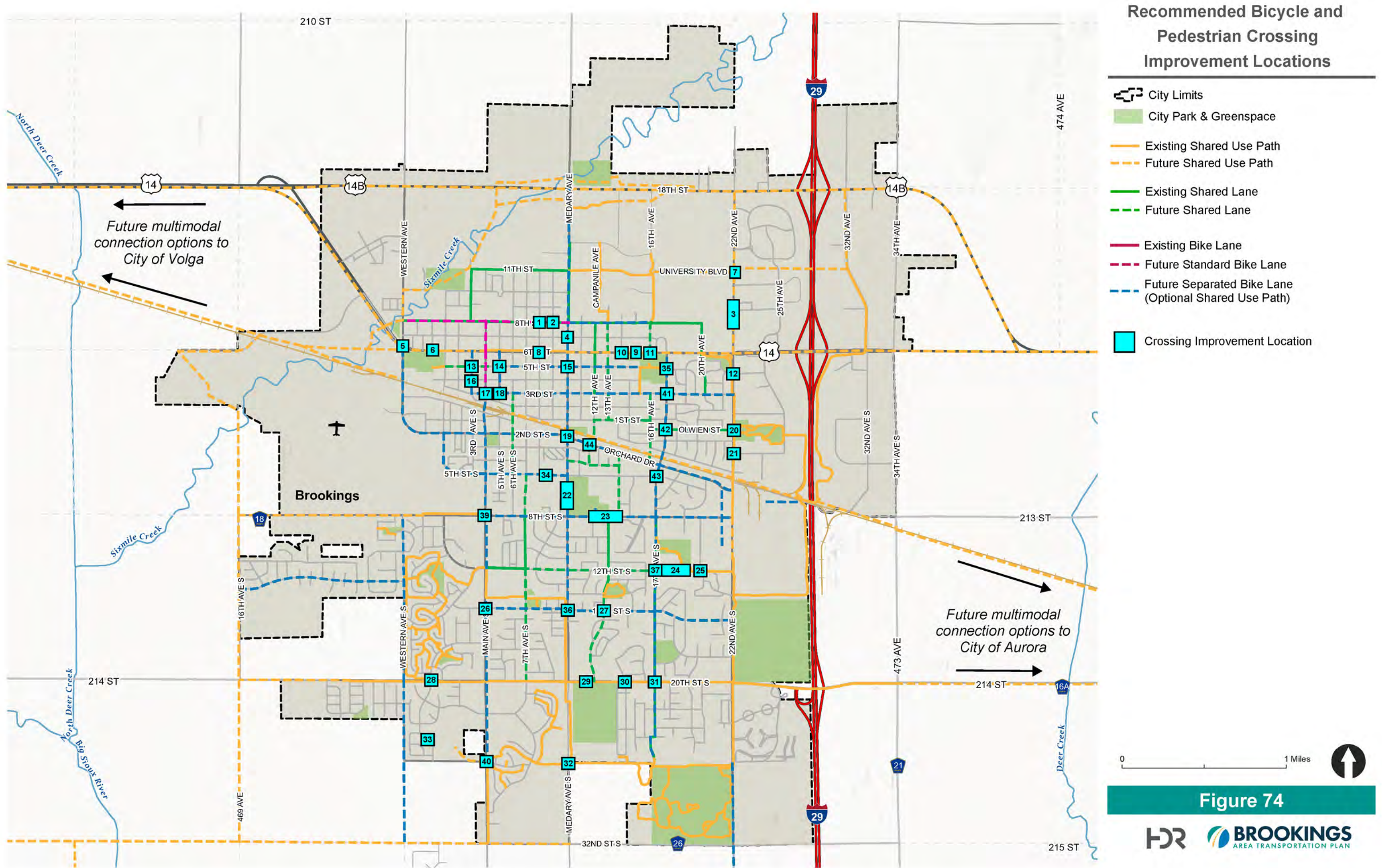


Table 56: Proposed Crossing Improvement Estimated Costs

DESCRIPTION	UNIT	UNIT PRICE
Crosswalks - Pavement Markings and Warning Signs	EACH	\$3,000
ADA Ramp and Detectable Warning Surface	EACH	\$11,000
Rectangular Rapid Flashing Beacons	EACH (assume 2 signs with RRFBs, double sided)	\$30,000
Pedestrian Hybrid Beacon	EACH SYSTEM (assumed crossing 4 lanes)	\$200,000

9.6 Downtown Streets

Brookings has already implemented several features along Main Avenue that make downtown vibrant and successful. This includes:

- On-Street Parking
- Continental Style Marked Crosswalks
- Painted Stop Bars
- Mid-Block Crossings with Signage
- Curb Extensions
- Bike Parking
- Landscaping
- Seating
- Outdoor Display



Downtown Brookings (near Main Avenue & 5th Street Intersection)

There are some additional features that could be implemented to further enhance safety, walkability, and bikeability in the downtown area. This includes adding rectangular rapid flashing beacons to mid-block crossings, converting mid-block crossings to raised crosswalks, considering raised intersections, adding lighting to any dim areas, and considering neighborhood traffic circles at stop-controlled intersections. Restricting parking near intersections and crossings to provide wide sight triangles can also improve safety. Adding bikeways along Main Avenue, 3rd Avenue, and 5th Avenue can help to slow traffic and improve safety and mobility for all users. This section presents those bikeway options.

Main Avenue Bikeway Concepts

Main Avenue consists of two vehicular travel lanes and back-out angle parking (as shown in **Figure 75**). There are sidewalks on each side abutting storefronts and curb extensions at the intersections.

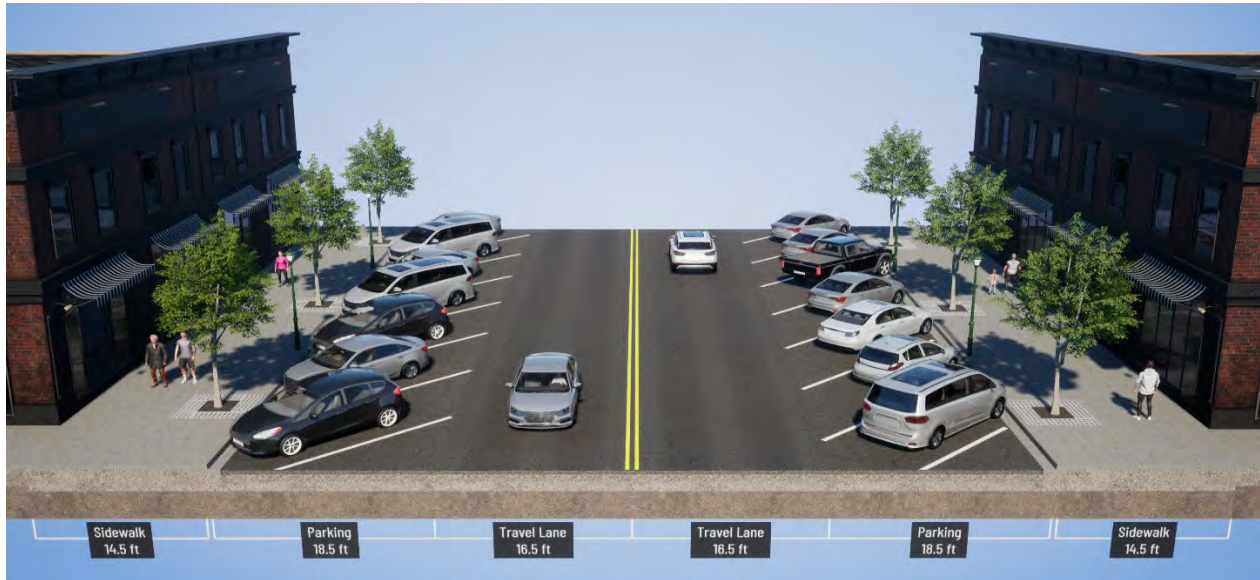


Figure 75: Main Avenue Existing Section

The preferred type of bicycle facility is first evaluated by reviewing the traffic volume and 85th percentile speed and referring to the facility selection chart, as shown in **Table 57** and **Figure 76**, which indicates that a shared lane may be appropriate between 5th Street and 6th Street, and a dedicated bike lane, preferably with a buffer, may be appropriate between 3rd Street and 5th Street. In addition, the general downtown posted speed limit should be evaluated for a potential 20 mph posted speed to further bolster safety. Additional considerations for this portion of Main Avenue are a narrowed travel lane width of 10 feet and the back-out angle parking, which can be problematic for people biking as described earlier.

Three main concepts were developed for Main Avenue, including:

- **Option 1: Main Avenue Conventional Bike Lanes Concept (Figure 77)**
- **Option 2: Main Avenue Parking-Separated Bike Lanes Concept (Figure 79)**
- **Option 3: Main Avenue Curb-Separated Bike Lane Concept (Figure 81)**

The first bikeway option for Main Avenue consists of front-out angle parking with conventional bike lanes added to the road. This could be done by only restriping the road and no reconstruction. Narrowed lane width should be further evaluated in future planning and design projects.

Table 57: Main Avenue Bikeway Type Review

MAIN AVENUE STREET SEGMENT	85 TH PERCENTILE SPEED	DAILY TRAFFIC VOLUMES	RECOMMENDED BIKEWAY TYPE
3 rd – 4 th Street	18 mph (25 mph posted)	4,410	Bike Lane (buffered)
4 th – 5 th Street	n/a (25 mph posted)	4,410	Bike Lane (buffered)
5 th – 6 th Street	20 mph (25 mph posted)	2,235	Shared Lane/Bike Boulevard

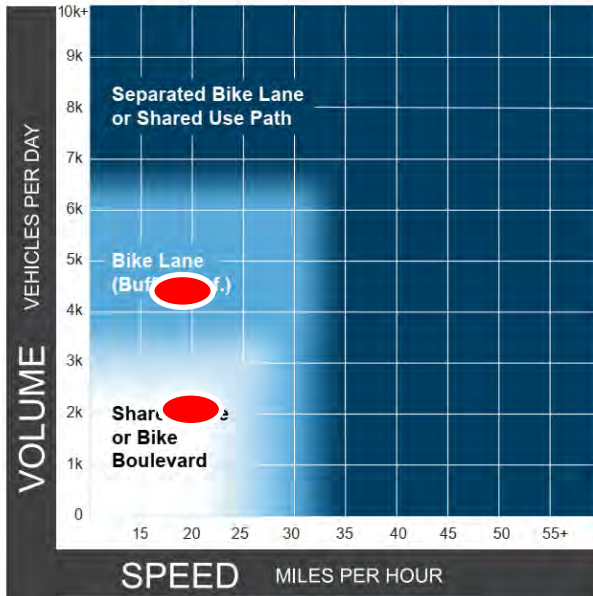


Figure 76: Main Avenue Facility Selection Chart



Figure 77: Main Avenue Conventional Bike Lanes (Option 1)

The second option for Main Street would be to put the bike lanes along the curb and push parking toward the middle of the road to create parking-separated bike lanes. Since Brookings already has curb extensions at the intersections, those would need to be modified to allow the bike lane to go through in this scenario. This option would require reconstruction of the gutter pan.



Figure 78: Example Parking-Separated Bike Lanes



Figure 79: Main Avenue Parking-Separated Bike Lanes (Option 2)

The third option for Main Avenue would be to construct separated bike lanes at either an intermediate level or sidewalk level. This option would require reconstruction of the road to be implemented.



Figure 80: Example Curb-Separated Bike Lanes



Figure 81: Main Avenue Curb-Separated Bike Lanes (Option 3)

3rd Avenue Bikeway Concepts

The existing cross section of 3rd Avenue consists of three lanes with a center two-way left turn lane, and on-street parking (as shown in **Figure 82**). There are sidewalks on each side.

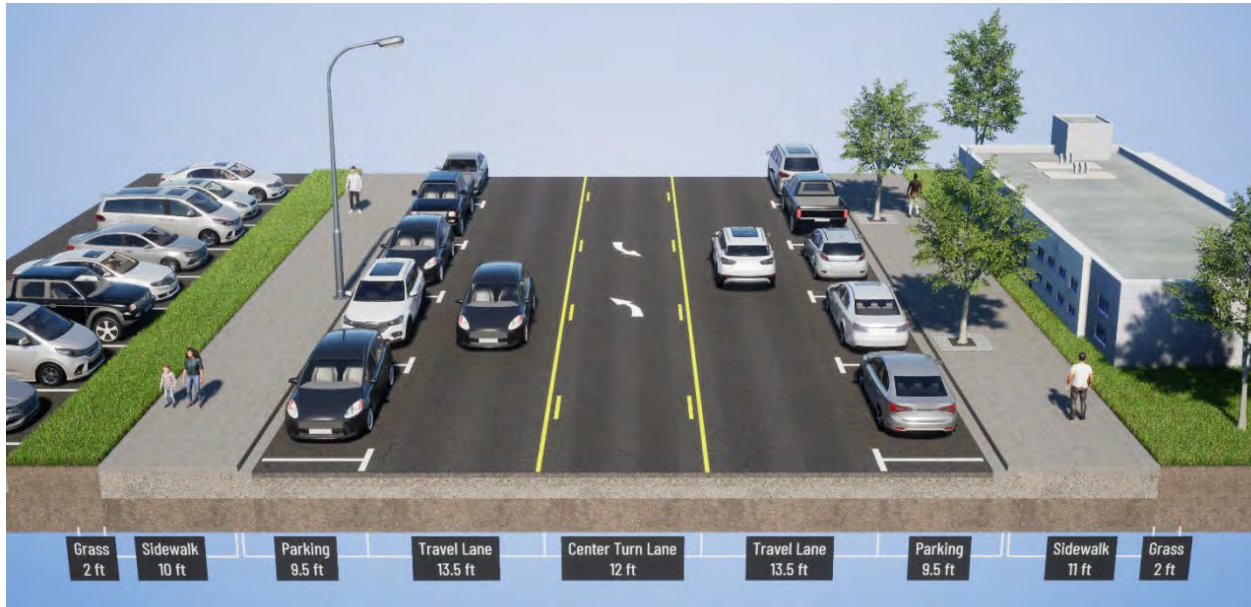


Figure 82: 3rd Avenue Existing Section

The preferred type of bicycle facility is first evaluated by reviewing the traffic volume and 85th percentile speed and referring to the facility selection chart, as shown in **Table 58** and **Figure 83**, which indicates that a dedicated separated bike lane, preferably with a buffer, may be appropriate between 3rd and 6th Streets. In addition, the general downtown posted speed limit should be evaluated for a potential 20 mph posted speed to further bolster safety.

If the center two-way left turn lane is removed from 3rd Avenue, that extra space can be repurposed for bike lanes and buffers on both sides of each bike lane to create a more comfortable bikeway. An alternative to placing the buffered bike lanes between the parking and travel lanes would be to place them along the curb and shift the parking toward the center of the road to create parking-separated bike lanes. This scenario would require modification of the curb extensions at the intersection of 3rd Avenue and Front Street/3rd Street. It should be noted that the proposed option depicts varying bike lane buffer widths to showcase the flexibility with those dimensions.

Based on the information described above, one concept was developed for 3rd Avenue:

- **Option 1: 3rd Avenue Parking-Separated Bike Lanes Concept (Figure 84)**

Table 58: 3rd Avenue Bikeway Type Review

3RD AVENUE STREET SEGMENT	85 TH PERCENTILE SPEED	DAILY TRAFFIC VOLUMES	RECOMMENDED BIKEWAY TYPE
3 rd – 4 th Street	29 mph (25 mph posted)	4,700	Separated Bike Lanes
4 th – 5 th Street	n/a (25 mph posted)	4,700	Separated Bike Lanes
5 th – 6 th Street	28 mph (25 mph posted)	4,700	Separated Bike Lanes

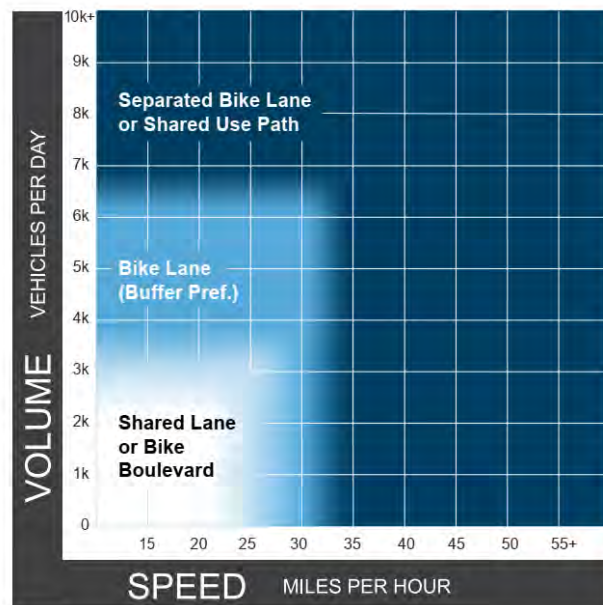


Figure 83: 3rd Avenue Facility Selection Chart



Figure 84: 3rd Avenue Parking-Separated Bike Lanes

5th Avenue Bikeway Concepts

The existing cross section of 5th Avenue consists of three lanes with a center two-way left turn lane, and on-street parking (as shown in **Figure 85**). There are sidewalks on each side and curb extensions at intersections.

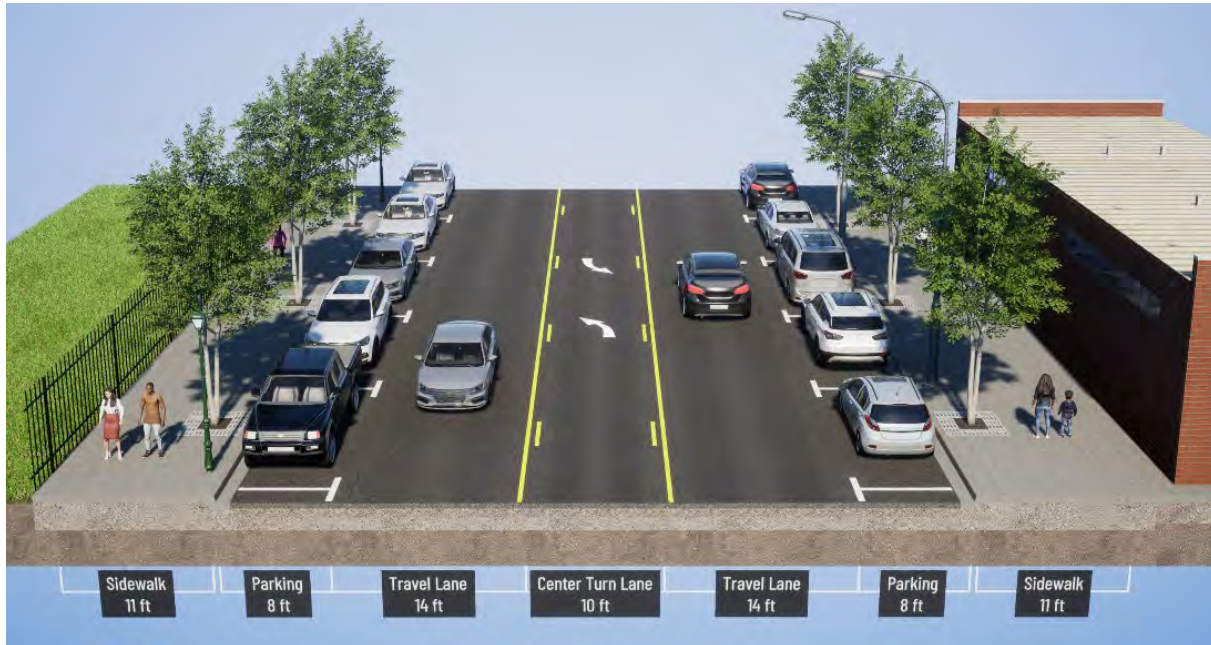


Figure 85: 5th Avenue Existing Section

The preferred type of bicycle facility is first evaluated by reviewing the traffic volume and 85th percentile speed and referring to the facility selection chart, as shown in **Table 59** and **Figure 86**, which indicates that a dedicated separated bike lane, preferably with a buffer, may be appropriate between 3rd and 6th Streets. In addition, the general downtown posted speed limit should be evaluated for a potential 20 mph posted speed to further bolster safety.

If the center two-way left turn lane is removed from 5th Avenue, that extra space can be repurposed for bike lanes and appropriate buffer widths on both sides to create a more comfortable bikeway.

Based on the information described above, one concept was developed for 3rd Avenue:

- **Option 1: 5th Avenue Parking-Separated Bike Lanes Concept (Figure 87)**

Table 59: 5th Avenue Bikeway Type Review

5 TH AVENUE STREET SEGMENT	85 TH PERCENTILE SPEED	DAILY TRAFFIC VOLUMES	RECOMMENDED BIKEWAY TYPE
3 rd – 4 th Street	24 mph (25 mph posted)	3,110	Separated Bike Lanes
4 th – 5 th Street	n/a (25 mph posted)	3,110	Separated Bike Lanes
5 th – 6 th Street	n/a (25 mph posted)	3,110	Separated Bike Lanes

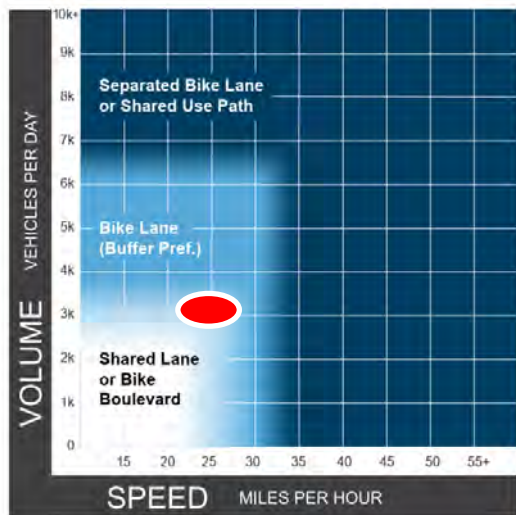


Figure 86: 5th Avenue Facility Selection Chart



Figure 87: 5th Avenue Parking-Separated Bike Lanes

9.7 Safe Routes to Schools

The active transportation infrastructure recommendations include some enhanced routes and crossings near schools. Since schools have unique active transportation needs based upon the ages of children walking and biking to the school, location of caregivers dropping off children, and buses entering and exiting, they benefit from a safe routes to school study and plan to address their specific needs. The City of Brookings and the school district should work together to establish school route plans for each school in the city and identify needed infrastructure improvements through a Safe Routes to School plan.

In addition to improved infrastructure, school programming can help children walk or bike to school safely. This may include expanding the area designated as the official ‘school zone for the purpose of temporarily lowered speed limits, establishing ‘school streets’, offering walking school buses and bike trains, and providing biking and walking curriculum in school.

School Route Planning and Zones

The school zone is important since it establishes where a school zone speed limit is enforced. South Dakota Codified Laws, Chapter 32-25, Section 14 addresses the speed limit in school zones:

When passing a school during a school recess or while children are going to or leaving school during the opening or closing hours, the maximum lawful speed shall be fifteen miles per hour. A violation of this section is a Class 2 misdemeanor.

Additionally, Chapter 32-25, Section 14.1 addresses posted school zones:

Municipalities and counties may establish posted school zones to regulate the traffic in the proximity of a school area. All traffic control devices used in school zones shall conform to a manual on traffic control for school areas adopted by the Department of Transportation. The manual shall provide a uniform system of warning, regulating, and guiding traffic through a school area. A municipality and county in the placement of traffic control devices as required by this section shall only be required to replace those currently used devices in the normal course of planned maintenance and replacement. Failure to obey such traffic control devices is a Class 2 misdemeanor.

The MUTCD notes that state statute defines school zone location, and the city should have a school route plan to guide how the school-related signs are used. Per the MUTCD, Section 7A.02 School Route Plans and School Crossings:

1. A school route plan for each school serving elementary to high school students should be prepared in order to develop uniformity in the use of school area traffic controls and to serve as the basis for a school traffic control plan for each school.
2. The school route plan, developed in a systematic manner by the school, law enforcement, and traffic officials responsible for school pedestrian safety, should consist of a map showing

streets, the school, existing traffic controls, established school walk routes, and established school crossings.

School Streets

[School streets](#) are vehicle-free areas, typically one block, outside schools that are activated at the start and end of the school day for a short period of time. Temporary barriers and signage establish vehicular restrictions. This enables children to walk and bike to school with fewer vehicular interactions. School streets also reduce traffic congestion and improve air quality. If needed, some vehicles, such as emergency vehicles or school buses, may be allowed within the restricted area.

Walking School Buses and Bike Trains

[A walking school bus](#) is a group of students walking to school with the help of adult chaperones. The group follows a predetermined route to school, very similar to a traditional school bus. New students join at stops along the route. Bike Trains are similar to a walking school bus, but on bikes.

If managed and coordinated by the school district, and chaperoned by adults, walking school buses and bike trains can mitigate some of the safety concerns that parents have in letting children cross busy streets and navigate the bicycle or pedestrian network.

Bike and Walk Safety Curriculum

The [Safe Routes Partnership](#) offers sample curriculum for biking and walking safety for children. Learning the ‘rules of the road’ and how to safely be a cyclist and pedestrian can be part of a school’s physical education curriculum. Including bikes in the curriculum would help improve children’s experience as cyclists and pedestrians.

Future Safe Routes to School Focus Streets

For future Safe Routes to School planning efforts, the following corridors should be key focus streets near school areas throughout Brookings:

- Larkspur Ridge Drive
- 3rd Street S
- 5th Street S
- 8th Street S
- 12th Street S
- 15th Street S
- 26th Street S
- Christine Avenue
- Medary Avenue
- 17th Avenue

10 Safety Action Plan

The Brookings Area Safety Action Plan (SAP) is a comprehensive safety plan to eliminate fatalities and serious injuries by 2050 on the transportation network in the City of Brookings and surrounding area. This includes improving safety for all roadway users including vulnerable road users (pedestrians and bicyclists), transit riders, and motorists by:



- Analyzing safety issues and needs with a focus on high-injury locations
- Identifying systemic risk factors leading to crashes and proactive safety improvement locations
- Establishing recommendations for future safety improvements
- Aligning plan with Safe Streets and Roads for All (SS4A) program requirements for Safety Action Plans and implementation grant funding opportunities

Safe Streets and Roads for All (SS4A) Program and the Safe System Approach (SSA)

Safe Streets and Roads for All (SS4A) is a competitive grant program established in 2021 through the Infrastructure Investment and Jobs Act passed by Congress. The United States Department of Transportation (USDOT) manages the SS4A fund, with \$5 billion in funding available from 2022 to 2026. The program helps fund regional and local safety that will prevent roadway fatalities and serious with an overall goal of zero roadway deaths and serious injuries.

Safe System Approach

The USDOT encourages all states and agencies to follow the Safe System Approach (SSA) to guide safety goals of zero roadway deaths and serious injuries, which views safety as a shared responsibility among all individuals involved in the use, planning, design, or construction of the transportation network. The goal of the SSA is to provide proactive protections to prevent crashes and minimize harm caused by those that do occur. **Figure 88** displays the principles of this approach around the outer ring in the graphic. The inner ring presents the elements or objectives of this approach.



Source: USDOT

Figure 88: Safe System Approach

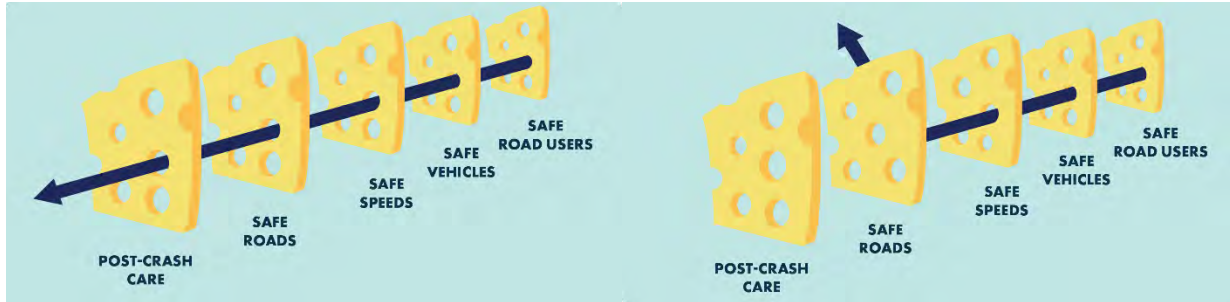
SSA is a shift from conventional road safety thinking because it focuses on both human mistakes and human vulnerabilities by designing systems with layers of protection. If one layer of safety fails, another will help prevent a crash or lessen the likelihood of serious injury or death (**Figure 89**). This SAP and the overarching transportation plan align with the principles and objectives of the SSA and integrates this philosophy into the recommendations for street design and transportation policies for the City of Brookings.

The six core principles of the SSA are:

- **Death / Serious Injury is Unacceptable** – Fatal and severe injury crashes are the most impactful and thus most desirable to reduce and eliminate.
- **Humans Make Mistakes** – Mistakes will happen, but the transportation system can be designed to protect users so inevitable mistakes are not fatal.
- **Humans are Vulnerable** – Humans are frail in comparison to the physical forces that can be present in a crash; design must consider human tolerances.
- **Responsibility is Shared** – All stakeholders share responsibility for safety.
- **Safety is Proactive** – Safety cannot simply be a reactive approach. Latent risk is present but not always obvious.
- **Redundancy is Crucial** – Without redundancy, any failure in the system may lead to death or serious injury.

Along with the six core principles there are five elements of crash risk. These elements have an impact on crash risk that results in fatal or serious injury. These elements assign responsibility to key stakeholders to provide a safe system based on redundancy. With improvements in each of the key principles, a greater level of redundancy will be achieved.

- **Safer People** – Individuals should operate within the roadway network in a safe fashion. This includes all users, such as drivers, pedestrians, cyclists, and transit riders. Individuals from drivers and passengers to pedestrians can take steps to improve safety.
- **Safer Vehicles** – Vehicles should be designed to minimize occurrence and severity of crashes by using safety features.
- **Safer Speeds** – Reducing speeds improves the potential to avoid a crash and reduces kinetic energy that can lead to death and life-altering injuries in the event of a crash. Safer speed is a critical component of the SSA as it is a significant factor in crash injury outcomes, especially with VRUs. Safer speeds are promoted by roadway design, enforcement, and educational outreach.
- **Safer Roads** – Roadway design can add redundancy and create barriers when mistakes happen by separating users in time and space. The design of the roadway environment can reduce the potential severity of a crash in the event of a crash.
- **Post-Crash Care** – When a crash does occur, emergency medical service (EMS) responders can provide critical care to minimize the severity of injuries and even prevent death. Providing good care after an incident, and quickly, can help mitigate the worsening of injuries. Providing quick response can also reduce the amount of time that a secondary crash could occur.



Source: FHWA

Figure 89: Shared Responsibility Through SSA

Need for a Safety Action Plan

To be eligible for SS4A grant funding to implement future projects, the City of Brookings must complete a safety action plan that outlines the City's safety goals and creates an actionable framework for identifying safety issues and appropriate strategies to move toward zero roadway deaths and serious injuries (**Figure 90**). To fulfill this requirement, the **Brookings Area Safety Action Plan (Appendix G)** was completed in conjunction with the BATP.

This safety action plan allows the City of Brookings and partner agencies to engage with stakeholders and the public to identify policy changes, strategies, and projects that will improve safety and determine what recommendations are suitable for the community. The safety action plan development, in along with the BATP, was led by the City of Brookings with engagement from the City of Aurora, Brookings County, SDDOT, BMU, SDSU, stakeholder focus groups, and the public. This feedback was essential to the plan development process, with engagement opportunities presented through outreach events, online surveys, social media, and open houses.



Figure 90: Components of a Safety Action Plan

Brookings Area Safety Action Plan Major Components

Major components of the Brookings SAP completed as part of the BATP include:

- **Safety Analysis (Section 5.2):** Brookings area crash history review (Jan. 2019 to June 2024)
 - **High Injury Network (HIN) (Figure 24):** Identifies intersections and corridor segments with elevated injury crash rates (potential reactive safety improvement locations)
 - **Systemic Risk Network (SRN) (Figure 26):** Identifies intersections and corridor segments with multiple systemic crash characteristics, regardless of injury severity (potential proactive safety improvement locations)
- **Engagement and Collaboration (Chapter 4):** Summarizes engagement activities and feedback garnered through the two sets of BATP public and stakeholder open house meetings, additional outreach events, website, and public travel survey. Each engagement activity included methods to provide feedback on safety issues and needs throughout the Brookings area, confirm potential safety improvement project locations, and select strategy strategies to prioritize.
- **Policy and Process Changes (Chapter 8 and Chapter 9):** Highlights design standards, guidelines, and bicyclist and pedestrian plan updates with safety focus (e.g., bicycle and pedestrian facility selection guidelines, traffic calming standards, complete streets policy, updated multimodal typical street sections, etc.)
- **Strategy and Project Selections (Chapter 13):** Establishes potential safety improvement project locations in the Brookings area and incorporates planned bicycle and pedestrian facility and crossing improvements due to the focus on improving safety for VRUs.
 - **Safety Priority Network (SPN) (Figure 95 and Figure 96):** Potential prioritized safety improvement project locations within the City of Brookings identified on the HIN, SRN, or through public and stakeholder feedback. Additional locations in Brookings growth areas are identified based on similar measures and will be reviewed for specific projects in future Brookings Area SAP updates when jurisdiction of those locations is transferred to the City of Brookings.
 - **Bicycle and Pedestrian Plan (Figure 68, Figure 69, and Figure 74):** Planned bicycle and pedestrian facility and crossing improvements based on the updated bicycle and pedestrian plan.

The full Brookings Area Safety Action Plan report is provided in **Appendix G**.

11 Build Conditions and Supplemental Scenarios

Based on identified traffic operational needs and intersection control evaluations through the 2050 Planning Horizon, future build condition scenarios were developed for study intersections. In addition, a series of supplemental scenarios were reviewed at study intersections based on illustrative downtown complete streets and road diet corridors, bicycle and pedestrian plan improvements, and potential safety improvements.

Build Condition Scenarios

Future-year build condition scenarios reflect intersection and corridor improvements to address long-range operational and safety needs through the 2050 planning horizon. These improvements typically entail modifications to intersection traffic control, intersection lane configurations, and corridor number of lanes. Build condition scenarios configurations and year 2050 operations are summarized in **Table 60**.

Further details about build condition scenario timeline of needs and interim configurations are provided in the *Future Conditions technical memo (Appendix D)*. Additional background on the associated needs at these locations is detailed in several technical memos provided in **Appendix B** through **Appendix F**.

Table 60: Analysis Intersection Build Configurations for Year 2050

INTERSECTION	EXISTING TRAFFIC CONTROL	PROPOSED TRAFFIC CONTROL CONDITIONS	2050 PLANNING HORIZON LOS AM / PM	NOTES
5 th Avenue & 3 rd Street	TWSC	AWSC	B / B	AWSC Warrants: 2050 (with existing potentially applicable criteria)
		Roundabout	A / B	
Main Avenue & Sweetgrass Drive	TWSC	TWSC	C* / B*	Signal Warrants: Not warranted through 2050; Monitor traffic volumes Install EB LT Lane (when needed)
Main Avenue S & 32 nd Street S	AWSC	Signal	B / B	Signal Warrants: 2050
		Roundabout	A / A	Install SB LT lane (with signal)
34 th Avenue S & 20 th Street S	TWSC	Signal	B / B	Signal Warrants: 2040-2050
		Roundabout	A / A	Install NB LT, SB LT, and WB LT lanes (with signal) AWSC warranted prior to signalization
Medary Avenue S & 20 th Street S	AWSC	Signal	B / B	Signal Warrants: 2040
		Roundabout	B / B	Install LT lanes on all approaches (with signal)

INTERSECTION	EXISTING TRAFFIC CONTROL	PROPOSED TRAFFIC CONTROL CONDITIONS	2050 PLANNING HORIZON LOS AM / PM	NOTES
US14 Bypass / 18 th Street & 22 nd Avenue	Signal	Signal	C / C	Incorporates planned SDDOT project for a US14 Bypass / 18 th Street multilane corridor expansion Install NB LT, NB T and SB LT lanes
22 nd Avenue S & Eastbrook Drive	TWSC	Signal	A / A	Signal Warrants: 2050
22 nd Avenue S & 32 nd Street S	AWSC	AWSC	B / B	Install SB LT lane
22 nd Avenue & University Boulevard	TWSC	TWSC	A / B*	Incorporates planned City of Brookings project for a 22 nd Avenue 5-lane corridor expansion Install NB T, SB LT, and SB T lanes (TWSC)
		Roundabout	A / A	
8 th Street S & Lewis/Hy-Vee Access	TWSC	TWSC (varying levels of access management)	A / A-C	TWSC sub-options to meet operational goals include: • Additional Turn Lanes (Install EB RT, WB RT, NB LT, and SB LT) • ¾ Access (NB RT and SB RT side-street movements only with EB LT and WB LT movements permissible) • RIRO Access (NB RT and SB RT side-street movements only)
		Roundabout	A / A	
20 th Street S & I-29 Exit 130 NB RTI	TWSC	Signal	B / B	Signal Warrants: 2040-2045
20 th Street S & I-29 Exit 130 SB RTI	TWSC	Signal	B / B	Signal Warrants: 2045-2050
22 nd Avenue S & 20 th Street S	Signal	Signal	C / C	Install NB T, SB LT, SB T, SB RT, and EB RT lanes
17 th Avenue S & 20 th Street S	AWSC	Signal	B / B	Install NB LT and SB LT lanes (signal)
		Roundabout	A / B	
US14 / 6 th Street & Western Avenue	TWSC	Signal	B / B	Signal Warrants: Crash criterion met
		Roundabout	A / A	

LOS based on overall intersection delay

TWSC: Two-way stop-control; AWSC: All-way stop control; RTI: Ramp terminal intersection; RIRO: Right-in Right-Out

* Indicates TWSC side-street operations of LOS F

Supplemental Scenarios

Several special supplemental scenarios for study intersections and corridors were identified through intersection control evaluations (locations where all-way stop-control was not warranted based on specific traffic or crash thresholds, but could be implemented based on engineering judgement), illustrative downtown complete streets corridors, illustrative road diet corridors, bicycle and pedestrian plan, safety action plan, and engagement and Study Advisory Team feedback for additional traffic operational analysis.

Illustrative downtown complete streets and road diet corridors with potential changes in number of lanes were reviewed at planning-level for corridor capacity (**Table 61**). Study intersections potentially affected by the illustrative scenarios, along with locations with other supplemental scenarios, were reviewed in terms of long-term 2050 operations in **Table 62**.

Table 61: Supplemental Scenario Analysis Planning-Level Corridor Configurations for Year 2050

CORRIDOR	EXISTING NUMBER OF LANES	PROPOSED NUMBER OF LANES	2050 PLANNING HORIZON LOS	SCENARIO
<u>3rd Avenue</u> : 3 rd St to US14 / 6 th St	3	2	A-C	Illustrative Complete Streets Corridor
<u>5th Avenue</u> : 3 rd St to US14 / 6 th St	3	2	A-C	Illustrative Complete Streets Corridor
<u>Medary Avenue S</u> : US14 / 6 th St to 8 th St	4	3	A-C	Illustrative Road Diet Corridor (3-Lane)
<u>Main Avenue S</u> : 8 th St S to 15 th St S	5	3	A-C	Illustrative Road Diet Corridor (3-Lane)
<u>Main Avenue S</u> : 15 th St S to 20 th St S	5	3	C-D	Illustrative Road Diet Corridor (3-Lane)

Table 62: Supplemental Scenario Analysis Intersection Configurations for Year 2050

INTERSECTION	EXISTING TRAFFIC CONTROL	PROPOSED TRAFFIC CONTROL CONDITIONS	2050 PLANNING HORIZON LOS AM / PM	NOTES
Medary Avenue & 15 th Street S	TWSC	AWSC	C / B	AWSC criteria potentially applicable based on engineering judgement
		Roundabout	A / A	
5 th Avenue & 3 rd Street	TWSC	TWSC (Illustrative Complete Streets)	A / A	Reflects illustrative downtown complete streets corridor along 5 th Avenue (conversion to 2-lanes) Convert southbound approach to a combined lane (all scenarios)
		AWSC (Illustrative Complete Streets)	B / B	
		Roundabout (Illustrative Complete Streets)	A / B	
12 th Street S & 7 th Avenue S	TWSC	AWSC	B / A	AWSC criteria potentially applicable based on engineering judgement
Campanile Avenue & 7 th Street	TWSC	AWSC	A / A	AWSC criteria potentially applicable based on engineering judgement
Main Avenue S & 20 th Street S	Signal	Signal (Illustrative Road Diet)	D / C	Reflects illustrative road diet corridor along Main Avenue S (conversion to 3-lanes) Convert existing lanes at intersection to NB LT, T, RT and SB LT, T, RT
Main Avenue S & 15 th Street S	TWSC	TWSC (Illustrative Road Diet)	A* / A*	Reflects illustrative road diet corridor along Main Avenue S (conversion to 3-lanes) Install WB LT lane
Main Avenue & 3 rd Street	Signal	Signal (Partial Pedestrian Scramble)	B / C	Partial Pedestrian Scramble: Does not include diagonal crosswalks
		Signal (Full Pedestrian Scramble)	B / C	Full Pedestrian Scramble: Includes diagonal crosswalks

INTERSECTION	EXISTING TRAFFIC CONTROL	PROPOSED TRAFFIC CONTROL CONDITIONS	2050 PLANNING HORIZON LOS AM / PM	NOTES
7 th Avenue & 5 th Street S	TWSC	AWSC	A / A	AWSC criteria potentially applicable based on engineering judgement
5 th Avenue & 5 th Street	AWSC	AWSC <i>(Illustrative Complete Streets)</i>	B / B	Reflects illustrative downtown complete streets corridor along 5 th Avenue (conversion to 2-lanes)
		Roundabout	A / A	Convert northbound and southbound approaches to a combined lane
8 th Street & Medary Avenue	AWSC	AWSC <i>(revised turn lanes)</i>	C / C	AWSC (revised turn lanes) scenario reflects a conversion LT, T/RT lanes on northbound and southbound approaches.
		Roundabout	A / A	

LOS based on overall intersection delay

TWSC: Two-way stop-control; AWSC: All-way stop control; RTI: Ramp terminal intersection; RIRO: Right-in Right-Out

* Indicates TWSC side-street operations of LOS F



8th Street & Medary Avenue Intersection

12 Funding Analysis

The Funding Analysis chapter provides a summary of funding trends and options for the City of Brookings, highlighting historical transportation-related revenues and expenditures and a future funding scenario with the goal of identifying typical transportation revenues and expenditures going forward.

The funding analysis reviewed current and previous Capital Improvement Plans (CIPs) and budgets for the city, which included state and federal funding. A series of funding projections were then developed through the year 2050. The resulting projections of annual transportation revenues and expenditures were grouped into the following time bands:

- **Short-term:** 2026 – 2030 (<2031)
- **Mid-term:** 2031 - 2040
- **Long-term:** 2041 – 2050 (2041+)

Recommended improvements identified in the **Implementation Plan** will be scheduled according to the short-term, mid-term, and long-range time bands based on a series of factors, namely the improvement's priority in addressing local needs, estimated cost, and ability to plan, design, and construct the project within the respective time band.

12.1 Funding Sources

Funds spent on the City of Brookings transportation system are from a variety of local, state, and federal sources, with local funds being the main source.

Local (City and County) Funding Sources

The City of Brookings 2nd Penny Sales Tax provides most of the funding spent on the transportation system while additional sources supplement that funding.

- **2nd Penny Sales Tax:** general fund revenue from City of Brookings sales tax
- **County Wheel Tax:** revenues from Brookings County's wheel tax fund
- **Prorate License Fees:** revenue from Brookings County commercial vehicle license fees
- **Motor Vehicle License Fees:** revenue from Brookings County motor vehicle license fees

State Funding Sources

State funding for highway and bridge projects is available through several sources, including:

- **Local Government Highway and Bridge Fund:** revenue from the State's Local Government Highway and Bridge Fund
- **State Grants:** revenue from State grants and reimbursements
- **Surface Transportation Program (STP) Funds:** SDDOT allocates funds to Class I cities defined as those with a population greater than 5,000

Federal Funding Sources

Federal transportation funding dollars are allocated to the SDDOT, and include:

- **Surface Transportation Block Grant Program (STBG):** funding for state or local use for projects on any federal-aid highway or bridge project on any public road, pedestrian and bicycle infrastructure, and transit capital projects
- **National Highway Performance Program (NHPP):** funding to support the condition and performance of the National Highway System (NHS), to construct new facilities on the NHS, and to ensure investment of federal-aid funds in highway construction are directed to support progress towards achievement of performance targets established in a state's asset management plan for the NHS. NHS corridors in the study area are I-29, US14, and US14B.
- **Highway Safety Improvement Program (HSIP):** funding for projects aimed at achieving a significant reduction in traffic fatalities and serious injuries on all public roadways, including non-state-owned public roads
- **Transportation Alternative Projects (TAP):** funding for smaller-scale alternative transportation projects including pedestrian and bicycle facilities, recreational trails, safe routes to school projects, historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity
- **Federal Transit Administration (FTA) Funds:** STP funding available for public transportation administrative and operating cost assistance through the Federal Transit Administration (Section 5311 Program)
- **U.S. Department of Health and Human Services Funds:** Older Americans Act (OAA) Title III B Supportive Services program for public transportation administrative and operating cost assistance to make transportation affordable and accessible
- **Federal Discretionary Grants:** grants administered by the U.S. Department of Transportation are available through a competitive process for a variety of transportation project types, subject to eligibility of the respective grant program

12.2 Historic Transportation Funding

Transportation-related revenues and expenditures provide by the City of Brookings for the years 2020 through 2024 were reviewed to establish baseline funding trends used to forecast future funding levels.

Historical Transportation Revenues

Historical transportation program revenues were primarily from the 2nd Penny Sales Tax, as shown in **Table 63**. State funding sources through STP and Local Government Highway and Bridge Fund provide approximately \$1.3 million to the Brookings transportation program. The portion of this revenue applied to transportation projects is determined through an annual budgetary process. The Brookings transportation program utilizes a portion of STP annually, reserving excess funding for future projects. It should be noted that greater amounts of grant funding revenue were available for

years 2021 through 2023 which was largely associated with the I-29 Exit 130 (20th Street S) interchange BUILD grant and construction as well as the University Boulevard reconstruction project.

Historical Transportation Expenditures

Historical transportation program expenditures between 2020 and 2024 are summarized in **Table 64**. Typically, capital improvements and pavement management were the two largest expenditure types, followed by staff resources and operations & maintenance.

Table 63: Transportation Program Revenues for City of Brookings (2020 – 2024)

REVENUE SOURCE	2020 (YOR \$)	2021 (YOR \$)	2022 (YOR \$)	2023 (YOR \$)	2024 (YOR \$)
2nd Penny Sales Tax					
Total Received Revenue*	\$7,111,000	\$7,700,000	\$8,915,000	\$9,712,000	\$10,281,000
Transportation Projects**	\$2,120,000 (30%)	\$2,949,000 (38%)	\$3,921,000 (44%)	\$5,007,000 (52%)	\$4,431,000 (43%)
Surface Transportation Funds (STP)					
Total Received*	\$846,000	\$916,000	\$909,000	\$852,000	\$870,000
Utilized Funds	\$215,000	\$ -	\$187,000	\$3,510,000	\$14,000
Local Government Highway & Bridge Fund	\$361,000	\$371,000	\$371,000	\$385,000	\$386,000
County / Highway & Bridge Tax	\$128,000	\$130,000	\$136,000	\$140,000	\$152,000
County / Wheel Tax	\$63,000	\$67,000	\$67,000	\$70,000	\$62,000
County / Road Tax	\$4,000	\$4,000	\$4,000	\$3,000	\$3,000
Other General Fund Revenues	\$2,090,000	\$2,117,000	\$2,093,000	\$2,190,000	\$2,297,000
Grant / TIF / Donor Funds	\$ -	\$4,058,000	\$10,504,000	\$6,813,000	\$901,000

Year of Revenue

* Total 2nd Penny Sales Tax and Surface Transportation Funds – received revenue. The portion of this revenue applied to transportation projects is determined through the annual budgetary process.

** Estimated based on: ‘Total Transportation Program Expenditures’ – all other revenue categories

Table 64: Transportation Program Expenditures for City of Brookings (2020 – 2024)

EXPENDITURE SOURCE	2020 (YOE \$)	2021 (YOE \$)	2022 (YOE \$)	2023 (YOE \$)	2024 (YOE \$)
Capital Improvements*	\$ -	\$4,308,000	\$11,492,000	\$8,117,000	\$1,601,000
Pavement Management	\$1,922,000	\$2,667,000	\$3,030,000	\$6,310,000	\$2,737,000
Staff Resources	\$1,428,000	\$1,372,000	\$1,423,000	\$1,383,000	\$1,582,000
Operations and Maintenance	\$735,000	\$741,000	\$770,000	\$897,000	\$785,000
Equipment	\$413,000	\$32,000	\$90,000	\$903,000	\$1,008,000
Street Lighting	\$483,000	\$576,000	\$478,000	\$508,000	\$533,000
Total Transportation Program Expenditures	\$4,981,000	\$9,696,000	\$17,283,000	\$18,118,000	\$8,246,000

Year of Expenditure

*Capital Improvements contains only 15th Avenue & 7th Street Intersection Redesign, 20th Street S Overpass, and University Boulevard

Historical Transportation Dollar Allocations

Transportation investments can be categorized based on project type. For the purposes of the BATP, transportation improvements are grouped according to how they impact the transportation system. The two categories considered in the BATP include:

- **System Expansion:** expands the transportation system through the construction of a new facility or expands an existing facility through an improvement like widening or new turn lanes (Capital Improvements expenditures)
- **System Preservation:** preserves the transportation system through maintenance efforts that repair or rehabilitate existing infrastructure (Pavement Management and Operations and Maintenance expenditures). This includes Mill & Overlay projects, Slurry Seal, Bituminous Materials, Pavement Assessments and Sidewalk Maintenance Projects.

Table 65 shows how Brookings has spent past transportation dollars on system expansion and preservation projects from 2020 through 2024. Over the five-year timeframe, approximately 78 percent of the transportation program is spent directly on System Expansion and System Preservation projects. In 2020, 53 percent of the program funding was spent on System Expansion and Preservation while 2021 through 2023 averaged 90 percent. In 2024, the program spending reduced to 62 percent, which aligned more with historical City of Brookings transportation expenditure trends.

The System Expansion / System Preservation split is approximately 55 / 45 percent over the five years. However, it should be noted that city staff performs most of the system preservation activities, at a cost-savings benefit to the city, and staff resources are included in these numbers. In addition, there were two large expansion projects beginning in 2021 with funding from a special interest group, SDDOT, and Tax Increment Financing.

Table 65: Historic City of Brookings Spending on Capital Improvements and Operations and Maintenance (2020 – 2024)

EXPENDITURE SOURCE	2020 (YOE \$)	2021 (YOE \$)	2022 (YOE \$)	2023 (YOE \$)	2024 (YOE \$)	TOTAL
System Expansion (Street and Sidewalk Capital Improvements)	-	\$4,308,000	\$11,492,000	\$8,117,000	\$1,601,000	\$25,518,000
System Preservation (Pavement Management, Operations and Maintenance)	\$2,657,000	\$3,408,000	\$3,800,000	\$7,207,000	\$3,522,000	\$20,594,000
Total	\$2,657,000	\$7,716,000	\$15,292,000	\$15,324,000	\$5,123,000	\$46,112,000
Percentage of Transportation Program*	53%	80%	88%	85%	62%	79%

Year of Expenditure

*Total of System Preservation and System Expansion divided by Total Transportation Expenditures.

Future-year System Expansion and System Preservation project funding will be estimated at 55 percent of the total transportation program budget, with the expansion / preservation split more consistent with individual years 2020 and 2024. However, this funding split may fluctuate between 50 and 65 percent or more from year to year.

12.3 Future Transportation Funding

A future funding scenario was developed to estimate transportation funding available to the City of Brookings through the year 2050. While the **Implementation Plan** is unconstrained, a supplemental scenario with consideration to cost restraints is included in this analysis. Planning-level funding levels are presented in terms of the time bands described earlier in the chapter. **Table 66** shows the sum of forecasted revenues by time band. Assumptions for the future funding scenario include:

- The City of Brookings utilized a 2.1% annual growth factor for local revenues, reflective of estimated tax base growth
 - The 2nd Penny Sales Tax portion allocated to transportation projects and Surface Transportation Funds Utilized were averaged over the last five years for a baseline
- STP, Local Government Highway and Bridge fund, County Wheel Tax and County Road Tax license fees were increased at 1.5% annually
- Grant funding was averaged over the last five years to establish a baseline and then increased by 1.5% annually
 - Assumption accounts for continued application and periodic award of grants

Applying the future-year revenue allocations described in the Historical Funding Trends section yields funding levels shown in **Table 67**. It should be noted that project costs tend to fluctuate over time which may result in years where transportation funding does not match increases in project costs.



12th Street S & Main Avenue S Intersection

Table 66: Transportation Program Forecasted Revenues by Time Band

REVENUE SOURCE	ANNUAL % INCREASE	SHORT-TERM 2026-2030 (YOR \$)	MID-TERM 2031-2040 (YOR \$)	LONG-RANGE 2041-2050 (YOR \$)
2nd Penny Sales Tax*				
<i>Total Received Revenue</i>	2.1%**	\$53,750,000	\$125,750,000	\$154,750,000
Transportation Projects	2.1%**	\$22,950,000	\$53,700,000	\$66,150,000
Surface Transportation Funds – Received*	1.5%	\$4,500,000	\$10,050,000	\$11,650,000
Surface Transportation Funds – Utilized	1.5%	\$1,150,000	\$2,550,000	\$2,950,000
Local Government Highway & Bridge Fund	1.5%	\$2,050,000	\$4,500,000	\$5,250,000
County / Hwy & Bridge Tax	1.5%	\$800,000	\$1,750,000	\$2,050,000
County / Wheel Tax	1.5%	\$350,000	\$750,000	\$850,000
County / Road Tax	1.5%	\$50,000	\$50,000	\$100,000
Other General Fund Revenues	2.1%**	\$12,000,000	\$28,100,000	\$34,600,000
Grants / Other	1.5%	\$4,650,000	\$10,400,000	\$12,050,000
Total		\$44,000,000	\$101,800,000	\$124,000,000

Year of Revenue

* Total 2nd Penny Sales Tax and Surface Transportation Funds – received revenue. The portion of this revenue applied to transportation projects is determined through the annual budgetary process.

** The City of Brookings Finance Department currently utilizes a 2.1% growth factor for revenue projections.

Table 67: Forecasted Funding Allocations by Time Band

EXPENDITURE SOURCE	SHORT-TERM 2026-2030 (YOE \$)	MID-TERM 2031-2040 (YOE \$)	LONG-RANGE 2041-2050 (YOE \$)	TOTAL (YOE \$)
System Expansion (Street and Sidewalk Capital Improvements)	\$24,200,000	\$55,990,000	\$68,200,000	\$148,390,000
System Preservation (Pavement Management, Operations and Maintenance)	\$19,800,000	\$45,810,000	\$55,800,000	\$121,410,000
Total	\$44,000,000	\$101,800,000	\$124,000,000	\$269,800,000
Percentage of Transportation Program	55%	55%	55%	55%

Year of Expenditure

12.4 Additional Funding Sources

It is recommended the City of Brookings investigate additional funding sources to supplement local and state funding. Examples of potential sources are listed in the following sections.

Grants Administered through U.S. Department of Transportation

There are several discretionary programs administered by the U.S. Department of Transportation (USDOT) modified or created through the Infrastructure Investment and Jobs Act (IIJA). Several discretionary grant programs recommended for City of Brookings type projects include:

- Better Utilizing Investments to Leverage Development (BUILD), Local and Regional Project Assistance
 - o Eligible projects: bridges, public transit, highways and roads, surface transportation at airports, and culvert replacement and habitat improvements
 - o \$1 M minimum grant
 - o Rural applications would be for 100% of the estimated cost
 - o Requires a benefit/cost analysis
- Bridge Investment Program
 - o Eligible projects: bridges
 - o Requires a benefit/cost analysis
- Rural Surface Transportation Program
 - o Eligible projects: bridges, highways and roads, highway freight, and highway safety
 - o Requires a benefit/cost analysis
- Reconnecting Communities Pilot Program
 - o Focus on improving mobility, access, economic development and connectivity where a barrier was created by the construction of a highway, rail, or other facility
 - o Planning and capital grants available
- Safe Streets and Roads for All Program (SS4A)
 - o Eligible projects: highway safety (planning and/or project implementation)
 - o Focused on preventing fatalities and serious injuries
 - o Need to develop a local safety plan
 - o Benefit/cost analysis is not required

A full list of grant programs authorized under the USDOT, such as the National Significant Freight and Highway Projects Program (INFRA), is available here: [Bipartisan Infrastructure Law Grant Programs | US Department of Transportation](#).

FHWA also provides a summary of pedestrian and bicycle funding opportunities through U.S. Department of Transportation surface transportation funding programs here: [Pedestrian and Bicycle Funding Opportunities: U.S. Department of Transportation Transit, Safety, and Highway Funds \(dot.gov\)](#).

Grants Administered through SDDOT

- Bridge Improvement Grant (BIG) Fund
- Transportation Alternatives
- Highway Safety Improvement Projects (HSIP)
- State Planning and Research Program
- Transportation Economic Development Grants

State of South Dakota Loan Programs

- **State Infrastructure Bank (SIB) Loans:** 0% interest loans of federal funds for federal-aid route projects
- **State Highway Fund Loans (SHFL):** industrial or agricultural business-related projects on non-federal-aid routes for counties and Class I cities

Community and Organizational Grants

It is recommended the City of Brookings pursue community and organizational grants that fit with desired goals and projects. It is recommended that the city partner with local organizations and advocacy groups for mode-specific grants.



3rd Avenue & 4th Street Intersection

13 Implementation Plan

The Implementation Plan reflects feasible project recommendations for the Brookings area transportation network over the next 20+ years. Recommendations were developed through a collaborative process to address long-range transportation needs, consisting of direction provided through study goals and objectives, Study Advisory Team guidance, and public and stakeholder input.

Implementation Plan recommendations are framed around time bands described in the **Funding Analysis** chapter of the BATP:

- **Short-term:** <2031
- **Mid-term:** 2031 - 2040
- **Long-term:** 2041+

Planning-level estimated costs are shown for each project in terms of current dollars (\$ 2026) and year of expenditure (YOE) dollars. Project construction costs are assumed to grow at 3 percent, compounded annually. Costs are shown in a middle year of each time band (e.g., 2031-2040 costs are escalated to year 2036). Unit costs used to estimate planning-level project costs for recommended roadway and bicycle and pedestrian network improvements are shown in **Table 68**.

Table 68: Project Unit Cost Assumptions

	IMPROVEMENT TYPE	COST (2026 \$)	UNIT
Roadway	New 2-lane rural paved roadway (with shoulders)	\$5,200,000	per mile
	2-lane urban roadway (new / full reconstruction)	\$4,600,000	per mile
	3-lane urban roadway (new / full reconstruction)	\$5,700,000	per mile
	4-lane divided / 5-lane urban roadway (new / full reconstruction)	\$12,400,000	per mile
	Add turn lane at urban intersection	\$515,000	per turn lane
	Add turn lane at rural intersection	\$360,000	per turn lane
	Intersection reconstruction	\$2,100,000	per intersection
	New traffic signal	\$515,000	per signal
	Traffic signal upgrades	\$155,000	per signal
	Raised median retrofit	\$155,000	per 100 linear feet
Bicycle and Pedestrian	Shared use path	\$125	per linear foot
	Conventional bicycle lanes	\$140,000	per mile
	Buffered bicycle lanes	\$190,000	per mile
	Bicycle boulevard	\$260,000	per mile
	Paved shoulder	\$120,000	per mile
	Shared lane markings	\$31,000	per mile
	Sidewalk	\$75	per linear foot
	Pedestrian scale lighting	\$410,000	per mile

13.1 Recommended Projects

Intersection and Corridor Projects

- Map: **Figure 91** and **Figure 92**
- Intersection projects: **Table 69**
- Corridor projects: **Table 70**

These tables include a description and long-range vision of the respective intersection(s) or corridor(s), summary of needs to be addressed by future projects, major intersection improvement information, and additional discussion of recommendations and timeline of improvements.

Intersection projects that are a part of a corridor summary sheet are noted in the 'Corridor Project Cross-Reference' column. Corridor project baseline costs include sidewalk on both sides of the roadway. For corridors designated for a future shared use path, corridor project costs include sidewalk on one side and shared use path on the other.

Intersection and corridor projects to be constructed by others (typically SDDOT) are shown in the same figure and listed in **Table 71** and **Table 72**.

Bicycle and Pedestrian Projects

- Map: **Figure 93** and **Figure 94**
- 'Core Area Infill' projects: **Table 73**
- 'Brookings Growth Area' projects: **Table 74**

Bicycle and pedestrian projects were broken into the following categories:

- **'Core Area Infill (Standalone Projects)'** projects are those that expand the existing shared use path network within the current Brookings city limits. These projects are generally located along existing drainageways or arterial or collector streets that may or may not have existing sidewalk, and are not part of future corridor projects previously identified in **Table 70**.
- **'Core Area Bicycle Network'** projects are on-street projects, such as bike lanes, throughout the developed Brookings core area.
- **'Part of Corridor Projects'** projects are those that are along a roadway corridor recommended for future improvements (see **Figure 91** and **Figure 92**). The associated roadway corridor project should be cross-referenced as part of the planning process.
- **'Brookings Growth Area'** projects are those that illustrate the long-range bicycle and pedestrian network throughout Brookings's growth area. This list of projects should be cross-referenced when the City of Brookings or partnering agencies are planning for major investments along the respective corridor to determine whether that is an opportune time to incorporate bicycle and pedestrian network enhancement.

Safety Priority Network

- Brookings core area map: **Figure 95**
- Brookings growth area map: **Figure 96**

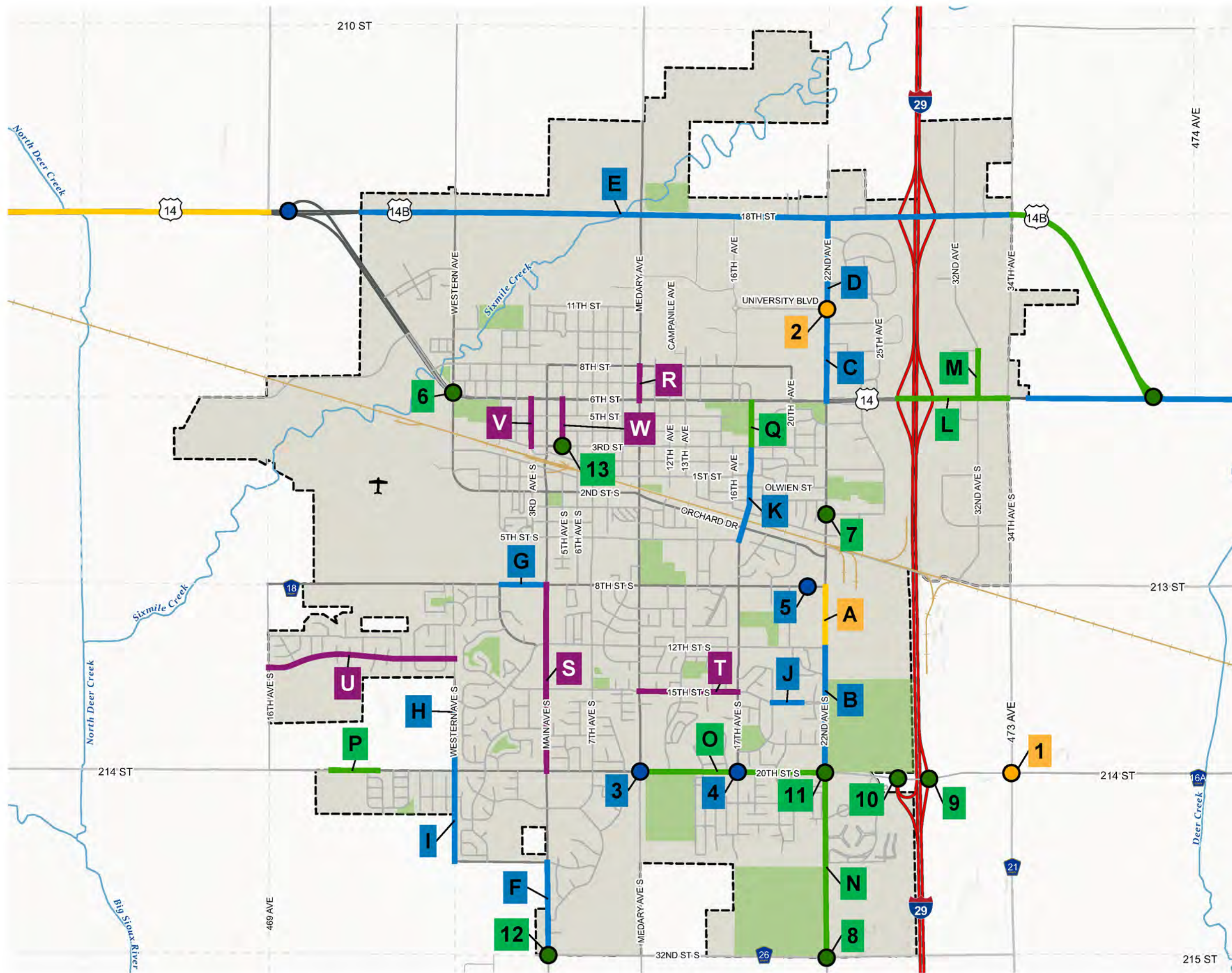
The Brookings Area Safety Action Plan includes a Safety Priority Network (SPN) for the Brookings core area and surrounding growth areas. The SPN reflects locations identified in the Safety Action Plan's High Injury Network (HIN), Systemic Risk Network (SRN), and/or through public and stakeholder feedback. For each SPN location, the Safety Action Plan presents recommended safety improvement projects and strategies to address the identified data-driven safety needs.

The Safety Action Plan should be reviewed as part of all transportation program and project-level planning efforts. Additional information on recommended projects and strategies for each identified SPN location is provided in **Appendix G**.

Programmatic Projects

The following programmatic projects support agency flexibility and a proactive approach to anticipate and address specific needs through dedicated funding categories. These types of projects may be grouped together to form larger projects, support larger roadway or bicycle and pedestrian corridor projects, or completed as standalone projects.

- **Bicycle and pedestrian crossings and connectivity enhancements:** refer to the **Bicycle and Pedestrian Plan** for recommended crossing projects
 - o Recommendation: allocate funding to improve crossing locations and address existing gaps in sidewalk connectivity
- **Safety enhancements:** refer to the **Safety Action Plan (Appendix G)** and **Figure 95** and **Figure 96** for recommended transportation safety projects
 - o Recommendation: allocate funding for safety enhancements to be incorporated into larger roadway and bicycle and pedestrian corridor projects and as standalone safety projects



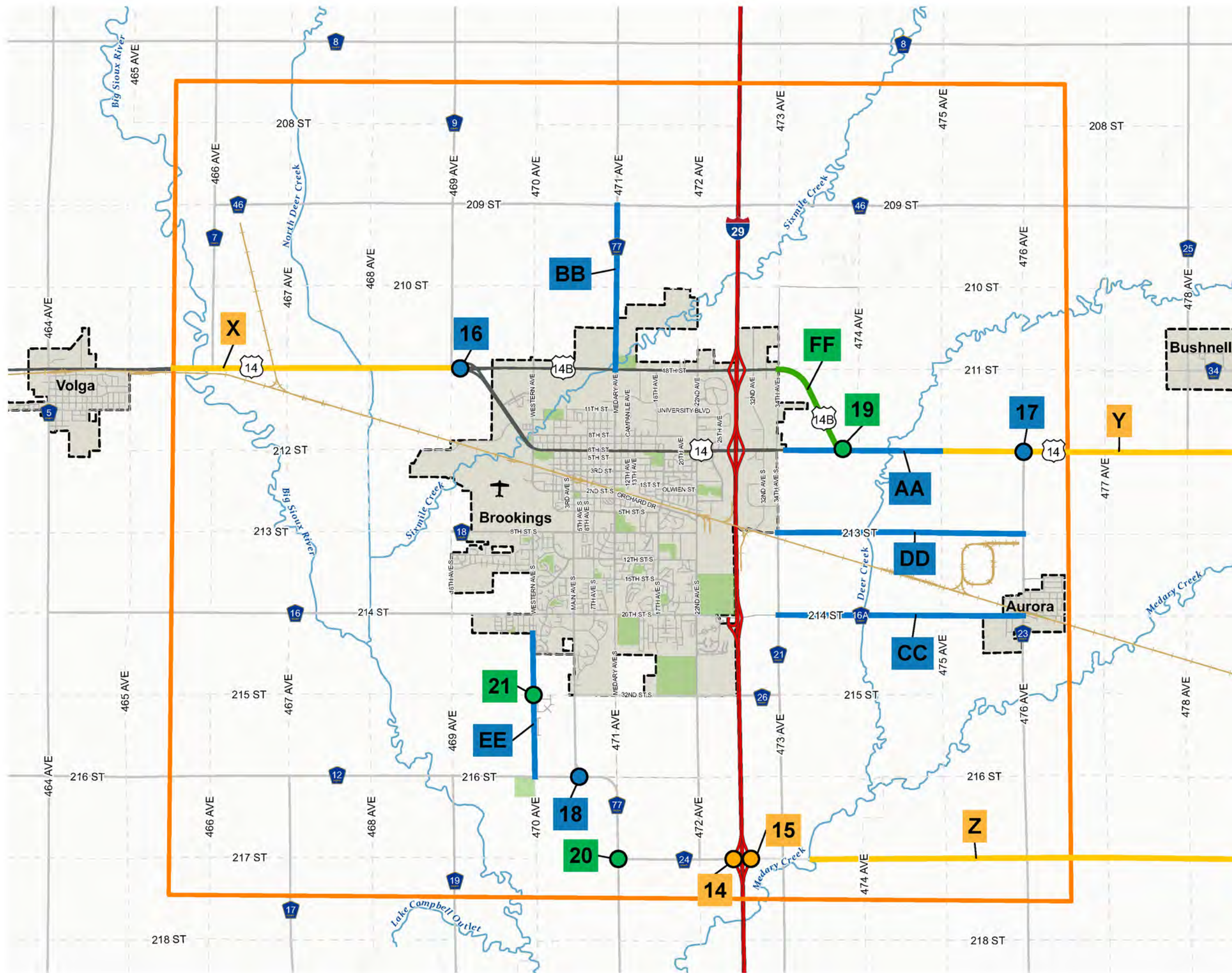
Recommended Intersection & Roadway Corridor Projects (City Focus)

- City Limits
- City Park & Greenspace
- Intersection Projects**
 - Short-Term
 - Mid-Term
 - Long-Range
 - Illustrative Intersection
- Corridor Projects**
 - Short-Term
 - Mid-Term
 - Long-Range
 - Illustrative Corridor

Note: The recommended intersection and roadway corridor projects represent major projects to be completed through the 2050 Planning Horizon. These projects were identified based on notable capacity or safety needs and planned area SDDOT or City of Brookings projects.

0 1 Miles

Figure 91



Intersections & Corridor Project Locations (Study Area Focus)

- Study Area
- City Limits
- City Park & Greenspace

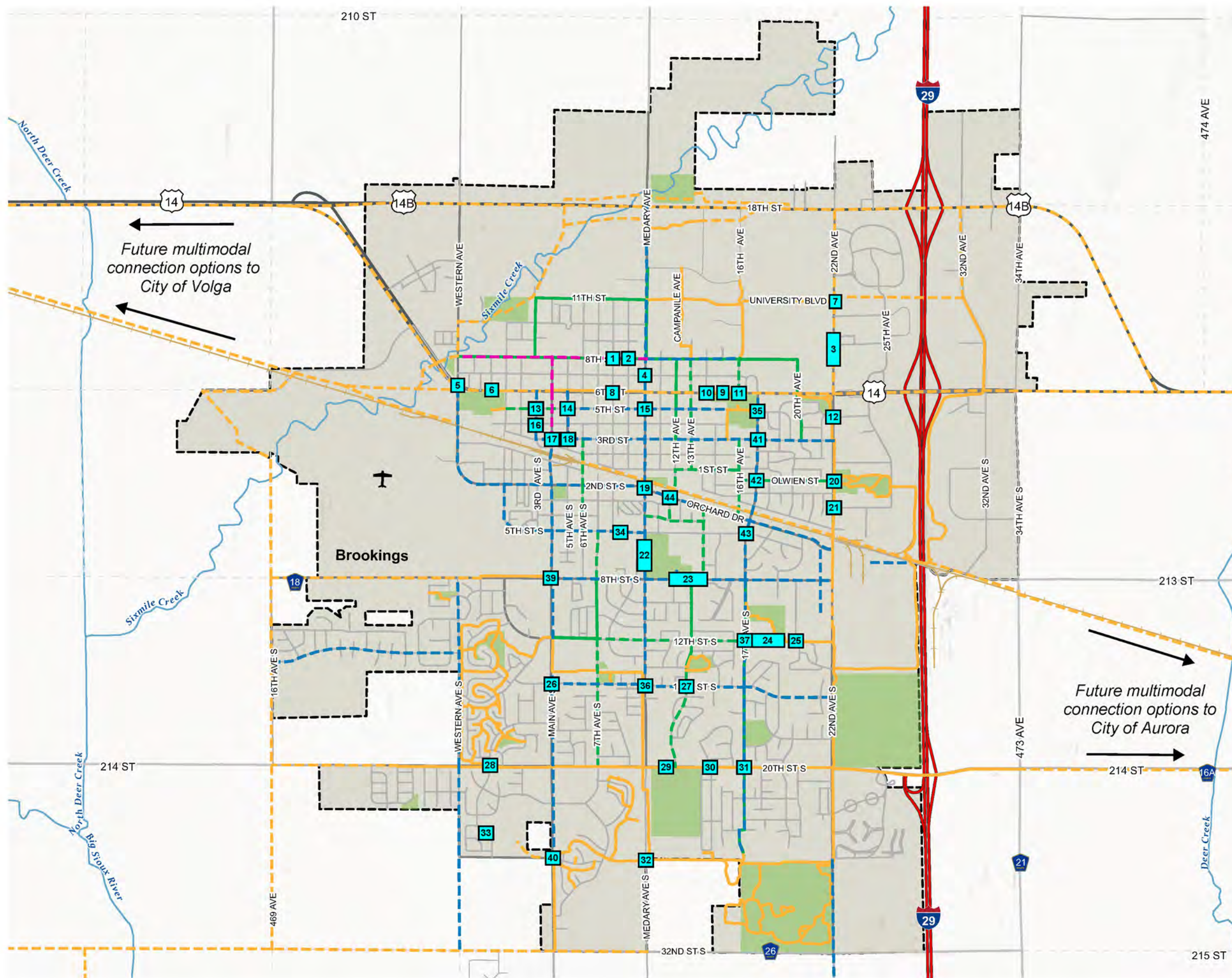
Intersection Projects

- Short-Term
- Mid-Term
- Long-Range
- Illustrative Intersection

Corridor Projects

- Short-Term
- Mid-Term
- Long-Range
- Illustrative Corridor

Bicycle and Pedestrian Network Plan (City Focus)

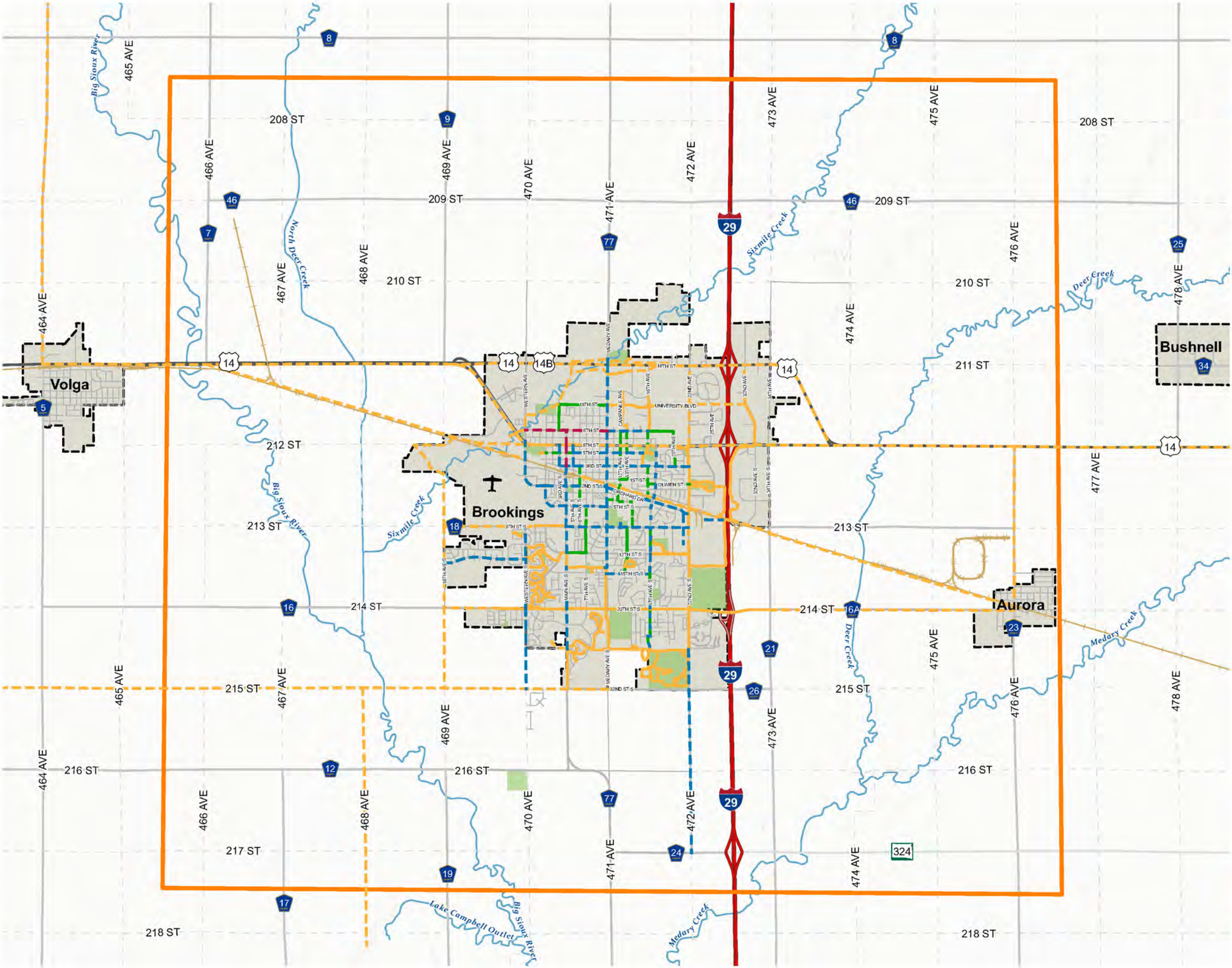


- City Limits
- City Park & Greenspace
- Existing Shared Use Path
- Future Shared Use Path
- Existing Shared Lane
- Future Shared Lane
- Existing Bike Lane
- Future Standard Bike Lane
- Future Separated Bike Lane (Optional Shared Use Path)
- Crossing Improvement Location



Figure 93

Bicycle and Pedestrian
Network Plan
(Study Area)



- Study Area
- City Limits
- City Park & Greenspace
- Existing Shared Use Path
- Future Shared Use Path
- Existing Shared Lane
- Future Shared Lane
- Existing Bike Lane
- Future Standard Bike Lane
- Future Separated Bike Lane (Optional Shared Use Path)

0 2 Miles



Figure 94

Table 69: Intersection Projects

INDEX	INTERSECTION	PROJECT TYPE	PRIORITY	TYPE	COST (2026 \$)	COST (YOE)
1	34 th Avenue S & 20 th Street S	Install Turn Lanes	Short-Term	Traffic	\$500,000	\$600,000
		All-Way Stop Control (if applicable)	Mid-Term	Traffic	\$10,000	\$20,000
		Traffic Control (Traffic Signal (if applicable) or Roundabout)	Long-Range	Traffic and Safety	\$500,000 - \$4,500,000	\$1,000,000 - \$8,200,000
2	22 nd Avenue & University Boulevard	Intersection Modifications	Short-Term	Traffic and Safety	\$500,000	\$600,000
		Intersection Modifications and Traffic Control (Two-Way Stop-Control or Multilane Roundabout)	Mid-Term	Traffic and Safety	\$4,000,000 - \$6,200,000	\$5,400,000 - \$8,400,000
3	Medary Avenue S & 20 th Street S	Traffic Control (Traffic Signal (if applicable) or Roundabout) and Turn Lanes	Mid-Term	Traffic and Safety	\$1,000,000 - \$1,400,000	\$5,400,000 - \$6,100,000
4	17 th Avenue S & 20 th Street S	Traffic Control (Traffic Signal (if applicable) or Roundabout) and Turn Lanes	Mid-Term	Traffic and Safety	\$500,000 - \$4,500,000	\$700,000 - \$6,100,000
5	8 th Street S & HyVee/Lewis Parking Lot Access	Intersection Modifications, Access Management, and Traffic Control	Mid-Term	Traffic	\$500,000 - \$1,000,000	\$700,000 - \$1,400,000
6	US14 / 6 th Street & Western Avenue	Traffic Control (Traffic Signal (if applicable) or Roundabout)	Long-Range	Safety	\$500,000 - \$6,200,000	\$1,000,000 - \$11,200,000
7	22 nd Avenue & Eastbrook Drive	Traffic Signal (if applicable)	Long-Range	Traffic	\$500,000	\$1,000,000
8	22 nd Avenue S & 32 nd Street S	Install Turn Lane	Long-Range	Traffic	\$500,000	\$1,000,000
9	20 th Street S & I-29 Exit 130 NB RTI	Traffic Signal (if applicable)	Long-Range	Traffic	\$500,000	\$1,000,000
10	20 th Street S & I-29 Exit 130 SB RTI	Traffic Signal (if applicable)	Long-Range	Traffic	\$500,000	\$1,000,000
11	22 nd Avenue S & 20 th Street S	Install Turn Lanes	Long-Range	Traffic	\$500,000	\$1,000,000
12	Main Avenue S & 32 nd Street S	Install Turn Lanes, Traffic Control (Traffic Signal (if applicable) or Roundabout)	Long-Range	Traffic	\$1,000,000 - \$4,500,000	\$1,900,000 - \$8,200,000
13	5 th Avenue & 3 rd Street	Traffic Control (All-Way Stop-Control (if applicable or Roundabout/Traffic Circle), Bicycle & Pedestrian, and Traffic Calming	Long-Range	Traffic and Safety	\$600,000 - \$1,100,000	\$1,000,000 - \$1,900,000

Short-Term (<2031) Mid-Term (2031-2040) Long-Range (2041+)

Table 70: Roadway Corridor Projects

INDEX	CORRIDOR	LIMITS	PROJECT TYPE	PRIORITY	COST (2026 \$)	COST (YOE)	NOTES
A	22 nd Avenue S	8 th Street S to 12 th Street S	5-Lane Urban Corridor Reconstruction	Short-Term	\$3,900,000	\$4,600,000	
B	22 nd Avenue S	12 th Street S to 20 th Street S	5-Lane Urban Corridor Reconstruction	Mid-Term	\$9,000,000	\$12,100,000	
C	22 nd Avenue	University Boulevard to US14 / 6 th Street	5-Lane Urban Corridor Reconstruction	Mid-Term	\$6,400,000	\$8,700,000	
D	22 nd Avenue	US14 Bypass / 18 th Street to University Boulevard	5-Lane Urban Corridor Reconstruction	Mid-Term	\$6,400,000	\$8,700,000	
E	US14 Bypass / 18 th Street	US14 (West) to 34 th Avenue	4 / 5-Lane Urban Corridor Reconstruction	Mid-Term	\$44,600,000	\$60,000,000	SDDOT
F	Main Avenue S	26 th Street S to 32 nd Street S	3-Lane Urban Corridor Reconstruction	Mid-Term	\$2,900,000	\$3,900,000	
G	8 th Street S	Crystal Ridge Road to Main Avenue S	3-Lane Urban Corridor Reconstruction	Mid-Term	\$1,800,000	\$2,500,000	
H	Western Avenue S	South of Summit Pass to 20 th Street S	3-Lane Urban Corridor Reconstruction	Mid-Term	\$3,100,000	\$4,200,000	Development-Driven
I	Western Avenue S	20 th Street S to 26 th Street S	2-Lane Urban Corridor Reconstruction	Mid-Term	\$2,500,000	\$3,400,000	Development-Driven
J	15 th Street S	Doral Drive to West of Franklin Avenue	2-Lane Urban Corridor Reconstruction	Mid-Term	\$800,000	\$1,100,000	Development-Driven
K	17 th Avenue	3 rd Street to 5 th Street S	Re-Stripe for Left Turn Lanes at Major Intersections	Mid-Term	\$1,600,000	\$2,200,000	Potentially applicable for left turn movements at 3 rd Street, Orchard Drive, and/or 5 th Street S
L	US14 / 6 th Street	I-29 Exit 132 SB RTI to 34 th Avenue	Development-Driven Area Intersection Improvements	Long-Range	Varies	Varies	Development-Driven; Traffic Signals, Intersection Modifications, Access Management
M	32 nd Avenue	Capital Street to US14 / 6 th Street	Development-Driven Area Intersection Improvements	Long-Range	Varies	Varies	Development-Driven; Traffic Signals, Intersection Modifications, Access Management
N	22 nd Avenue S	20 th Street S to 32 nd Street S		Long-Range	\$6,100,000	\$11,100,000	Development-Driven
O	20 th Street S	Medary Avenue S to 22 nd Avenue S	Development-Driven Area Improvements	Long-Range	Varies	Varies	Development-Driven
P	20 th Street S	Brighton Road / Rapid Valley Street Area	Development-Driven Area Improvements	Long-Range	Varies	Varies	Development-Driven
Q	17 th Avenue	US14 / 6 th Street to 3 rd Street	Re-Stripe for Left Turn Lanes at Major Intersections	Long-Range	\$2,400,000	\$3,300,000	Potentially applicable for left turn movements at US14 / 6 th Street and 3 rd Street
R	Medary Avenue	8 th Street to US14 / 6 th Street	Potential 3-Lane Road Diet (Illustrative Road Diet)	Illustrative	\$500,000	n/a	Costs assume shared use path
S	Main Avenue S	8 th Street S to 20 th Street S	Potential 3-Lane Road Diet (Illustrative Road Diet)	Illustrative	\$2,400,000	n/a	Costs assume shared use path
T	15 th Street S	Medary Avenue S to 17 th Avenue S	Potential 2-Lane Road Diet (Illustrative Road Diet)	Illustrative	\$1,200,000	n/a	Costs assume shared use path
U	Summit Pass	16 th Avenue S to Western Avenue S	Potential 2-Lane Road Diet (Illustrative Road Diet)	Illustrative	\$1,600,000	n/a	Costs assume shared use path
V	3 rd Avenue	US14 / 6 th Street to 3 rd Street	Potential 2-Lane Complete Streets Project (Illustrative Downtown Complete Streets)	Illustrative	\$500,000	n/a	
W	5 th Avenue	US14 / 6 th Street to 3 rd Street	Potential 2-Lane Complete Streets Project (Illustrative Downtown Complete Streets)	Illustrative	\$500,000	n/a	

Short-Term (<2031) Mid-Term (2031-2040) Long-Range (2041+)

Table 71: Intersection Projects (To Be Completed by Others)

INDEX	INTERSECTION	PROJECT TYPE	PRIORITY	JURISDICTION NOTES
14	I-29 Exit 127 SB RTI & SD324	Resurfacing	Short-Term	SDDOT
15	I-29 Exit 127 NB RTI & SD324	Resurfacing	Short-Term	SDDOT
16	US14 & US14 Bypass Interchange (West)	Intersection Reconstruction	Mid-Term	SDDOT
17	US14 & BC Hwy 23	Intersection Study (Brookings County MTP)	Mid-Term	SDDOT / Brookings County
18	BC Hwy 77 & BC Hwy 12	Intersection Reconfiguration (Brookings County MTP)	Mid-Term	Brookings County
19	US14 & US14 Bypass Interchange (East)	Intersection Reconstruction	Long-Range	SDDOT
20	BC Hwy 77 & BC Hwy 24	Intersection Study (Brookings County MTP)	Long-Range	Brookings County
21	215 th Street & 470 th Avenue	Intersection Study (Brookings County MTP)	Long-Range	Brookings County

Short-Term (<2031) Mid-Term (2031-2040) Long-Range (2041+)

Table 72: Roadway Corridor Projects (To Be Completed by Others)

INDEX	CORRIDOR	LIMITS	PROJECT TYPE	PRIORITY	JURISDICTION NOTES
X	US14	Near BC Hwy 7 Intersection	Turn Lanes	Short-Term	SDDOT
Y	US14	475 th Avenue to the East	Safety	Short-Term	SDDOT (STIP 2026)
Z	SD324	Medary Creek to the East	Safety	Short-Term	SDDOT STIP (2026)
AA	US14	34 th Avenue to 475 th Avenue	Intersection & Corridor Improvements	Mid-Term	SDDOT Development STIP 2030-2033
BB	BC Hwy 77	BC Hwy 46 to US14 Bypass / 18 th Street	Rural 2-Lane Reconstruction (Brookings County MTP)	Mid-Term	Brookings County
CC	BC Hwy 16A	BC Hwy 21 / 34 th Avenue to BC Hwy 23 / Broadway Avenue	Rural 2-Lane Reconstruction (Brookings County MTP)	Mid-Term	Brookings County
DD	213 th Street	BC Hwy 21 / 34 th Avenue to BC Hwy 23 / 476 th Avenue	Rural 2-Lane Reconstruction (Brookings County MTP)	Mid-Term	Brookings County
EE	470 th Avenue	26 th Street S to BC Hwy 12	Rural 2-Lane Reconstruction (Brookings County MTP)	Mid-Term	Brookings County
FF	US14 Bypass / 18 th Street	34 th Avenue to US14	Intersection & Corridor Improvements	Long-Range	SDDOT

Short-Term (<2031) Mid-Term (2031-2040) Long-Range (2041+)

Table 73: Bicycle and Pedestrian Projects (City of Brookings)

CORRIDOR	LIMITS	PROJECT TYPE	LENGTH (MI)	AREA	PRIORITY	COST (2026 \$)	COST (YOE \$)
8 th Street	Western Avenue to Medary Avenue	Standard Bike Lane	1.0	Central	Short-Term	\$140,000	\$170,000
8 th Street	Medary Avenue to Jackrabbit Avenue	Separated Bike Lane (Optional Shared Use Path)	0.5	Central	Short-Term	\$100,000 - \$200,000	\$200,000 - \$300,000
1 st Street	12 th Avenue to 16 th Avenue	Shared Lane	0.3	Central	Short-Term	\$10,000	\$20,000
Olwien Street	16 th Avenue to 22 nd Avenue	Shared Lane	0.5	Central	Short-Term	\$20,000	\$30,000
2 nd Street S	Main Avenue S to Medary Avenue S	Separated Bike Lane (Optional Shared Use Path)	0.5	Central	Short-Term	\$100,000 - \$200,000	\$200,000 - \$300,000
Forest Street	Medary Avenue S to Elm Avenue	Shared Lane	0.3	Central	Short-Term	\$10,000	\$20,000
12 th Street S	7 th Avenue S to 17 th Avenue S	Shared Lane	0.8	Central	Short-Term	\$30,000	\$40,000
Main Avenue	8 th Street to US14 / 6 th Street	Standard Bike Lane	0.2	Central	Short-Term	\$30,000	\$40,000
6 th Avenue S	3 rd Street to 5 th Street S	Shared Lane	0.5	Central	Short-Term	\$20,000	\$30,000
7 th Avenue S	5 th Street S to 8 th Street S	Shared Lane	0.3	Central	Short-Term	\$10,000	\$20,000
7 th Avenue S	12 th Street S to 20 th Street S	Shared Lane	0.7	Central	Short-Term	\$30,000	\$40,000
12 th Avenue	3 rd Street to 1 st Street	Shared Lane	0.2	Central	Short-Term	\$10,000	\$20,000
Birch Avenue	Railroad Crossing to Forest Street	Shared Lane	0.2	Central	Short-Term	\$10,000	\$20,000
Campanile Avenue	8 th Street to US14 / 6 th Street	Shared Lane	0.2	Central	Short-Term	\$10,000	\$20,000
13 th Avenue	US14 / 6 th Street to 1 st Street	Shared Lane	0.4	Central	Short-Term	\$20,000	\$30,000
Christine Avenue	15 th Street S to 20 th Street S	Shared Lane	0.5	South	Short-Term	\$20,000	\$30,000
Elm Avenue	Orchard Drive to 8 th Street S	Shared Lane	0.4	Central	Short-Term	\$20,000	\$30,000
Jackrabbit Avenue	8 th Street to US14 / 6 th Street	Shared Lane	0.2	Central	Short-Term	\$10,000	\$20,000
16 th Avenue	3 rd Street to Orchard Drive	Shared Lane	0.3	Central	Short-Term	\$10,000	\$20,000
22 nd Avenue S	8 th Street S to North of 12 th Street S	Shared Use Path	0.3	Central	Short-Term	\$100,000	\$200,000
US14 Bypass / 18 th Street	US14 to 34 th Avenue	Shared Use Path	3.8	North	Mid-Term	\$1,300,000	\$1,800,000
US14 / 6 th Street	Western Avenue to Main Avenue	Shared Use Path	0.5	Central	Mid-Term	\$160,000	\$220,000
US14 / 6 th Street	Medary Avenue to 20 th Avenue	Shared Use Path	0.8	Central	Mid-Term	\$260,000	\$350,000
Western Avenue / 2 nd Street S	US14 / 6 th Street to Main Avenue S	Separated Bike Lane (Optional Shared Use Path)	1.0	Central	Mid-Term	\$190,000 - \$320,000	\$260,000 - \$440,000
Division Avenue / 5 th Street S	2 nd Street S to Main Avenue S	Separated Bike Lane (Optional Shared Use Path)	0.5	Central	Mid-Term	\$100,000 - \$160,000	\$140,000 - \$220,000
5 th Street	Pioneer Park to 5 th Avenue	Shared Lane	0.3	Central	Mid-Term	\$15,000	\$25,000

CORRIDOR	LIMITS	PROJECT TYPE	LENGTH (MI)	AREA	PRIORITY	COST (2026 \$)	COST (YOE \$)
5 th Street	5 th Avenue to Hillcrest Park	Separated Bike Lane (Optional Shared Use Path)	0.9	Central	Mid-Term	\$180,000 - \$290,000	\$250,000 - \$390,000
3 rd Street	3 rd Avenue to 22 nd Avenue	Separated Bike Lane (Optional Shared Use Path)	1.6	Central	Mid-Term	\$310,000 - \$520,000	\$420,000 - \$700,000
Orchard Drive	Medary Avenue S to 22 nd Avenue S	Separated Bike Lane (Optional Shared Use Path)	1.1	Central	Mid-Term	\$190,000 - \$360,000	\$210,000 - \$490,000
8 th Street S	Main Avenue S to 22 nd Avenue S	Separated Bike Lane (Optional Shared Use Path)	1.5	Central	Mid-Term	\$300,000 - \$600,000	\$300,000 - \$600,000
15 th Street S	Main Avenue S to 22 nd Avenue S	Separated Bike Lane (Optional Shared Use Path)	1.5	Central	Mid-Term	\$300,000 - \$600,000	\$300,000 - \$600,000
3 rd Avenue	US14 / 6 th Street to 3 rd Street	Separated Bike Lane (Optional Shared Use Path)	0.3	Central	Mid-Term	\$60,000	\$100,000
5 th Avenue	US14 / 6 th Street to 3 rd Street	Separated Bike Lane (Optional Shared Use Path)	0.3	Central	Mid-Term	\$60,000	\$100,000
17 th Avenue S	Orchard Drive to 20 th Street S	Separated Bike Lane (Optional Shared Use Path)	1.3	Central	Mid-Term	\$250,000 - \$320,000	\$340,000 - \$570,000
22 nd Avenue	University Boulevard to US14 / 6 th Street	Shared Use Path	0.5	Central	Mid-Term	\$160,000	\$220,000
22 nd Avenue	US14 Bypass / 18 th Street to University Boulevard	Shared Use Path	0.5	Central	Mid-Term	\$160,000	\$220,000
32 nd Avenue	US14 Bypass / 18 th Street to Existing Trail	Shared Use Path	0.5	North	Mid-Term	\$160,000	\$220,000
Allyn Frerichs Trail (North)	US14 / 6 th Street to US14 Bypass / 18 th Street	Shared Use Path	2.6	Central / North	Mid-Term	\$840,000	\$1,100,000
US14 / 6 th Street	22 nd Avenue to 34 th Avenue	Shared Use Path	1.0	Central	Long-Range	\$320,000	\$580,000
2 nd Street S	Main Avenue to Medary Avenue	Separated Bike Lane (Optional Shared Use Path)	0.5	Central	Long-Range	\$100,000 - \$160,000	\$190,000 - \$290,000
5 th Street S	Main Avenue to Medary Avenue	Separated Bike Lane (Optional Shared Use Path)	0.5	Central	Long-Range	\$100,000 - \$160,000	\$190,000 - \$290,000
8 th Street S	16 th Avenue S to East of Western Avenue S	Shared Use Path	1.1	West	Long-Range	\$360,000	\$660,000
Summit Pass	16 th Avenue S to Western Avenue S	Separated Bike Lane (Optional Shared Use Path)	1.0	West	Long-Range	\$200,000 - \$320,000	\$190,000 - \$290,000
20 th Street S	16 th Avenue S to Rio Grande Avenue	Shared Use Path	0.7	South	Long-Range	\$230,000	\$420,000
Western Avenue S	8 th Street S to 26 th Street S	Separated Bike Lane (Optional Shared Use Path)	1.5	West	Long-Range	\$290,000 - \$480,000	\$530,000 - \$870,000
Main Avenue S	3 rd Street to 26 th Street S	Separated Bike Lane (Optional Shared Use Path)	2.3	Central / West	Long-Range	\$440,000 - \$740,000	\$800,000 - \$1,300,000
Medary Avenue	US14 Bypass / 18 th Street to US14 / 6 th Street	Separated Bike Lane (Optional Shared Use Path)	1.0	North	Long-Range	\$200,000 - \$320,000	\$190,000 - \$290,000
Medary Avenue	US14 / 6 th Street to 15 th Street S	Separated Bike Lane (Optional Shared Use Path)	1.6	Central	Long-Range	\$310,000 - \$520,000	\$560,000 - \$940,000
17 th Avenue	US14 / 6 th Street to Orchard Drive	Separated Bike Lane (Optional Shared Use Path)	0.7	Central	Long-Range	\$140,000 - \$230,000	\$260,000 - \$420,000
17 th Avenue S / Avalon Circle	20 th Street S to Allyn Frerichs Trail	Separated Bike Lane (Optional Shared Use Path)	0.5	Central	Long-Range	\$100,000 - \$160,000	\$190,000 - \$290,000
22 nd Avenue S	26 th Street S to 32 nd Street S	Separated Bike Lane (Optional Shared Use Path)	0.5	Central	Long-Range	\$100,000 - \$160,000	\$190,000 - \$290,000
Allyn Frerichs Trail (West)	US14 / 6 th Street to 8 th Street S	Shared Use Path	2.6	West	Long-Range	\$840,000	\$1,500,000
HyVee / Lewis Frontage Road	Orchard Drive to University Marketplace	Separated Bike Lane (Optional Shared Use Path)	0.4	Central	Long-Range	\$80,000 - \$130,000	\$150,000 - \$240,000

CORRIDOR	LIMITS	PROJECT TYPE	LENGTH (MI)	AREA	PRIORITY	COST (2026 \$)	COST (YOE \$)
3M Connection	West of Allyn Frerichs Trail (near 3M)	Separated Bike Lane (Optional Shared Use Path)	0.2	Central	Long-Range	\$40,000 - \$70,000	\$80,000 - \$120,000
Railroad Path (Illustrative)	6 th Avenue to 34 th Avenue S	Shared Use Path	2.4	Central/East	Long-Range	\$770,000	\$1,400,000
I-29 Pedestrian Crossing (Illustrative)	22 nd Avenue to 32 nd Avenue	Shared Use Path	0.7	North	Long-Range	\$230,000 (excludes structural costs)	\$420,000 (excludes structural costs)

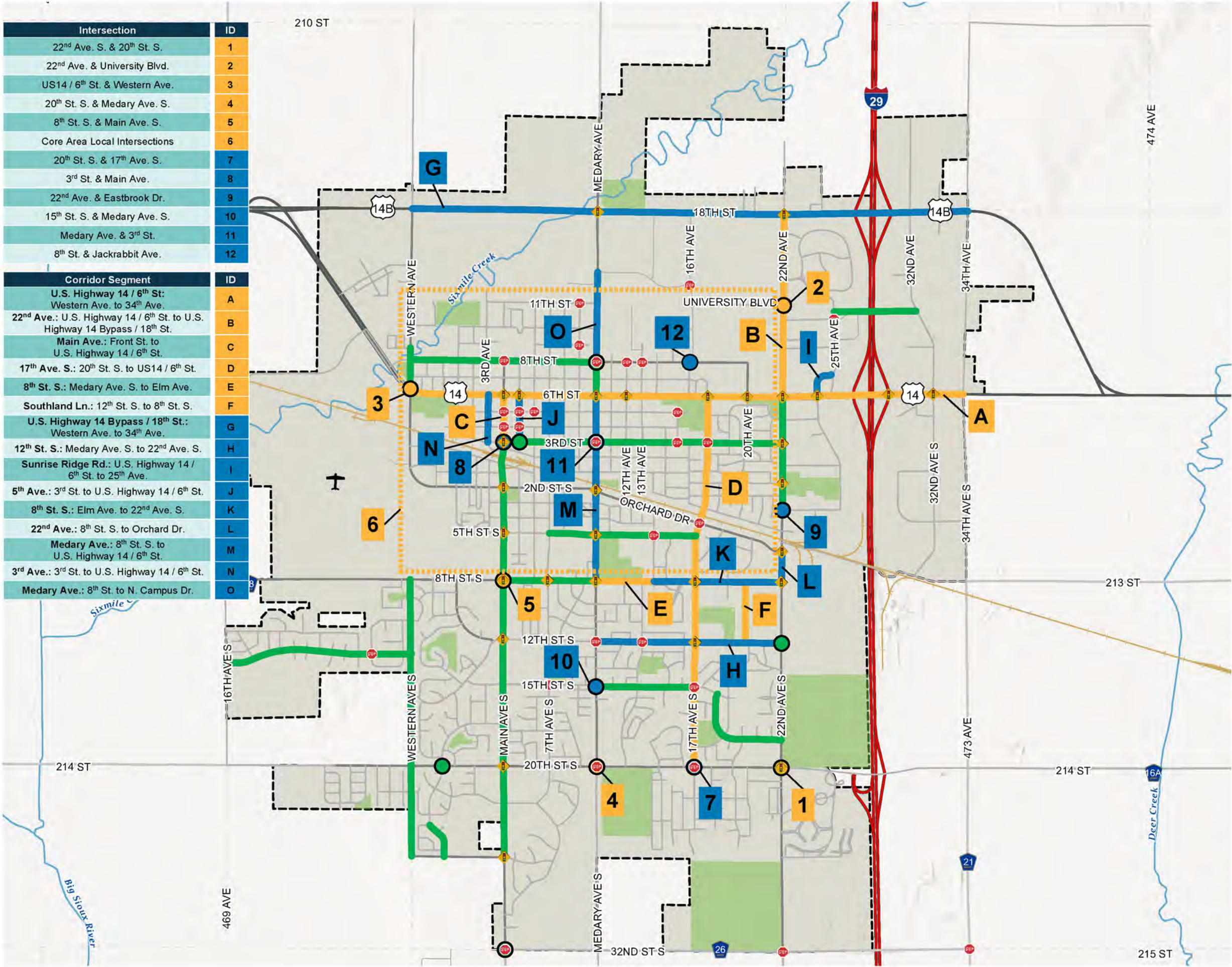
Short-Term (<2031) Mid-Term (2031-2040) Long-Range (2041+)

Table 74: Bicycle and Pedestrian Projects (Brookings Growth Area)

CORRIDOR	LIMITS	PROJECT TYPE	LENGTH (MI)	PRIORITY
US14	Volga to US14/US14 Bypass (West)	Shared Use Path	4.1	Long-Range
US14 Bypass	34 th Avenue to US14/US14 Bypass (East)	Shared Use Path	1.3	Long-Range
US14	US14/US14 Bypass (East) to BC Hwy 23	Shared Use Path	2.3	Long-Range
Railroad Path (Illustrative)	US14 to Western Avenue (Volga)	Shared Use Path	4.1	Long-Range
Railroad Path (Illustrative)	34 th Avenue S to Broadway Avenue (Aurora)	Shared Use Path	3.2	Long-Range
BC Highway 16A	BC Hwy 21 to Broadway Avenue (Aurora)	Shared Use Path	3.0	Long-Range
215 th Street	466 th Avenue to Medary Avenue S	Shared Use Path	5.0	Long-Range
469 th Avenue	8 th Street S to 215 th Street	Shared Use Path	2.0	Long-Range
469 th Avenue	8 th Street S to 215 th Street	Shared Use Path	2.0	Long-Range
470 th Avenue	26 th Street S to 32 nd Street S	Separated Bike Lane (Optional Shared Use Path)	0.5	Long-Range
472 nd Avenue	32 nd Street to BC Hwy 24	Separated Bike Lane (Optional Shared Use Path)	2.0	Long-Range

Short-Term (<2031) Mid-Term (2031-2040) Long-Range (2041+)

Safety Priority Network
(City of Brookings)
Tier 1 & 2 Locations



- City Limits
- City Park & Greenspace
- All Way Stop-Control Intersections
- Signalized Intersections
- Interstate
- US Highways
- State Highways
- County Roads
- City Road
- Township Roads

Safety Priority Network

Intersections

- Tier 1 - High Priority
- Tier 2 - Medium Priority
- Tier 3 - Low Priority

Segments

- Tier 1 - High Priority
- Tier 2 - Medium Priority
- Tier 3 - Low Priority

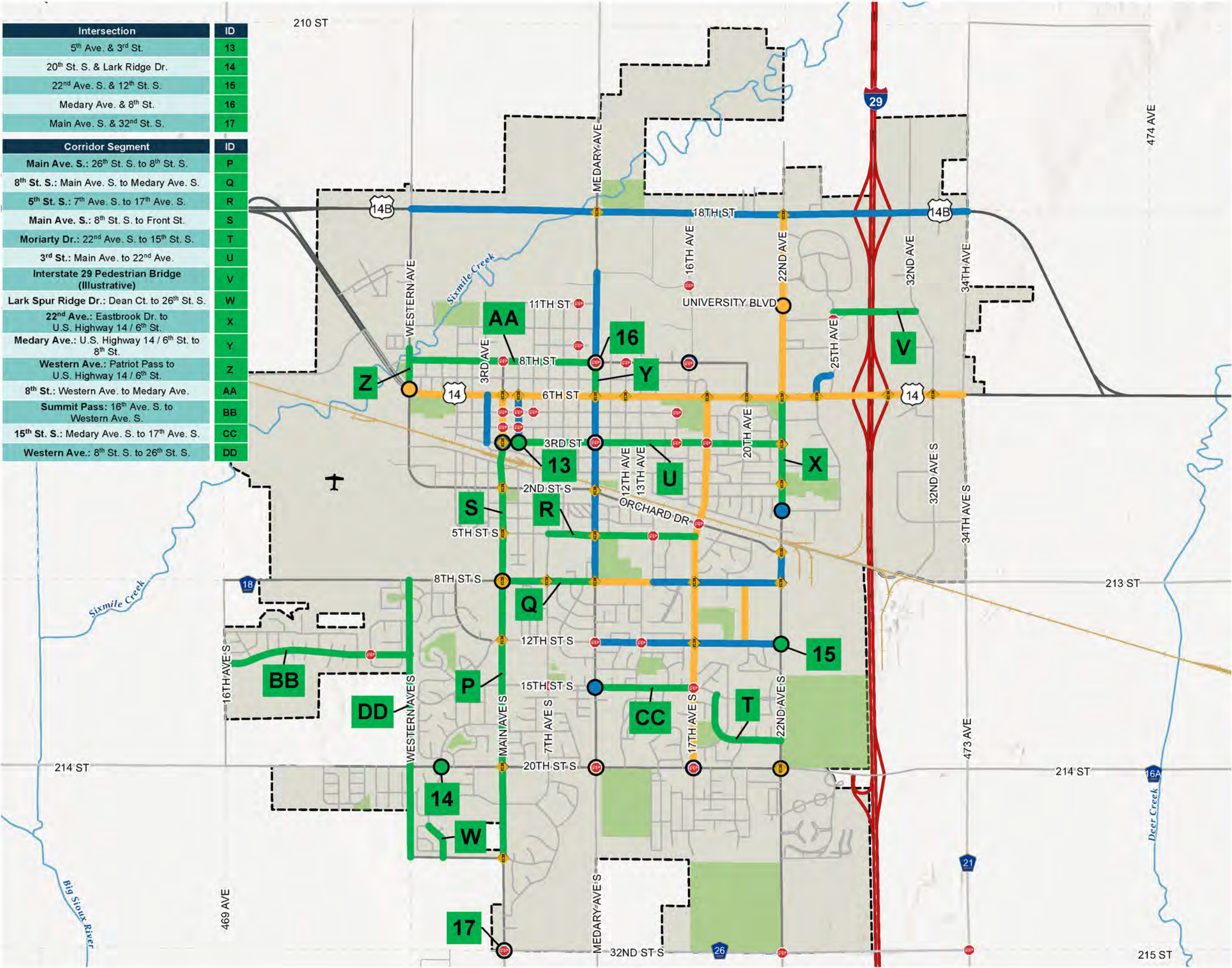
Note: The Safety Priority Network (SPN) reflects locations that were identified in the High Injury Network (HIN), Systemic Risk Network (SRN), and/or through public and stakeholder feedback. SPN intersections and corridor segments are compiled in the Brookings Area Safety Action Plan (SAP) as potential safety improvement project locations.

0 1 Miles



Figure 95a

Safety Priority Network
(City of Brookings)
Tier 3 Locations



- City Limits
- City Park & Greenspace
- All Way Stop-Control Intersections
- Signalized Intersections
- Interstate
- US Highways
- State Highways
- County Roads
- City Road
- Township Roads

Safety Priority Network

Intersections

- Tier 1 - High Priority
- Tier 2 - Medium Priority
- Tier 3 - Low Priority

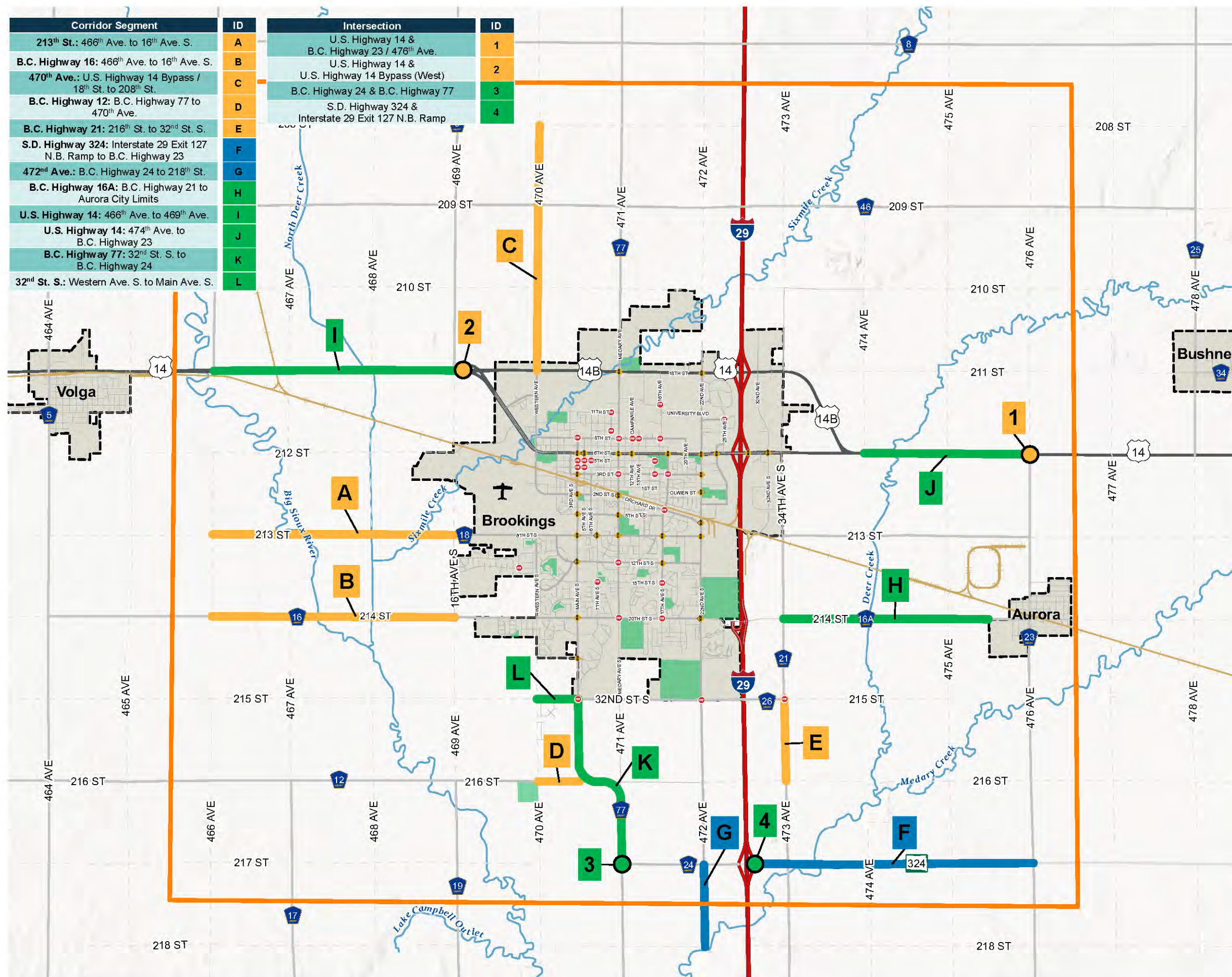
Segments

- Tier 1 - High Priority
- Tier 2 - Medium Priority
- Tier 3 - Low Priority

Note: The Safety Priority Network (SPN) reflects locations that were identified in the High Injury Network (HIN), Systemic Risk Network (SRN), and/or through public and stakeholder feedback. SPN intersections and corridor segments are compiled in the Brookings Area Safety Action Plan (SAP) as potential safety improvement project locations.



Figure 95b



Safety Priority Network (Brookings Growth Areas)

- Study Area
- City Limits
- City Park & Greenspace
- All Way Stop-Control Intersections
- Signalized Intersections
- Interstate
- US Highways
- State Highways
- County Roads
- City Road
- Township Roads

Safety Priority Network - Growth Areas

Intersections

- Tier 1 - High Priority
- Tier 2 - Medium Priority
- Tier 3 - Low Priority

Segments

- Tier 1 - High Priority
- Tier 2 - Medium Priority
- Tier 3 - Low Priority

Note: The Safety Priority Network (SPN) reflects locations that were identified in the High Injury Network (HIN), Systemic Risk Network (SRN), and/or through public feedback. SPN intersections and corridor segments are compiled in the Brookings Area Safety Action Plan (SAP) as potential safety improvement project locations in future Brookings growth areas or by agency partners.

0 2 Miles



Figure 96



13.2 Supporting Recommendations

Roadway Design Standards

The Roadway Design Standards section highlights key elements related to typical street sections, complete street elements, road diets, traffic operations, and access. It is recommended that the City of Brookings:

- Adopt a Complete Streets Ordinance to formalize the City's commitment to a complete streets approach to providing safe, efficient, and connected travel for all modes of travel.
- Incorporate elements from the BATP design standard recommendations into the City of Brookings' Design Standards to provide a robust, consistent framework for future transportation improvements.

Pavement Management

It is recommended that the City of Brookings conduct a pavement condition survey every 3 to 5 years to establish a baseline of current pavement conditions and develop a data-driven maintenance and rehabilitation plan.

Joint Agency and Jurisdictional Transfer Projects

It is recommended that the City of Brookings continue to partner with the SDDOT, City of Aurora, City of Volga, and Brookings County on growth area projects to support future development and provide a safe, efficient, and connected transportation network for all modes of travel.

Candidate corridor projects for future jurisdictional transfer were noted in the project tables to encourage consideration of a cost-share to bring the roadway up to good or long-range condition and jurisdictional transfer to the City of Brookings.

To help facilitate future transfers and questions on roadway jurisdiction, it is recommended that growth boundary resolutions be in place between the City of Brookings and City of Aurora and City of Brookings and City of Volga.

Roundabouts, Alternative Intersections, and Innovative Multimodal Elements

As part of the City's commitment to complete streets and transportation safety for all modes of travel, alternative intersections and innovative multimodal elements within or adjacent to intersections should continue to be considered and evaluated during a project's planning phase. A roundabout is one example of alternative intersection, which, depending on the setting, may bring several operational and safety benefits to the intersection for all modes of travel.

Safe Routes to School Plan

Based on guidance from the BATP Bicycle and Pedestrian Plan, it is recommended that the City of Brookings complete a Safe Routes to School Plan to address specific school corridor multimodal improvements, establish school route plans with the Brookings School District, and assist with any school programming efforts to help child walk or bike to school safely.

Planning for the Project Development Process

It is important to understand the typical project development process for larger projects and account for the timeline to plan, study, evaluate, and design the future project. An overview of this process is highlighted in **Figure 97**. This process was a key consideration when considering project priorities and assigning a time band that is both feasible and attainable for successful implementation.

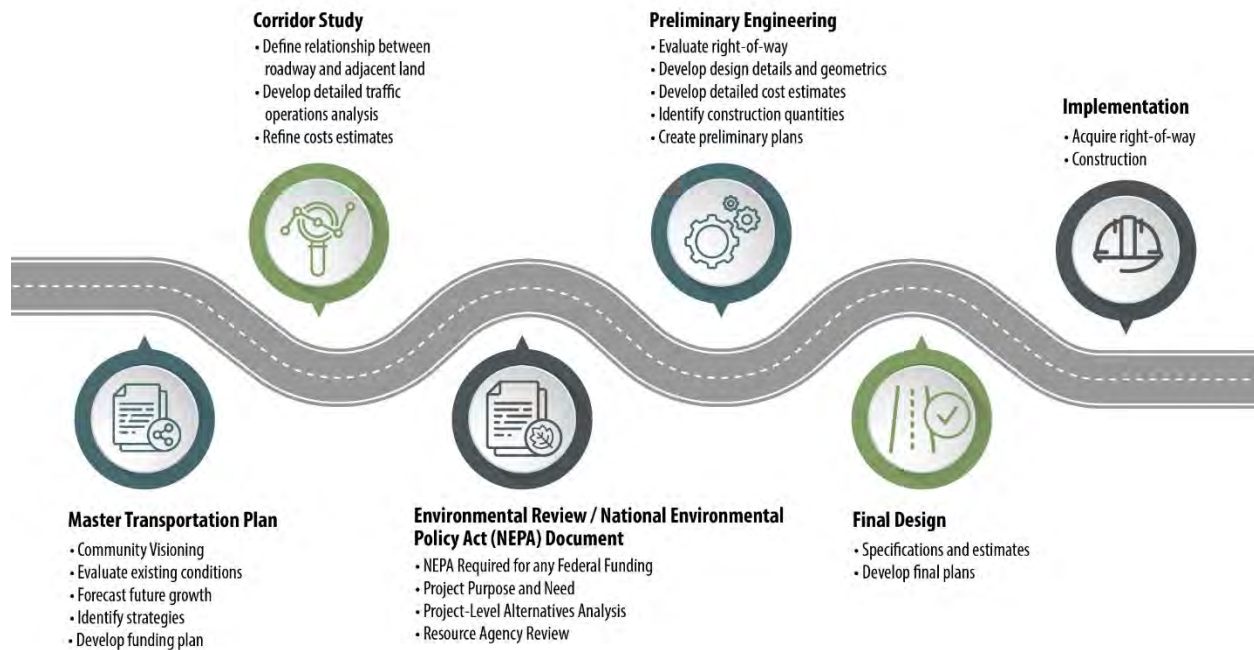


Figure 97: Typical Project Development Process

Brookings Growth Area

While the Implementation Plan focuses on projects within and surrounding the developed and developing areas of Brookings, it is important to recognize Brookings's long-range growth area. Subsequent area transportation plan updates will incorporate additional projects that expand into this area to support the community's planned growth. Until then, the Major Roads Plan (**Figure 40**) and the Brookings 2040 Comprehensive Plan provide a glimpse into the long-range transportation network within the City's planning area.

13.3 Recommended Programs to Consider for U.S. Department of Transportation Discretionary Grant Funding

It is recommended that the City of Brookings continue to pursue U.S. Department of Transportation discretionary grant funding, particularly for projects that are of multi-jurisdictional importance in the regional transportation network and/or address multimodal connectivity, long-range operations and safety, freight movement, and economic development needs. This funding will be important in the ultimate feasibility of some projects as well as addressing unforeseen challenges related to funding shortfalls, increased project costs, and/or accelerated transportation needs. Recommended U.S. Department of Transportation discretionary grant programs for the City of Brookings include:

- Rural Surface Transportation Program
- Reconnecting Communities Pilot Program
- Safe Streets and Roads for All (SS4A) Program

These grants typically have minimum funding levels, so it may be beneficial to package multiple projects together that address area, corridor, or similar types of needs to meet requirements. Further, incorporating multimodal elements and addressing multiple key needs associated with a specific grant are often beneficial during the selection process.

It is important to position for grants ahead of a Notice of Funding Opportunity (NOFO) being published. This allows for developing initial grant application components and identifying which grants may be the best fit for the desired projects. Further, this encourages flexibility to meet any new or modified requirements presented in the current NOFO. City of Brookings should also weigh any additional requirements associated with the application and delivering the project, as those requirements may be beyond the typical project duties and reflect an additional cost.

13.4 Recommended Progress Monitoring and Transparency

It is recommended that the City of Brookings monitor progress of recommendations within the Brookings Area Transportation plan, with consideration to the following:

1. Post the BATP to the City of Brookings website
2. Track progress of implementing BATP recommendations
3. Complete a review of the BATP document, at minimum, every 10 years
4. Update the BATP document as needed to reflect modified policies and changed conditions
5. Incorporate policy and design guidance recommendations into local policy and procedures
6. Assess new technologies to improve safety and operations of the multimodal transportation network

Appendix A: Public Engagement Summaries

Appendix B: Crash History Review Memo

Appendix C: Traffic Forecasts and Operations Analysis Memos

Appendix D: Intersection Traffic Control Evaluations Memo

Appendix E: Road Diet Evaluations Memo

Appendix F: Special Event Assessments for Traffic Conditions and Pedestrian Safety Memo

Appendix G: Brookings Area Safety Action Plan