City of Harrisburg

Master Transportation Plan

Harrisburg, South Dakota

June 2022

The preparation of this report has been financed in part through grants from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under State Planning and Research Program, Section 505 of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

The South Dakota Department of Transportation provides services without regard to race, color, gender, religion, national origin, age or disability, according to provisions contained in SDCL 20-13, Title VI of the Civil Rights Act of 1964, the Rehabilitation Act of 1972, as amended, the Americans With Disabililities Act of 1990 and Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, 1994. To request additional information on the SDDOT's Title VI/Nondiscrimination policy or to file a discrimination complaint, please contact the Department's Civil Rights Office at 605-773-3540.

Contents

Figures

Tables

Introduction

The City of Harrisburg and the surrounding area is a fast growing community in Lincoln County, South Dakota. Harrisburg was once a small farming community that grew slowly until the 1970's when the first of several small residential subdivisions were approved. Harrisburg quickly began to grow into a "bedroom community" for Sioux Falls. The study area grew modestly for the next few decades until the housing boom of the 2000's occurred, with the City's population soaring from less than 1,000 to approximately 7,000 residents today.

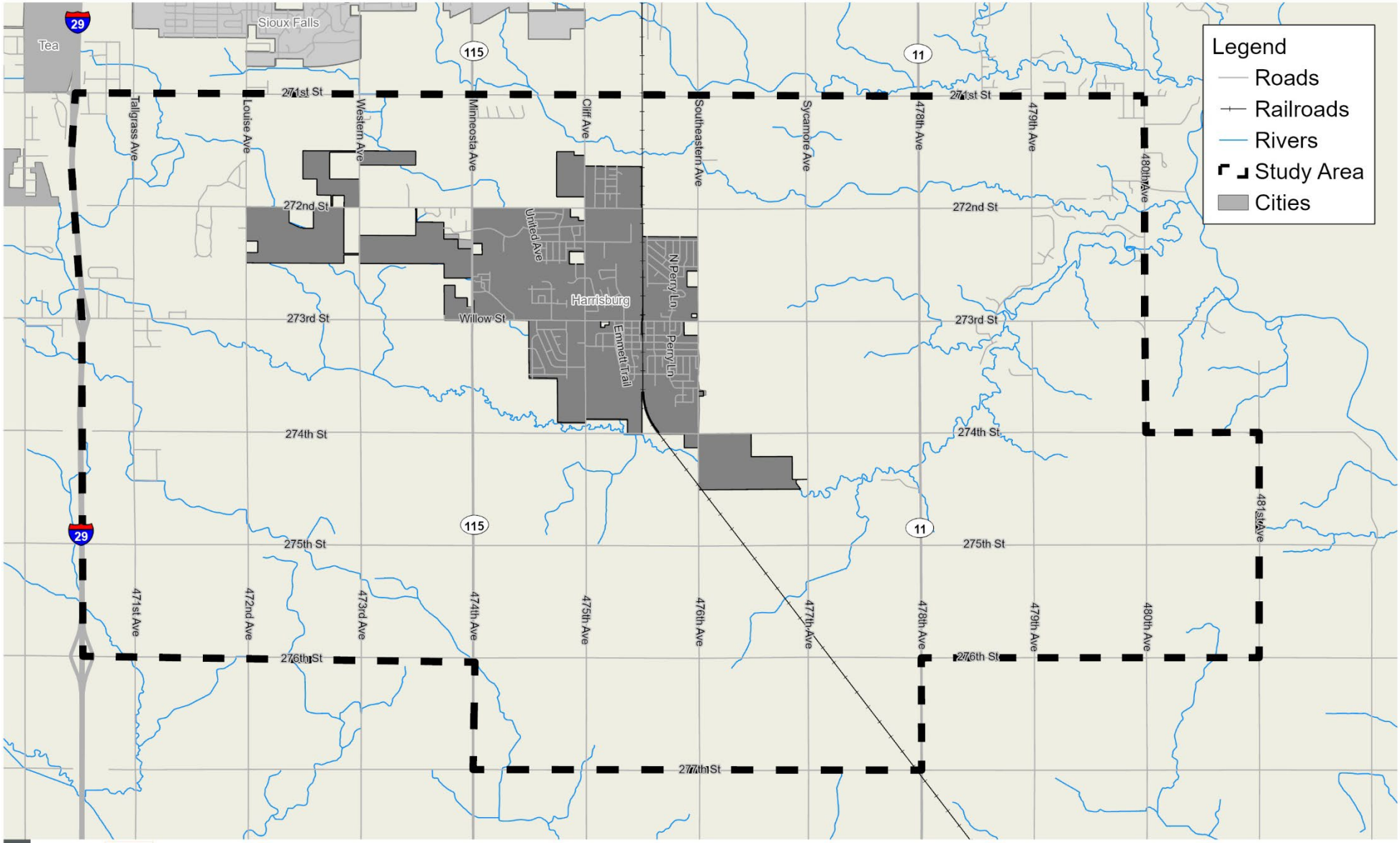
With its proximity to the Sioux Falls metropolitan area, traffic levels and patterns are anticipated to change over time as the city and surrounding study area continue to grow. As such, the City of Harrisburg, Sioux Falls Metropolitan Planning Organization (MPO), and the South Dakota Department of Transportation (SDDOT) have developed this transportation plan as an investigation of baseline conditions and a plan for future transportation improvements for the area. As the Harrisburg area continues to develop into the future, it is important to plan for an effective transportation system that can provide safe mobility for all users. Significant travel growth is anticipated between today and 2045, spurring the need for a plan to address the needs for new roadways and pedestrian and bike facilities.

The purpose of the Harrisburg Master Transportation Plan (MTP) is to provide the following.

- **Establish a picture of baseline conditions**. This informs the issues the study area currently faces and collects public and stakeholder input on current transportation needs. This includes evaluating anticipated future transportation system needs.
- **Establish recommendations for future improvements.** This include a set of recommended street, bicycle, and pedestrian improvement projects and a set of standards and policy recommendations to provide for safe and efficient growth in the system.

The study area is shown in **Figure 1**.

Figure 1: MTP Study Area



Goals and Objectives

The vision for Harrisburg's Master Transportation Plan (MTP) was developed through input received from the community and stakeholders during engagement events and guidance from city staff. This vision articulates the goals and objectives for the transportation system while guiding future transportation decision-making based on the values of the community.

Master Transportation Plan Vision Statement

The vision statement for the Harrisburg MTP is below:

*The Harrisburg Master Transportation Plan provides the building blocks for a **safe, efficient, and reliable** transportation system that is **accessible** for all users and supports a growing community by promoting local **economic development** goals.*

Master Transportation Plan Goals and Objectives

Table 1 presents the MTP goals and objectives. The goals articulate important emphasis areas for the MTP to address. Objectives are specific and actionable items that the MTP should promote. The MTP goals support the Sioux Falls MPO's Long Range Transportation Plan, the SDDOT Long Range Transportation Plan, and Federal Transportation Planning Factors.

Table 1: MTP Goals and Objectives

Goal Area	Objectives
Safety	Reduce the frequency of vehicle, bicycle, and pedestrian crashes
Economic	Improve freight and multimodal connections to commercial and recreational land uses
Efficiency and Reliability	Limit recurring congestion
	Provide reliable freight corridors
Maintain the System	Devote sufficient resources and plan for maintaining the transportation system in a state of good repair
Bicycle and Pedestrian Connections	Improve bicycle / pedestrian facility connections
Placemaking	Construct context-sensitive transportation improvements consistent with adjacent development
	Support city development goals through street network improvements and proposed policies and standards
Accessibility	Provide continuous collector and local street networks and grids
	Incorporate bicycle and pedestrian infrastructure into street projects
Resiliency	Reduce the impacts of the transportation system on natural resources
	Increase the system's ability to recover from natural and man-made events

Community Profile

Population Growth

The population of Harrisburg has grown very rapidly since 2000, as indicated in **Table 2**. Harrisburg experienced modest growth between 1980 and 2000; population growth then exploded between 2000 and 2010 as the population increased by over 300 percent. The next decade saw another period of significant growth as Harrisburg added 2,000 more residents.

Housing Characteristics

Just over 2,000 households are found within Harrisburg, with an average household size of 3.1 occupants. Most of Harrisburg's homes are occupied by the owner, while roughly 15 percent are rental units as seen in **Table 3**.

Employment Characteristics

Harrisburg's workers are employed in a range of industries, from agriculture to professional services. 2020 American Community Survey (ACS) data estimates that the largest share of Harrisburg's workers are employed in educational services, health care, and social assistance. The next highest percentage of workers are in information, finance, insurance, and real estate while the lowest percentage workers are in public administration. **Table 4** summarizes the breakdown of employment types for Harrisburg's workers.

Table 2: Harrisburg Population Growth, 1980 - 2020

Year	Population	Percent Change
1980	558	-
1990	727	30.3%
2000	960	32.0%
2010	4,089	325.9%
2020	6,732	64.6%

Source: U.S. Census Bureau Decennial Census, 1980 – 2020

Table 3: Housing Characteristics for Harrisburg Residents

Housing Characteristics	
Households	2,069
Average Household Size	3.1
Percent Owner-Occupied	85.9%
Percent Renter-Occupied	14.1%

Source: American Community Survey 2020 5-Year Estimates

Commuting Characteristics

Over 90 percent of Harrisburg's workers use a personal vehicle or carpool to get to work, while just over 6 percent are estimated to work from home, as seen in **Table 5**. Other than personal vehicle use or working from home, a small proportion of workers walk to their place of employment.

The vehicle-oriented nature of Harrisburg is further supported by data for vehicle accessibility, which is shown in **Table 6**. Based on 5-year ACS estimates, over 85 percent of households have access to at least 2 vehicles and 100 percent of households have access to at least 1 vehicle.

Journey to work data sourced from the ACS are shown in **Table 7** and indicate that most commute trips take 25 minutes or less for Harrisburg workers, with the median commute trip taking about 19 minutes. Less than 2 percent of workers have a commute beyond 45 minutes.

Further detail on commute patterns of Harrisburg's workforce were obtained from the U.S. Census Bureau's Longitudinal Employer-Household Dynamics (LEHD) Program. **Table 8** shows LEHD data for the year 2019 that indicates more Harrisburg residents leave the city for work than outside workers come into Harrisburg, with 91 percent of Harrisburg residents traveling outside of the community for their job. LEHD data estimates 312 community members live and work in Harrisburg, with approximately 84 percent of jobs held by individuals who live outside the city. **Figure 2** provides a graphical depiction of the inflow and outflows.

Table 4: Employment Characteristics for Harrisburg Workers

Industry	Percent of Workers
Agricultural, Forestry, Fishing, Hunting, and Mining	3.0%
Construction	6.9%
Manufacturing	10.0%
Wholesale Trade	4.0%
Retail Trade	7.9%
Transportation and Warehousing, and Utilities	6.4%
Information, Finance, Insurance, and Real Estate	13.8%
Professional, Scientific, Management, and Administrative	6.2%
Educational Services, Health Care, and Social Assistance	31.2%
Arts, Entertainment, Recreation, Accommodation, and Food Service	3.5%
Other Services (except Public Administration)	4.8%
Public Administration	2.3%

Source: American Community Survey 2020 5-Year Estimates

Table 5: Means to Work for Harrisburg Workers

Means to Work	Percent of Workers
Car, Truck, or Van	92.6%
Drove Alone	88.6%
Carpool	5.4%
Public Transportation	0.0%
Walked	0.7%
Biked	0.0%
Taxicab, Motorcycle, or Other Means	0.0%
Worked from Home	6.7%

Source: American Community Survey 2020 5-Year Estimates

Table 6: Vehicles Available to Harrisburg Workers

Vehicles Available	Percent of Households
0 Vehicles Available	0.0%
1 Vehicle Available	13.7%
2 Vehicles Available	46.7%
3 or More Vehicles Available	39.6%

Source: American Community Survey 2020 5-Year Estimates.

Table 7: Travel Time to Work for Harrisburg Workers

Travel Time to Work	Percent of Workers
Less than 10 Minutes	16.0%
10 to 14 Minutes	10.2%
15 to 19 Minutes	25.4%
20 to 24 Minutes	20.8%
25 to 29 Minutes	10.6%
30 to 34 Minutes	11.3%
35 to 44 Minutes	4.0%
45 to 59 Minutes	0.4%
60 or More Minutes	1.5%
Mean Travel Time to Work (Minutes)	18.8

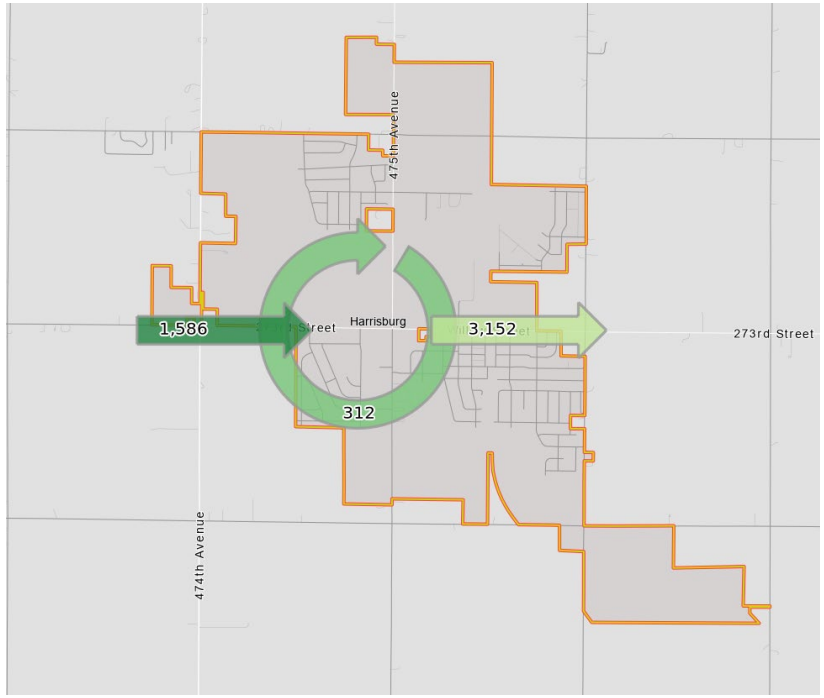
Source: American Community Survey 2020 5-Year Estimates

Table 8: Commuting Inflow and Outflow for Harrisburg Workers

Harrisburg Workers	Number	Percent
Employed in Harrisburg	1,898	
Employed in Harrisburg but Live Outside the City	1,586	83.6%
Employed and in Harrisburg	312	16.4%
Harrisburg Residents		
Live in Harrisburg	3,464	
Live in Harrisburg but Employed Outside the City	3,152	91.0%
Live and Employed in Harrisburg	312	9.0%

Source: American Community Survey 2020 5-Year Estimates

Figure 2: Commuting Inflow and Outflow for Harrisburg



Public Engagement

Public engagement was an integral part of the MTP development, with multiple events held through the planning process. The events held included:

- Master Transportation Plan Survey
- Public Open Houses
- Virtual Stakeholder Meetings

The feedback received during these public engagement events guided the development of Plan goals and objectives as well as strategy recommendations.

Appendix A contains a complete summary for each public engagement event.

Master Transportation Plan Survey

The Master Transportation Plan Survey was a virtual engagement opportunity that was available on the MTP project website from November 19, 2021 through December 31, 2021. The survey was designed to collect feedback from residents regarding the current transportation needs and issues facing the community. The survey was promoted through social media and the November 2021 in-person public meeting. The survey collected 433 responses. **Table 9** and **Table 10** summarize the main takeaways from the survey.

Table 9: Survey Respondent Votes for MTP Focus Areas

Rank	Focus Area	Percentage of Votes
1	Efficiency and Reliability	44%
2	Safety	41%
3	Economic	32%
4	Accessibility	27%
5	Bicycle and Pedestrian Connections	23%
6	Resiliency	18%
7	Placemaking	17%
8	Innovative	8%

Table 10: Survey Respondent Votes for Top Goal / Issue Areas

Rank	Goal/Issue	Percentage of Votes
1	Improve traffic flow on area streets during rush hour	82%
2	Ease of travelling to work, school, shopping, and recreational areas in Harrisburg	50%
3	Adding/improving sidewalks and pedestrian crossings	41%
4	Improve the physical condition of roadways and sidewalks	34%
5	Improve traffic safety for automobiles, bicycles, and pedestrians	21%
6	Adding/improving existing biking facilities (bike lanes, trails, bike racks, etc.)	20%
7	Improving weather response such as plowing snow	9%
8	Reduce traffic blockages and noise from existing rail crossings	6%
9	Adding public transportation options	4%
T-10	Add availability of new transportation options like bike sharing, ridesharing (Lyft, Uber, etc), and electric scooters	2%
T-10	Improve the safety of railroad crossings	2%

Public Open Houses

Two Public Open House events were held during the MTP development process. These events invited community members to visit with project staff to learn more about the planning process and give input regarding transportation needs and opportunities as well as potential strategies for implementation.

Open House #1

Open House #1 was held on November 18, 2021 at Liberty Elementary School. This event informed residents of the plan development process and gave attendees the opportunity to share their input regarding the needs of the transportation system and focus areas for the MTP. This Open House event had approximately 25 attendees.

The Open House had multiple stations for attendees to visit, with several stations providing information about the plan development process and the baseline conditions for the existing transportation system. Interactive stations asked participants to vote on MTP focus areas and comment on what they view as the most pressing issues and opportunities for the multimodal transportation system.

Figure 3 and **Figure 4** summarize the main takeaways from Open House 1.

Figure 3: Open House #1 Attendee MTP Goal Area Votes

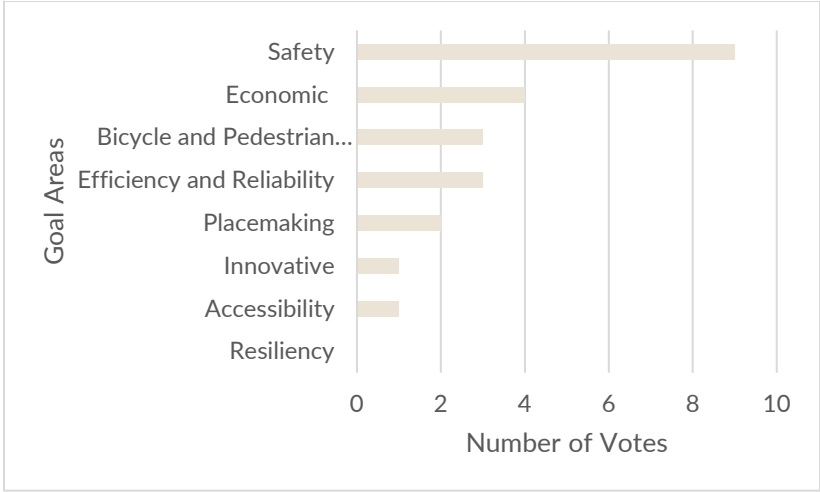
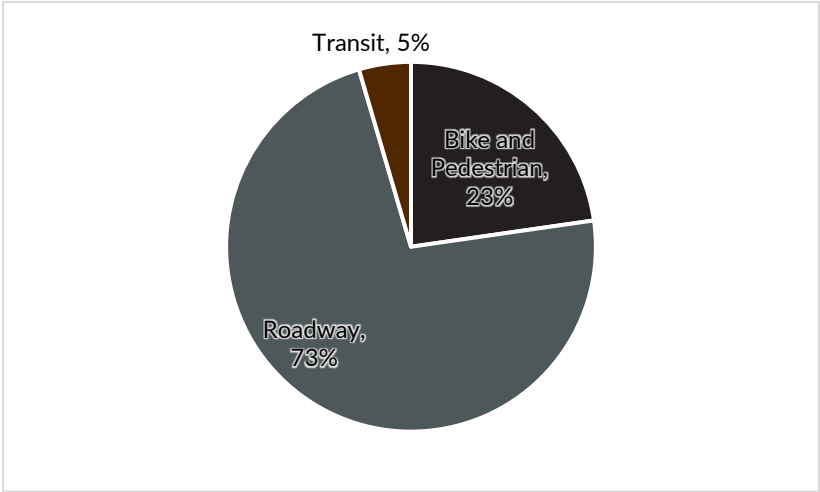


Figure 4: Open House #1 Attendee Modal Issues and Opportunities Responses



Open House #2

Open House 2 was held on March 22, 2022 and was also hosted at Liberty Elementary School. This Open House event presented initial plan recommendations and sought feedback from the community on MTP recommendations and the potential roadway, bicycle, and pedestrian strategies developed by the project team. The Open House had approximately 35 attendees.

Similar to Open House 1, this event had multiple stations for participants to visit and get information pertaining to future transportation conditions, such as forecasted traffic volumes and operations, and recommended improvements for the multimodal system that aim to address current transportation needs.

Table 11 summarizes recommendations received from attendees at Open House 2.

Stakeholder Meetings

A series of virtual stakeholder meetings were held during the MTP development process. Stakeholders were identified by city staff and include representatives of South Dakota Game, Fish, and Parks, Lincoln County, South Eastern Council of Governments, Harrisburg School District, Harrisburg Chamber of Commerce, Southeastern Electric Cooperative, Xcel Energy, and local land developers. These meetings informed stakeholders of the plan process and allowed the study team to hear issues and opportunities identified by stakeholders. Two sessions were held for each stakeholder meeting; these sessions are summarized below.

Table 11: Open House #2 Attendee Recommendations for System Improvements

Comment	Mode
Resurface Cliff from half mile north of 272nd to Willow Street	Roadway
Gas station at Cliff / 272nd--add turn lane here	Roadway
Short-term priority should be to widen Cliff Ave to 3 lanes	Roadway
Don't like roundabout at Cliff / Willow	Roadway
Widen Willow west of Cliff before the section east of Cliff	Roadway
Priority for Cliff east of tracks	Roadway
Four way stop at Honeysuckle and Shebal isn't effective, need a signal	Roadway
Streetlights needed at intersection of Willow and Highway 11. Safety issue due to lack of lighting.	Roadway
Safety hazard to make road go through northeast of High School. Keep it an uninterrupted trail	Bike / Pedestrian
Crosswalk across Cliff and Willow to retail sites and schools	Bike / Pedestrian

Stakeholder Meeting #1

The first series of Stakeholder Meetings were held on December 15 and 16, 2021. As these meetings were planned as a supplement to Public Open House 1, the format and information presented was the same.

Stakeholders were asked to vote on their priority focus areas for the MTP, which are shown in **Figure 5**. Stakeholders were also asked to comment on transportation issues and opportunities through leaving comments on a virtual map; the breakdown of comments by mode are shown in **Figure 6**.

Stakeholder Meeting #2

The second series of Stakeholder Meetings were held on April 6 and April 7, 2022. Like the first Stakeholder Meetings, these were planned to supplement the second Public Open house held in March 2022; the format and information presented was the same.

Stakeholders in attendance were invited to discuss the types of bicycle and pedestrian treatments they felt are appropriate for implementation within Harrisburg. A second activity asked attendees to comment on an aerial map the types of solutions they believe can address existing transportation issues.

Figure 5: Stakeholder Meeting #1 MTP Focus Area Votes

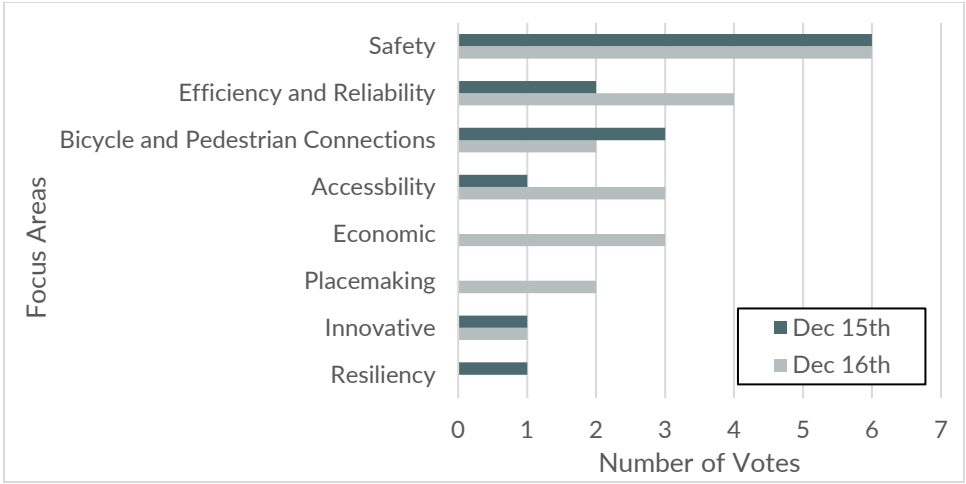
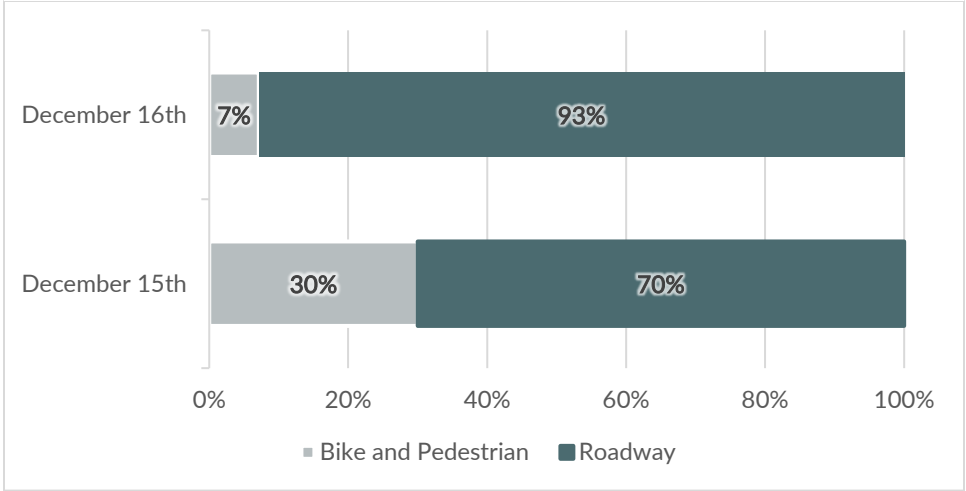


Figure 6: Stakeholder Meeting #1 Meeting Map Comments by Mode



Baseline Conditions

The existing Harrisburg area transportation system was reviewed to establish the multimodal network's baseline conditions. A review of existing traffic operations and safety, the bicycle and pedestrian system, transit conditions, freight conditions, and rail facilities was conducted as part of the baseline conditions analysis. These baseline conditions inform the evaluation and selection of alternatives recommended to the City of Harrisburg for future implementation.

Existing Road Network

The roadway network within the MTP study area is made up of segments and corridors with varying degrees of mobility and accessibility. Each road segment is classified based on its function within the network using a hierarchical system ranging from roadways with the greatest degree of mobility to those with the greatest degree of accessibility. **Table 12** summarizes the roadway classification system. **Figure 7** illustrates the city's current roadway functional classification system.

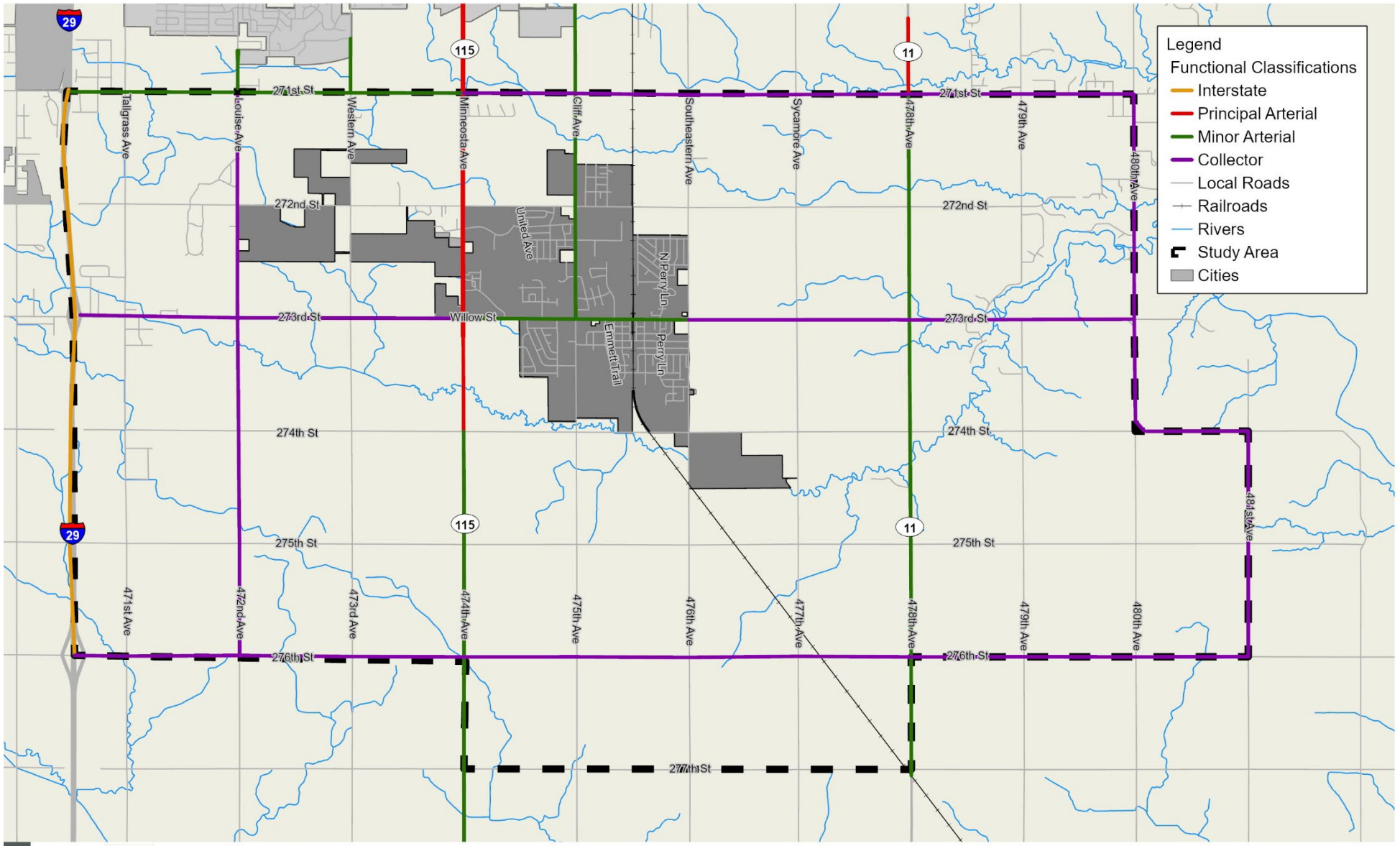
The study area street network is currently configured to support a small city and surrounding rural area. Given the extensive development and growth pressures the study area is experiencing and will continue to experience through the study area, the street network must change over the planning horizon to accommodate increased mobility and safety demands from urban scale development.

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.

Table 12: Functional Classification Descriptions

Functional Classification	Description
Interstate	Provide highest degree of mobility but most limited accessibility. Designed for long-distance travel at higher speeds between major urban areas.
Principal Arterial	Provide a high degree of mobility within major centers of metropolitan areas (including Harrisburg), while also providing a low level of direct access to adjacent land uses.
Minor Arterial	Provide connections to Principal Arterial routes and facilitate trips of moderate length. Provide greater access to land uses than Principal Arterials.
Collector	Provide a connection between local roads and the arterial road network. Typically have the lowest degree of mobility and the highest degree of access.
Local	Provide direct access to adjacent land uses. Do not carry through traffic.

Figure 7: Existing Functional Classification



Traffic Operations

A baseline traffic operations assessment was conducted to identify operational issues and areas of recurring congestion along study area corridors. A planning level volume-to-capacity (V / C) approach was used, which estimates peak hour traffic operations based on existing daily traffic volumes and design capacities for the area's roadways. This high-level approach assigns each corridor a "Level of Service" (LOS) grade based on the ratio of traffic volume to design capacity; **Figure 8** summarizes the LOS definitions.

Design capacities within Harrisburg are based on the South Dakota Department of Transportation's (SDDOT) *Road Design Manual*. These standards set forth the number of lanes necessary to support operations on rural and urban roadways by defining capacity thresholds. **Table 13** shows these thresholds.

The results of the V / C analysis are shown in **Figure 9**. As shown, most study area roads are operating at LOS B or better. Several segments are operating at LOS D or worse, with the lowest observed being LOS F. These lower-scoring segments are:

- Cliff Avenue, from 273rd Street to 271st Street
- Willow St (273rd Street), from 476th Street to Highway 115

Figure 8: Level of Service Definitions

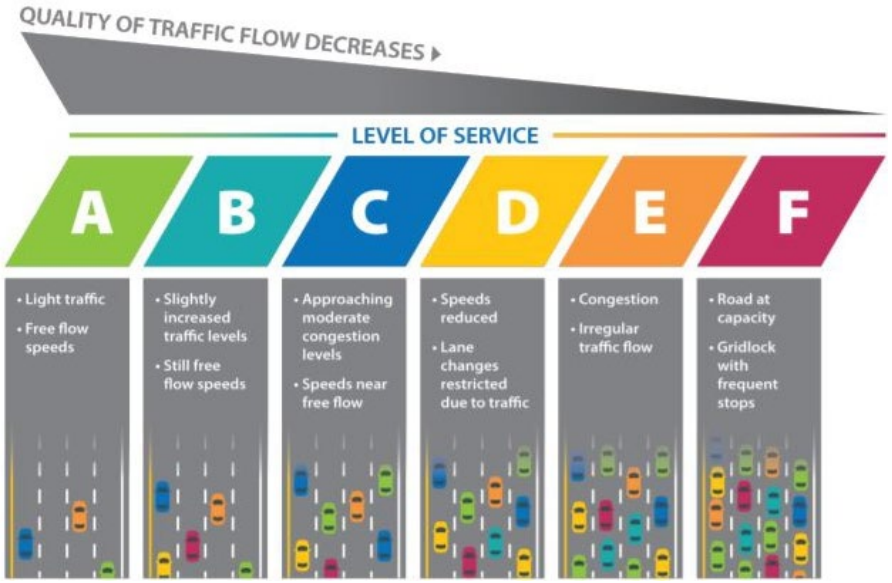
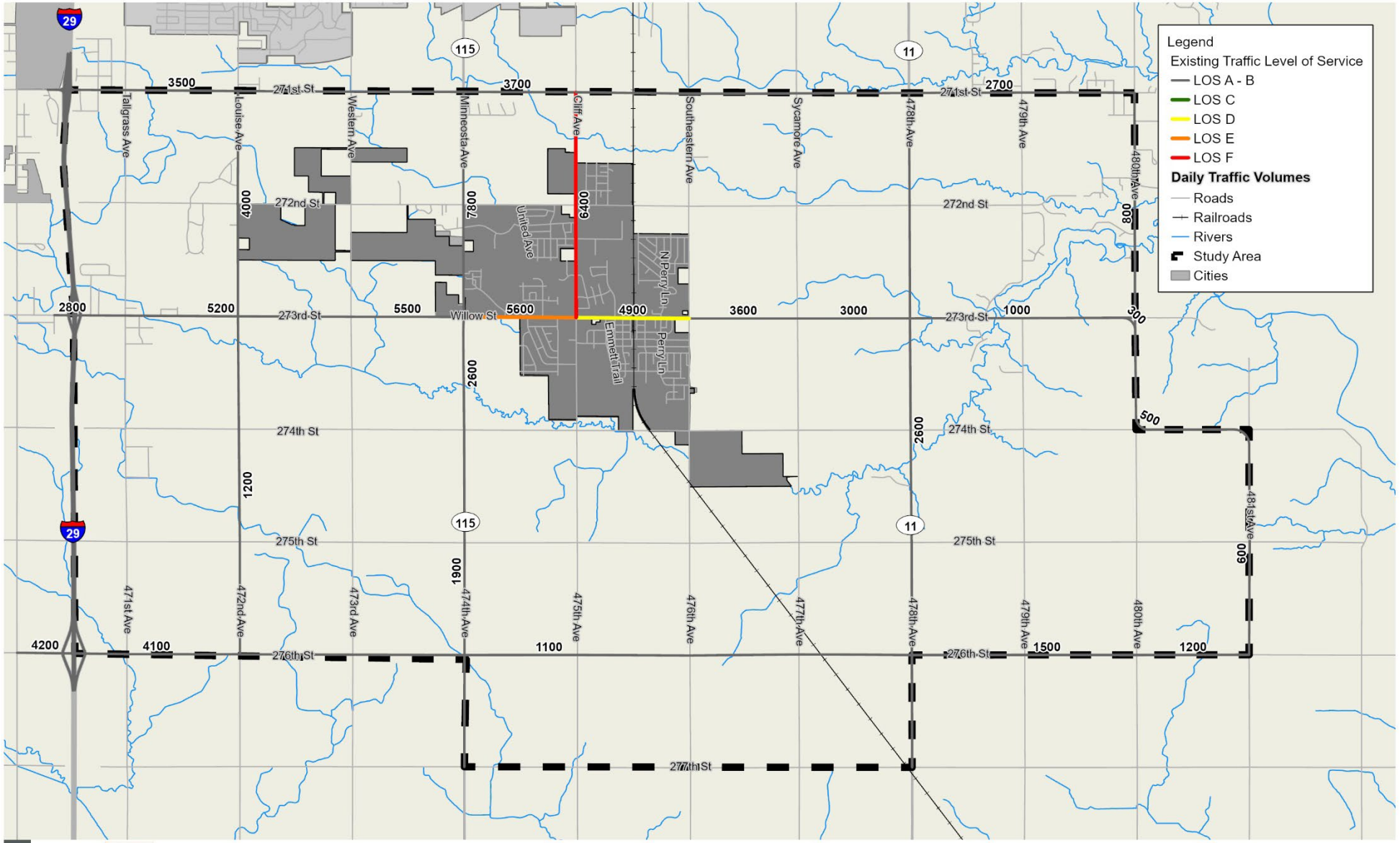


Table 13: South Dakota Department of Transportation ADT Thresholds

Total Number of Lanes	Total Design Year (Average Daily Traffic)	
	Rural Level	Urban Level
2	< 8,000	< 6,000*
3		6,000* to 16,000
4	8,000 to 20,000	
5		16,000 to 30,000
6	> 20,000	> 30,000

Source: South Dakota Department of Transportation
*Modified from the SDDOT Road Design Manual level of 2,500

Figure 9: Existing Volume-to-Capacity Analysis



Traffic Safety

Crash data for years 2016 through 2020 were analyzed to identify high-crash locations, with the aim of proposing appropriate safety treatments. The analysis removes the skewing effect of Interstate 29 (I-29) crashes to focus on the non-interstate crash densities in the study area. The findings of this analysis are summarized in **Table 14**, which shows annual crash trends.

Annual Crash Trends

Between 2016 and 2020, 621 crashes occurred on the non-Interstate system in the Harrisburg area as shown in **Table 14**. Annual crashes fluctuated during this 5-year period, with a peak of 157 crashes in 2019 and a low of 96 crashes in 2017.

Four fatal crashes occurred between 2016 and 2020 with an average of 1 crash of this severity happening each year. Crashes resulting in injury totaled 143 during the 5-year period, with the highest number occurring in 2018. Over 75% of crashes resulted in property damage only. The fatal crashes occurred at the following locations:

- 272nd Street & Southeastern / 476th Avenue
- 273rd Street, east of Western / 473rd Avenue
- Highway 11, north of 273rd Street
- Highway 115 & 276th Street

Table 14: Annual Crashes in the Harrisburg Area, 2016 - 2020

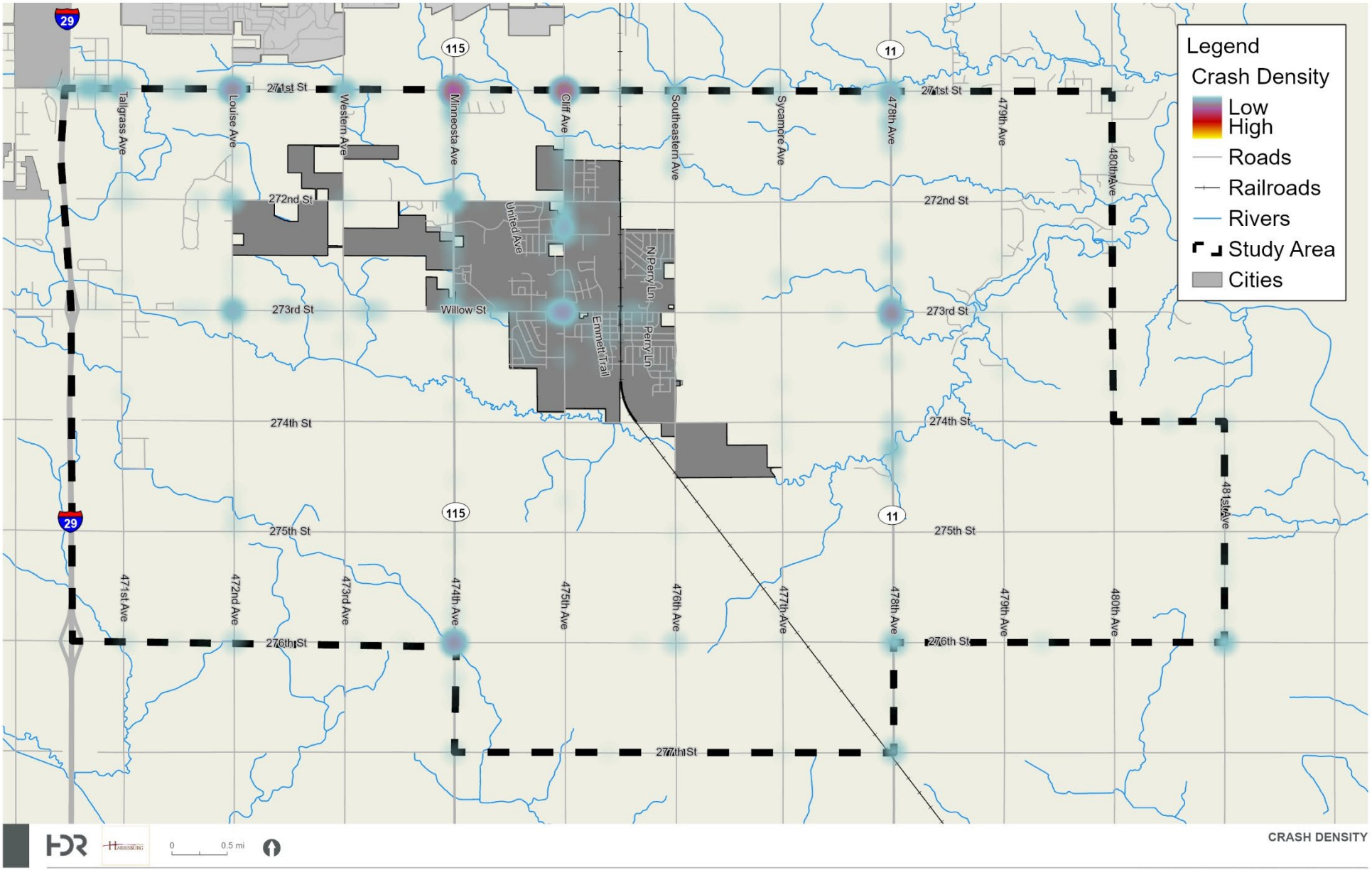
Year	Fatal	Injury	Property Damage Only	Total
2016	1	29	77	107
2017	1	24	71	96
2018	1	32	102	135
2019	0	29	128	157
2020	1	29	96	126
Total	**4**	**143**	**474**	**621**

Source: South Dakota Department of Public Safety

Crash Density

Crash density for the study area is shown in **Figure 10.** As seen in the figure, there were notably high crash densities on Highway 115 northwest of Harrisburg city limits as well as along Cliff Avenue in central Harrisburg. These roads carry higher levels of traffic, so they are expected to record higher frequencies of crash events.

Figure 10: Crash Density, 2016 - 2020



Intersection Crash Frequencies

An intersection safety analysis was conducted to identify locations that exhibited frequent crashes between 2016 and 2020; those intersections determined to have recorded high crash frequencies will be considered candidates for future improvements. **Table 15** summarizes the top 10 crash frequency intersections while **Figure 11** shows their locations within the study area.

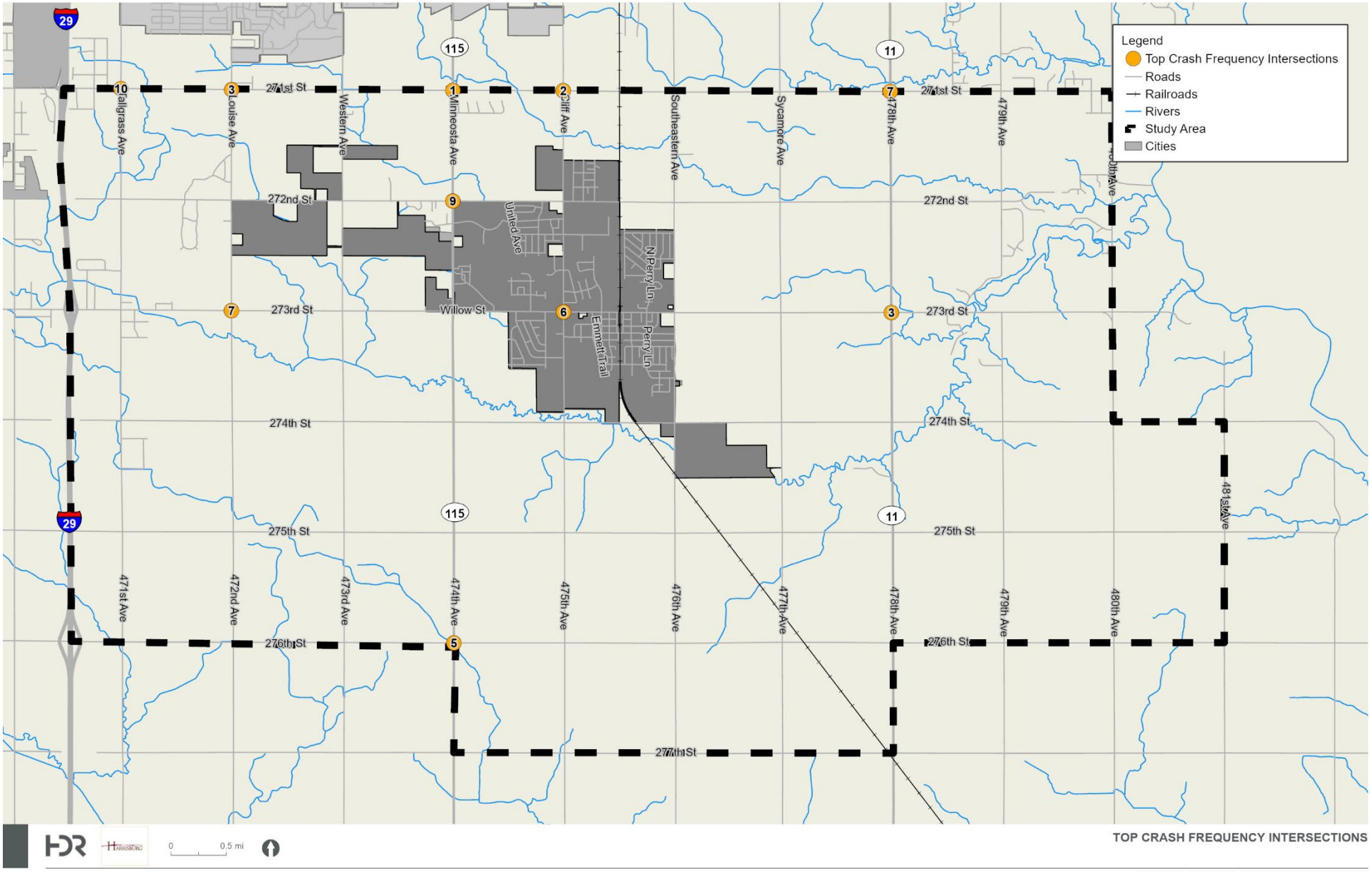
As seen in **Table 15**, the intersection of Highway 115 / 271st Street was associated with 31 crashes during the 5-year period of 2016 to 2020, more than the total crashes at any other location in the study area. The second highest location was Cliff Avenue and 271st Street, which recorded 28 crashes during this same period. Two intersections tied for the third highest crash total with 18 crashes recorded: 472nd Avenue / 271st Street and Highway 11 / 276th Street. The analysis indicates that 271st Street is associated with most of these high crash frequency intersections, which is not surprising as study area traffic volumes are highest along the north side of the study area. A second takeaway from **Table 15** relates to the rural nature of several intersections identified as a top crash frequency location and the higher design speeds of these roads. Potential safety improvement techniques are provided in **Appendix B**.

Table 15: Top 10 Crash Frequency Intersections

Rank	Intersection	Crash Frequency
1	Highway 115 / 271st Street	31
2	Cliff Avenue / 271st Street	28
3	472nd Avenue / 271st Street	18
3	Highway 11 / 273rd Street	18
5	Highway 115 / 276th Street	17
6	Cliff Avenue / Willow Street	14
7	472nd Avenue / 273rd Street	11
7	Highway 11 / 271st Street	11
9	Highway 115 / 272nd Street	10
10	471st Avenue / 271st Street	9

Source: South Dakota Department of Public Health

Figure 11: Top Crash Frequency Intersections, 2016 - 2020



Key Traffic Safety Locations

Key safety locations in the Harrisburg area identified through safety analysis and feedback from city staff and stakeholders include:

- Highway 115
- Highway 11
- Cliff Avenue
- 271st Street
- 472nd and Willow Intersection

These corridors will be reviewed for potential safety enhancements in later phases of the plan.

Bicycle and Pedestrian Safety

Crash data for years 2016 through 2020 was reviewed to assess safety for bicyclists and pedestrians in the City of Harrisburg. The 5-year crash data indicates that one crash involving a bicyclist occurred in 2016 and this crash resulted in injury. A single crash over 5-years does not indicate a pattern, other than reinforcing the need to plan for safe bicycle and pedestrian facilities for the study area.

Minor bicycle and pedestrian crashes, injuries, and property damage are typically not reported to law enforcement and therefore not included in datasets.

Origin – Destination Analysis

To better understand travel patterns through Harrisburg, the study team reviewed origin and destination (O-D) data from StreetLight. The StreetLight data is location data anonymously sourced from mobile phone users and tracks the movement of the devices as they travel across the study area. This analysis established origin and destination patterns by looking at average weekday travel conditions during 2019, so that the impacts on commuter travel stemming from the COVID-19 pandemic were withheld.

The O-D analysis reviewed travel between a set of pre-selected zones throughout the Harrisburg area. These zones act as “check points” for detecting mobile phone movements; each time a mobile device passes through a zone, that movement is recorded. A large emphasis was placed on travel external to the study area, where are least one end of the trip occurred outside of the study area. These external entry / exit points selected for the O-D analysis include:

- 272nd Street east of 480th Street
- Tallgrass Avenue north of 271st Street
- Highway 11 north of 271st Street
- Highway 115 / Minnesota Avenue north of 271st Street
- Cliff Avenue north of 271st Street
- Highway 11 south of 276th Street
- Highway 115 south of 276th Street
- 273rd Street east of I-29
- 271st Street east of I-29

Three of the O-D zones had the most significant levels of through traffic for the study area:

- Highway 11 north of 271st Street
- Highway 11 south of 276th Street
- Highway 115 south of 276th Street

Appendix C contains a map for each zone that shows where traffic had gone once the respective external zone was passed and documents the latest available daily traffic volume for that station.

Parking Assessment

Parking is available throughout the study area:

- On-street parking is provided in most neighborhoods and some city streets. The City regulates on-street parking through signage for snow routes and locations where parking is not allowed.
- Off-street parking is provided at most private residences and businesses in the study area.

No parking issues were identified by the study team or through input received from stakeholders and the public. It is assumed that as portions of Harrisburg redevelop in a more urban form, parking will be a more significant concern. As the core of Harrisburg and other urban-scale development occurs, the City should consider on-street parking and other parking policies. Future parking policies could include shared-parking, elimination or reduction of parking requirements for developers, and priced parking that limits the need for off-street parking in future mixed-use districts.

Pavement Condition and Maintenance

Harrisburg completed a Pavement Management Study in 2020 that analyzed existing pavement conditions and recommended budgetary and management decisions to maximize investment in current and future roadway assets. The study reviewed 22 centerline miles of roadway to calculate the average Pavement Condition Index (PCI), which is a metric used to assess pavement health based on a scale of 0 to 100, with 100 being excellent condition. **Table 16** provides a description of PCI levels.

Overall pavement conditions for the 22 centerline miles analyzed are shown in **Figure 12**. Harrisburg's arterial roads range from a PCI low of 50 to a high of 70 while collector roads have a broader range of 40 to 100. Residential streets have the widest range with some of these roads shown to be in very poor condition while a higher percentage are in excellent condition.

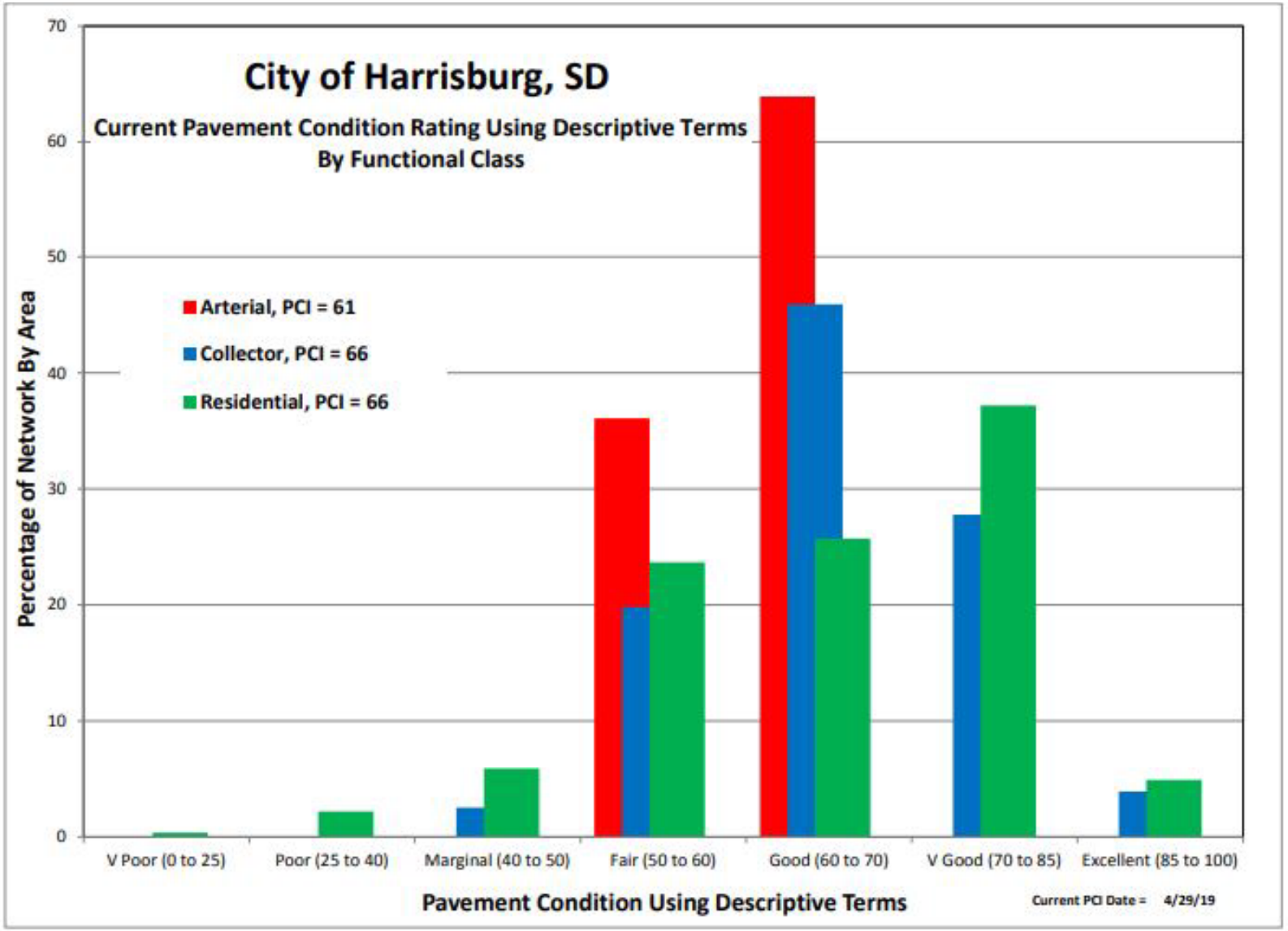
Additional pavement data sourced from the 2019 Lincoln County Master Transportation Plan is shown in **Figure 13** and illustrates PCI for the functionally classified roads within the Harrisburg area.

Table 16: Descriptions of Pavement Condition Index Levels

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	Marginal to 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.

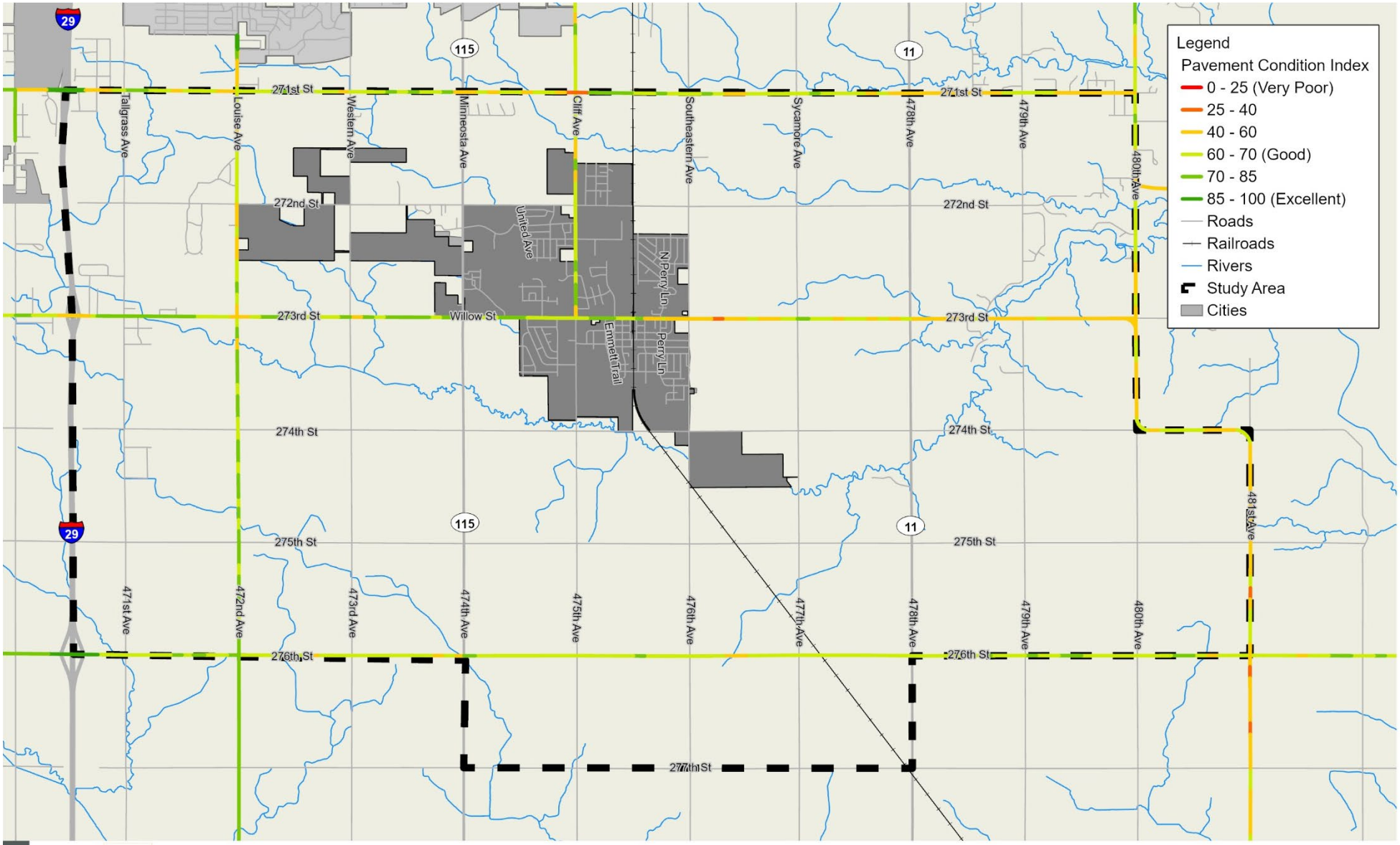
Source: City of Harrisburg, Pavement Management Analysis Report

Figure 12: Pavement Condition Rating for Harrisburg Roads



Source: City of Harrisburg, Pavement Management Analysis Report

Figure 13: Pavement Condition Index



Multimodal Network

Existing Bicycle and Pedestrian Network

The existing bicycle and pedestrian network for the City of Harrisburg includes sidewalks, unpaved and paved trails, and on-street bicycle accommodations. **Figure 14** shows this existing network. The existing network includes the following elements:

UNPAVED TRAILS

There are two existing unpaved trails in Harrisburg, located along portions of Cliff Avenue and 273rd Street. ADA-compliant ramps and truncated domes were added to the crossings for the trail along 273rd Street.

PAVED TRAILS

Paved trails are typically 10 feet wide for bi-directional travel for both bicyclists and pedestrians and may follow an independent alignment such as a waterway, greenway, or former railroad right-of-way. Trails may be narrowed to 8 feet wide in constrained locations. For high-use locations, trails may be widened to 12 feet to better accommodate bi-directional bicycle and pedestrian travel. Examples of existing paved trails include the trail around Lake Ole and the trail between the elementary and high schools.

Unpaved trail along Willow Street

Source: Google Streetview

Paved trail around Lake Ole

Source: Google Streetview

SIDEPATHS

Sidepaths are a specific type of paved trail located parallel to a street and located within the road right-of-way. They should also be at least 10 feet wide for bi-directional travel for both bicyclists and pedestrians and provide at least 5 feet of separation from the road, with 6.5 feet as the preferred distance. On higher-speed roadways, separation width between the roadway and sidepath should increase.

Examples of existing sidepaths in Harrisburg include the sidepath along the north side of Willow Street and the east side of Highway 115/Minnesota Avenue.

ON-STREET BICYCLE ACCOMMODATION

There is an existing marked bike lane along a portion of Columbia Street north of Foundation Drive. This lane is approximately 7 feet wide. Standard bike lanes are a minimum of 5 feet wide and use a bicycle symbol and arrow (or words and arrow) pavement markings and signage in accordance with Part 9, Traffic Control for Bicycle Facilities, of the *MUTCD*.

Sidepath at Willow Street and Cliff Avenue

Source: Google Streetview

Sidepath at Willow Street and Highway 115

Source: Google Streetview

UNCONTROLLED CROSSINGS

Existing uncontrolled pedestrian crossings in Harrisburg include:

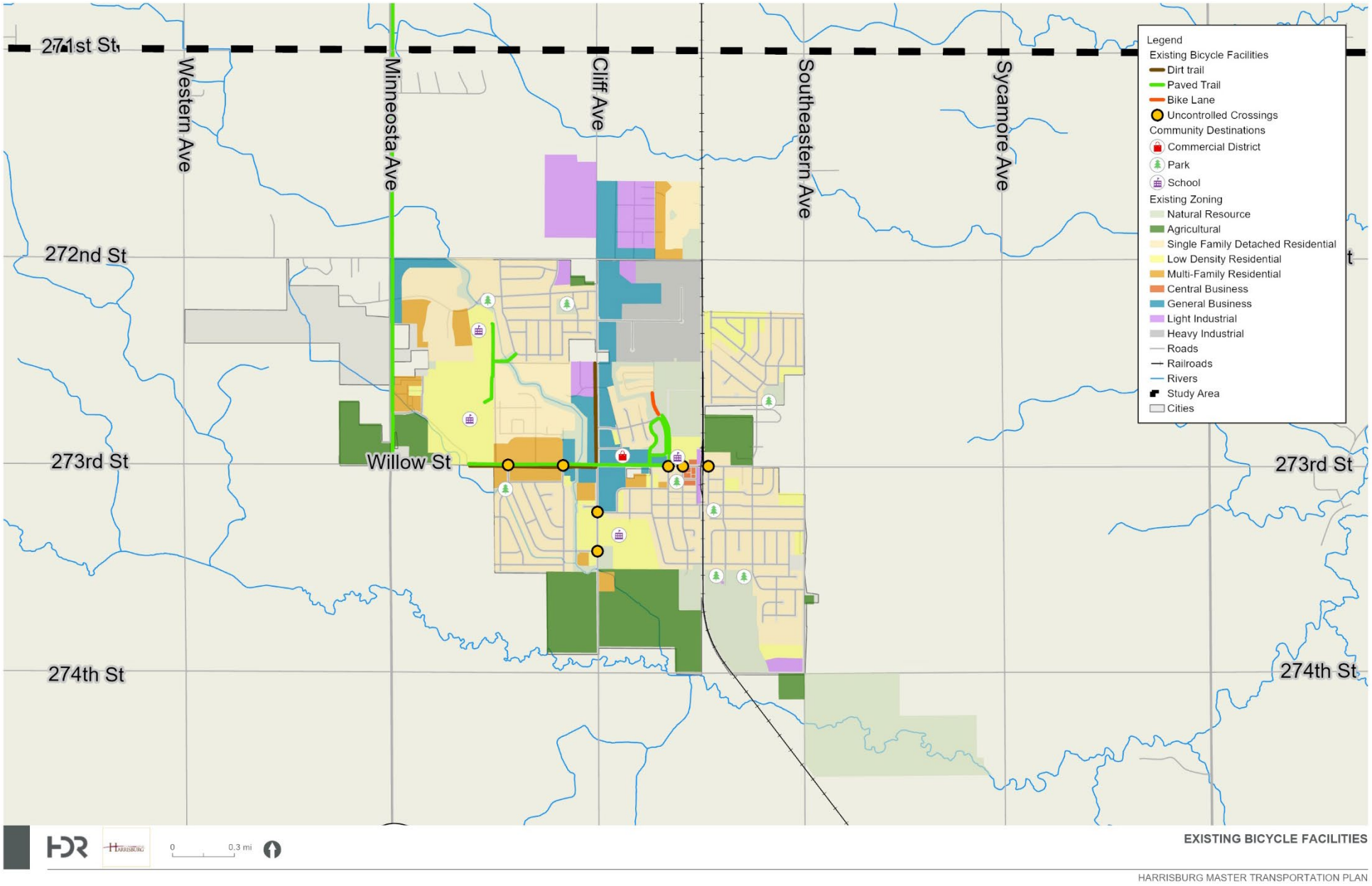
- Willow Street and Honeysuckle Drive
- Willow Street and Shebal Avenue
- Willow Street and Columbia Street (marked school crossing)
- Willow Street and Prairie Street (marked school crossing)
- Willow Street and Milwaukee Avenue (marked crossing to dirt trail)
- Cliff Avenue and Honeysuckle Drive
- Cliff Avenue and Maple Street

These uncontrolled crossings are shown in **Figure 14**.

Marked bike lane along Columbia Street

Source: Google Streetview

Figure 14: Existing Bicycle Facilities



Transit

Currently, there is no fixed-route or paratransit service offered in Harrisburg as the city lies outside the area served by Sioux Area Metro (SAM). With continued growth in the area, the need for public transit service that connects Harrisburg residents to opportunities within the city as well as the surrounding communities will likely rise.

When exploring options for future transit service in Harrisburg, looking at what similar communities in the region are doing can provide a roadmap for the city to follow. Several peer communities and organizations in the Sioux Falls area that have recently completed transit evaluations include:

- City of Brandon
- City of Dell Rapids
- Inter-Lakes Community Action Partnership

CITY OF BRANDON

Brandon currently operates Brandon City Transit, Inc., an on-demand transit service that operates Monday through Friday from 8:00 AM to 3:30 PM. Rides are offered to any location in the city at a cost of $2 per ride (each way). Riders must call the dispatcher to schedule a ride.

The City of Brandon completed a Coordinated Public Transit – Human Services Transportation Plan in 2019. The Plan developed a strategy for coordination between transit providers in the area while identifying gaps in access to transit for residents of the community. Additional elements of the Plan include an assessment of the strengths and weaknesses of the existing on-demand service offered in the city and a series of goals for service improvement.

CITY OF DELL RAPIDS

Dell Rapids' transit service, DellsXpress, offers on-demand service Monday through Friday from 7:00 AM to 5:00 PM. Rides within Dell Rapids city limits are $2, while round trip rides to Sioux Falls are $14. Riders can also schedule trips to destinations outside of city limits by calling DellsXpress dispatch.

DellsXpress recently entered a partnership with Brookings Area Transit Authority (BATA) in which management of operations is carried out by BATA. Dell Rapids also completed a Coordinated Public Transit—Human Service Transportation Plan in 2019 that identified potential transit-users within the city, and articulated the goals and objectives for service and operations. The partnership between DellsXpress and BATA reflects the overarching aim for Dell Rapids transit to better coordinate with regional providers.

RURAL OFFICES OF COMMUNITY SERVICES

Rural Offices of Community Services (ROCS) is a non-profit organization operating in 14 counties in south-central and south-eastern South Dakota. ROCS provides on-demand transit service within all counties they serve. While Harrisburg is within the ROCS Service Area, ROCS does not offer transit services to the city. This means there is a potential for Harrisburg to coordinate with ROCS and provide on-demand transit service in the community.

Freight System

Highway Freight

Highway freight facilities support the bulk of freight movements in the Harrisburg area due to the proximity of Sioux Falls and the presence of major highways including I-29, Highway 115, and Highway 11. In addition to these factors, there are many freight generating land uses located within Harrisburg and the surrounding area.

Figure 15 shows the density of these freight generating locations in and around Harrisburg. The freight generation shown is estimated from available employment data and the use of typical freight traffic generated with those employment types and intensities.

Also shown are routes identified by city staff as local truck routes and SDDOT's Preferential Truck Network. I-29 is designated as part of the state's Preferential Truck Network in the *2017 State Freight Plan*, while local freight routes identified by city staff include Highway 115, Cliff Avenue, 273rd / Willow Street, and Industrial Drive. Freight generators within the study area are concentrated in Harrisburg and along I-29 in the northwestern part of the study area.

Rail Freight

The only existing rail freight facility within Harrisburg is the BNSF main line that runs through the eastern part of the city. The South Dakota DOT State Freight Plan emphasizes the importance of rail freight in the state's economy owing to the significant amount of agricultural product moved on these facilities.

One issue related to rail freight is the presence of at-grade rail crossings. These crossings can cause traffic delays as vehicles are forced to stop for trains to pass, as well as safety issues related to vehicle – train conflicts. The existing at-grade crossings within the study area include:

- 277th Street, west of Highway 11
- 276th Street, east of 477th Avenue
- 477th Avenue, north of 276th Street
- 275th Street
- 476th Avenue, south of 274th Street
- 274th Street
- East Maple Street
- East Willow Street
- 272nd Street
- 271st Street

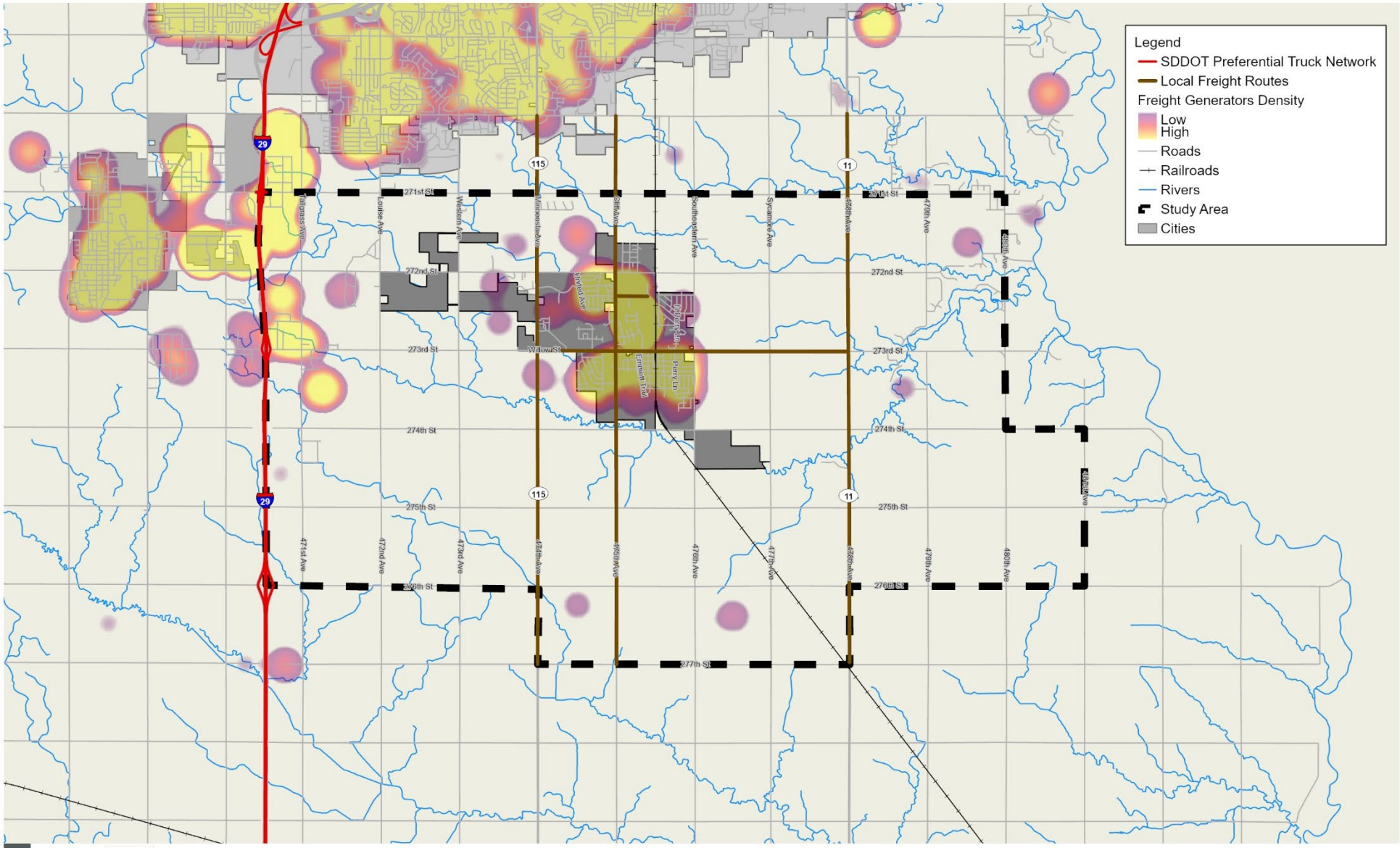
Air Freight

Currently, no air freight facilities exist within the Harrisburg study area. The SDDOT State Freight Plan indicates that Joe Foss Field in Sioux Falls facilitates most air freight movements in the state. Harrisburg is located approximately 15 miles south of this facility.

Pipelines

The 2019 Comprehensive Plan for Harrisburg indicates that several petroleum and natural gas transmission lines are in and around Harrisburg. These facilities require easements and consideration when planning roadway and development expansions.

Figure 15: Location of Freight Generators and Relative Level of Truck Traffic



Emergency Routes

All roads classified as arterial or collector roads are considered emergency routes within the Harrisburg area. **Figure 16** contains all arterial and collector roads in the study area that are considered a part of the emergency route network. Emergency routes within the MTP study area include:

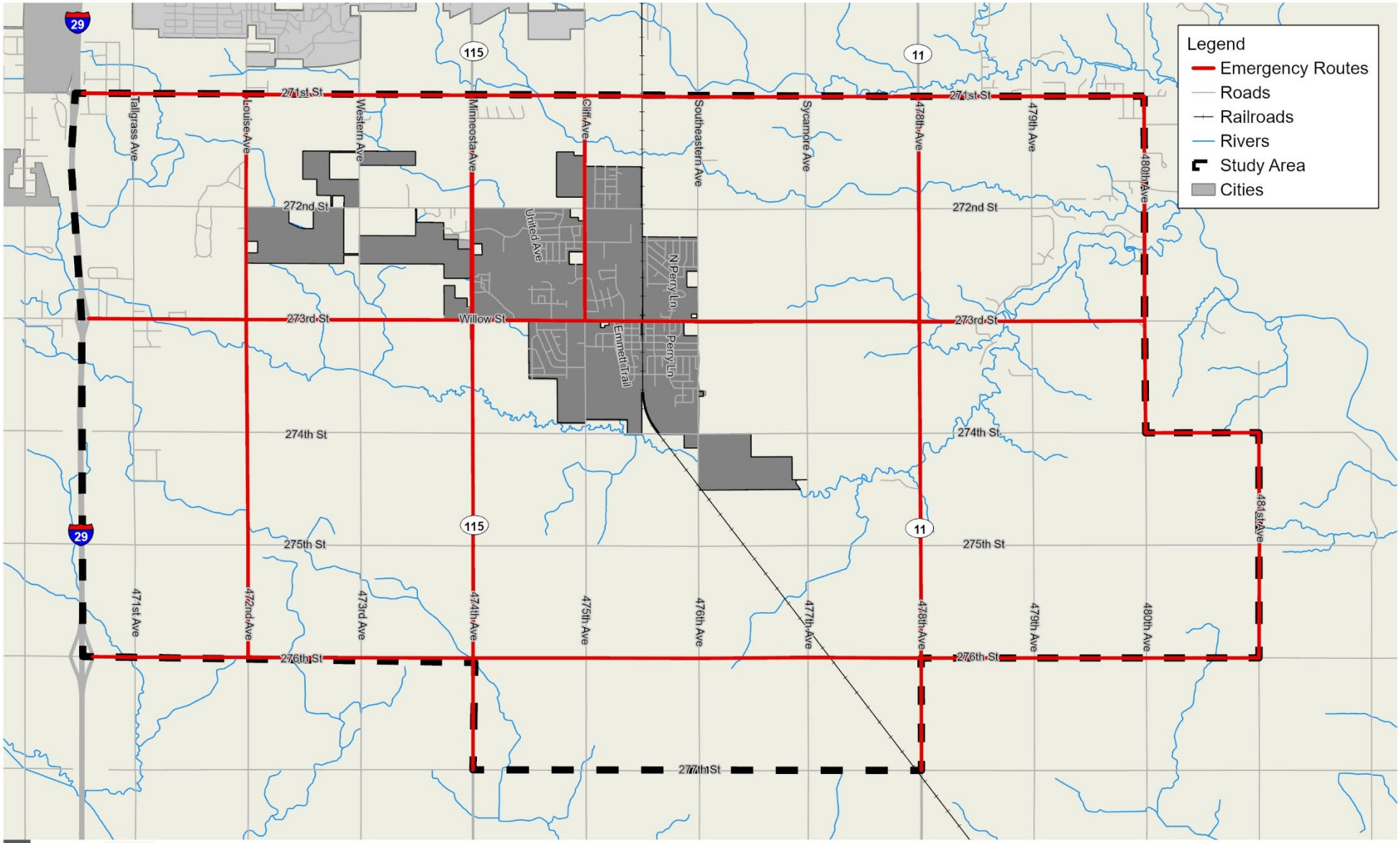
- 271st Street
- 276th Street
- 480th Avenue
- 481st Avenue
- Willow Street (273rd Street)
- Highway 115
- Cliff Avenue, north of Willow Street
- Highway 11

Issues Summary

Based on the data reviewed and the public and stakeholder input received, the issues facing the study area can be summarized as follows:

- **Traffic Operations**: Peak hour congestion is present along Cliff Avenue and Willow Street.
    - As Harrisburg continues to grow, additional areas of congestion will emerge.
- **Safety**: There are several crash hotspots identified in the study area, with the primary safety focus corridors being Highway 115, Highway 11, Cliff Avenue, 271st Street, and the intersection of 472nd Avenue and Willow Street.
- **Bicycle and Pedestrian Connections**: The foundations of a solid bicycle and pedestrian network are present in the study area. There are opportunities to expand this network through:
    - Continuing expansion of the trail and sidewalk system.
    - Developing safe pedestrian and bike crossings for the street system.
- **Freight Movement**: There are several significant employers in the study area that generate freight and need to have efficient connections outside the study area.
- **Street Classification and Standards**: The current street classification system and standards have been evaluated as a part of this study and revised to provide a template for the City to use to serve future development.

Figure 16: Emergency Routes



Standards Development

Major Street Plan

The Major Street Plan is used by the city to guide future development so that orderly growth can be planned for and investment in the transportation system is maximized. The Major Street Plan incorporates recommended functional classifications that build off the functional classification system described in the Baseline Conditions so that consistency and coordination between local and state planning can take place.

The current Major Street Plan and recommended functional classifications are shown in **Figure 17**; this Plan serves as the basis of the MTP standards development.

It is anticipated that a large number of the streets shown in **Figure 17** will not be required through the year 2045 planning horizon of this plan. However, as new developments are approved and platted during the life of this plan, it is recommended that the general alignment and configuration of the streets shown in **Figure 17** be followed.

Future Land Use

Harrisburg's plan for future land uses is the key determinant in shaping how the community will develop over the next few decades. Harrisburg's 2019 Comprehensive Plan details the vision for the city's future form and character based on anticipated future population levels and the land uses necessary to support this growth. By identifying where specific land uses are permitted, the plan ensures orderly development that meets the community's vision and goals for future growth.

Land use is inextricably linked to transportation as the type of land use activity that occurs at a given location dictates the travel demand to that location. The aim of this Standards Development chapter is to recommend network improvements that best complement adjoining land uses so that solutions to existing system deficiencies that can be identified and balanced with the anticipated growth in population and travel demand.

Figure 18 shows planned future land uses based on the 2019 Comprehensive Plan. Similar to the major street plan, much of the development shown in **Figure 18** is anticipated to occur beyond the year 2045, but this Future Land Use map has informed much of the decision-making related to the standards development chapter.

Figure 17: Proposed Major Street Plan

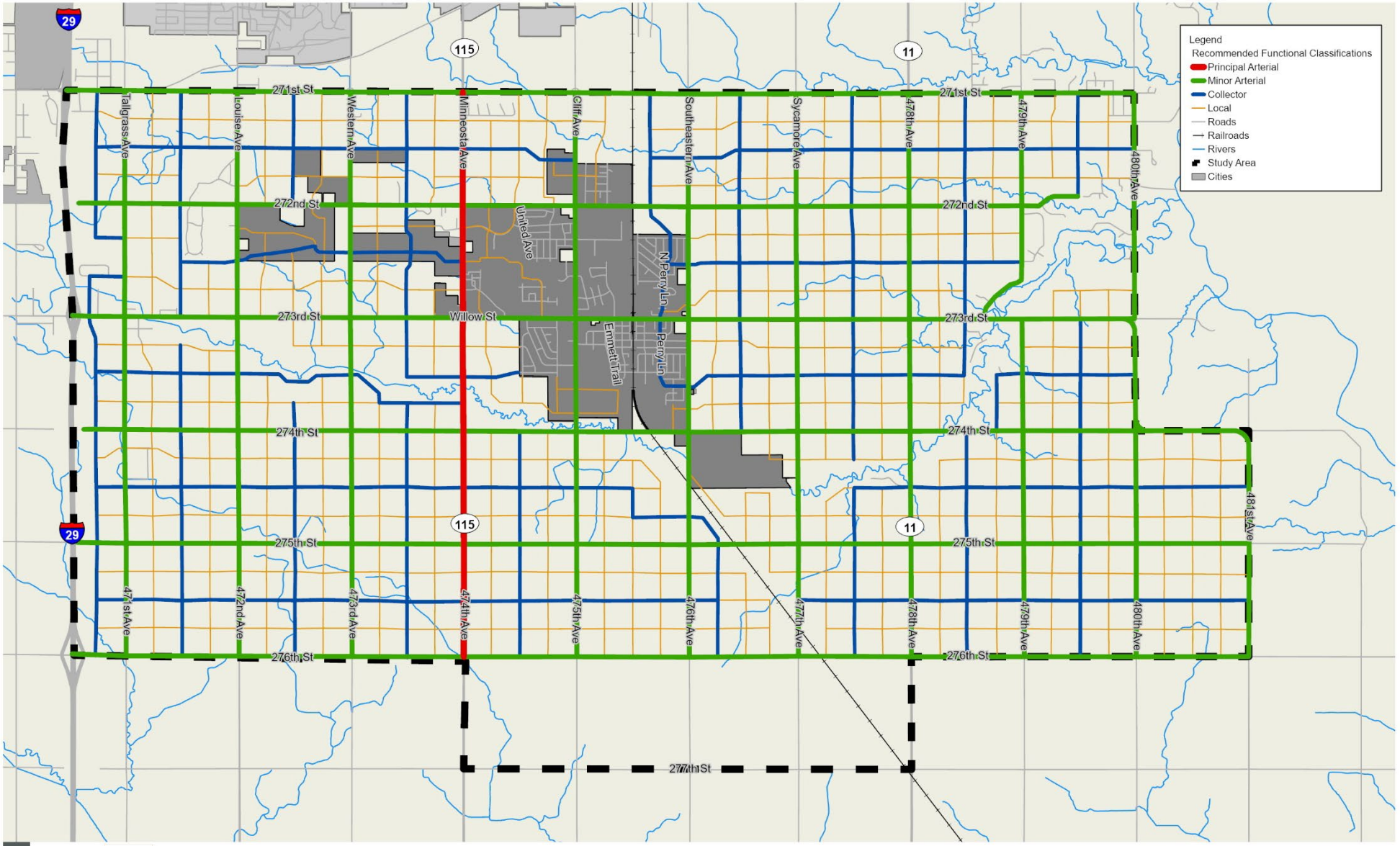
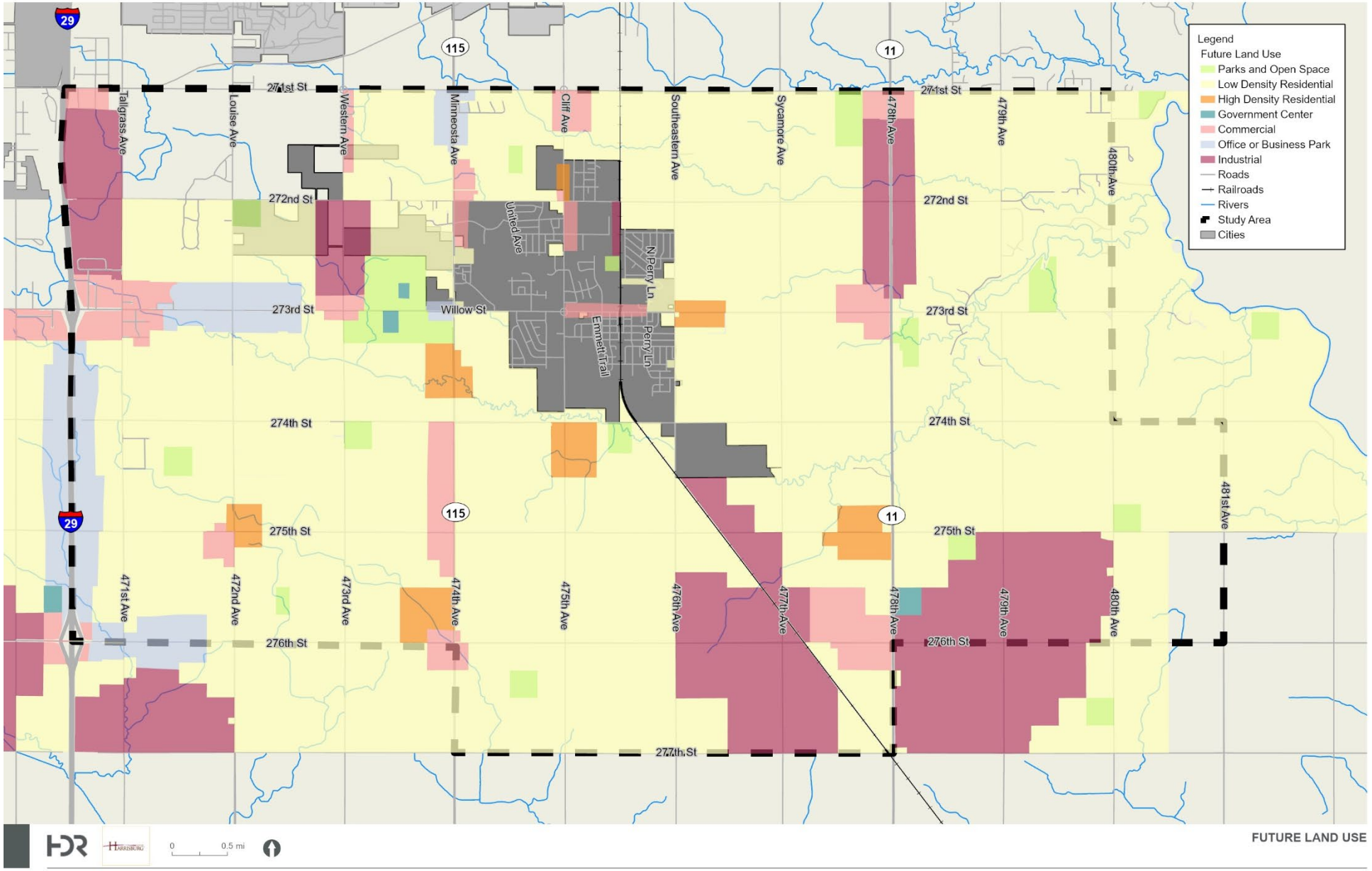


Figure 18: Harrisburg Future Land Use Plan



Proposed Street Cross-Section Typologies

There are two broad categories of street cross sections – rural and urban – which can be further defined into specific street typologies.

General Rural Cross Section

- Ditches used to manage stormwater
- Pedestrian facilities, housing, and businesses are set back beyond ditches
- Typically requires more public right-of-way than urban streets

General Urban Cross Section

- Curb and gutter with storm sewers used to manage stormwater
- Possible on-street parking
- Pedestrian access from street to adjacent housing and businesses
- Typically requires less public right-of-way than rural roads as drainage conveyance is below ground in storm sewers.

Typical Rural Cross Section Design

Typical Urban Cross Section Design

Rural Cross Section Design

A range of potential rural cross-sections are summarized in this section for a range of different corridor types.

Signature Rural Entry Corridor - Arterial

Through plan development, it was decided that a signature rural entry corridor should be identified to communicate Harrisburg's ties to its small town, rural past. This signature rural entry corridor is Willow Street (273rd Street) between Interstate 29 and SD 115 / Minnesota Avenue. The Plan recommends the following for this corridor:

- The corridor would be a 3-lane rural cross section and function as an arterial road. Given current traffic forecasts, 3-lanes are sufficient to efficiently and safely carry traffic through 2045.
- The corridor would have monument or entrance signage for Harrisburg and sidepaths on at least one side to provide recreational and transportation opportunities for biking and walking.
- The proposed 160-foot-wide cross section allows for sufficient open space to convert Willow Street to a 5-lane cross section if warranted by increased traffic volumes in the future.
- The wider rural right-of-way allows at least 40 feet of separation and green space between the road and the adjacent sidepaths / sidewalks. Landscaping plantings and water detention features should be located within the planting strip to create an inviting atmosphere.
- The rural cross-section will include storm sewers to support additional conveyance during storms, set back beyond the eventual 5-lane cross-section to eliminate the need to move them during a future widening.

Typical Rural Arterial

Additional 3-lane rural corridors with a more limited 100-foot right-of-way may be built in some corridors with a limited need to access adjacent development, such as along industrial development and single-family residential subdivisions.

If traffic volumes increase to justify additional travel lanes, the 3-lane rural cross section can be supplemented to accommodate 5 lanes. Note that the placement of storm sewers and green space setbacks eliminate the needs for significant additional infrastructure changes beyond the addition of more lanes of pavement and moving the ditches.

Rural Collector

Rural collectors are 2-lane roads with ditches on either side. Many of the main roads in the study area are currently classified as rural collectors. These roads likely will not require much improvement until the surrounding areas develop and become more urban. In these cases, rural and urban 3-lane cross-sections will likely be warranted.

It is anticipated that most neighborhood collectors in future subdivisions will be urban design.

Figure 19 through **Figure 21** illustrates example rural cross section designs.

Figure 19: 3-Lane Rural Cross Section

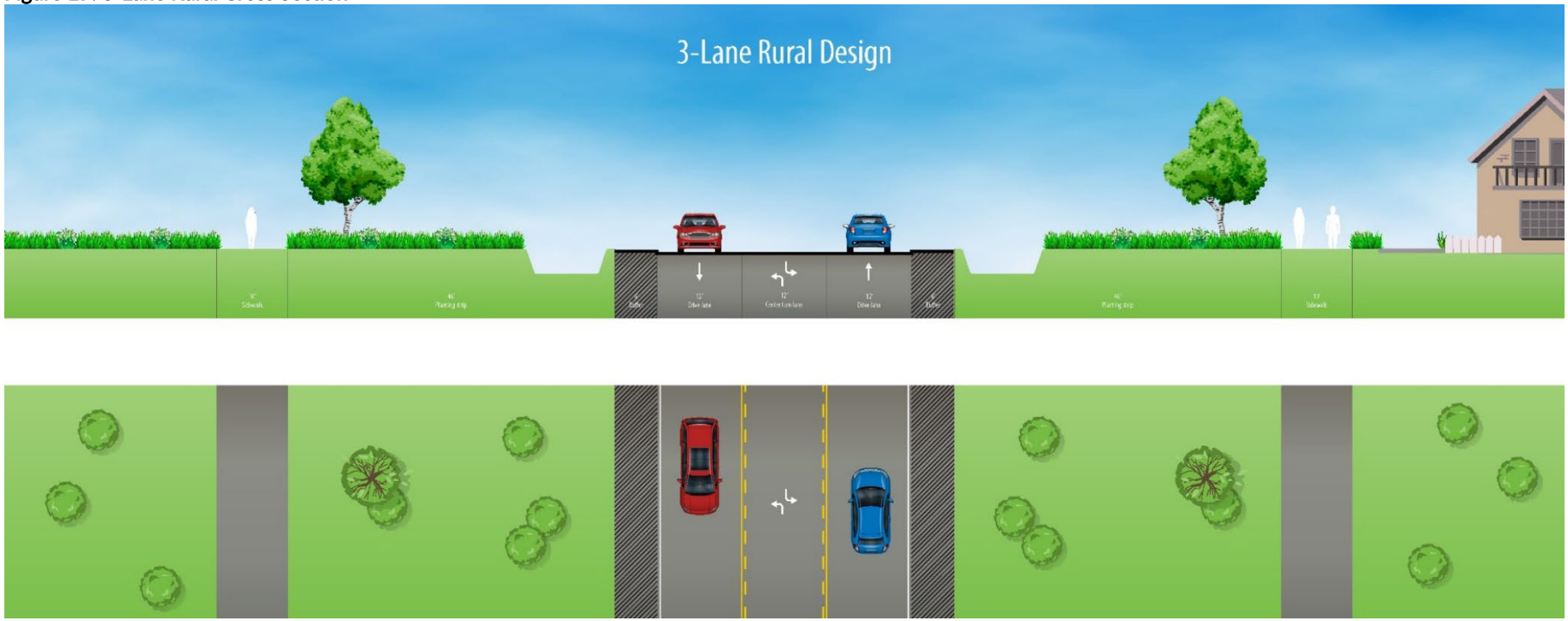


Figure 20: 5-Lane Rural Cross Section

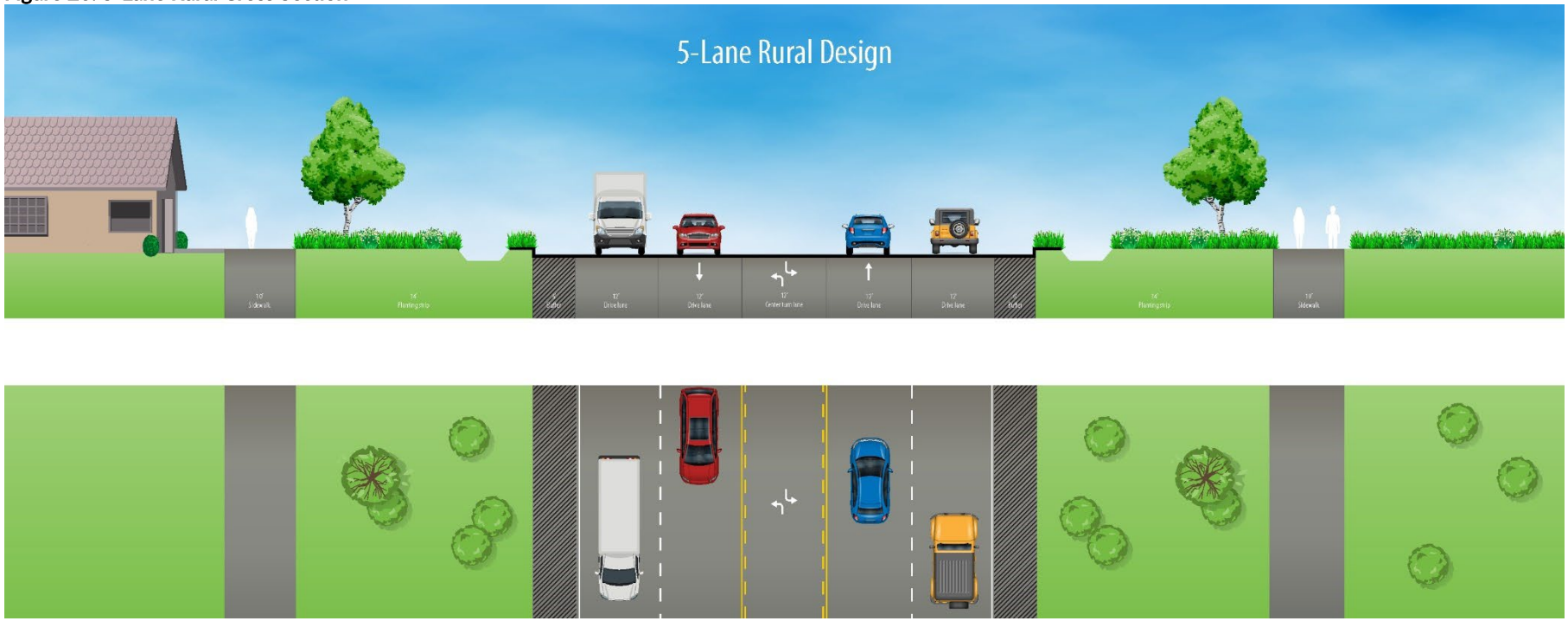
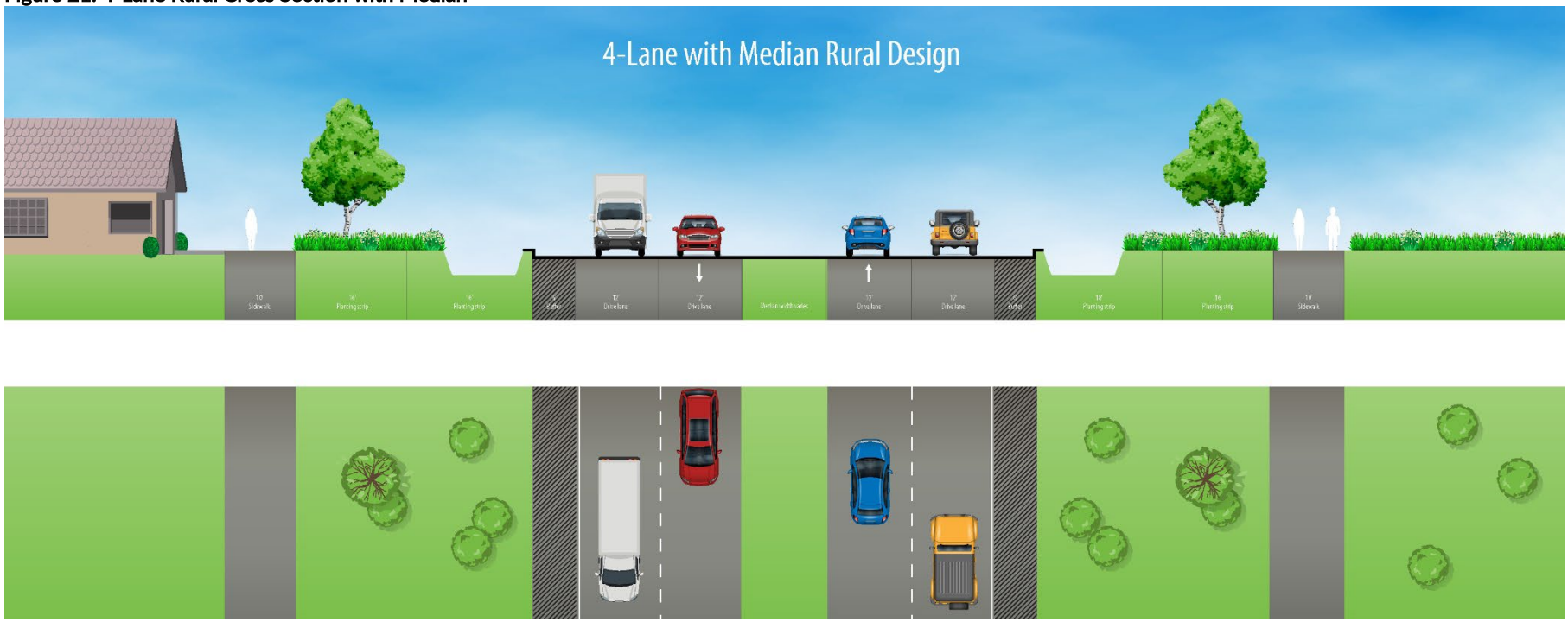


Figure 21: 4-Lane Rural Cross Section with Median



Urban Cross Section Design

Urban Arterial

Urban arterials are appropriate in many corridors of the study area as it develops. Urban cross sections are proposed along:

- Willow Street (273rd Street) between Minnesota Avenue (SD 115) and Cliff Avenue.
- Cliff Avenue between 271st Street (CR 106) and 274th Street

It is anticipated a 3-lane urban corridor will meet traffic needs in these corridors through the year 2045. Features of this cross section include:

- The center two-way left turn lane provides significant safety and traffic operations benefits over the current 2-lane cross section. Removing left-turning traffic from through traffic eliminates delays and provides significant safety benefits by reducing the predicted incidence of rear-end crashes and allows turning traffic more time to accept gaps in oncoming traffic to complete left turns.
- Like Willow Street near I-29, Cliff Avenue could have monument or entrance signage for Harrisburg near 271st Street.
- It is anticipated this cross section would provide a sidepath on at least one side of the street, with a sidewalk on the other side for recreational and transportation opportunities for people biking and walking along this corridor.
- The proposed 100-foot-wide cross section allows for sufficient open space to convert these corridors to a 5-lane cross section if warranted by increased traffic volumes in the future.
- This width of right-of-way allows 9 to 16 feet of separation and green space between the road and the adjacent pedestrian ways.
- The urban cross-section will include curb and gutter leading to storm sewers. Urban sections in most corridors should have storm sewers set back beyond the 3-lane curb line to the eventual 5-lane cross section to eliminate the need to move them during future widenings.

An example urban 3-lane cross-section is shown in **Figure 22**. Example urban 5-lane and 4-lane divided cross sections are shown in **Figure 23** and **Figure 24**.

Urban Downtown

There is an opportunity to redevelop Harrisburg's traditional downtown into a vibrant mixed-use center. To support that vision of a downtown area, a downtown cross-section has been developed. The downtown corridor identified by the MTP is Willow Street between Cliff Ave and Railroad Avenue, which has a right-of-way of 80 feet wide. Two different urban downtown cross-sections were developed:

- An ideal 100' cross-section that might be possible if redevelopment and replatting along the street occurs. This cross-section is illustrated in (shown in **Figure 25**).

- An 80' cross-section that would fit within the existing public right-of-way along Cliff Ave. This cross-section is illustrated in. (Shown in **Figure 26**.)

It is anticipated a 3-lane urban corridor will meet traffic needs in these corridors through the year 2045. Features of this cross-section include:

- The center left turn lane for safety and traffic operations benefits.
- Wide sidewalks on both sides of the corridor, directly adjacent to businesses and residences. The sidewalk should be a seamless connection between the street (and its on-street parking and pedestrian amenities) and adjacent businesses, providing an active pedestrian space adjacent to businesses.
- The proposed cross sections allow for on-street parking.
- The urban cross section will include curb and gutter leading to storm sewers.
- Due to right-of-way constraints and the focus of downtown as a destination, it is not anticipated that Willow Street would be widened beyond 3-lanes.
- In the downtown area, people biking may share the street with people driving since pedestrian activity is anticipated to be higher in this area. Further, the low traffic volumes and traffic speeds (posted 20 mph) do not warrant dedicated bike lanes.

Railroad Avenue between Willow Street and Maple Street could serve a similar urban downtown function, but the limited right-of-way (50 feet) could only support two travel lanes and on-street parking.

Bicycle Boulevards

Bicycle boulevards may be considered for:

- Maple Street between S Cliff Avenue and Southeastern Ave (476th Avenue) - see also MPO Multi-use Trail Study
  - Connects the church, downtown, and middle school
- Any low volume, low speed roadway that can be used to connect trail segments or destinations.

Figure 22: 3-Lane Urban Cross Section

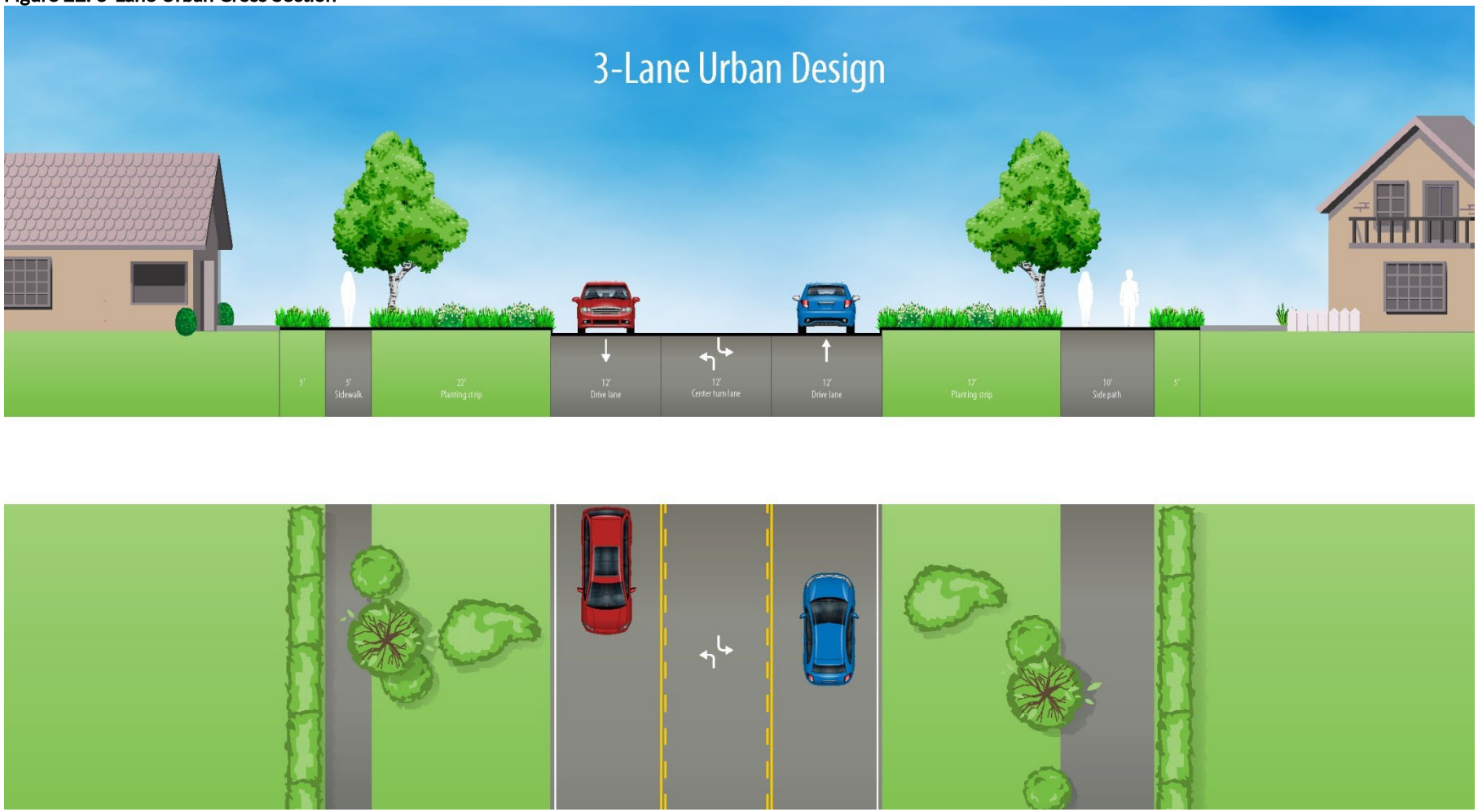


Figure 23: 5-Lane Urban Cross Section

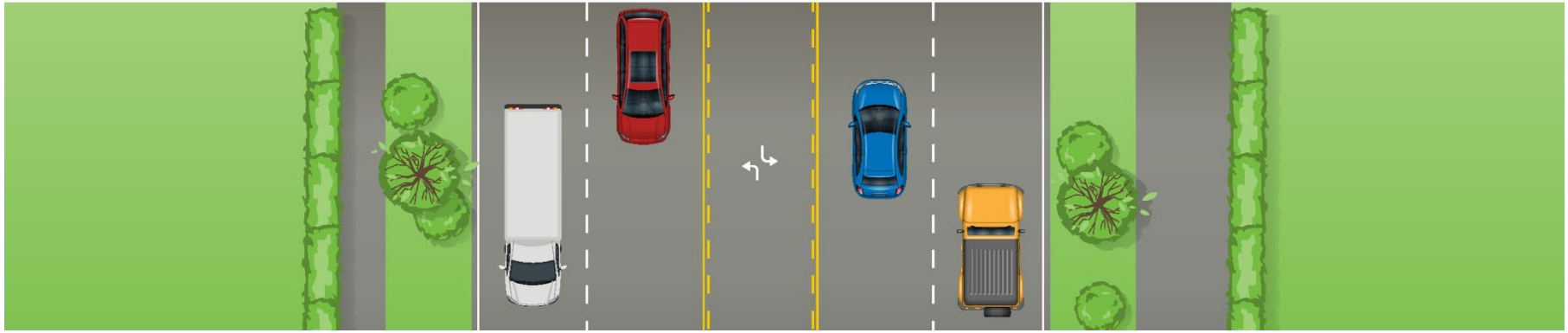


Figure 24: 4-Lane Urban Cross Section with Median

Figure 25: 3-Lane Urban Downtown Cross Section (100' Right-of-Way)

Figure 26: 3-Lane Urban Downtown Cross Section (80' Right-of-Way)

Access Management

Existing Access Management Standards

Current access management standards are governed by the Harrisburg Design Standards, which detail all standards related to roadway design within in the city. The manual defines access as:

"Access is defined as any connection, driveway, street, turnout or other means of providing for the movement of vehicles to or from the public roadway system. Access is further defined as any full movement access, right in right out movement, or partial movement access."

Additional access management standards detail access restrictions at intersections, which is specified in **Table 17**.

Access Management Recommendations

As Harrisburg continues to develop and improvements are made to the road network, it is recommended that the city update the access management standards to accommodate increasing traffic volumes and more urban street and intersection types.

As medians and traffic signals become more prevalent on arterial streets, access spacing for functionally classified streets should be adjusted for more urban streets, similar to the Sioux Falls access management standards shown in **Table 18**. The application of these access management recommendations (in this example for Arterial II) would result in:

- Principal and Minor Arterial maintaining current access point spacing criteria.
- Signals spaced at a distance of at least ½ mile apart on principal arterials (Minnesota Ave) and ¼ mile apart on minor arterials.
- Median openings to allow full access every ¼ mile, with more frequent right-in, right-out access as allowed by the current Harrisburg policy.

Table 17: Existing Restricted Access at Intersections Standards

	Intersecting with: Principal Arterial	Minor Arterial	Collector	Local
Principal Arterial	660			
Minor Arterial	300	300		
Collector	300	300	200	
Local	-	-	150	50

Table 18: City of Sioux Falls Access Management Standards

Classification	Signal Spacing	Median Opening	Unsignalized Intersection Spacing
Regional Arterial/Expressway	1/2 mile	1/2 mile	2640
Arterial I	1/4 mile	1/4 mile	1320
Arterial II	1/4 mile	1/4 mile	varies
Arterial III	1/4 mile	660	varies

Pavement Maintenance and Rehabilitation

The 2020 Pavement Management Study provides a detailed plan for maintaining existing pavement and management strategies for new pavement. Recommendations of this study are supported by the MTP and include[1]:

- Adopt a citywide policy to maintain PCI at or above 65, while keeping improvement backlog below 10 percent.
- Review full suite of proposed rehabilitation strategies and unit rates annually.
- Increase maintenance budgets as the City expands or increases the amount of paved roads.
- Resurvey streets every few years to update condition data and rehabilitation program.

Truck Routes

Existing truck routes were discussed in the Freight section of the Baseline Conditions section and shown in **Figure 15**. Future truck routes should seek to maintain connectivity to the regional freight system, providing reliable connections between industry in Harrisburg and the wider state and national freight network. Future truck route corridors should be located along roads classified as collector or higher, as these facilities are able to support larger vehicle usage. To enhance the existing freight network, particular consideration should be given to routes that provide east – west connections. Example facilities that could be candidates for truck route designation include:

- Willow Street / 273rd Street from Highway 11 to I-29
- 276th Street from Highway 11 to I-29
- Highway 11

Other important factors to consider when identifying future truck routes include land uses served, existing right-of-ways, and the ability to accommodate proper lane widths, turning radii, and presence of intersections.

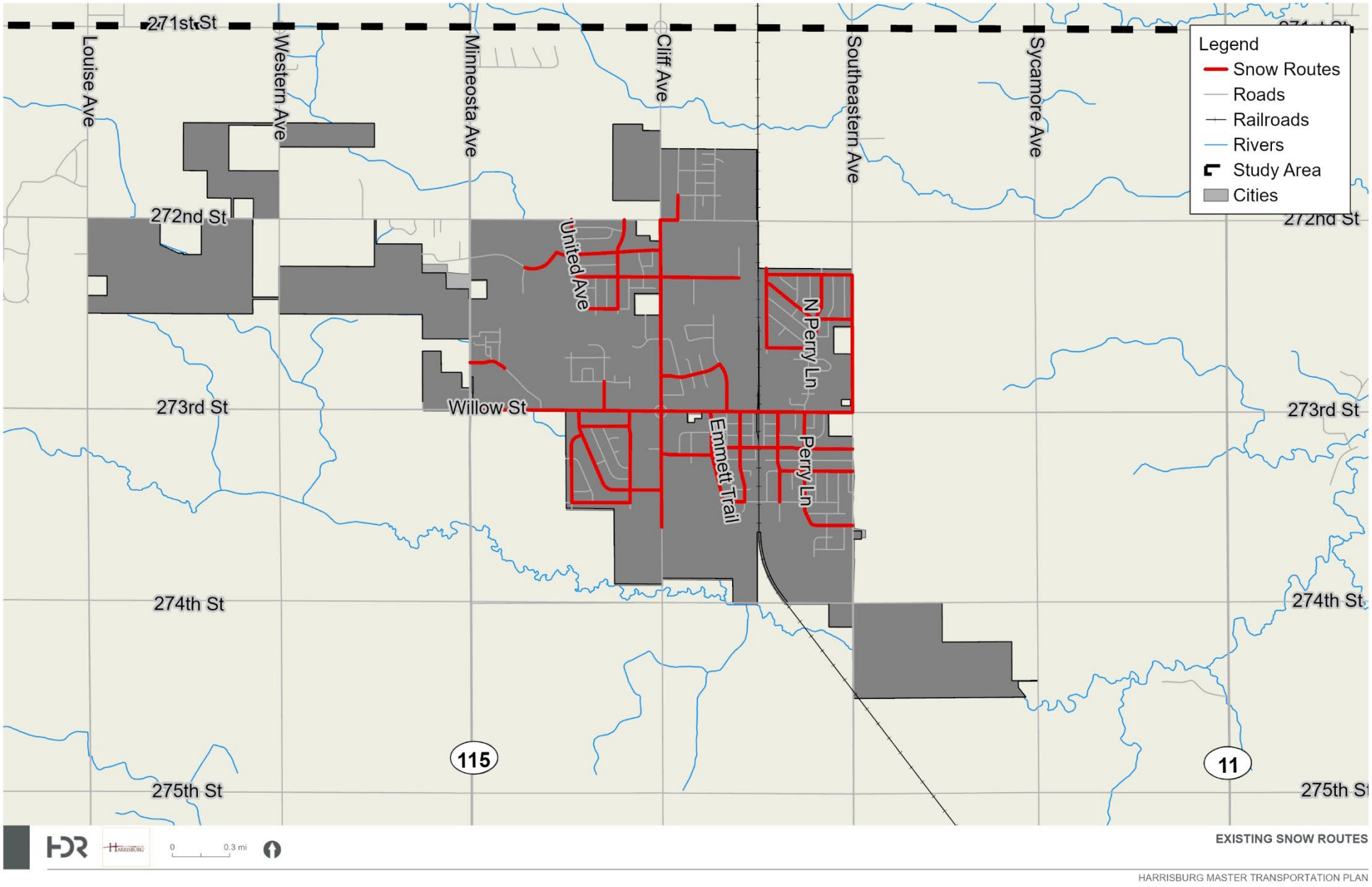
Emergency Routes

Harrisburg maintains dedicated routes in the event of an emergency related to snow. The purpose of these routes is to provide access to the city's most critical facilities during extreme winter weather events. The city of Harrisburg enacts a parking ban once a citywide Snow Alert is declared, which prohibits parking on both sides of all streets so that plows may operate. Several criteria must be met to issue a Snow Alert, including when 2 inches of snow is forecast for the city, or when snowplows are dispatched. **Figure 27** shows the emergency snow routes within Harrisburg.

As development occurs within the city and the existing road network is expanded, it is recommended that Harrisburg continue to update their Emergency Snow Routes to ensure access to critical infrastructure is maintained. It is advised that future arterial and collector streets are prioritized when identifying additional Emergency Snow Routes.

[1] 2020 Pavement Management Analysis Report

Figure 27: Existing Snow Routes



Trails and Complete Streets

This section provides recommendations and best practices to improve walking and bicycling conditions in the Harrisburg MTP study area. Recommendations were developed based upon public input, existing conditions analysis, and best practices. Pedestrian accommodations must be compliant with the Americans with Disabilities Act (ADA), which affects design details such as running slope, cross slope, facility width, and crossing improvements. The following national state-of-the-practice guidance documents were used to inform recommendations and should be followed during design processes:

- FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations
- FHWA Manual on Uniform Traffic Control Devices (MUTCD)
- NACTO Designing for All Ages and Abilities
- FHWA Small Town and Rural Multimodal Networks
- AASHTO Guide for the Development of Bicycle Facilities

Recommendations for bicycle and pedestrian improvements were grouped into the following categories:

- Trails and Sidepaths (Wide Sidewalks)
- Bicycle and Pedestrian Crossings

Proposed Trail and Bicycle Network

The Sioux Falls MPO developed a planned bicycle network for the 2045 Long Range Transportation Plan (LRTP), including the Harrisburg area. This network includes existing paved trails, future trails, and future sidepaths. Many of the trail connections identified by the LRTP follow streams and drainages and are not currently in public road right-of-way. Many of these future trail connections would rely on acquisition of agricultural land for public use. As each area is developed, the city should secure right-of-way for future trail development.

The Sioux Falls MPO Multi-Use Trail Study (**Figure 30**) identified a preferred concept for a trail connection between Harrisburg and Yankton Trail Park in Sioux Falls. The southern portion of this preferred route is within our study area. The proposed improvements have been incorporated into this plan.

In addition to the MPO-identified planned trails in the study area, many of the street network improvements identified in this plan will incorporate sidepaths. **Figure 28** and **Figure 29** shows this planned network. Sidepaths are often an attractive solution for accommodating people biking and walking for several reasons:

- They provide space for people both walking and biking.
- They are comfortable for cautious bicyclists and children.
- They require minimal (or no) added road right-of-way.
- They provide connections and access to adjacent land uses.
- They function similarly to a sidewalk, which makes them generally acceptable to the public.
- They can often be constructed during a road project.

Figure 28: Proposed MTP Bicycle and Pedestrian Network

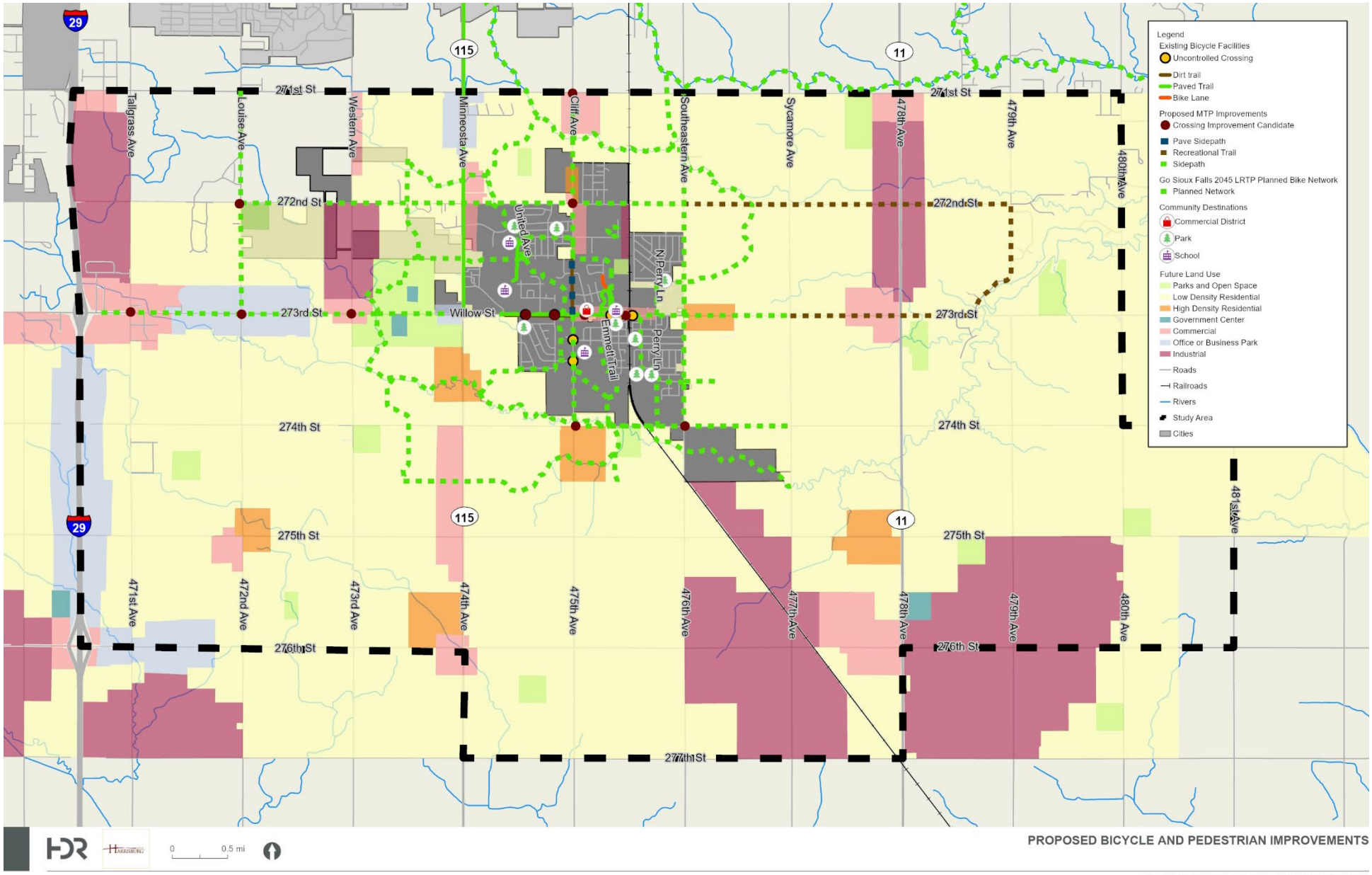


Figure 29: Proposed MTP Bicycle and Pedestrian Network, City View

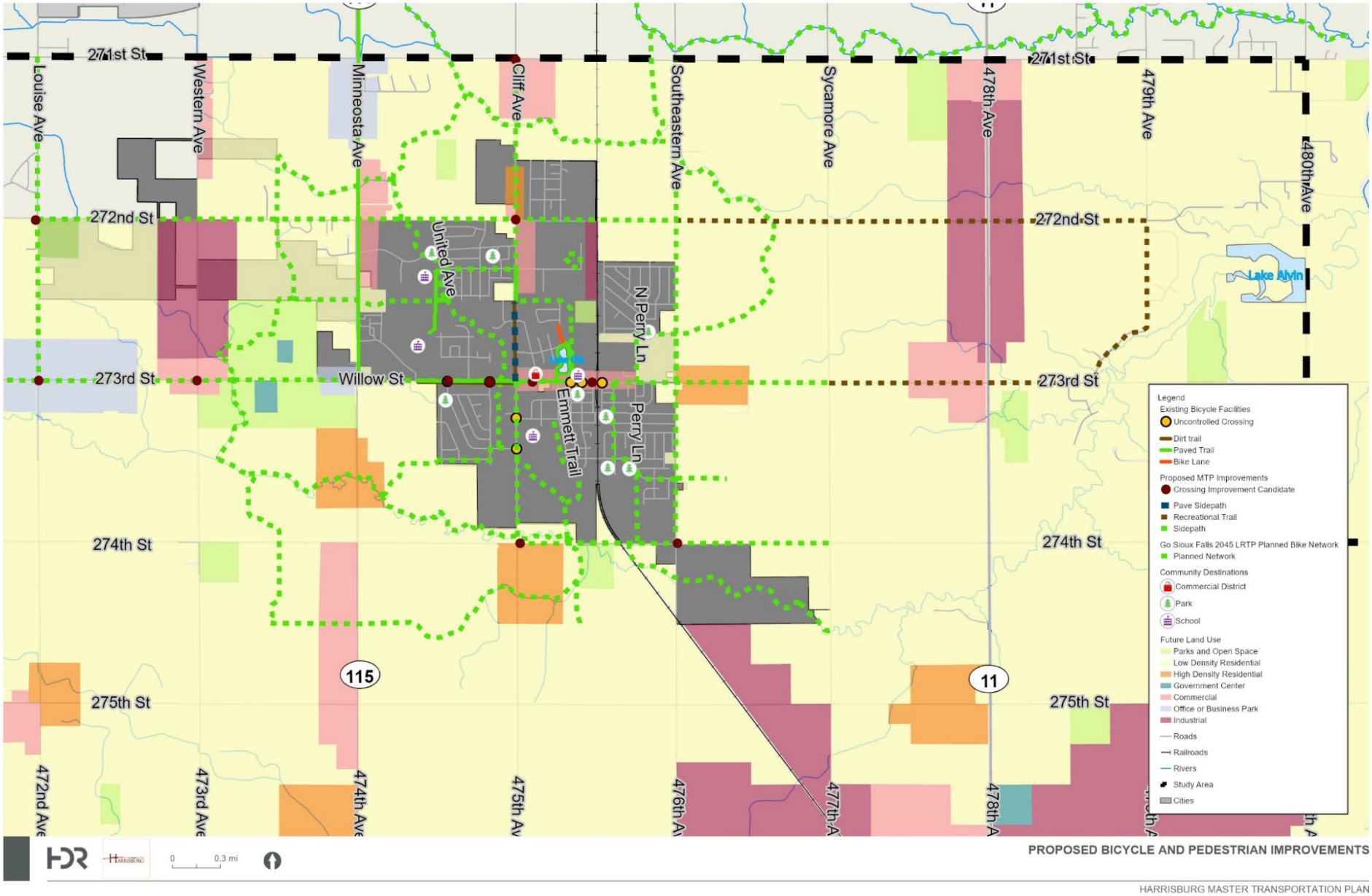
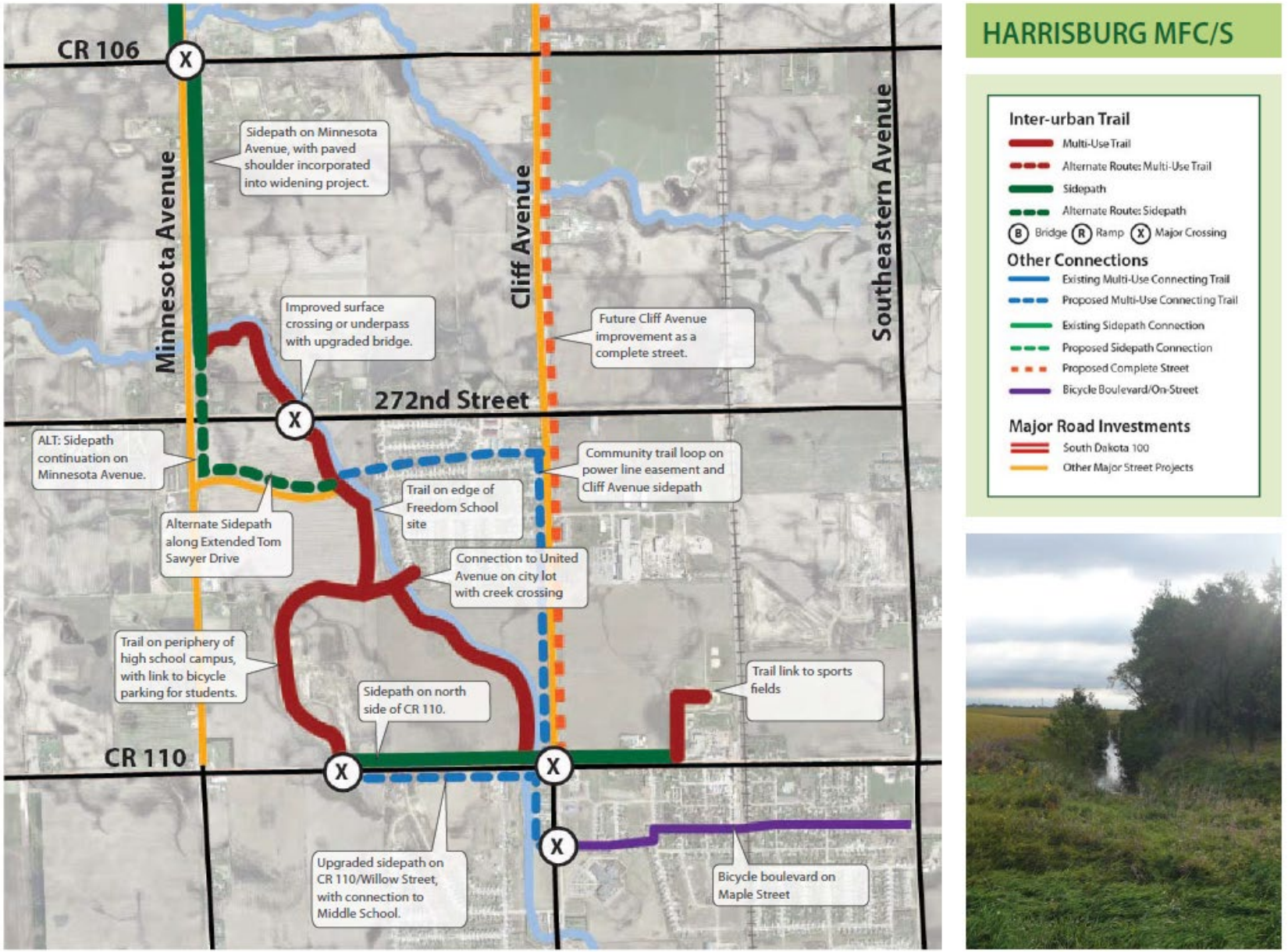


Figure 30: Trail Improvements Identified through the 2011 Sioux Falls MPO Multi-Use Trail Study



Sidepaths can be suitable in many locations, particularly where there are few driveways and intersecting streets, such as along large open spaces (e.g., golf courses, parks, fields, bodies of water, etc.).

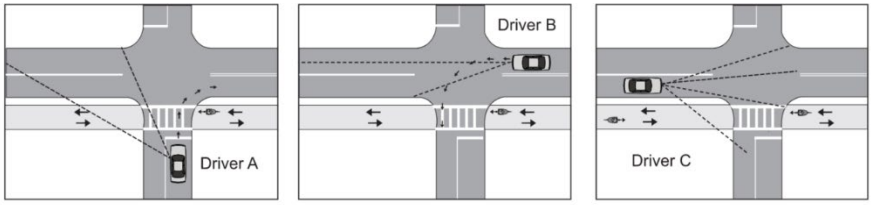
Driveways and intersecting streets crossing sidepaths create conflict points between different types of users. Because people biking travel faster than people walking, it is harder for them to stop if a vehicle approaches unexpectantly and they are more likely to enter a motorist's field of vision without sufficient time for the motorist to react. The AASHTO *Guide for the Development of Bicycle Facilities* provides an exhibit of sidepath conflicts.

Example of shared lane markings

Source: Google Streetview

When a sidepath is the preferred accommodation for people biking, designers should consider improvements to mitigate these conflicts.

Potential sidepath conflicts



Right turning Driver A is looking for traffic on the left. A contraflow bicyclist is not in the driver's main field of vision.

Left turning Driver B is looking for traffic ahead. A contraflow bicyclist is not in the driver's main field of vision.

Right turning Driver C is looking for left turning traffic on the main road and traffic on the minor road. A bicyclist riding with traffic is not in the driver's main field of vision.

Source: AASHTO Guide for the Development of Bicycle Facilities

ON-STREET BICYCLE ACCOMMODATION

Shared lane markings and bicycle boulevards help improve bike-friendliness on low volume and low speed roadways. Shared lane markings consist of a painted bicycle symbol and chevron to indicate where bicycles are anticipated to be using the roadway. They should be accompanied by a Bikes May Use Full Lane sign (MUTCD R4-11).

A bicycle boulevard uses shared lane markings and signage to designate a preferred route for people biking to access destinations. These routes may include additional features to improve their bike-friendliness, such as traffic calming measures, traffic diversion, and intersection improvements.

Bicycle and Pedestrian Crossing Standards

People biking and walking are vulnerable users of the transportation system, meaning that they are more likely to be injured or killed in a collision than people driving vehicles. Intersections and other street crossings present conflict points between different types of roadway users. To improve safety conditions, there are several treatments that can be used which improve the visibility of people biking and walking to motorists through dedication of roadway space, signage, signals, or facility design.

Controlled Crossings

Controlled crossings are most often found at the intersections of two roadways. Controls may include traffic signals or STOP signs for one or more approaches of the intersection. In areas where these intersections include trails or sidewalks, the crossing should also include:

- **Painted stop bar**: Indicates to the motorist where to stop.
- **Continental style marked crosswalk at school and trail crossings**: Indicates to motorist that pedestrians may be crossing and indicates to pedestrian where to cross.
    - Parallel lines style marked crosswalks are acceptable at other controlled crossings.
- **Detectable warnings (truncated domes and ramps)**: Provides ADA compliance.
- **Pedestrian countdown timers**: Indicates time remaining to cross, which reassures pedestrians of their ability to cross before the signal changes.
- **Turning Vehicles Yield to Pedestrians (or Bicycle/Pedestrians) sign**: Indicates to motorist to yield to people using the trail at a signalized crossing where vehicles are allowed to make a right turn on red.

Sources: Chicago Transit Authority, Chicago Metropolitan Planning Agency

Uncontrolled Crossings

Uncontrolled crossings occur where sidewalks or trails intersect a roadway where no traffic control is present. Uncontrolled crossings require improvements that bring awareness to vehicles of crossing pedestrians and bicyclists and improve safety conditions. These can occur at mid-block locations where the intersection spacing is larger than a quarter mile, there are high pedestrian generators (such as schools, parks, or other public amenities), there is a trail crossing, or the intersection only has two-way traffic control and the bicycle or pedestrian crossing is on the uncontrolled approach. The appropriate kinds of improvements depend on the roadway type, width, daily traffic volume, speed, and context of the crossing. To determine the appropriate intervention, the FHWA Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations has a guide shown in **Figure** 31.

For the City of Harrisburg, uncontrolled crossing locations may require:

- Yield pavement markings – indicates to motorists where to yield to pedestrians.
- Continental-style marked crosswalk - indicates to motorists that pedestrians may be crossing and indicates to pedestrian where to cross.
- Detectable warnings (truncated domes) and ramps – provides ADA compliance.
- Bicycle/pedestrian crossing warning signs and advance warning signs (MUTCD signs W11-15 and W11-15P or W16-7P), – indicates to motorists that people may be crossing at marked location.
- Crossings near schools should use the School Crossing Assembly (MUTCD signs S1-1 and plaques as appropriate).
- In-street pedestrian crossing signs (MUTCD signs R1-6).
- Rectangular Rapid Flashing Beacons (RRFB) – brings attention to the bicycle/pedestrian crossing warning signs by flashing only when someone is crossing.
- High-Intensity Activated Crosswalks (HAWK) – directs vehicular traffic to stop when people are using the crosswalk.
- Concrete median islands with refuge – provides protected area in the middle of the street for people crossing.
- Curb extensions (aka bulb outs) – narrows the roadway to slow motorists and shortens the crossing distance for pedestrians.

Example Bicycle and Pedestrian Crossing Signs

Source: Manual on Uniform Traffic Control Devices

Figure 31: FHWA Guide for Pedestrian Improvements at Uncontrolled Crossings

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)	❶ 2 4 5 6	❶ 5 6 7 9	① 5 6 ❼ ❾	❶ 4 5 6	❶ 5 6 7 9	① 5 6 ❼ ❾	❶ 4 5 6 7 9	① 5 6 7 9	① 5 6 ❾
3 lanes with raised median (1 lane in each direction)	❶ 2 3 4 5	❶ ❸ 5 7 9	① ❸ 5 ❼ ❾	① 3 4 5 7 9	① ❸ 5 ❼ ❾	① ❸ 5 ❼ ❾	① ❸ 4 5 7 9	① ❸ 5 ❼ ❾	① ❸ 5 ❾
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	❶ 2 3 4 5 6 7 9	❶ ❸ 5 6 7 9	① ❸ 5 6 ❾	① 3 4 5 6 7 9	① ❸ 5 6 ❼ ❾	① ❸ 5 6 ❾	① ❸ 4 5 6 7 9	① ❸ 5 6 ❾	① ❸ 5 6 ❾
4+ lanes with raised median (2 or more lanes in each direction)	❶ ❸ 5 7 8 9	❶ ❸ 5 7 8 9	① ❸ 5 8 ❾	① ❸ 5 7 8 9	① ❸ 5 ❼ 8 ❾	① ❸ 5 8 ❾	① ❸ 5 ❼ 8 ❾	① ❸ 5 8 ❾	① ❸ 5 8 ❾
4+ lanes w/o raised median (2 or more lanes in each direction)	❶ ❸ 5 6 7 8 9	① ❸ 5 ❻ 7 8 9	① ❸ 5 ❻ 8 ❾	① ❸ 5 ❻ 7 8 9	① ❸ 5 ❻ ❼ 8 ❾	① ❸ 5 ❻ 8 ❾	① ❸ 5 ❻ ❼ 8 ❾	① ❸ 5 ❻ 8 ❾	① ❸ 5 ❻ 8 ❾

Given the set of conditions in a cell,

\# Signifies that the countermeasure is a candidate treatment at a marked uncontrolled crossing location.

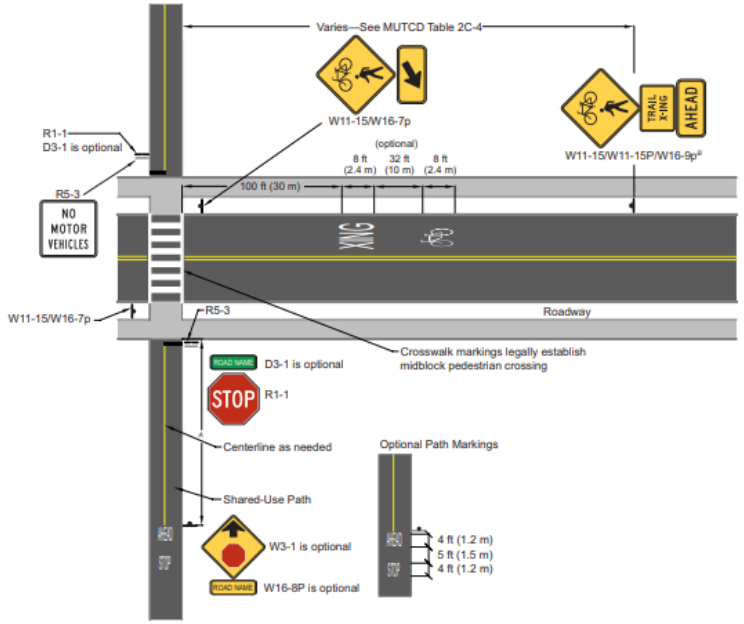
● Signifies that the countermeasure should always be considered, but not mandated or required, based upon engineering judgment at a marked uncontrolled crossing location.

○ 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)**

Example Bicycle and Pedestrian Crossing Treatments



City-wide policy for all mid-block crossings should follow these recommendations, with prioritization of mid-block crossings at key pedestrian generators such as schools, parks, and other amenities. Any existing or future mid-block crossings should have crossing improvements suited to the roadway conditions based on the FHWA matrix shown in **Figure 31.**

Potential Future Mid-Block Crossings

There are a few locations where new mid-block crossings would improve walkability in the city:

- Willow Street and Railroad Avenue
- Cliff Avenue and Hunters Gate Townhomes

The images to the right show example locations that could be good candidates for mid-block crossing improvements. Along E Willow Street, a new crossing may be aligned with Railroad Avenue. Along S Cliff Avenue, a new crossing may be needed to connect the townhomes on the west side of the road with the commercial development on the east side of the road. Further analysis will need to determine exact improvements and locations. It is anticipated that several other locations will emerge with new development by 2045.

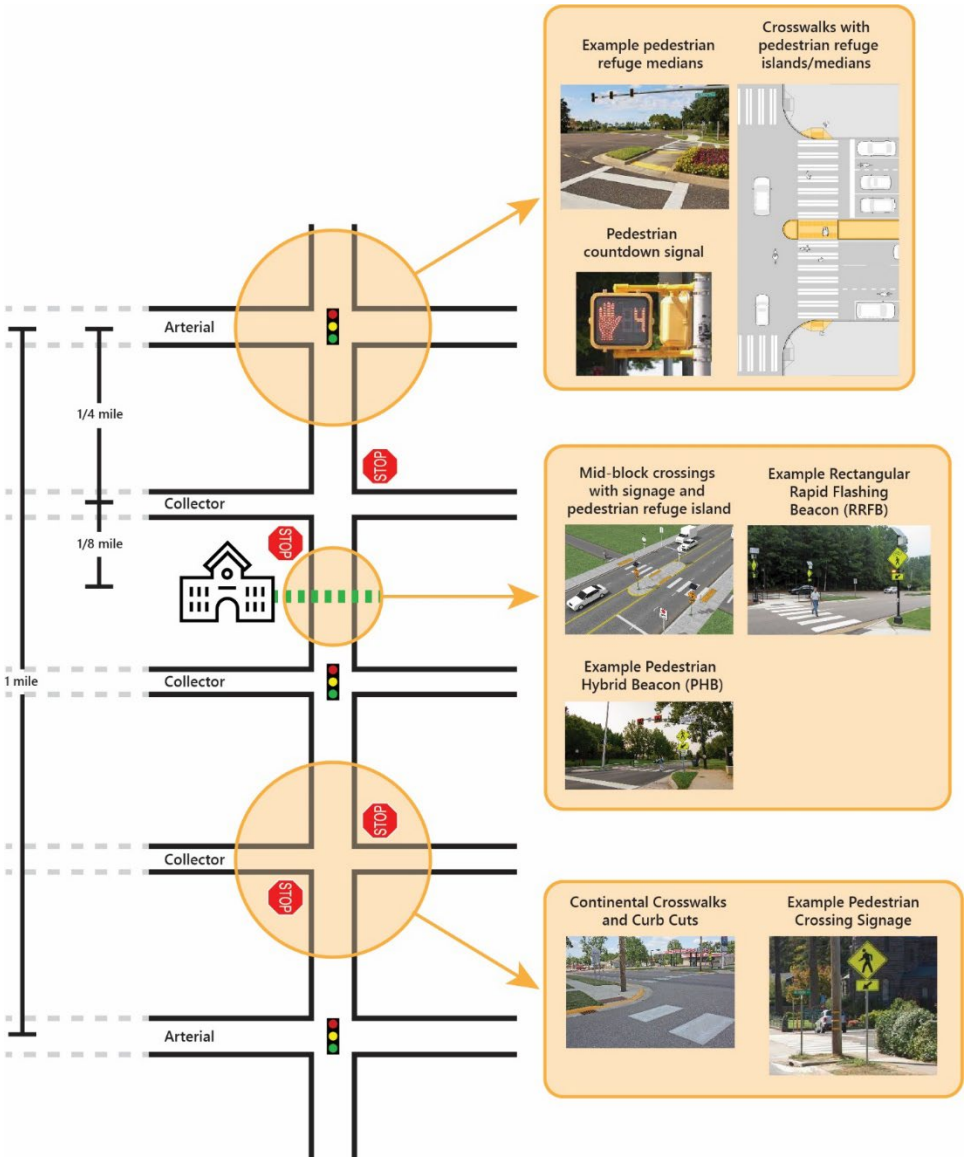
As new development is constructed, mid-block crossings should be considered when intersection spacing is larger than a quarter mile; however, crossing spacing is preferred for 1/8 of a mile in high-pedestrian areas such as near schools, parks, public services, commercial and downtown areas, among others. **Figure 32** shows a schematic showing crossing distances and types of improvements based on the roadway context.

Potential mid-block crossing along Willow Street

Potential mid-block crossing along Cliff Avenue

Sources: Google Streetview

Figure 32: Crossing Improvements Schematic



Sidepath Crossings

Where sidepath trails intersect roads and driveways, additional crossing markings may be warranted depending upon the field of vision associated with the intersection and the volume of vehicular traffic. Other factors, such as the anticipated speed of bicyclists (e.g., downhill bicyclists will travel faster and enter the motorist's field of vision with less time for the motorist to react than uphill bicyclists), will also influence the need for conflict mitigation improvements. Improvements may include:

- STOP sign for motorists on driveways – indicate to motorists to stop
- Yield pavement markings – indicates to motorists where to yield to pedestrians
- Continental-style marked crosswalk - indicates to motorists that pedestrians may be crossing and indicates to pedestrian where to cross
- 2-WAY BICYCLE CROSS TRAFFIC– alerts motorists of bicyclists that might be approaching from a direction counter to customary scanning behavior of motorists at a STOP sign. This sign would be posted under a STOP sign at streets and driveways. *(Note: This sign, W16-21P, is proposed in the MUTCD update planned to be completed by May 2023.)*

If there are particularly problematic intersections, design and infrastructure modifications such as providing a raised crosswalk or moving the crossing back from the roadway may be considered.

The image below shows an example location where crossing improvements would be beneficial to improve the safety of bicyclists and pedestrians by increasing visibility to vehicles entering and exiting the driveway. In this example, crosswalk pavement markings and a STOP sign for motorists with the 2-WAY BICYCLE CROSS TRAFFIC plaque may be added.

Location needing crossing improvements on Willow Street

Source: Google Streetview

2-Way bicycle cross traffic sign proposed in the MUTCD update

Future Conditions

Anticipated housing and employment growth in Harrisburg will increase future travel demand. Forecasted traffic volumes provide an understanding of how the 2045 transportation system will operate. Based on the results of the future conditions analysis, a series of potential improvement alternatives were developed to address the issues and deficiencies identified.

Future Growth in Harrisburg

Estimating future conditions for Harrisburg was based on population and employment forecasts provided by the Sioux Falls MPO for the year 2045, which is the horizon period for this MTP.

Population and employment are the two main factors that influence travel demand, and thus are viewed as the primary determinants of traffic. By forecasting the amount of population and employment growth expected to occur in the community through 2045, we can develop an understanding of traffic operations resulting from this growth.

Table 19 summarizes the estimated growth levels for population, households, and employment through 2045. The resulting forecasts indicate a significant amount of growth anticipated for the Harrisburg area, with the population anticipated to grow 3.7 percent per year and employment to also grow at 3.7 percent per year. Over 5,000 new households are expected to be in the community by the year 2045.

Figure 33 and **Figure 34** illustrate where household growth and employment growth are anticipated to occur.

Table 19: Population, Household, and Employment Growth for Harrisburg, 2018 - 2045

	2018	2045	Total Growth (2018 -2045)	Annual Growth
Population	8,925	23,911	168%	3.7%
Households	3,071	8,361	172%	3.8%
Employment	3,566	9,512	167%	3.7%

A Flexible Plan for a Dynamic Community

Historical growth rates in the Harrisburg area have varied over the years but have accelerated dramatically since 2000. The population in 2000 was 958 people, growing to 6,700 by 2020. The growth rate has been almost 8% annually over the past 30 years. As Harrisburg becomes a larger portion of the fast-growing Sioux Falls metro area, as a percentage those rates are anticipated to decline somewhat going into the future. However, at the 3.7% annual growth rate shown in Table 19 there is still a substantial growth of nearly 15,000 population and nearly 6,000 new jobs in the Harrisburg area.

It is in recognition of this fast-growing, dynamic environment that the MTP has purposely built in flexibility of street recommendations. If some corridor growth exceeds the 2045 forecasts during the life of this plan, there are standards included to accommodate that accelerated growth.

Figure 33: Estimated Household Growth, 2018 - 2045

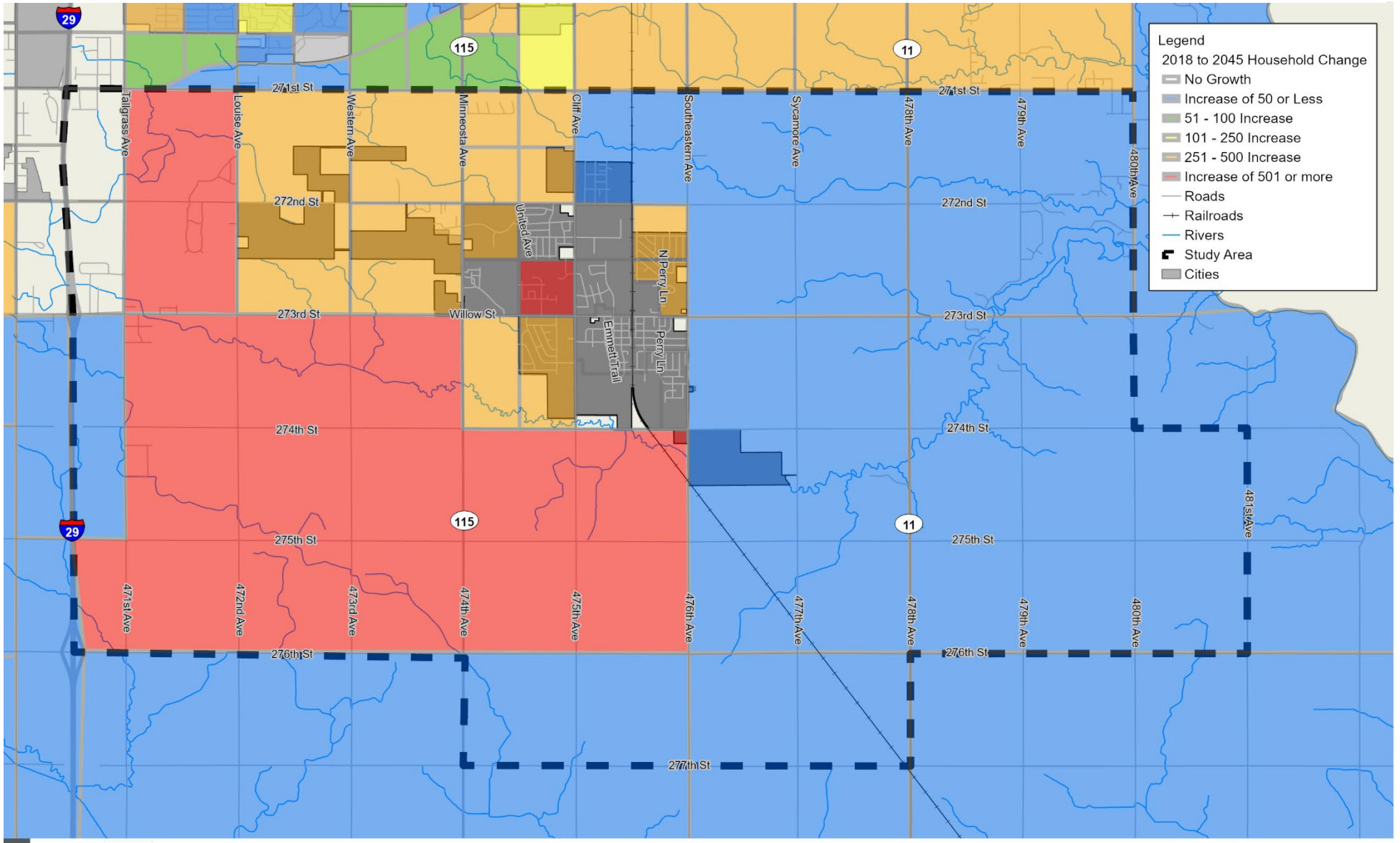
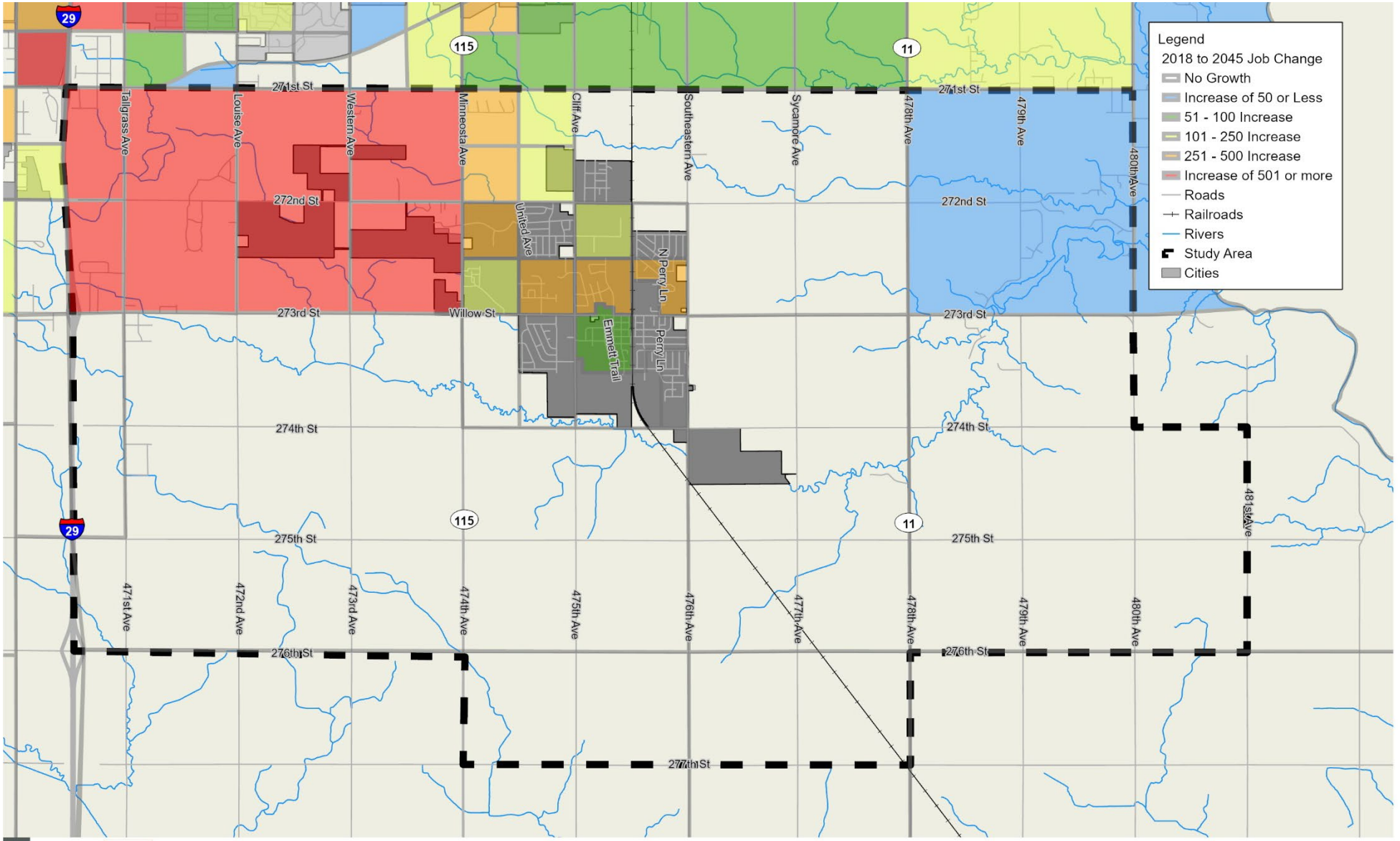


Figure 34: Estimated Employment Growth, 2018 - 2045



Traffic Forecasts

Traffic forecasts were developed using the Sioux Falls Metropolitan Planning Organization's (MPO) Travel Demand Model (TDM) for the year 2045. The TDM is a set of mathematical procedures that estimate future traffic levels based on anticipated household and employment growth in addition to the transportation system in place. Identified transportation improvements that are planned for implementation are also incorporated in the TDM to better reflect the transportation network of the future.

Forecast Scenarios

Traffic forecasts were developed for the Sioux Falls MPO's "Plan" scenario. This scenario serves as an estimation of traffic operations for the future road network with the fiscally constrained transportation improvements from the Sioux Falls MPO LRTP.

Plan Scenario Performance

Performance statistics, shown in **Table 20**, derived from the MPO's TDM outputs summarize travel conditions for the base and Plan scenarios to illustrate the expected changes in system-wide travel between 2018 and 2045.

Table 20: Comparison of Performance for Base and Plan Scenarios

	Base Scenario (2018)	Plan Scenario (2045)	Percent Change
Trips	31,075	93,019	199%
Vehicle Miles Traveled (VMT)	159,091	272,532	71%
Vehicle Hours Traveled (VHT)	3,090	7,362	138%
Trips per Household	10.12	11.13	10%
Average Trip Speed	51.49	37.02	-28%
Average Trip Length	5.12	2.93	-43%
Average Trip Time	5.97	4.75	-20%

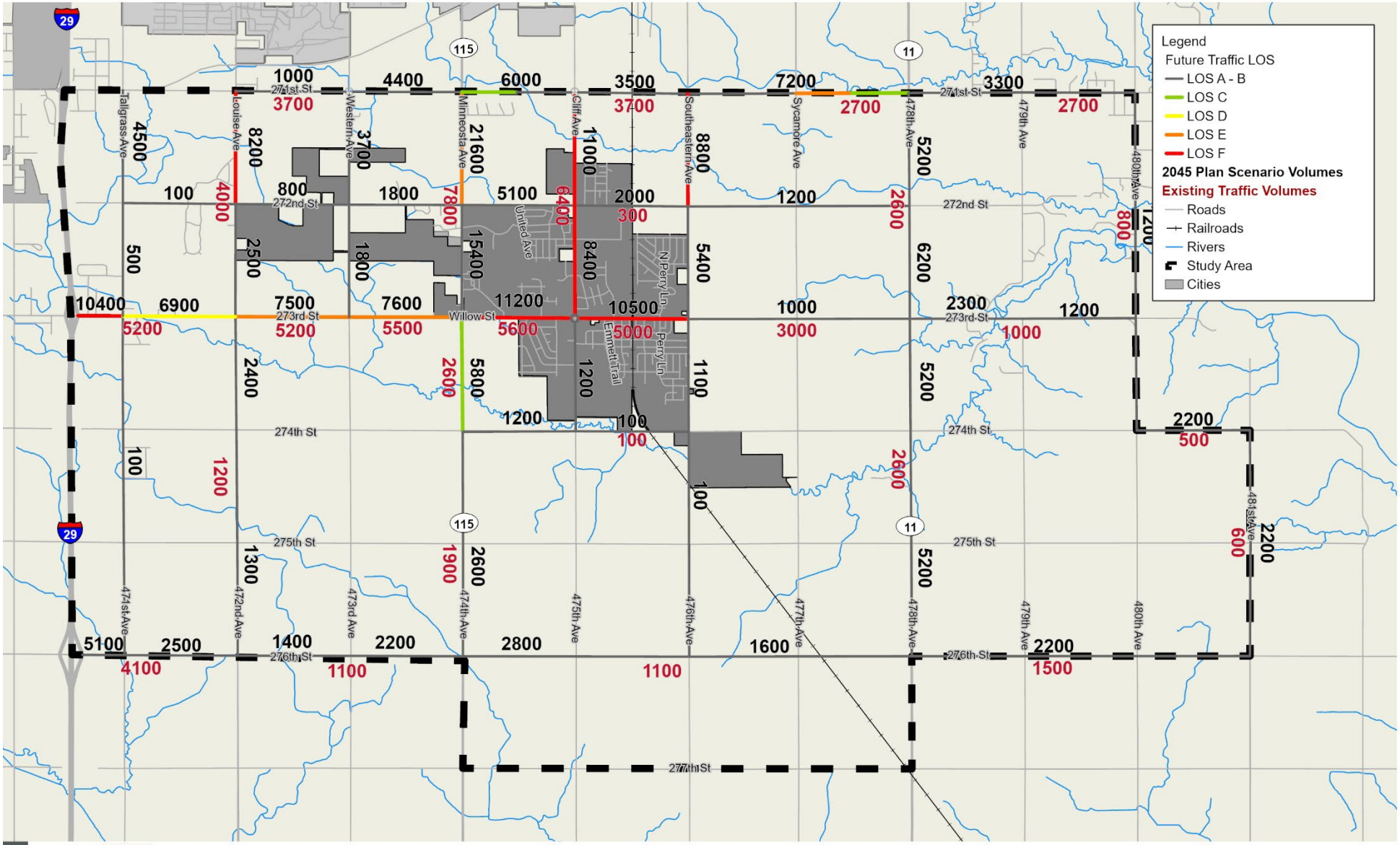
Total trips made under the Plan scenario are estimated to increase nearly 200 percent over the base scenario and this growth is due to the rapid population and employment growth that is expected to occur within the MTP study area.

Vehicle miles traveled (VMT), summarized as total daily travel on the roadway system, are estimated to increase by 71 percent while vehicle hours traveled (VHT), summarized as the total of daily vehicle hours spent traveling, are estimated to increase by nearly 140 percent. What these trends are likely showing is:

- **Shorter Trips within the Study Area:** When you compare Trip Growth (+199%) compared to total distance traveled by all vehicles (VMT Growth at 71%), the trend indicates a huge shift in study area travel. Today, a large portion of travel is long trips through the study area and between Harrisburg and Sioux Falls. In the future, there will be a much larger number of trips generated in the study area which means there will be many more opportunities for shorter work and shopping trips that occur entirely within the study area.
- **More Trips at a Slower Speed**: When you compare VMT Growth (+71%) to VHT Growth (+138%) these two trends indicate an overall decrease in average trip speeds. This is likely indicative of more traffic using lower speed arterials (like Cliff and Willow) compared to higher speed highways (like Highway 115 and Highway 11) and increases in congestion without arterial street improvements.

As shown in **Figure 355**, the future 2045 traffic forecasts (based on the MPO TDM) and associated estimated future traffic operations for the Plan scenario anticipate increased congestion along the Cliff Avenue corridor between 271st Street and Willow Street and on Willow Street between Minnesota Avenue and Southeastern Avenue; Louise Avenue north of 272nd is also anticipated to see a rise in congestion by 2045. Other areas expected to experience congested traffic flows by 2045 are Minnesota Avenue between 271st Street and 272nd Street, and Willow Street between Minnesota Avenue and Louise Avenue.

Figure 35: Plan Scenario Traffic Forecasts



Funding Analysis

This chapter summarizes an analysis of transportation funding trends and options for the City of Harrisburg, with the goal of identifying typical transportation revenues and expenditures going forward. A future funding scenario will serve as the basis for timing and implementing recommended improvements as part of the MTP.

The analysis reviewed current and previous Capital Improvement Plans (CIP) and budgets for the city, as well as state and federal spending for the area. Based on the revenues and expenditures identified during the review, a series of funding projections were developed through the year 2045. The resulting projections of annual transportation revenues and expenditures were grouped into the following time bands:

- **Capital Improvement Plan Term**: 2021 – 2025
- **Short-term**: 2026 – 2030
- **Mid-term**: 2031 – 2037
- **Long-term**: 2038 – 2045

Recommended improvements identified as part of the MTP update will be scheduled according to the short-, mid-, and long-term time bands based on a series of factors, namely the improvement's priority in addressing local needs and estimated cost. The Capital Improvement Plan Term covers all improvements programmed under the current CIP and considers these improvements to be committed.

Funding Sources

Funds spent on the transportation system are from a variety of local, state, and federal sources.

Local Funding Sources

Local funds are the main sources of transportation funding in Harrisburg. Harrisburg's General Fund provides most of the funding spent on the transportation system while additional sources supplement that funding. The major local sources for transportation funds are:

- **General Fund**: Funds services performed by the City of Harrisburg. General fund revenues come from property taxes, sales taxes, fees, permits, transfer payments, grants, fines, annual special assessments, and interest income.
- **Street Lighting Fund**: Revenues from the city's street light service fee.
- **Arterial Street Fund**: Revenues from arterial street platting fees and arterial street building permit fees.
- **Maintenance Assessments**: Revenues from the city's street maintenance assessment levied on lots fronting and abutting public right-of-way (ROW).
- **Motor Vehicle Commercial Prorate**: Revenue from Lincoln County's motor vehicle fees.
- **Motor Vehicle Licenses**: Revenue from Lincoln County's motor vehicle license fund allocated to Lincoln County cities based on total street miles.
- **County Highway and Bridge Reserve Tax:** Revenues from Lincoln County's Highway and Bridge Fund.

- **County Wheel Tax**: Revenues from Lincoln County's wheel tax fund. These funds are available only for highway and bridge maintenance and construction.

State Funding Sources

State funding for highway and bridge projects is available to Harrisburg through several sources. The main State sources include:

- **Local Government Highway / Bridge Fund**: Revenue from the State's Local Government Highway / Bridge Fund. Harrisburg receives 1.31% of funds from this source each year.
- **State Grants**: Revenue from State grants and reimbursements.
- **Surface Transportation Program (STP) Funds:** SDDOT allocates the funds to Class I cities, defined as those with populations between 5,000 and 50,000, through a formula-based approach that accounts for population, number of state and federal route lane miles, land mass, and fringe development.

Federal Funding Sources

Federal transportation funding dollars are allocated to the South Dakota Department of Transportation (DOT). The Federal programs that SDDOT can use within the study area include:

- **Surface Transportation Block Grant Program (STBG)**: Funding for state or local use for projects on any Federal-aid highway or bridge projects 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. The only NHS corridors in the study area are I-29 and South Dakota Highway 115.
- **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 schools projects, historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity.

Due to the absence of public transit service in the community, Harrisburg does not receive Federal Transit Administration funds.

Historical Transportation Funding in Harrisburg

Transportation program revenues and expenditures for the years 2016 through 2020 were reviewed to establish the baseline funding trends used to forecast future funding levels. The following sections summarize revenues and expenditures for Harrisburg's transportation program.

Several additional revenue sources contributed to Harrisburg's historical transportation program.

Historical Transportation Revenues

Historical revenues for Harrisburg's transportation program totaled $5.7 million between 2016 and 2020, as shown in **Table 21**. Most of these revenues came from General Fund supplements, which were drawn from the city's General Fund to bridge the gap between project costs and allocated funding. Maintenance assessments were a second major source of revenue and provided a significant amount of dollars for system preservation needs at just over $1.2 million during the 5-year period.

SDDOT's STP provided Harrisburg with $636,000 between 2017 and 2020, while proceeds from loans and intergovernmental transfers provided the city with $668,000 and $158,000, respectively, in revenue.

Historical Transportation Expenditures

Historical expenditures for Harrisburg's transportation system between 2016 and 2020 balanced with the revenues for the same period. **Table 22** details how Harrisburg spent its transportation program dollars during these five years. Note that several expenditure items relate to administrative and similar expense types; further discussion of transportation expenditures will exclude administrative expenditures to focus on capital improvements and operations and maintenance (O&M) related spending.

The largest expenditure category was Capital Improvements at $1.7 million, much of it spent in 2020. Preservation spending, comprised of maintenance improvements ($748,000) and O&M expenditures ($711,000), was another sizable portion of spending during this timeframe.

Table 21: Local Transportation Program Revenues for the City of Harrisburg, 2016 - 2020

Revenue Source	2016	2017	2018	2019	2020	Total
General Fund Supplement	$419,000	$492,000	$338,000	$342,000	$1,403,000	**$2,994,000**
Maintenance Assessments	$130,000	$196,000	$244,000	$300,000	$367,000	**$1,237,000**
Loan Proceeds	$0	$668,000	$0	$0	$0	**$668,000**
SDDOT STP Funds	$0	$75,000	$184,000	$184,000	$193,000	**$636,000**
Intergovernmental Road Transfers	$31,000	$26,000	$33,000	$34,000	$34,000	**$158,000**
Street Lighting Fee	$0	$0	$0	$0	$50,000	**$50,000**
Total	**$580,000**	**$1,457,000**	**$799,000**	**$860,000**	**$2,047,000**	**$5,743,000**

Table 22: Transportation Program Expenditures for the City of Harrisburg, 2016 - 2020

Expenditure Source	2016	2017	2018	2019	2020	Total
Capital Improvements	$25,000	$668,000	$0	$0	$1,026,000	**$1,719,000**
Employee Wages	$214,000	$250,000	$241,000	$265,000	$322,000	**$1,292,000**
Maintenance Improvements	$95,000	$180,000	$198,000	$115,000	$160,000	**$748,000**
Operations and Maintenance	$96,000	$90,000	$102,000	$167,000	$256,000	**$711,000**
Street Lighting	$115,000	$111,000	$115,000	$120,000	$140,000	**$601,000**
Major Equipment Purchases	$35,000	$158,000	$53,000	$103,000	$14,000	**$363,000**
Debt Service	$0	$0	$90,000	$90,000	$129,000	**$309,000**
Total	**$580,000**	**$1,457,000**	**$799,000**	**$860,000**	**$2,047,000**	**$5,743,000**

HISTORICAL TRANSPORTATION DOLLARS ALLOCATIONS

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

- System Expansion: Expands the transportation system through the construction of a new facility or expands an existing facility through an improvement like widening.
- System Preservation: Preserves the transportation system through maintenance efforts that repair or rehabilitate existing infrastructure.

Table 23 shows how Harrisburg has spent past transportation dollars on system expansion and system preservation projects. Between 2016 and 2020, the city spent just over $1.7 million on expanding the system, with the bulk of those dollars spent in 2020. System preservation spending equaled $1.95 million over the five-year period and saw a gradual increase during this timeframe. Overall spending on the transportation system saw approximately 47 percent of funds spent on expanding the system while 53 percent of funds were spent on preserving the system.

Table 23: Historic Local Spending on Capital Improvements and Operations and Maintenance

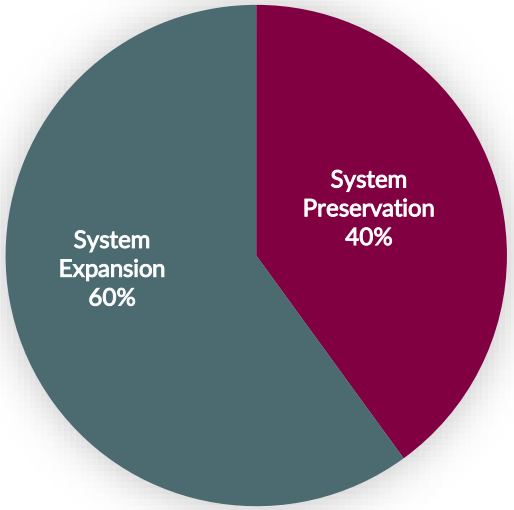
Project Type	2016	2017	2018	2019	2020	Total
System Expansion	$25,000	$668,000	$0	$0	$1,026,000	**$1,719,000**
System Preservation	$226,000	$286,000	$346,000	$467,000	$623,000	**$1,948,000**
Total	**$251,000**	**$954,000**	**$346,000**	**$467,000**	**$1,649,000**	**$3,667,000**

While planning and constructing system expansions is necessary to improve traffic operations and accommodate growth, maintaining the existing system is the current priority for Harrisburg. Recent trends indicate more funding coming into the city's transportation budget to spend on system expansion. To develop a future funding scenario that balances preservation of the existing system while addressing expansion needs, the MTP assumes future transportation funding will follow an allocation of 40 percent of funding spent on system preservation and 60 percent of funding spent on system expansion.

Future Funding Scenario

A future funding scenario was developed to estimate the total transportation funding that will be available to the City of Harrisburg through the year 2045 to ensure identified future improvements have reasonable cost constraints. Funding levels discussed as part of the scenario are presented in terms of the time bands shown earlier; **Table 24** shows the sum of forecasted revenues by time band. Assumptions for the future funding scenario include:

- A 3.5% annual growth factor was applied for local revenues, reflective of estimates of tax base growth.
- STP and TAP funds for the state were grown at 1.5% annually, based on input from SDDOT. Harrisburg's estimated share of these revenues was grown based on a ratio of Harrisburg's forecasted population growth relative to the anticipated rate of growth for South Dakota's population. This means that Harrisburg was provided a proportional share increase of the state pot for STP (dedicated) and TAP (competitive).



As seen in the table, revenues in the short-term (2026-2030) are anticipated to equal $13.3 million, with most of these funds coming from the city's General Fund. Mid-term (2031–2037) funding is forecasted to be just over $23 million, with the majority of this sum expected to come from the General Fund, Maintenance Assessments, and state STP funding. Long-term (2038–2045) funding was forecasted to be $34.5 million, which results in a total of $71 million available to the city for transportation improvements through the planning horizon.

Applying the system preservation, system expansion, and preliminary engineering allocations described in the Historical Funding Trends section yields the funding levels shown in **Table 25**. It is anticipated that Harrisburg will have a total of $28.4 million available for system preservation and $42.6 million available for system expansion based on revenue forecasts and current revenue sources.

Table 24: Forecasted Revenues by Time Band

Revenue Source	Time Band			Total
	Short-term (2026 – 2030)	Mid-term (2031 – 2037)	Long-term (2038 – 2045)	
General Fund	$5,500,000	$9,500,000	$14,000,000	**$29,000,000**
Arterial Street Fees	$1,700,000	$2,900,000	$4,200,000	**$8,800,000**
Maintenance Revenues	$4,400,000	$7,700,000	$11,300,000	**$23,400,000**
STP Funds	$1,400,000	$2,500,000	$4,000,000	**$7,900,000**
TAP Funds	$300,000	$600,000	$1,000,000	**$1,900,000**
Total	**$13,300,000**	**$23,200,000**	**$34,500,000**	**$71,000,000**

Table 25: Forecasted Funding Allocations by Time Band

Time Band	System Preservation	System Expansion	Total
Short-term (2026 – 2030)	$5,320,000	$7,980,000	**$13,300,000**
Mid-term (2031 – 2037)	$9,280,000	$13,920,000	**$23,200,000**
Long-term (2038 – 2045)	$13,800,000	$20,700,000	**$34,500,000**
Total	**$28,400,000**	**$42,600,000**	**$71,000,000**

Plan Recommendations

The development of the recommended network improvements presented in this chapter were guided by public input received during the MTP process and existing and future conditions analyses that highlighted the most pressing needs of the community.

Discussion of the Plan recommendations is framed around the implementation time bands described in the Funding Analysis chapter of the Plan:

- **Short-term**: 2026 – 2030
- **Mid-term**: 2031 – 2037
- **Long-term**: 2038 – 2045

Supplementing the recommended implementation timing schedule are planning-level estimated costs, shown for both 2022 and year-of-expenditure (YOE) dollars. Project construction costs are assumed to grow at 3% annually compounded. Costs are shown in the middle year of each time band (e.g., 2026-2030 costs escalated to the year 2028). The unit costs used to estimate planning-level costs for the recommended roadway network improvements are shown in **Table 26.**

Table 26: Roadway Unit Cost Assumptions

Improvement Type	Cost (2022 $)	Unit
New 2-lane rural paved roadway (with paved shoulders)	$3,500,000	per mile
New 3-lane urban roadway	$5,000,000	per mile
Add urban turn lane at intersections	$400,000	per turn lane
Add rural turn lane	$250,000	per turn lane
Widen to 3-lane urban facility (includes reconstruction)	$5,000,000	per mile
2-lane rural paving and reconstruction (with paved shoulders)	$3,500,000	per mile
New bridge	$225	per sq ft
New traffic signal	$400,000	per signal
New interchange	$25,000,000	per interchange
Traffic signal upgrades (signal)	$75,000	per signal
Traffic signal upgrades (communications)	$30	per foot
2-lane concrete reconstruction	$3,500,000	per mile

Recommended Street Projects

The planned roadway projects are shown in **Figure 36**, by anticipated project timing, including the current capital improvement program projects of:

- Willow St / Cliff Ave Intersection Capacity Improvements
- 272nd Street paving between Minnesota and the railroad tracks
- Southeastern Ave paving south of Willow St

Table 27 provides a summary of all of the recommended street projects and associated costs.

The projects shown in **Figure 36** reflect sufficient capacity improvements to limit recurring congestion in the study area through 2045 (based on Sioux Falls MPO traffic forecasts).

Figure 36: Recommended Network Improvements Implementation Timing

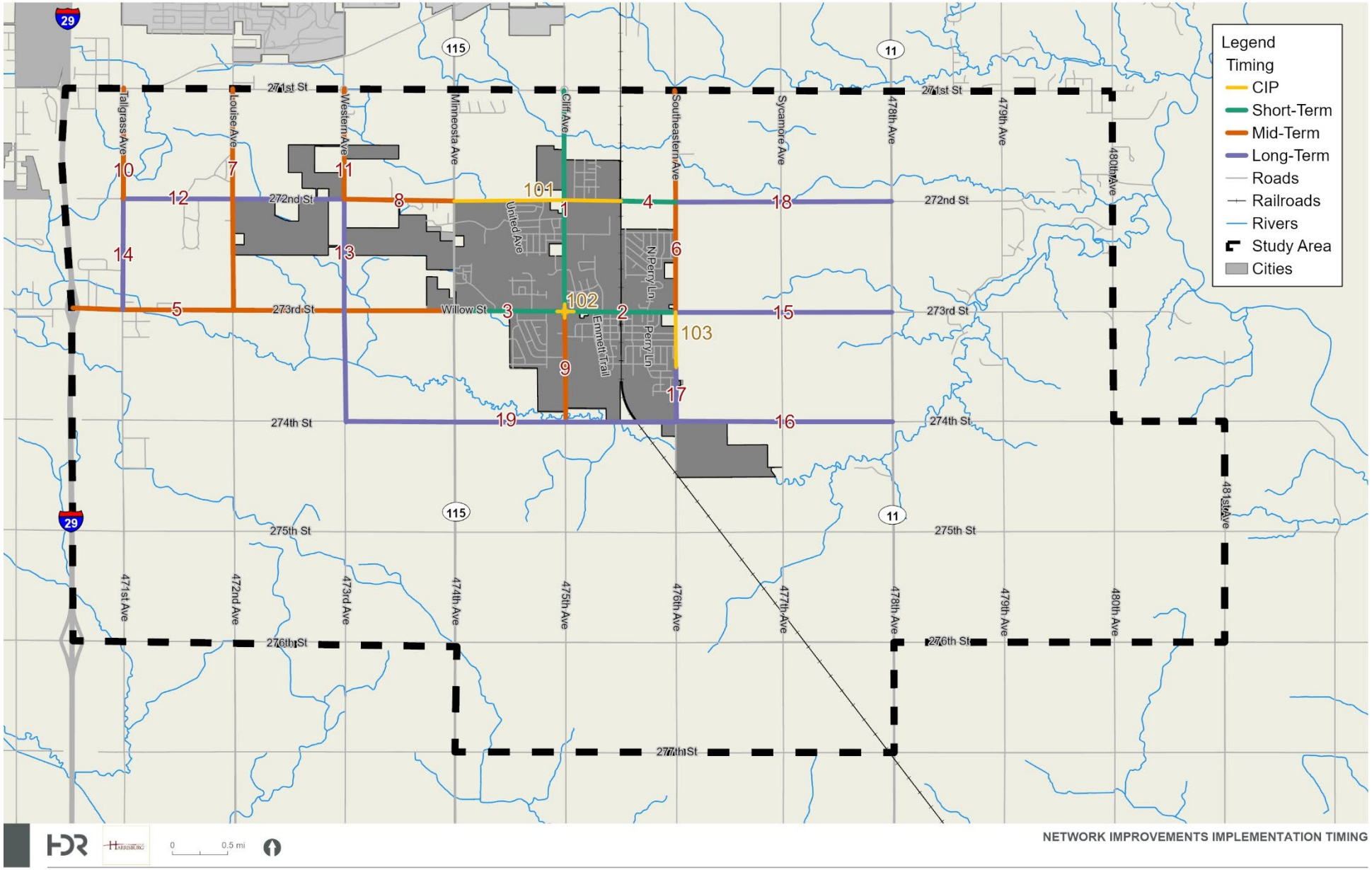


Table 27: Summary of Recommended Network Improvement Implementation Timing

Time Band	Project ID	Name	Improvement Type	Cost (2022 $)	Cost YOE
Short-Term (2026 - 2030)	1	Cliff Avenue, Willow to 271st	Widen To 3-Lane Urban Facility	$10,000,000	$11,900,000
	2	Willow Street, Cliff to Southeastern	Widen To 3-Lane Urban Facility	$5,000,000	$6,000,000
	3	Willow Street, Minnesota to Cliff	Widen To 3-Lane Urban Facility	$5,000,000	$6,000,000
	4	272nd Street, railroad to Southeastern	Pave & Widen To 3-Lane Urban Facility	$2,500,000	$3,000,000
	Short-Term Total			**$22,500,000**	**$26,900,000**
Mid-Term (2031 - 2037)	5	Willow Street, I-29 to Minnesota	Widen To 3-Lane Facility	$17,500,000	$25,000,000
	6	Southeastern Avenue, Willow to 271st	Widen To 3-Lane Facility	$10,000,000	$14,300,000
	7	Louise Avenue, Willow to 271st	Widen To 3-Lane Urban Facility	$10,000,000	$14,300,000
	8	272nd Street, Western to Minnesota	2-Lane Rural Paving	$3,500,000	$5,000,000
	9	Cliff Avenue, 274th to Willow	Widen To 3-Lane Urban Facility	$5,000,000	$7,100,000
	10	Tallgrass Avenue, 272nd to 271st	2-Lane Rural Paving	$3,500,000	$5,000,000
	11	Western Avenue, 272nd to 271st	2-Lane Rural Paving	$3,500,000	$5,000,000
	Mid-Term Total			**$53,000,000**	**$75,700,000**
Long-Term (2038 - 2045)	12	272nd Street, Tallgrass to Western	2-Lane Rural Paving	$7,000,000	$12,500,000
	13	Western Avenue, Willow to 272nd	2-Lane Rural Paving	$7,000,000	$12,500,000
	14	Tallgrass Avenue, Willow to 272nd	2-Lane Rural Paving	$3,500,000	$6,200,000
	15	Willow Street, Southeastern to 478th	Widen To 3-Lane Facility	$10,000,000	$17,800,000
	16	274th Street, Southeastern to 478th	Pave & Widen To 3-Lane Facility	$10,000,000	$17,800,000
	17	Southeastern Avenue, 274th to ½ mile north	Widen To 3-Lane Facility	$2,500,000	$4,400,000
	18	272nd Street, Southeastern to 478th	Pave And Widen To 3-Lane Urban Facility	$7,000,000	$12,500,000
	19	274th Street, Western to Southeastern	2-Lane Rural Paving	$10,500,000	$18,700,000
	Long-Term Total			**$57,500,000**	**$102,400,000**
Total				$133,000,000	$205,000,000

Recommended Bicycle and Pedestrian Projects

The planned bicycle and pedestrian projects are shown in **Figure 377** by anticipated project timing. **Table 28** provides a summary of all of the recommended bicycle and pedestrian projects and associated costs. Many of these projects are sidepath projects that would be completed at the time of adjacent street construction projects.

An additional recommendation of the bicycle and pedestrian element is to provide safe pedestrian crossings at key locations, as discussed in the Standards Development chapter. The standards identified in that chapter should provide the tools to monitor conditions in Harrisburg as growth occurs and identify when new crossing improvements should occur.

Funding Gap

As noted in **Table 27** and **Table 28**, the project needs (costs) in the study area are anticipated to outpace current revenue sources through 2045. The system-wide gap in funding is estimated to be roughly $146 million, based on the YOE costs associated with the roadway, bicycle, and pedestrian improvements shown in **Table 27** and **Table 28**.

The need to fund system expansion is apparent, as evidenced by the substantial growth anticipated to occur in the community. While the MTP recommends 60 percent of future transportation funds be dedicated to funding improvements that add system capacity, there is potential need to identify alternate funding sources, such as grants, to help fund future improvements. A second alternative would be to allocate a portion of preservation funding for expansion.

The recommended strategy for addressing the funding gap is for the city to continually monitor growth patterns and the resulting impacts on daily traffic volumes so that system improvements can be targeted to those areas of the community that are most impacted by growth pressure.

Additional Plan Recommendations

Through the process of plan development, additional special items have been identified through this plan.

Highway 11 and Highway 115 Improvements

Corridor studies are currently underway on Highways 11 and Highway 115 in the study area. Issues are anticipated to emerge on these highways during the planning horizon of 2022-2045. As traffic volumes grow on Highway 11, it is anticipated that safety issues could begin to emerge at intersections through the corridor. Safety recommendations that come as a part of the corridor study are supported by this MTP.

Traffic capacity on Highway 115 should be sufficient through 2045. However, safety concerns could emerge south of Cliff Avenue where the corridor was recently widened. Safety and potentially intersection improvement recommendations that come as a part of the corridor study are supported by this MTP

Neighborhood Circulation and Safety Near Schools

Many of the issues identified by the public and stakeholders related to morning drop off and afternoon pickup at schools in neighborhoods and Harrisburg High School. Through a safe routes to school approach, there is the opportunity to identify moderate intersection control improvements, traffic management approaches for school hours, and improved neighborhood pedestrian crossings to mitigate some of these conflicts.

Explore Expanded Transportation Funding Options

As demonstrated in this MTP, as Harrisburg grows its local and state revenues will grow as well. However, the transportation system needs will outpace current sources of revenue, even with that growth. Opportunities to investigate new funding sources include:

- **Federal Grants**. There are several new grant opportunities with the Infrastructure Investment and Jobs Act (IIJA). Federal earmarks are also more available now through the political process.
- **Identify Additional Sustainable Sources of Local Funding**. As the community grows, there will be opportunities to capture new revenues to provide transportation service to new residents and businesses in the area.

Develop a Plan for 271st Street After Veteran's Parkway is Built

One of the ideas that came up during MTP development was completing a detailed corridor study for 271st Street along the northern edge of the study area. When Veteran's Parkway is built, it will carry much of the regional traffic in this part of the Sioux Falls metropolitan area, and the type of traffic and needs of 271st will change. It will also likely urbanize rapidly, and a study that evaluates cross-section needs, access needs, and pedestrian and bike needs to effectively serve adjacent land uses would be helpful to plan for the future of this corridor.

Willow Street Corridor Initiative

There is a civic group advocating for the near-term improvement of the Willow Street corridor between Cliff Avenue and Interstate 29 (Projects 3 & 5; **Table 27**). An illustration of the typical project development process is shown in **Figure 38**. As shown, inclusion in the Master Transportation Plan is just the first step in a project becoming a reality. Additional project work, analysis, and design is required for projects to be implemented.

An illustration of the typical project development process is shown in **Figure 38**. As shown, inclusion in the Master Transportation Plan is just the first step in a project becoming a reality. Additional project work, analysis, and design is required for projects to be implemented.

Figure 37: Recommended Bicycle and Pedestrian Improvements Implementation Timing

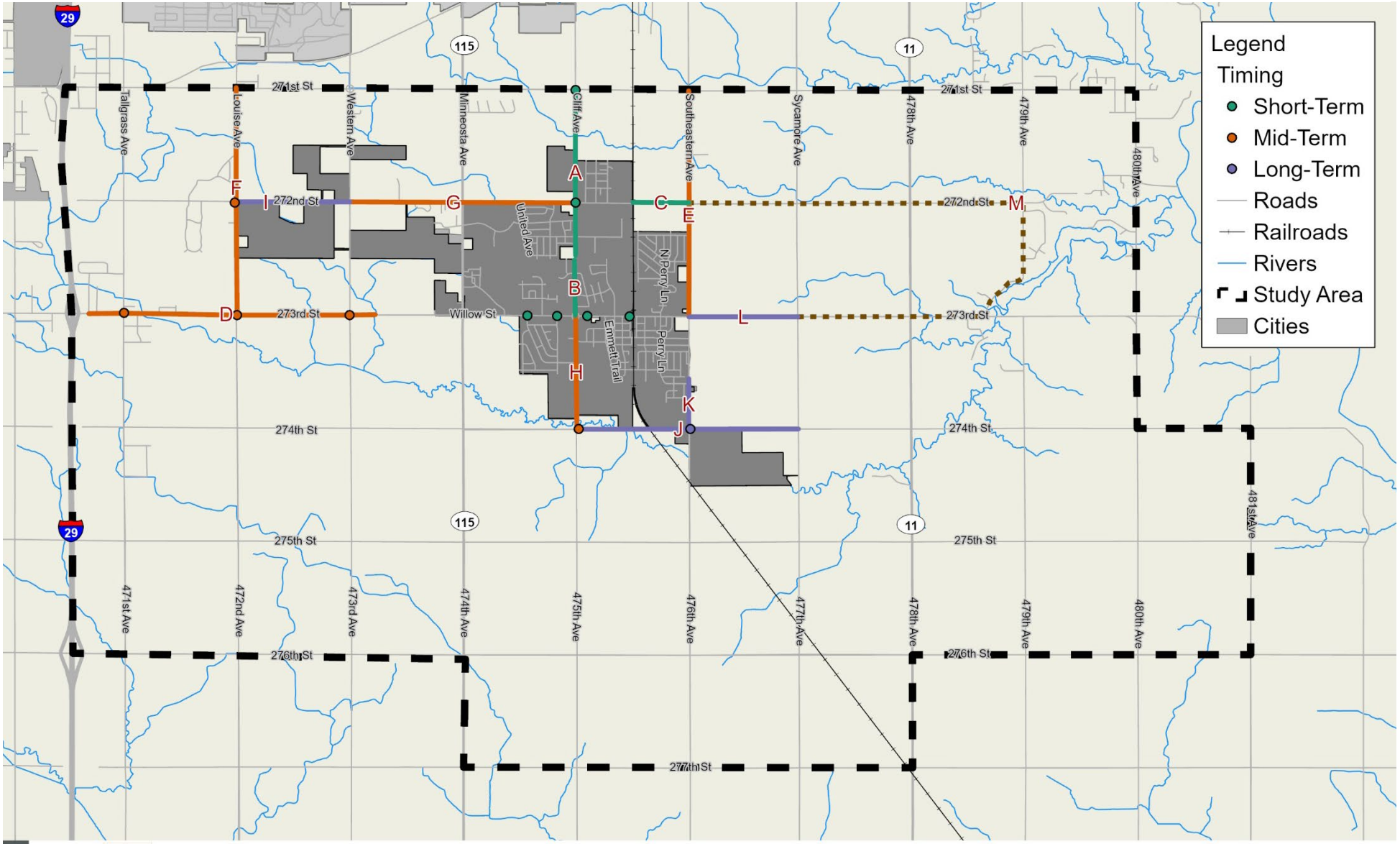
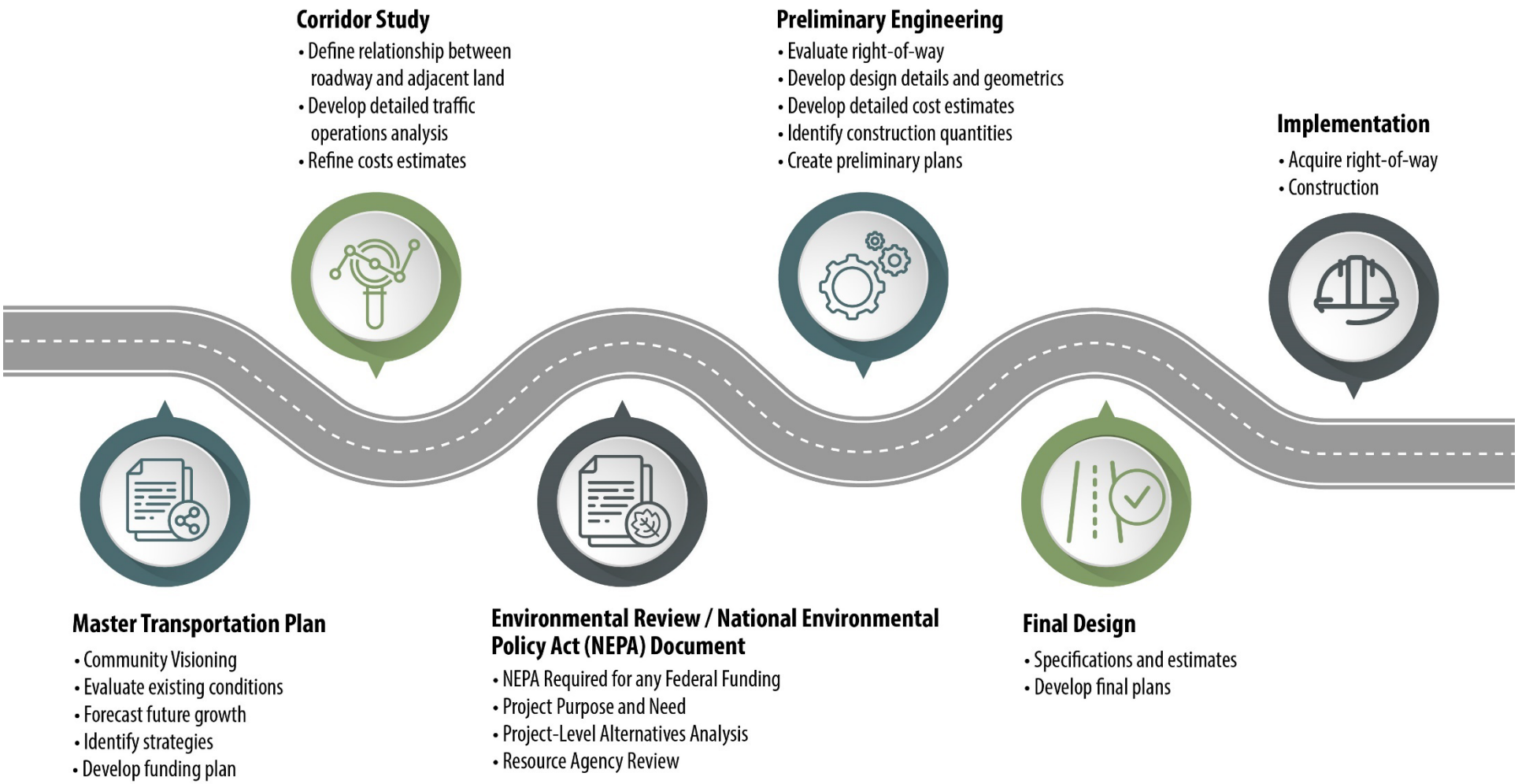


Table 28: Summary of Recommended Bicycle and Pedestrian Network Improvement Implementation Timing

Time Band	Project ID	Name	Improvement Type	Cost (2022 $)	Cost YOE
Short-Term (2026 - 2030)	A	Cliff Avenue	Sidepath	$800,000	$1,000,000
	B	Cliff Avenue	Pave Sidepath	$300,000	$400,000
	C	272nd Street	Sidepath	$300,000	$400,000
	Short-Term Total			**$1,400,000**	**$1,800,000**
Mid-Term (2031 - 2037)	D	Willow Street	Sidepath	$1,300,000	$1,900,000
	E	Southeastern	Sidepath	$1,100,000	$1,600,000
	F	472nd Avenue	Sidepath	$1,100,000	$1,600,000
	G	272nd Street	Sidepath	$500,000	$700,000
	H	Cliff Ave south	Sidepath	$500,000	$700,000
	Mid-Term Total			**$4,500,000**	**$6,500,000**
Long-Term (2038 - 2045)	I	272nd Street	Sidepath	$500,000	$900,000
	J	274th Street	Sidepath	$1,000,000	$1,800,000
	K	Southeastern	Sidepath	$200,000	$400,000
	L	Willow Street	Sidepath	$500,000	$900,000
	Long-Term Total			**$2,200,000**	**$4,000,000**
Vision	M	Lake Alvin Loop	Recreational Trail	$3,100,000	$5,500,000
Total (excludes Vision Project)				**$8,100,000**	**$12,300,000**

Figure 38: Project Development Process



Appendix A – Public Engagement

Public Engagement Survey

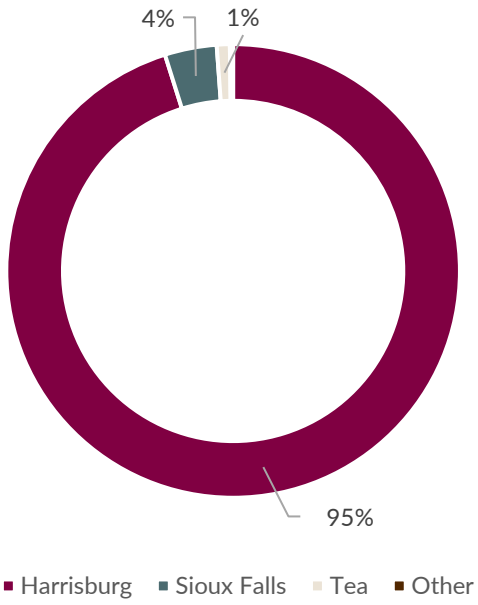
The Harrisburg Master Transportation Plan (MTP) Survey was conducted to gather input on the transportation needs and issues facing the community of Harrisburg while giving residents the opportunity to share their ideas for solutions that could address these needs and issues.

Posted on the MTP project website, the survey opened after Public Meeting #1 was held at Liberty Elementary School in Harrisburg on November 19th, 2021 and was closed on December 31st, 2021. Advertisements for the survey were posted in the local newspaper on two occasions and email notifications were sent to addresses registered on the MTP mailing list found on the project website. A total of 433 responses to the survey were submitted between November 19th and December 31st, and the responses received are summarized below; as respondents were able to skip questions and/or leave questions unanswered, not all questions recorded 433 responses. Refer to **Appendix A** for the complete list of questions used in the survey.

The remainder of this document provides a summary of input received by survey question.

In which city do you live?

City	Harrisburg	Sioux Falls	Tea	Other	Total
Number of Respondents	411	16	4	1	**432**
Percent	95%	4%	1%	0%	



"Other" Answer Provided:

- Canton

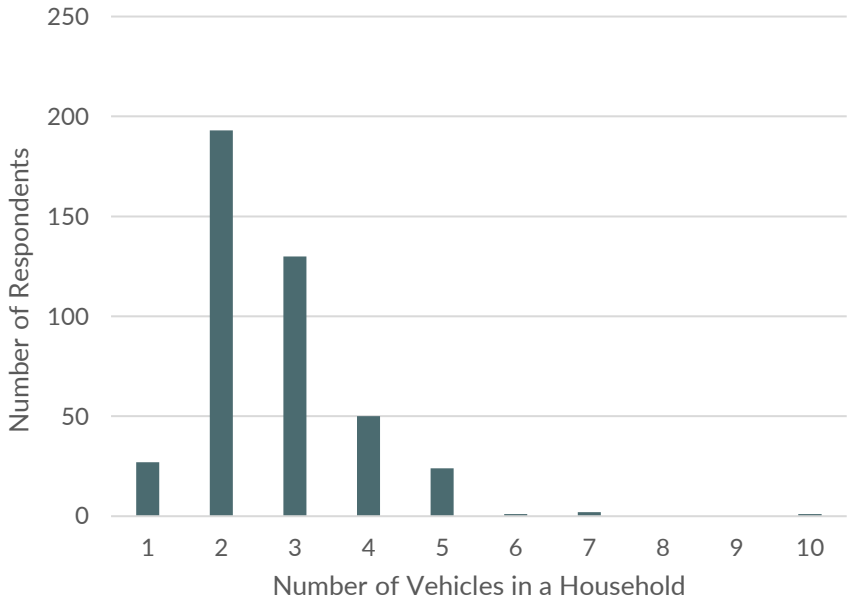
To understand the geographic distribution of survey participants, they were asked their city of residence. 95% of survey participants

indicated they live in Harrisburg, while the next largest proportion of participants live in Sioux Falls. A handful of participants live in the nearby communities of Tea and Canton.

How many operating vehicles (cars, trucks, motorcycles/mopeds, vans) do you or others in your household own?

Number of Vehicles in a Household	1	2	3	4	5	6	7	8	9	10	Total
Number of Respondents	27	193	130	50	24	1	2	0	0	1	**428**
Percent	6%	45%	30%	12%	6%	0%	0%	0%	0%	0%	

Survey participants were asked to share the number of vehicles that they or members of their household own. Vehicle ownership is a key factor influencing how people travel. As seen in the table, 45% of participant households have 2 vehicles available to them, while the second largest proportion of households (30%) have 3 vehicles available. These results indicate the likelihood that many residents of the community have multiple vehicles available, making vehicle usage a higher probability for completing trips compared to other modes (public transit, walking, biking, ridesharing, etc.).



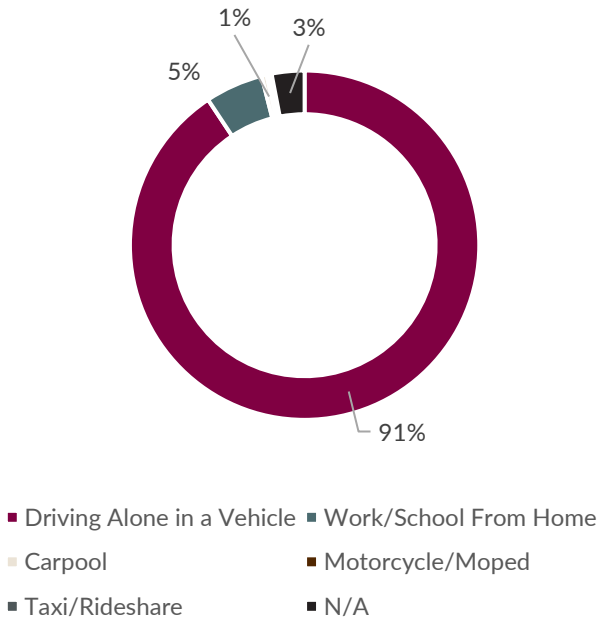
What method of transportation do you normally use to go to work/school?

Method of Transportation	Driving Alone in a Vehicle	Work/School From Home	Carpool	Motorcycle/Moped	Taxi/Rideshare	N/A	Total
Number of Respondents	389	23	2	1	1	13	**429**
Percent	91%	5%	0%	0%	0%	3%	

"N/A" Answers Provided:

- Retired
- I do not work/ attend school

Survey participants were asked about the typical transportation mode they used to complete their commute trip to work or school. Approximately 91% of participants indicated they drive alone to work/school while 5% of participants indicated they work/attend school from home. A few participants reported using other modes (carpool, motorcycle/moped, taxi/rideshare) while 3% of responses were recorded as N/A. These results highlight the significant usage of single-occupant vehicles for work/school commuting.



How long have you lived in Harrisburg?

Time	Less than 1 year	1-10 years	11-20 years	21-30 years	31-40 years	More than 40 years	N/A	Total
Number of Respondents	21	223	125	20	13	16	14	**432**
Percent	5%	51%	29%	5%	3%	4%	3%	

"N/A" Answer Provided:

- I don't live in Harrisburg

Survey participants were asked about their tenure in Harrisburg. Over half of the participants stated they have lived in Harrisburg for 1 to 10 years, while the next largest proportion of residents have lived in the community for 11 to 20 years. 7% of participants have been long-time residents, indicating they have lived in the community for over 30 years.

In which city do you work?

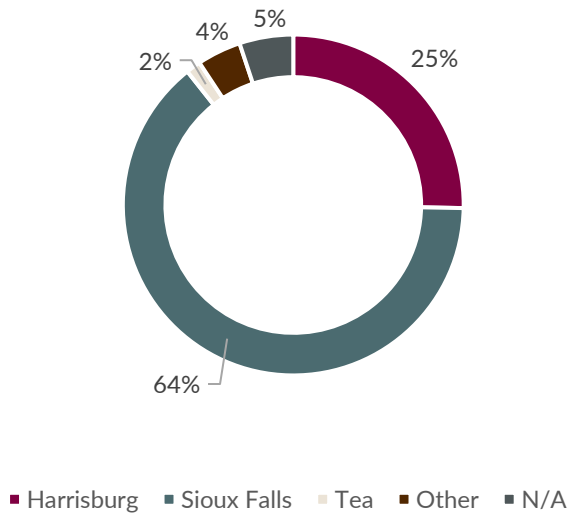
City	Harrisburg	Sioux Falls	Tea	Other	N/A	Total
Number of Respondents	109	276	6	18	22	**431**
Percentage	25%	64%	1%	4%	5%	

"Other" Answers Provided:

- Alcester
- Baltic
- Beresford
- Brandon
- Brookings
- Canton
- Dell Rapids
- Flandreau
- Hills, Minnesota
- Lenexa, KS
- Madison
- Multiple surrounding cities
- Rock Valley, IA
- Statewide
- Worthington

"N/A" Answers Provided:

- I do not work
- Retired
- Harrisburg
- Remote Work (Harrisburg Residence)
- Work From Home (Harrisburg Residence)
- Operate Own Business From Home (Harrisburg Residence)



Survey participants were asked where their work location is, as understanding commute patterns into and out of Harrisburg influences planning decisions on improvements to the transportation system. Based on the responses received, 64% of survey participants indicated they commute into Sioux Falls for work. One quarter of participants stated they work within Harrisburg while 5% work from

home or are retired. A number of participants self-reported work locations in other surrounding communities, with one participant's work location recorded as being Lenexa, KS.

Which issues below do you believe are most important and should be addressed in the Harrisburg Master Transportation Plan? Select up to three

Rank	Goal/Issue	Votes	Percentage of Participants Who Chose This Option
1	Improve traffic flow on area streets during rush hour	353	82%
2	Ease of travelling to work, school, shopping, and recreational areas in Harrisburg	215	50%
3	Adding/improving sidewalks and pedestrian crossings	178	41%
4	Improve the physical condition of roadways and sidewalks	148	34%
5	Improve traffic safety for automobiles, bicycles, and pedestrians	90	21%
6	Adding/improving existing biking facilities (bike lanes, trails, bike racks, etc.)	86	20%
7	Improving weather response such as plowing snow	37	9%
8	Reduce traffic blockages and noise from existing rail crossings	25	6%
9	Adding public transportation options	16	4%
T-10	Add availability of new transportation options like bike sharing, ridesharing (Lyft, Uber, etc), and electric scooters	9	2%
T-10	Improve the safety of railroad crossings	9	2%
Total Entries		**433**	

Survey participants were asked to select up to 3 issues from a list of 11 that they feel are the most pressing issues facing Harrisburg's transportation system. The top issue, with 82% of participants selecting it, was improving traffic flow on area streets during rush hour. Half of the participants selected the ease of travelling to work, school, shopping, and recreational areas in Harrisburg as the second most pressing issue that needs to be addressed by the MTP while the third issue of adding/improving sidewalks and pedestrian crossings was selected by 41% of participants. Tied for 10th and receiving 2% of votes by participants were the issues of adding new transportation options to the system and improving safety at rail crossings. Participants had the opportunity to write in additional issues they feel should be addressed by the MTP, which are presented in the bulleted list below.

"Other" Answers Provided:

- A roundabout in the middle of town is a disastrous idea
- After school transportation for the kids
- All of the above options need to be addressed.
- Bus transportation for kids who live over one mile away from school
- Change the southern lane on 115 and willow to a blinking yellow arrow
- Cliff into Sioux Falls is garbage.
- Connection from Legendary Estates across the railroad tracks to a street west of the tracks to have access to Cliff Ave with a stoplight intersection. Or pave some combo of Southeastern and 272nd to have paved north and/or west access to Legendary Estates.
- Curb, gutter and sidewalks along all roads in city limits
- develop 273 and cliff to functions roads and make the intersection stop lights and NOT a roundabout
- Disability friendly transportation that would allow Community providers to come to Lincoln county
- Doesn't look like the amount of room will be enough on Cliff to expand the much needed widening. All of the new is not set back far enough. What will that mean for the homes south of the storage debacle? Pave Southeastern!

- Don’t put in a roundabout at Willow and Cliff.
- Expanding existing roads for traffic
- Fixing traffic flow issues surrounding schools; connecting housing developments so the city feels more connected.
- Getting to Freedom Elementary
- Having all sidewalks ADA accessible and more cross lights for pedestrians.
- I can only pick three! Infrastructure is critical. To many small Development need a master community development otherwise it just a hodgepodge mess.
- I didn’t check the snow removal box, but several times the streets were not plowed even close to the curb, makes travel difficult when it freezes
- I think a roundabout is the wrong plan for Cliff and Willow.
- I think it would really help traffic flow in Harrisburg if Southeastern were paved from Harrisburg to SF. It could lessen the amount of traffic using Cliff and Minnesota.
- Improve ADA Accessibility
- Improve traffic flow at the crossroads of Willow and cliff
- Improve traffic flow without stoplights. They may be useful during peak periods of traffic but are a nuisance and waste of time at most other times of day. Roundabouts keep traffic flowing so much better
- Improving traffic flow means stoplights NOT roundabouts.
- INCREASE CAPACITY
- Increase capacity of main arterial roadways through Harrisburg. Lowering travel times through the city.

- It's incredibly hard to see at night near that busy four-way intersection by the gas stations, and there needs to be traffic lights in that intersection and street lights on Willow going toward the high school.
- It's impossible sometimes to get out of our development during rush hour/ school drop off and school pick up.
- Keep school traffic out of the subdivision
- Let's add a roundabout
- Lincoln county does a horrible job with snow removal
- Looking to finish more gravel roads around town with asphalt.
- More paved roads instead of just the main roads
- More sidewalks in residential areas that have not been installed after new builds.
- Need more lanes on cliff and on willow
- Neighborhoods by the school are almost impossible to get out of in the morning
- NO ROUNDABOUT AT CLIFF AVE CORNER
- No roundabouts in the city of Harrisburg.
- NO ROUNDABOUTS!!!
- No. Improving the flow of traffic during rush hours by expanding lanes and finishing nearby roads (such as Western, Southeastern and Sycamore) should be priority.
- Not all of Harrisburg has sidewalks!!! We need sidewalks!!! How is my Child supposed to walk to school safely? There is no bus in our area AND major areas with out sidewalks!
- Not enough sidewalks. People actually walk to businesses if there are sidewalks

- other access to various areas besides willow
- Pave 272 between Minnesota and Cliff
- pave gravel roads around perimeter of towns
- Pave roads like southeastern to allow for more access in and out of Harrisburg other than Cliff and Willow.
- Pave Southeastern Avenue north to 271st to reduce traffic load on Cliff Avenue
- Pave Southeastern between Legendary Estates and Hwy 106
- Pave southeastern east of legendary
- Pave the roads just north and south of town. Like 272nd and just south of town
- Paving 272 between Minnesota and cliff
- Paving gravel roads, like southeastern(476th Ave.) ->willow to 69th St.
- Paving of the gravel road on the north side of town. The road is heavily traveled and in terrible condition.
- Paving Southeastern and also Connecting Legendary Estates to Cliff Ave to have another option for access to main roads in Harrisburg
- Paving Southeastern into Legendary Estates and the new development currently being built.
- Paving southeastern to help with traffic flow
- Paving Southeastern, widening Cliff Avenue, making a railroad crossing at Tiger or just a pedestrian crossing for ease of kids riding bikes to the middle school. Also stop allowing businesses to put the parking lot access not aligning the business across the street, accidents are going to happen
- Paving the rest of southeastern by legendary estates.

- Please add a stop light to the four-stop at cliff and willow. Traffic flow makes it impossible to exit green meadows addition during the morning and evenings.
- Please do not put a round-a-bout by Casey's...it doesn't seem safe for the pedestrian traffic there!
- Please, no roundabouts!!
- Put a stoplight at Hwy 110 & Cliff
- Reduce the number of access points on busy streets, aka willow west of cliff
- Repair existing sidewalks and streets
- roadways are 1920s...population/growth is gridlock
- safety should be standard with any project. You want more population and business development? In order to grow, you need paved roads. Make cliff ave 4 lanes up to SF. Pave the roads around legendary estates development. People and businesses will follow once you pave more roads.
- Single lane on going to high school and business traffic jams on Cliff
- Snowplow leaves huge drift blocking end of driveway Impossible to get out without skid loader
- Southeastern paved to the highway
- Speeding
- Stop light on Cliff and Willow. The school buses have a horrible time at 4 way stop.
- Stoplight at the corner of Cliff and Willow
- Street lighting
- Take responsibility for the county highways that are in city limits, make willow a four lane through town

- There needs to be more ways to get across and through town. There should be a road to connect Tom Sawyer with the back side of the high school.
- Traffic around Liberty during school drop off and pick up
- Traffic lights and sanding after a weather incident.
- Transportation for kids that live in town to schools.
- turning lanes on N Cliff
- Widen Cliff Ave and/or add turning lanes
- Widen Cliff Avenue
- Widen main streets -- Cliff & Willow
- Willow needs to no less then 3 lanes from Minnesota ave to southeastern
- Yes we need traffic lights on cliff and 273. That intersection is a jokester street
- Yes. Pave the dirt roads!
- You need a stop light on cliff & willow

What types of future projects do you believe should be funded to improve Harrisburg's transportation network?

Rank	Focus Area	Total Votes	Percentage of Participants Who Chose This Option
1	Adding pavement where there are currently gravel roads	249	59%
2	Road Maintenance	180	42%
3	Adding sidewalks/pedestrian crosswalks	175	41%
4	Installing/updating traffic signs and signals, railroad crossing safety features, etc.	149	35%
5	Adding bicycle and pedestrian-friendly facilities (street lights, bike lanes, bike racks, benches, beautification of sidewalks)	130	31%
6	Increasing the number of snowplows	48	11%
Total Entries		**424**	

Survey participants were asked about the types of improvements they would like to see implemented to improve Harrisburg's transportation network, and 59% of participants chose adding pavement where there are currently gravel roads as a top desired improvement. The second and third improvements, selected by 42% and 41% of participants, are road maintenance and adding sidewalks and pedestrian crosswalks. The improvement receiving the lowest total of votes was increasing the number of snowplows that operate during and after snow events. Additional ideas for improvements shared by participants are included in the bulleted list above.

"Other" Answers Provided:

- A bridge in one location so an option to get through town with train present.
- Bus that goes downtown to Sioux Falls
- Cliff Avenue and Willow Ave 4 lanes like Minnesota Ave
- Cliff needs to be a 4 lane. Willow also needs to be 4 lane.
- creating more avenues for traffic to flow, instead of all through the center of town.
- Enforce speed limits
- Expanding roads, traffic flow studies and having requirements for housing developers.
- Fix the high school traffic jam problem.
- Gates on snow plows
- I know a lot are against it, but I really like the idea of a roundabout
- lane increases
- Make willow a 4 lane
- More lanes of traffic on Cliff and Willow.
- More lanes, turning lanes, shoulders, etc. that meet design standards for existing, and rapidly increasing , ADT
- Paving Southeastern would be great. Yes, I have heard the argument for years.
- Snow gates
- Snow gates on snow blows. Please stop dumping snow in my driveway.

- Turning lanes in busy intersections with traffic lights
- Upgrade Willow and cliff to four lanes with improved traffic control
- Widen and impove Cliff ave.
- widen road for willow
- Widen roads to 4 lanes with turning lanes specifically on Cliff Ave
- Widen the roads and increase capacity. It takes 15 min to get through the stop sign in the morning and evening.
- Widen Willow St and put in turn lanes
- Widening Cliff to 4 lanes going N out of Harrisburg
- widening the current major roads in/out of Harrisburg (Cliff) and through town (Willow)

What goals or characteristics of the Harrisburg transportation system should the Master Transportation Plan focus on?

Rank	Focus Area	Total Votes	Percentage of Participants Who Chose This Option
1	EFFICIENCY AND RELIABILITY	181	44%
2	SAFETY	169	41%
3	ECONOMIC	133	32%
4	ACCESSIBILITY	110	27%
5	BICYCLE AND PEDESTRIAN CONNECTIONS	95	23%
6	RESILIENCY	74	18%
7	PLACEMAKING	71	17%
8	INNOVATIVE	34	8%
Total Entries		**413**	

Other:

- All of the above
- Better traffic control at the 4 way stop by fareway
- Fixing the traffic mess we currently have to increase traffic flow and safety
- No roundabout
- Widen willow to a 4 lane with turning and street light at the four way stop

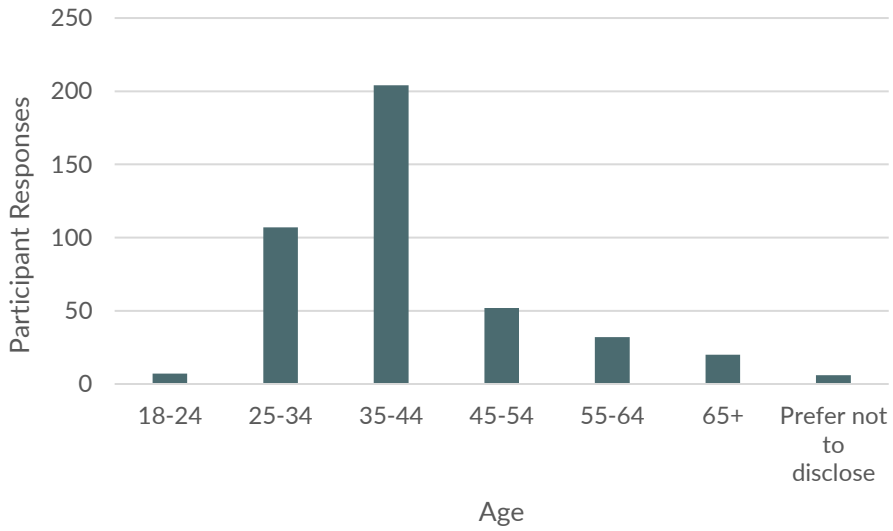
- Widening the main roads into Harrisburg forget putting in roundabouts put in lights

Survey participants were asked to select which areas they would like the MTP to focus on. The top three focus areas chosen by participants were Efficiency and Reliability (44%), Safety (41%), and Economic (32%). These focus areas reflect the participants input regarding the transportation issues they view as the most pressing in Harrisburg.

What is your age?

Age	18-24	25-34	35-44	45-54	55-64	65+	Prefer Not to Disclose	Total
Number of Respondents	7	107	204	52	32	20	6	**428**
Percent	2%	25%	48%	12%	7%	5%	1%	

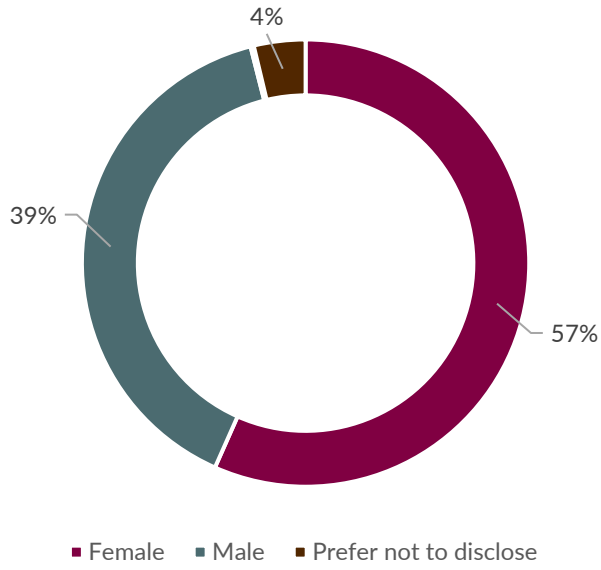
The final two questions asked of participants focused on demographic topics. The first question asked participants their age; 75% of participants indicated they are 44 years of age or younger, with the majority of these participants falling into the 35-44 years of age range. Nearly 25% of participants indicated they are 45 years of age or older while 1% chose to not disclose their age.



What is your gender?

Gender	Female	Male	Other	Prefer Not to Disclose	Total
Number of Respondents	243	169	1	16	**429**
Percent	57%	39%	0%	4%	

The second demographic question asked participants their gender. 57% of respondents indicated they are female while 39% identified as male; 4% chose to not disclose their gender.



In which city do you live?

- ☐ Harrisburg
- ☐ Tea
- ☐ Sioux Falls
- ☐ Other: _____

How many operating vehicles (cars, trucks, motorcycles/mopeds, vans) do you or others in your household own?

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ Other: _____

What method of transportation do you normally use to go to work/school?

- ☐ Car/truck (driving alone)
- ☐ Carpool
- ☐ Walk
- ☐ Taxi/rideshare service (Uber, Lyft, etc.)
- ☐ Bicycle
- ☐ Public Transit
- ☐ Motorcycle/moped
- ☐ I work/do school at home
- ☐ I do not attend work/school
- ☐ Other: _____

How long have you lived in Harrisburg?

- ☐ Less than 1 year
- ☐ 1-10 years
- ☐ 11-20 years
- ☐ 21-30 years
- ☐ 31-40 years
- ☐ More than 40 years
- ☐ I don't live in Harrisburg

In which city do you work?

- ☐ Harrisburg
- ☐ Tea
- ☐ Sioux Falls
- ☐ Other: _____

Which issues below do you believe are most important and should be addressed in the Harrisburg Master Transportation Plan? Select up to three.

- ☐ Ease of travelling to work, school, shopping, and recreational areas in Harrisburg
- ☐ Adding/improving existing biking facilities (bike lanes, trails, bike racks, etc.)
- ☐ Adding/improving sidewalks and pedestrian crossings
- ☐ Improve traffic safety for automobiles, bicycles, and pedestrians
- ☐ Improve traffic flow on area streets during rush hour

- ☐ Improve the physical condition of roadways and sidewalks
- ☐ Improve the safety of railroad crossings
- ☐ Adding public transportation options
- ☐ Add availability of new transportation options like bike sharing, ridesharing (Lyft, Uber, etc), and electric scooters
- ☐ Improving weather response such as plowing snow
- ☐ Reduce traffic blockages and noise from existing rail crossings

Are there any issues or opportunities related to transportation that were not included in the previous list?

_____

What types of future projects do you believe should be funded to improve Harrisburg's transportation network?

- ☐ Adding sidewalks/pedestrian crosswalks
- ☐ Road maintenance
- ☐ Adding pavement where there are currently gravel roads
- ☐ Installing/updating traffic signs and signals, railroad crossing safety features, etc.
- ☐ Adding bicycle and pedestrian-friendly facilities (street lights, bike lanes, bike racks, benches, beautification of sidewalks)
- ☐ Increasing the number of snow plows
- ☐ Other: _____

What goals or characteristics of the Harrisburg transportation system should the Master Transportation Plan focus on?

- ☐ SAFETY: Reducing the risk of harm to users of Harrisburg transportation system (cars, bikes, and pedestrians)
- ☐ ACCESSIBILITY: Connecting people to goods and services as well as providing choices for different modes of transportation (car, bike, bus, etc.)
- ☐ ECONOMIC: Focusing on transportation as a means of supporting and promoting the economic vitality of the Harrisburg area. Connecting people with jobs, shopping, and schools
- ☐ RESILIENCY: Creating a transportation system that is adaptable and providing service when significant impactful events occur
- ☐ EFFICIENCY AND RELIABILITY: Providing for the efficient and reliable movement of people, services, and goods
- ☐ PLACEMAKING: Integrating the transportation system with land use to provide transportation facilities that fit in with their surrounding neighborhoods and development. Creating well-designed places and complete communities
- ☐ INNOVATIVE: Incorporating emerging trends and technologies into the transportation system
- ☐ BICYCLE AND PEDESTRIAN CONNECTIONS: Providing enhanced infrastructure and connections for pedestrians and bicyclists. These investments could include more trails and sidepaths, enhanced pedestrian crossings of streets, and potentially on-street bike routes

☐ Other:

_____

_____

What is your age?

☐ Under 18
☐ 18-24
☐ 25-34
☐ 35-44
☐ 45-54
☐ 55-64
☐ 65+
☐ Prefer not to disclose

What is your gender?

☐ Male
☐ Female
☐ Other
☐ Prefer not to disclose

Public Meeting #1

The first Public Meeting was held at Liberty Elementary School in Harrisburg on Thursday, November 18th from 5 p.m. to 7:30 p.m. The purpose of the meeting was to inform residents of the plan development process, provide residents with an opportunity to offer input on transportation needs and issues, and identify plan goals and direction.

The meeting was advertised across several platforms, including a public notice posted by Sioux Valley News, posts on the city's social media channels, and an email invite sent to those signed up for notifications via the project website.

Meeting Overview

The November 18 public meeting was an in-person open house event, where attendees were able to visit several stations to learn about the plan development process and offer input on plan goals as well as existing transportation issues and opportunities. The stations for the public meeting included:

- **Welcome station** – attendee sign in and informational materials regarding plan development process and timeline.
- **Baseline Conditions station** – boards with maps that illustrated current transportation conditions, including existing traffic volumes and highest crash intersections.
- **Plan Goals station** – this was an interactive station with a board that asking attendees to select the three goal areas they find most important for the plan to address, out of eight potential goal areas to choose from.
- **Issues and Opportunities mapping station** – this was an interactive station asking attendees to leave comment notes on an area map of their issues and opportunities for the multimodal transportation system.

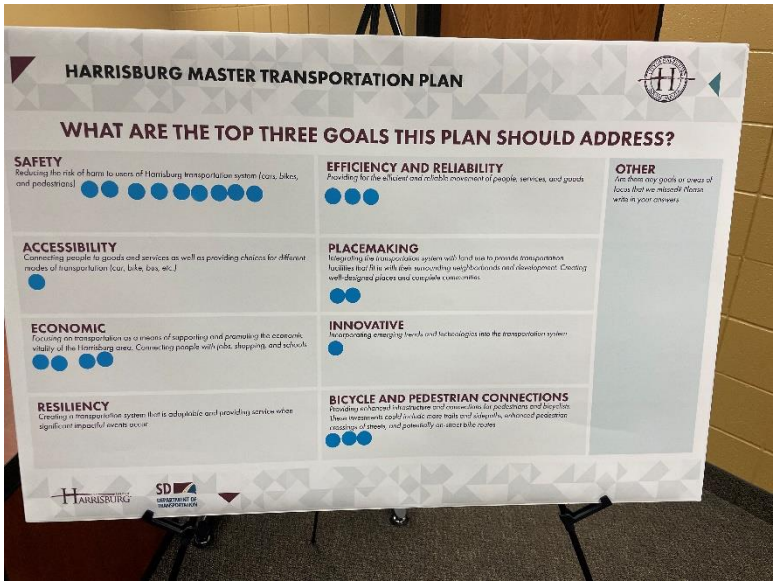
Materials used in Public Meeting #1 are available in the "Past Events" area of the project website.

Meeting Outcomes

Approximately 25 residents attended the November 18 Public Meeting, and most attendees participated in the interactive stations. Summaries for each of the interactive stations are below.

Plan Goals

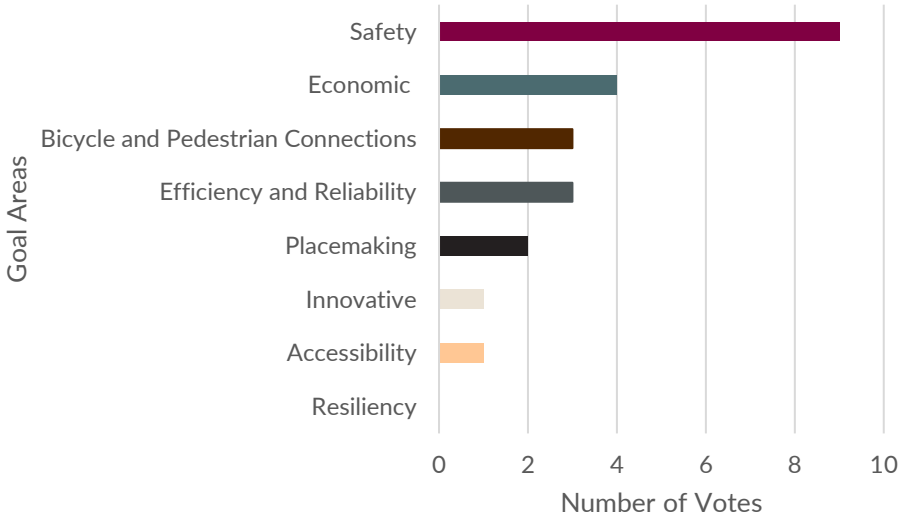
The Plan Goals activity asked participants to review the eight goal areas identified for the Master Transportation Plan, and then vote for the three goal areas they believe the plan should focus on. The goal areas identified were:



- Safety
- Accessibility
- Economic
- Resiliency
- Efficiency and Reliability
- Placemaking
- Innovative
- Bicycle and Pedestrian Connections

The results of the Plan Goals activity are shown in **Figure 1**. As shown, Safety received the highest number of votes with 9, followed by Economic with 4 votes. Bicycle and Pedestrian Connections tied with Efficiency and Reliability at 3 votes each.

Figure 1: Results for the Plan Goals Activity



Issues and Opportunities Mapping

The second interactive station asked participants to comment on current transportation issues and opportunities on by writing on a large map of the MTP study area. Attendees provided 22 comments that covered roadway, bicycle and pedestrian, and transit topics; the results of the activity are in **Figure** 2. As shown in the figure, most comments were related to roadway improvements.

Figure 2: Results for the Issues and Opportunities Activity

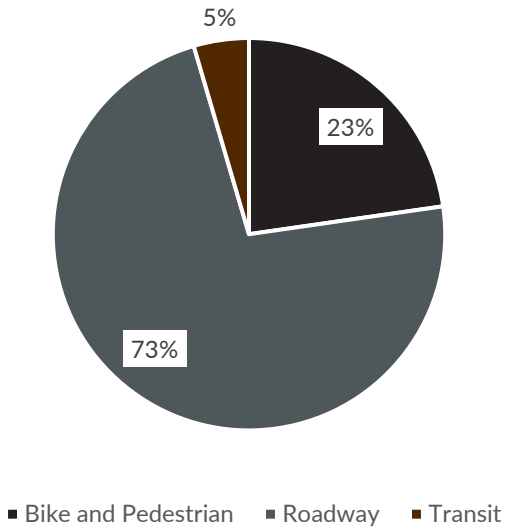


Figure 3 below shows the location and related transportation mode for the input attendees shared during the Issues and Opportunities activity, including an identification (ID) number for each comment. **Table 1** provides documentation of the comments associated with each ID number.

Figure 3: Public Meeting #1 Issues and Opportunities Input

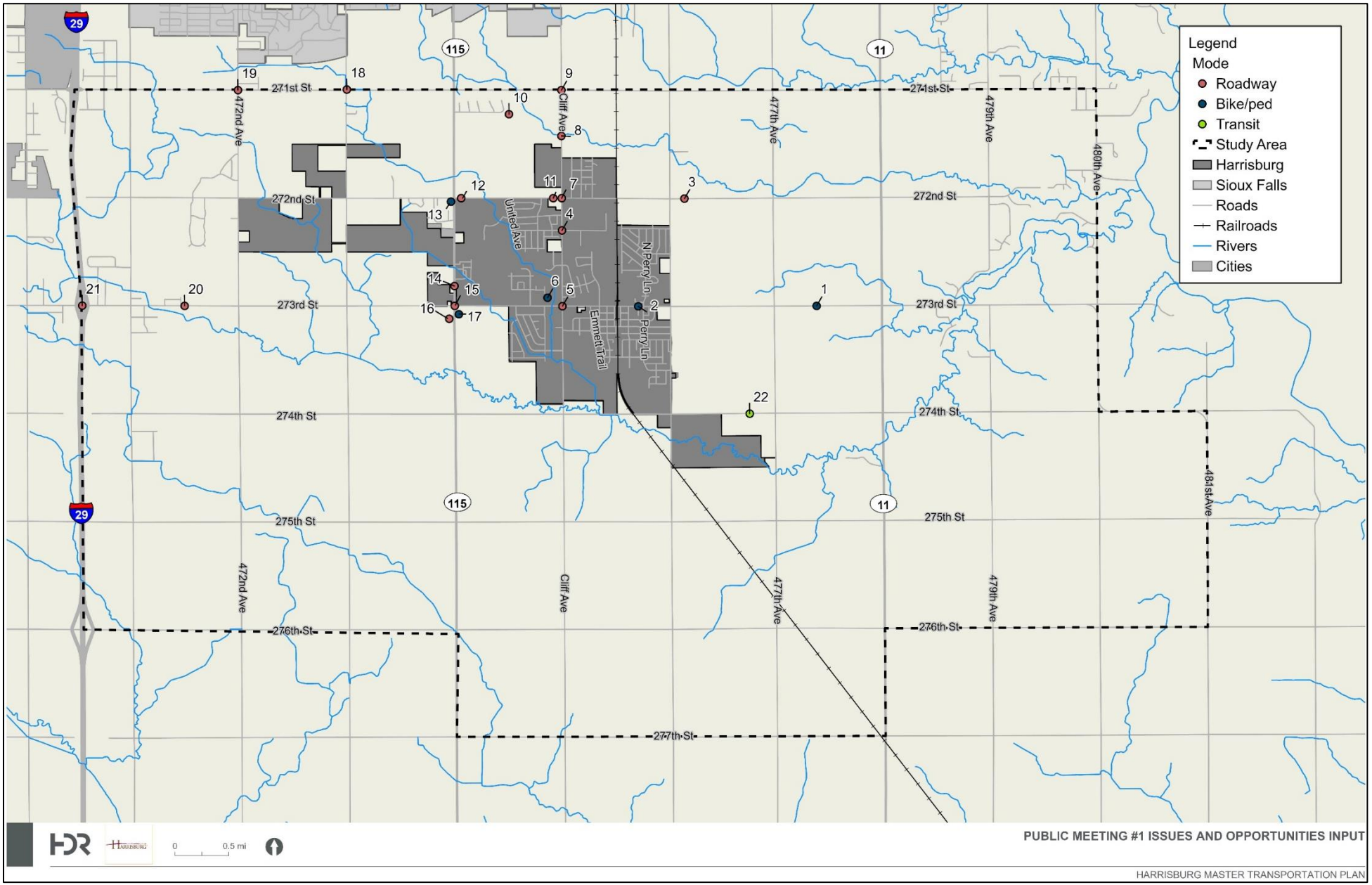


Table 1: Public Meeting 1 Issues and Opportunities Attendee Comments

ID	Comment	Mode
1	Trail to Lake Alvin	Bike / Pedestrian
2	More sidewalks all over the city	Bike / Pedestrian
3	Pave Southeastern to 272nd	Roadway
4	Controlled access at Industrial and Cliff	Roadway
5	Cliff and Willow Intersection	Roadway
6	Harrisburg needs a heart-healthy downtown	Bike / Pedestrian
7	Paving 272nd	Roadway
8	Need more lanes on Cliff. Medians are awesome	Roadway
9	Roundabout	Roadway
10	New high school	Roadway
11	Lots of left turns from Cliff	Roadway
12	Whose job to pave 272nd?	Roadway
13	Love Minnesota Ave side path connecting to Sioux Falls	Bike / Pedestrian
14	Longer left turn lane into high school	Roadway
15	Signal retiming	Roadway
16	Improve commercial industrial to reduce tax burden on homeowners	Roadway
17	Consider resiliency in balancing transportation and commuters with bicycle, pedestrians, and parks	Bike / Pedestrian
18	Roundabout	Roadway
19	271st will dead-end with Veterans Pkwy	Roadway
20	New state highway SD 110 from I-29 to Hwy 11	Roadway

21	Exit 71 access and safety improvements	Roadway
22	Transit service- contract operator to accommodate future jobs	Transit

Stakeholder Meeting #1

The first Stakeholder Meetings occurred on December 15th and 16th, 2021 and were hosted virtually via Webex video conferencing platform. The purpose of the meetings was to inform stakeholders of the plan development process and offer an opportunity for discussion regarding the existing transportation needs and issues facing the community.

Stakeholders were identified by city staff and include representatives of South Dakota Game, Fish, and Parks, Lincoln County, Southeastern Council of Governments, Harrisburg School District, Harrisburg Chamber of Commerce, Southeastern Electric Cooperative, Xcel Energy, and local land developers. A total of 30 stakeholders attended across both meetings.

Meeting Overview

The Stakeholder Meetings were planned as a supplement to the November 18th Public Meeting held at Liberty Elementary School in Harrisburg. As such, the main activities of the Stakeholder Meeting mirror those of the November Public Meeting and used Mural, a virtual platform that facilities group collaboration, to engage attendees in the meeting activities. These activities include:

- **Plan Development presentation** – a brief description of the plan development process, including the plan focus areas and existing transportation conditions.
- **Plan Focus Areas activity** – interactive activity asking attendees to select the three goal areas they find most important for the plan to address.
- **Project Area Mapping activity** – interactive activity asking attendees to comment, on an area map, on the current transportation issues and needs facing the community.

Meeting Outcomes

The outcomes of the Stakeholder Meeting activities are summarized below for each of the activities.

Plan Focus Areas Activity

The Plan Focus Areas activity invited stakeholders to discuss eight goal areas of the Master Transportation Plan and cast three votes for the areas they feel the Plan should prioritize. These goal areas include:

- Safety
- Accessibility
- Economic
- Resiliency
- Efficiency and Reliability
- Placemaking
- Innovative
- Bicycle and Pedestrian Connections

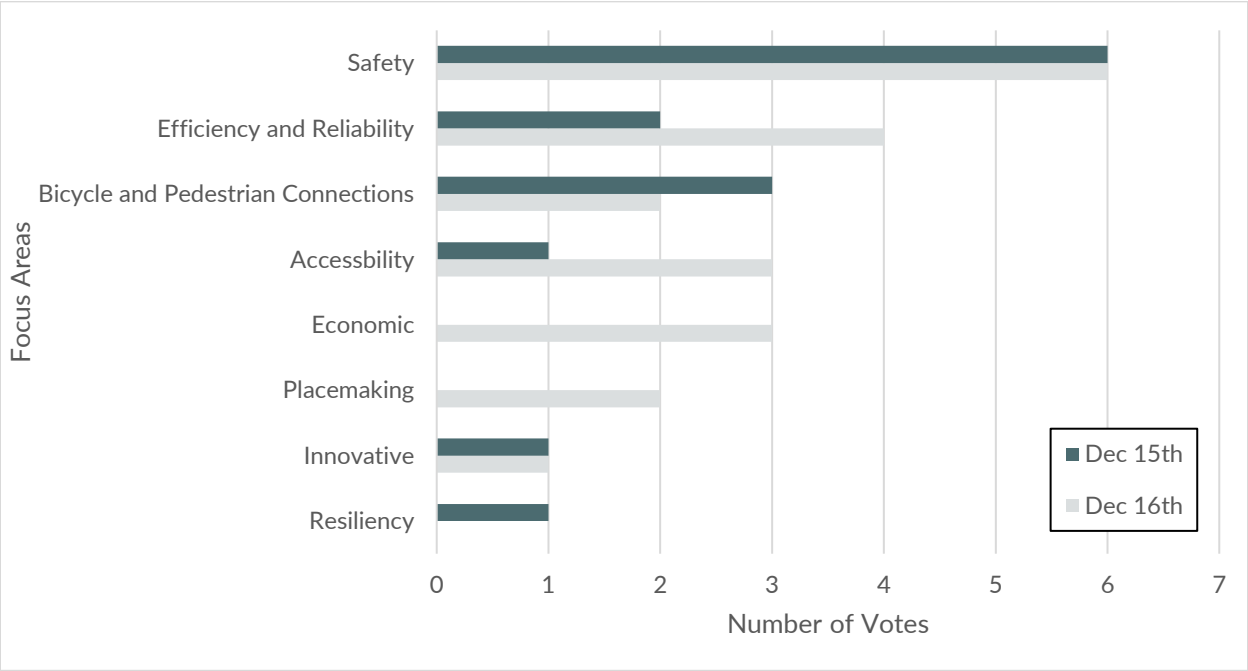
The results for the Plan Focus Areas are shown in **Figure 4**, with results from the December 15th and 16th sessions shown separately. Stakeholders in both meeting sessions highlighted Safety as the top goal area for the Plan to focus on, while attendees of the December 15th session indicated that the second and third areas of focus for the Plan should be Bicycle and Pedestrian Connections and Efficiency and Reliability. When discussing the Plan Focus Areas, some comments shared were:

- Safety
    - An emphasis should be placed on pedestrian safety
    - There was interest in access control
- Bicycle and Pedestrian Connections
    - Future connections should focus on recreation by communities and state parks
    - Connecting neighborhoods with trails
    - Minnesota Avenue bike trail is an asset

Stakeholders at the December 16th session had similar thoughts on what the areas the Plan should focus on, with Safety again receiving the most votes. Efficiency and Reliability received the second most votes while Accessibility and Economic tied for third. Some comments made regarding the Plan Focus Area included:

- Safety
    - Keeping the students safe on the road
    - Keeping travelers throughout the region safe
- Efficiency and Reliability
    - Improving efficiency during peak traffic times (school drop offs/pickups, industrial parks)
    - Understanding what areas other than schools generate a lot of traffic and planning for this traffic
- Economic
    - Plan for and encourage mixed-use development, keeping transportation in mind

Figure 4: Plan Focus Areas Voting Results for Stakeholder Meetings



Project Area Mapping

The Project Area Mapping activity invited attendees to use an area map to comment on the most pressing transportation needs and issues that the community faces. Comments received during this activity were mainly focused on traffic operations and safety issues, but input on potential bicycle and pedestrian connections was received during the session. **Figure 5** shows the breakdown of comments by mode type.

Discussion in the December 15th meeting centered around some of the operational issues affecting Willow Street, such as traffic congestion during peak travel times, access issues related to Harrisburg neighborhoods and the high school, and the impacts of new developments on area travel demand. The bike and pedestrian comments detailed community interest in extending the bike trail system to connect with nearby recreation areas, namely Lake Alvin and Good Earth State Park.

Discussion during the December 16th session also focused heavily on roadway issues as shown in **Figure 7**. Similar to the December 15th session, the majority of comments keyed in on operational and safety issues prevalent in the community, with especially along the Willow Street and 272nd Street corridors. More discussion on the desire to expand the bicycle and pedestrian system to connect to area recreation destinations were heard during this activity.

Figure 5: Project Area Mapping Results for the Stakeholder Meeting Sessions

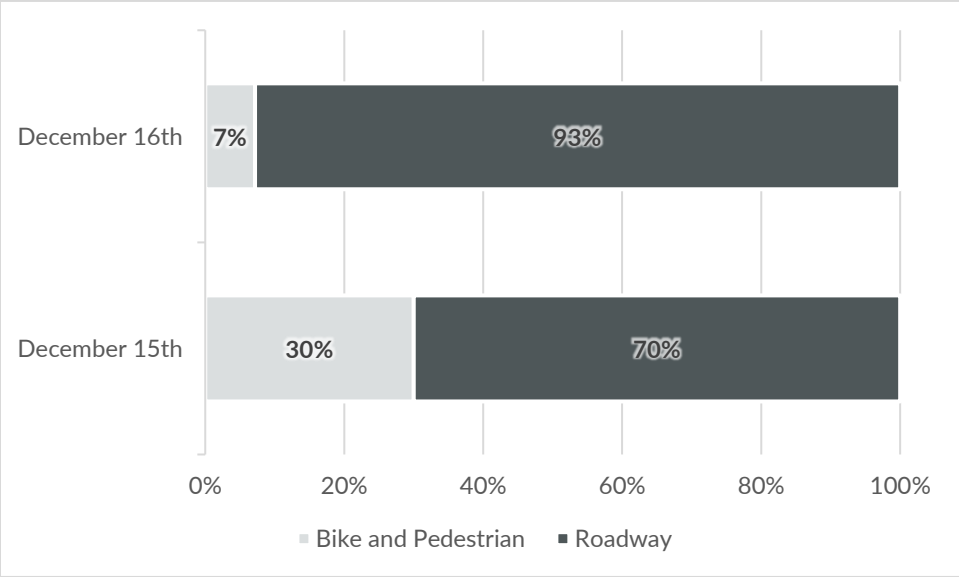


Figure 6 and **Figure 7** show the Mural results for the two stakeholder meeting sessions.

Figure 6: Mural Results for the December 15th Session

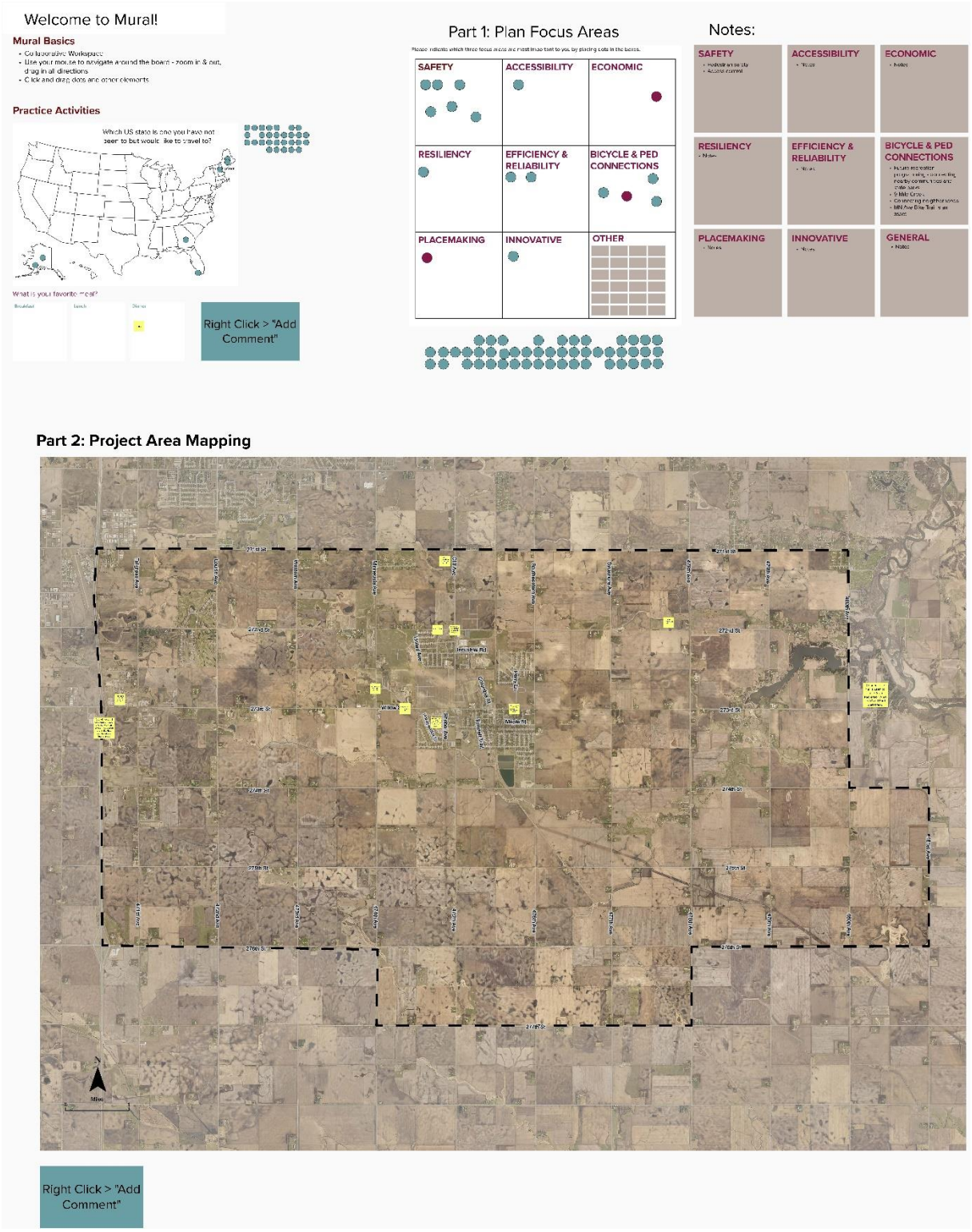
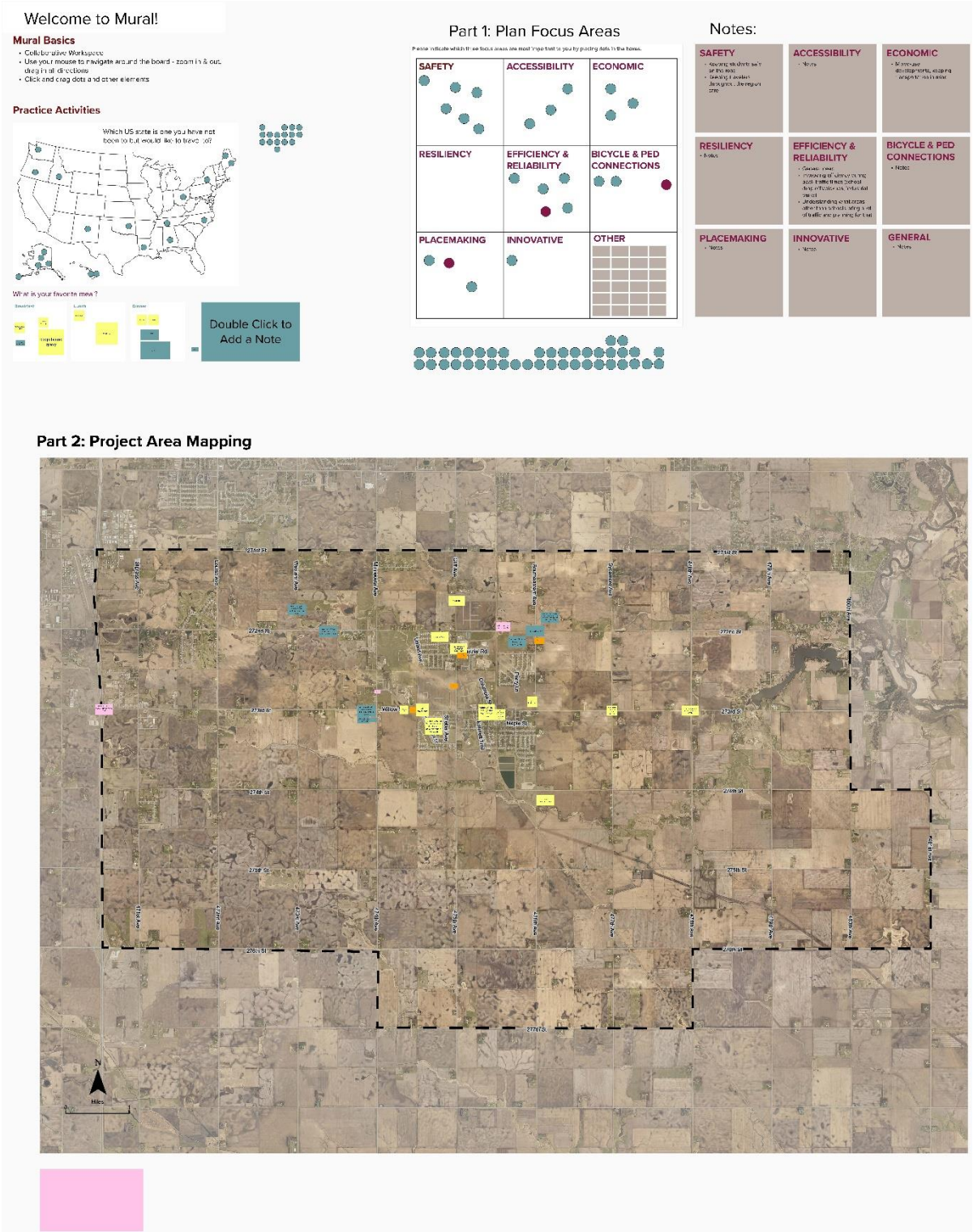


Figure 7: Mural Results for the December 16th Session



Public Meeting #2

The second Public Meeting was held at Liberty Elementary School in Harrisburg on Tuesday, March 22, 2022 from 5:30 p.m. to 7:00 p.m. Not including the study team members present, approximately 35 people attended the meeting. The purpose of the meeting was to engage residents about the draft Master Transportation Plan recommendations and get their feedback on potential strategies to alleviate transportation issues that could arise as Harrisburg continues to grow and develop through 2045.

The meeting was advertised across several platforms, including a public notice posted by Sioux Valley News, posts on the City's social media channels, and an email invite sent to those signed up for notifications via the project website.

Meeting Overview

The March 22 public meeting was an in-person open house event, where attendees were able to visit several stations to learn about the plan recommendations for Harrisburg's future transportation system and offer their thoughts and ideas on how the community can improve the existing system while planning for the anticipated growth pressure from future development. Public Meeting #2 began with a brief presentation that walked attendees through the Future Conditions analysis which guided the development of the Plan network recommendations. The presentation also provided context for each of the stations set up for meeting, at which attendees were able to engage in discussion with project team members. The stations for the public meeting included:

- **Welcome station** — attendee sign in and informational materials regarding Plan recommendations as well as comment / question forms.
- **Future Traffic Conditions station** — board with a map that showed current traffic volumes, forecasted future traffic volumes, and estimated congestion areas.
- **Network Recommendations station** — a series of boards showing Plan recommendations, including candidates for future widening and paving, planned road classifications, and potential locations for bicycle and pedestrian treatments.

- **Cross Section Recommendations**—board showing recommended street cross sections at rural and urban scales.
- **Bicycle and Pedestrian Treatment Menu**—board showing a range of potential bicycle and pedestrian crossing treatments applicable in the Harrisburg area.
- **Network Recommendations mapping station** —interactive station asking attendees to leave their mapped comments about the information presented during the meeting on a large map of the Plan's study area.

Meeting Outcomes

The residents in attendance at the March 22 Public Meeting and offered helpful feedback during discussion with project team members. The comments received during the interactive map station are presented in **Figure 8**, with specific comments summarized in **Table 2** by identification number.

Materials used in Public Meeting #2 are available in the "Past Events" area of the project website.

Figure 8: Public Meeting #2 Plan Recommendations Input

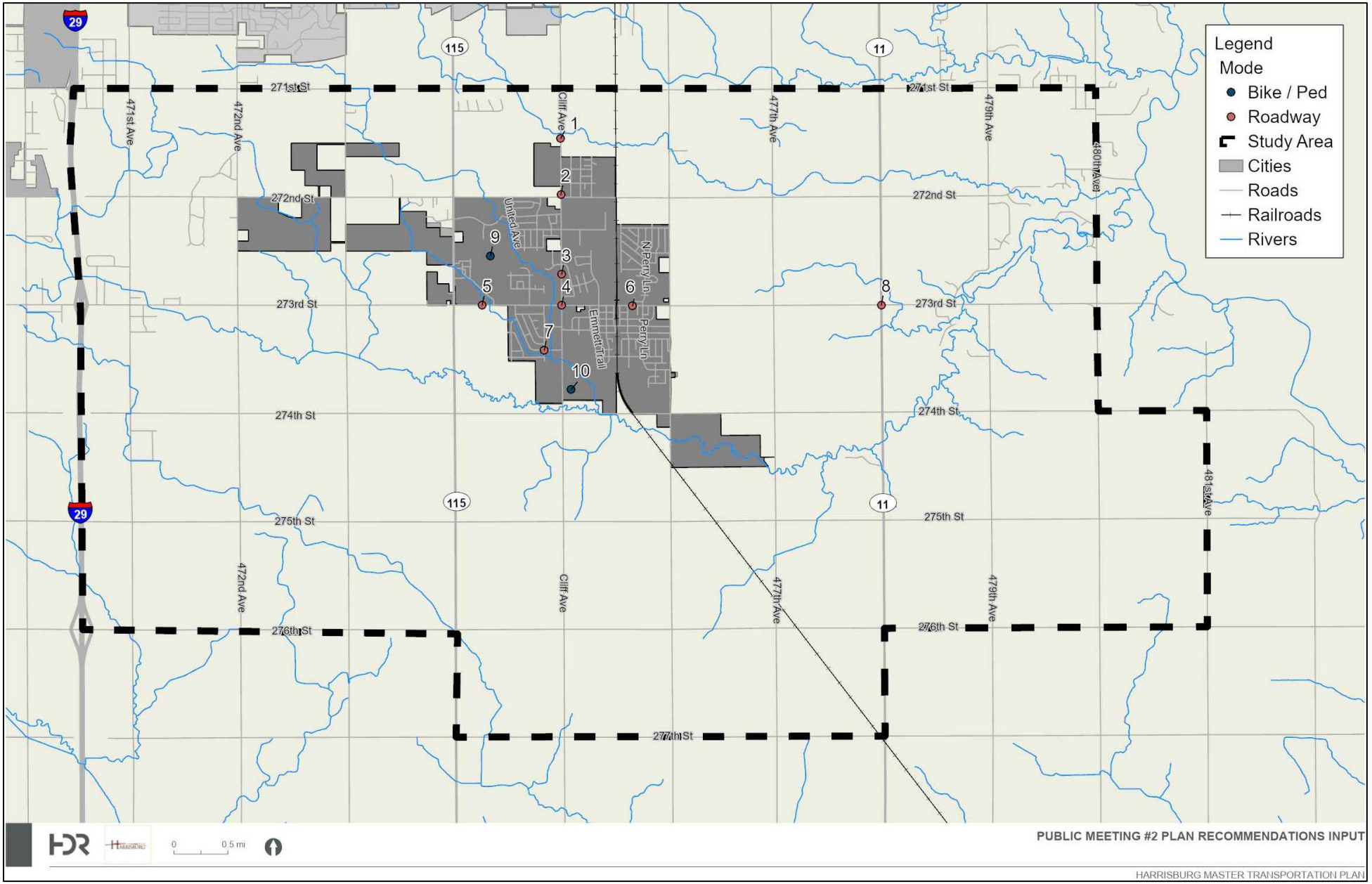


Table 2: Public Meeting 2 Recommendations Attendee Comments

ID	Comment	Mode
1	Resurface Cliff from half mile north of 272nd to Willow Street	Roadway
2	Gas station--add turn lane here	Roadway
3	Short-term priority should be to widen Cliff Ave to 3 lanes	Roadway
4	Don't like roundabout at this location	Roadway
5	Widen this section of Willow before the section east of Cliff	Roadway
6	Priority	Roadway
7	Four way stop isn't effective, need a signal	Roadway
8	Streetlights needed at intersection. Safety issue due to lack of lighting	Roadway
9	Safety hazard to make road go through. Keep it an uninterrupted trail	Bike / Pedestrian
10	Crosswalk across Cliff and Willow to retail sites and schools	Bike / Pedestrian

Stakeholder Meeting #2

The second round of Stakeholder Meetings occurred on April 6th and 7th, 2022 and were hosted virtually via Webex video conferencing platform. The purpose of the meetings was to update stakeholders on the Plan's development through sharing preliminary findings while offering an opportunity for stakeholders to discuss ideas for Harrisburg's future transportation system. A total of 14 stakeholders attended across both meetings.

Meeting Overview

The Stakeholder Meetings were planned as a supplement to the March 22nd Public Meeting held at Liberty Elementary School in Harrisburg. As such, the main activities of the Stakeholder Meeting mirror those of the March Public Meeting and used Mural, a virtual platform that facilities group collaboration, to engage attendees in the meeting activities. These activities include:

- **Plan Recommendations presentation** – a brief description of the recommendations developed as part of the Master Transportation Plan. Also discussed were the results of a future conditions analysis that presented future traffic conditions; these conditions informed the development of Plan recommendations.
- **Bicycle and Pedestrian Crossing Treatments activity** – interactive activity asking stakeholders to share input and vote on potential bicycle and treatments they believe are appropriate for the future multimodal transportation system.
- **Future Project Mapping activity** – interactive activity asking attendees to provide comments on an area map on potential solutions to the transportation issues and needs facing the community.

Meeting Outcomes

The outcomes of the meeting activities are summarized below for each stakeholder session.

April 6th Session

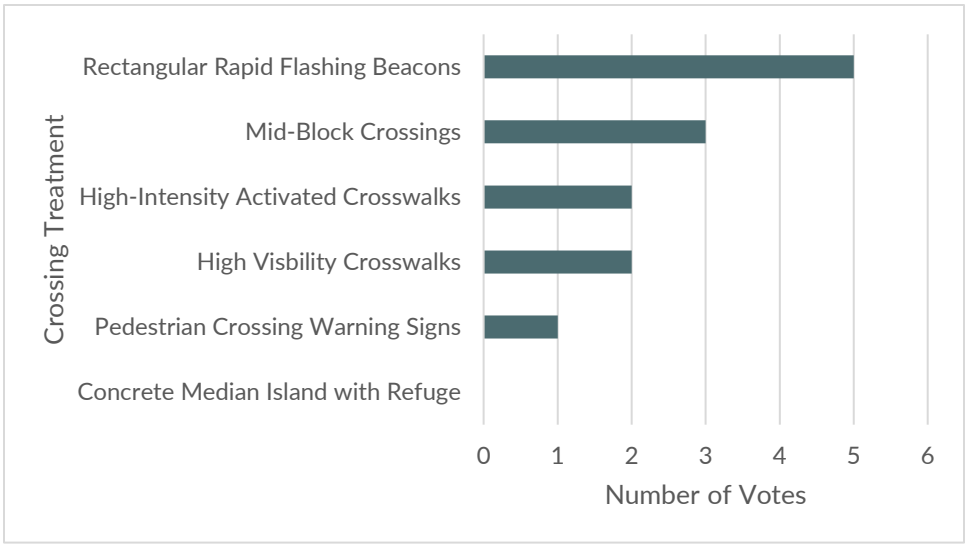
Bicycle and Pedestrian Crossing Treatments Activity

The Bicycle and Pedestrian Crossing Treatment activity for the April 6th session invited stakeholders to review potential bicycle and pedestrian treatments that could be implemented in the future and vote on the treatments they feel would be most effective in meeting the vision for the multimodal system. These treatments include:

- Mid-block crossings
- Pedestrian crossing warning signs
- High visibility crosswalks
- Rectangular rapid flashing beacons (RRFB)
- High-intensity activated crosswalks (HAWK)
- Concrete median island with refuge

The results for the Bicycle and Pedestrian Menu activity are shown in **Figure 9**.

Figure 9: Voting Results for Bicycle and Pedestrian Crossing Treatments Activity



Stakeholders at the April 6th session expressed the most interest in the RRFB treatment, feeling the enhanced visual component adds an additional safety element that would be well suited for crossings near schools and other areas where younger residents would be likely to cross the street.

Other crossing treatments that received votes from the stakeholders were mid-block crossings, HAWK signals, and high visibility crosswalks. These treatments all reflect stakeholder interest in treatments that enhance safety for pedestrians and provide access to key destinations, including schools and commercial areas, especially those along Cliff Avenue and Willow Street.

Future Project Mapping Activity

Stakeholders discussed several items that should be addressed by the MTP during the Future Project Mapping activity. The main point of discussion amongst Stakeholders was the need to widen Cliff Street to a 3-lane section to accommodate current congestion and the anticipated growth in traffic as the community continues to attract new residents. Stakeholders felt that this improvement should be the top priority for the city and could supplement the planned improvements for the intersection of Cliff Avenue and Willow Street.

Further discussion during this activity reinforced the stakeholder's desire for improved pedestrian safety that arose during the Bicycle and Pedestrian Crossing Treatments activity.

Figure 10 shows the Mural board containing the results of both activities for the April 6th session.

April 7th Session

Bicycle and Pedestrian Crossing Treatments Activity

The Bicycle and Pedestrian Crossing Treatment activity for the April 7th session was discussion-based and did not have the voting component used in the April 6th session. Rather stakeholders reviewed the crossing treatment types and discussed which areas of the community could benefit from the various crossings, then posted their comments on a map depicting existing and proposed bicycle and pedestrian improvements. Some of the common themes from this activity were:

- Several opportunities for crossing treatments to improve safety pedestrians exist in Harrisburg
- Need for safe pedestrian crossings at school and commercial locations
- Opportunity to expand the trail network exists along Willow Street and Cliff Avenue

Future Project Mapping

Stakeholder discussion during the Future Project Mapping activity revolved around the needs that attendees felt were the most pressing for the city to address. Similar to previous public engagement events, concern over traffic growth on Cliff Avenue and Willow Street was shared by all stakeholders. Supplementing these concerns was a discussion of when and where the community can expect the need for wider roads, meaning 4 and/or 5 lanes, to arise.

Additional discussion focused on the residential areas south of Willow Street between Cliff Avenue and Southeastern Avenue, specifically on the desire to shift "through" traffic traveling to Cliff Avenue via Maple Street near South Middle School. These comments were based on perceived safety concerns, especially for children walking to school, with stakeholders interested in looking to alternate routes for this traffic. The lack of sidewalks in this part of Harrisburg was also mentioned as a safety concern that stakeholders would like to see addressed. **Figure 11** shows the Mural Board containing the results of the activities for the April 7th session.

Figure 10: Mural Board for the April 6th Stakeholder Meeting Session

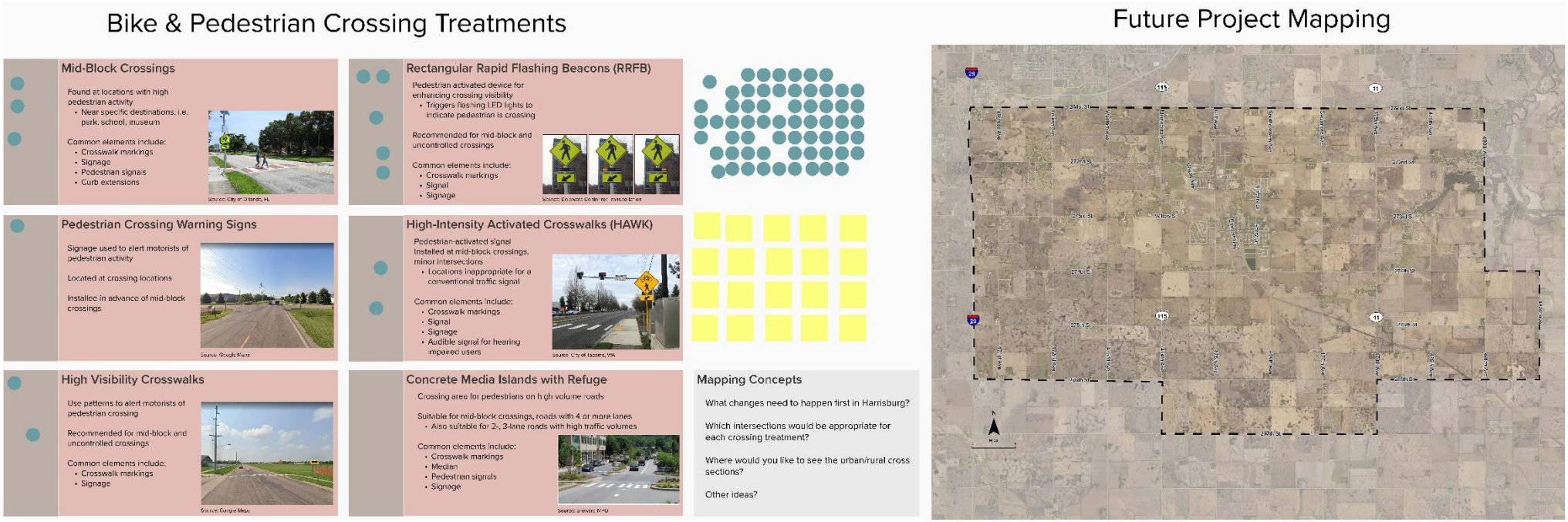
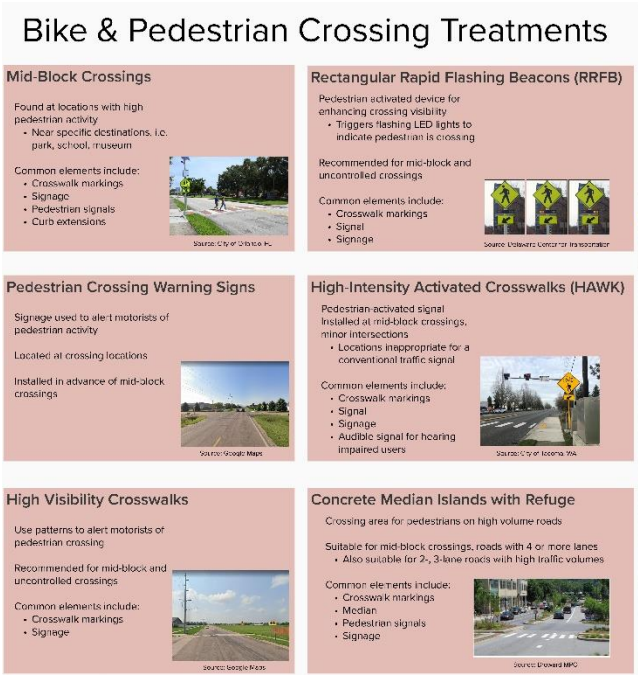
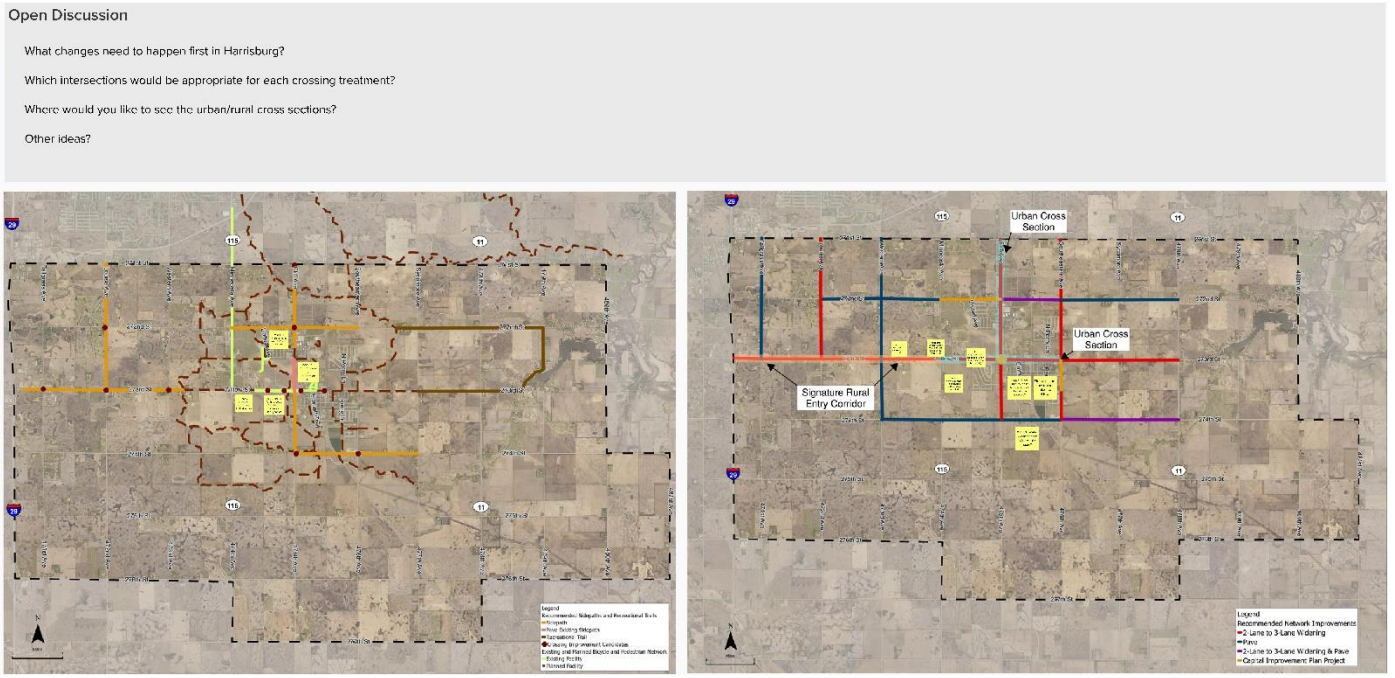


Figure 11: Mural Board for the April 7th Stakeholder Meeting Session





Appendix B – Safety Countermeasures

Safety Countermeasures

Safety Countermeasure Alternatives

Based on the traffic safety review in the *Baseline Conditions* technical memo, safety countermeasure alternatives were developed for select study area intersections. The following alternatives were prepared to address safety-related needs for locations with the ten highest crash frequencies and based on the critical index ratio. The critical index ratio is the ratio of the observed crash rate to the intersection's critical crash rate. The critical crash rate is a statistical check that identifies intersections with higher-than-expected crash outcomes, and an index rate that exceeds 0.8 was identified as the threshold for "safety needs" in this study. Intersection crash data tables, organized by crash frequencies and crash rates, are provided at the end of this Appendix.

Potential projects for study area intersections are summarized below, based on safety improvement countermeasure assessment. Many of these projects may be short-term treatments, as the study area urbanizes and many of these roads will have significant improvements over the next 20 years which will change safety conditions at the intersections.

Highway 115 & 271st Street Intersection

- Traffic Control Device: **Signal**
- 5-Year Crash Frequency: **31**
- Critical Index Ratio: **1.06**
- Safety Countermeasure Alternatives:
    - Recent improvements at this intersection and along the Highway 115 corridor include construction of a permanent traffic signal, 4-lane corridor, turn lanes, raised median, and roadway lighting.

Cliff Avenue & 271st Street Intersection

- Traffic Control Device: **Signal**
- 5-Year Crash Frequency: **28**
- Critical Index Ratio: **1.03**
- Safety Countermeasure Alternatives:
    - Construct roundabout or install permanent traffic signals with reflective backplates.
    - Install advance warning beacons for traffic signal.
    - Review future requests for redevelopment and changes in access for opportunities to further access management techniques.
    - Continue periodic signal timing updates as traffic patterns evolve.

472nd Avenue & 271st Street Intersection

- Traffic Control Device: **Roundabout**
- 5-Year Crash Frequency: **18**
- Critical Index Ratio: **0.95**
- Safety Countermeasure Alternatives:
    - Consider reviewing speed limits on adjacent roadways and increasing signage size and frequency.
    - Consider increasing approach (entering) deflection or narrowing lanes to decrease approaching and internal roundabout speeds
- Note: Intersection reconstructed to a roundabout in 2018. Crashes increased to seven (7) in 2019 but declined to one (1) in 2020. No crashes after 2016 involved an injury.

Highway 11 & 273rd Street Intersection

- Traffic Control Device: **Two-Way Stop-Control (TWSC)**
- 5-Year Crash Frequency: **18**
- Critical Index Ratio: **1.38**
- Safety Countermeasure Alternatives:
    - Install optimally placed stop bars on stop-controlled approaches, doubled-up (left and right) oversized advance “Stop Ahead” intersection warning and stop signs, and “STOP” road markings.

Highway 115 & 276th Street Intersection

- Traffic Control Device: **Two-Way Stop-Control (TWSC)**
- 5-Year Crash Frequency: **17**
- Critical Index Ratio: **1.82**
- Safety Countermeasure Alternatives:
    - Consider reviewing speed limits on adjacent roadways and increasing intersection warning signage size and frequency.

Cliff Avenue & Willow Street Intersection

- Traffic Control Device: **All-Way Stop-Control (AWSC)**
- 5-Year Crash Frequency: **14**
- Critical Index Ratio: **0.60**
- Safety Countermeasure Alternatives:
    - Intersection being designed for a capacity and safety upgrade anticipated in 2023.

472nd Avenue & 273rd Street Intersection

- Traffic Control Device: **All-Way Stop-Control (AWSC)**
- 5-Year Crash Frequency: **11**
- Critical Index Ratio: **0.55**
- Safety Countermeasure Alternatives:
    - Install doubled-up (left and right) oversized advance “Stop Ahead” intersection warning signs.
    - Consider converting existing doubled-up (left and right) stop signs to larger sizes and/or installing flashing beacons or LED sign border.

Highway 11 & 271st Street Intersection

- Traffic Control Device: **All-Way Stop-Control (AWSC)**
- 5-Year Crash Frequency: **11**
- Critical Index Ratio: **0.69**
- Safety Countermeasure Alternatives:
    - Install doubled-up (left and right) oversized advance "Stop Ahead" intersection warning and stop signs and optimally placed stop bars to the eastbound and westbound approaches.
    - Consider converting existing stop signs to larger sizes and/or installing flashing beacons or LED sign border.

Highway 115 & 272nd Street Intersection

- Traffic Control Device: **Two-Way Stop-Control (TWSC)**
- 5-Year Crash Frequency: **10**
- Critical Index Ratio: **0.45**
- Safety Countermeasure Alternatives:
    - Recent improvements at this intersection and along the Highway 115 corridor include construction of a 4-lane corridor, turn lanes, raised median, and roadway lighting.
    - Review traffic signal warrants as volumes increase.

Tallgrass Avenue & 271st Street Intersection

- Traffic Control Device: **Two-Way Stop-Control (TWSC)**
- 5-Year Crash Frequency: **9**
- Critical Index Ratio: **0.67**
- Safety Countermeasure Alternatives:
    - No identified safety trends.
    - Intersection planned for reconstruction as part of future South Veterans Parkway project.

481st Avenue & 276th Street Intersection

- Traffic Control Device: **Two-Way Stop-Control (TWSC)**
- 5-Year Crash Frequency: **8**
- Critical Index Ratio: **1.32**
- Safety Countermeasure Alternatives:
    - Intersection has recent additions of flashing beacons and rumble strips. Monitor if these changes mitigation issues. If additional changes are warranted consider reviewing speed limits on adjacent eastbound and westbound road segments and converting existing stop signs to a larger size.

Table 1: Harrisburg Intersection Crash Frequency Rankings – Injury Severity and Manner of Collision (2016 – 2020)

Int. No.	Intersection	Traffic Control Device	Total Crashes	Injury Severity			Manner of Collision				
				Fatal	Injury	PDO	Single Vehicle	Rear-end	Head-on	Angle	Sideswipe
1	Hwy 115 & 271st St	Signal	31	0	10	21	3	12	1	15	0
2	Cliff Ave & 271st St	Signal	28	0	10	18	2	14	0	11	1
3	472nd Ave & 271st St	Roundabout	18	0	1	17	6	8	0	3	1
4	Hwy 11 & 273rd St	TWSC	18	0	10	8	6	1	0	10	1
5	Hwy 115 & 276th St	TWSC	17	1	10	6	2	0	0	14	1
6	Cliff Ave & Willow St	AWSC	14	0	1	13	0	3	0	11	0
7	472nd Ave & 273rd St	AWSC	11	0	1	10	1	2	0	8	0
8	Hwy 11 & 271st St	AWSC	11	0	2	9	1	4	0	5	1
9	Hwy 115 & 272nd St	TWSC	10	0	2	8	3	1	0	5	1
10	Tallgrass Ave & 271st St	TWSC	9	0	2	7	2	2	0	3	2
Totals:			**167**	**1**	**49**	**117**	**26**	**47**	**1**	**85**	**8**

Table 3: Harrisburg Intersection Crash Frequency Rankings – Light Condition and Road Surface Condition (2016 – 2020)

Int. No.	Intersection	Traffic Control Device	Total Crashes	Light Condition				Road Surface Condition			
				Daylight	Dark – Not Lighted	Dark – Lighted	Dawn/ Dusk	Dry	Wet	Snow	Slush/ Ice/ Frost
1	Hwy 115 & 271st St	Signal	31	18	6	6	1	22	3	2	3
2	Cliff Ave & 271st St	Signal	28	20	2	3	3	24	3	1	0
3	472nd Ave & 271st St	Roundabout	18	14	2	1	1	12	1	4	1
4	Hwy 11 & 273rd St	TWSC	18	7	11	0	0	15	2	0	1
5	Hwy 115 & 276th St	TWSC	17	13	4	0	0	15	1	1	0
6	Cliff Ave & Willow St	AWSC	14	8	1	3	1	11	3	0	0
7	472nd Ave & 273rd St	AWSC	11	8	2	0	1	6	0	3	2
8	Hwy 11 & 271st St	AWSC	11	9	2	0	0	9	1	1	0
9	Hwy 115 & 272nd St	TWSC	10	5	3	2	0	8	0	1	1
10	Tallgrass Ave & 271st St	TWSC	9	7	2	0	0	5	1	0	3
Totals:			**167**	**109**	**35**	**15**	**7**	**127**	**15**	**13**	**11**

Table 4: Harrisburg Intersection Crashes Frequency by Year (2016 – 2020)

Int. No.	Intersection	Traffic Control Device	Total Crashes	2016	2017	2018	2019	2020
1	Hwy 115 & 271st St	Signal	31	4	7	10	5	5
2	Cliff Ave & 271st St	Signal	28	8	6	3	9	2
3	472nd Ave & 271st St	Roundabout	18	4	2	4	7	1
4	Hwy 11 & 273rd St	TWSC	18	1	2	5	6	4
5	Hwy 115 & 276th St	TWSC	17	6	3	2	2	4
6	Cliff Ave & Willow St	AWSC	14	4	0	4	3	3
7	472nd Ave & 273rd St	AWSC	11	5	2	1	3	0
8	Hwy 11 & 271st St	AWSC	11	0	0	8	1	2
9	Hwy 115 & 272nd St	TWSC	10	2	2	3	1	2
10	Tallgrass Ave & 271st St	TWSC	9	0	3	1	2	3
Totals:			**167**	**34**	**27**	**41**	**39**	**26**

Table 5: Harrisburg Intersection Crash Rates (2016 – 2020)

Int. No.	Intersection	Total Crashes	Daily Entering Vehicles	Million Entering Vehicles	Crash Rate	Critical Crash Rate	Ratio
1	Hwy 115 & 276th St	17	3,000	5.40	3.15	1.73	**1.82**
2	481st Ave & 276th St	8	1,600	2.96	2.70	2.04	**1.32**
3	Hwy 11 & 273rd St	18	4,600	8.35	2.16	1.56	**1.38**
4	Hwy 115 & 271st St	31	11,600	21.13	1.47	1.38	**1.06**
5	Cliff Ave & 271st St	28	10,600	19.32	1.45	1.40	**1.03**
6	472nd Ave & 271st St	18	7,300	13.25	1.36	1.42	**0.95**
7	Tallgrass Ave & 271st St	9	4,800	8.67	1.04	1.55	0.67
8	Hwy 11 & 271st St	11	5,900	10.84	1.02	1.48	0.69
9	Hwy 11 & 276th St	7	3,800	6.97	1.00	1.62	0.62
10	476th Ave & 271st St	8	4,700	8.66	0.92	1.55	0.60
		HSM weighted average crash rate for study area signalized intersections = 1.00					
		HSM weighted average crash rate for study area unsignalized intersections = 0.95					

Intersections with a crash rate exceeding the critical crash rate (ratio > 0.8) noted in **Red Bold**.

Table 6: Harrisburg Intersection Crash Rate Rankings – Injury Severity and Manner of Collision (2016 – 2020)

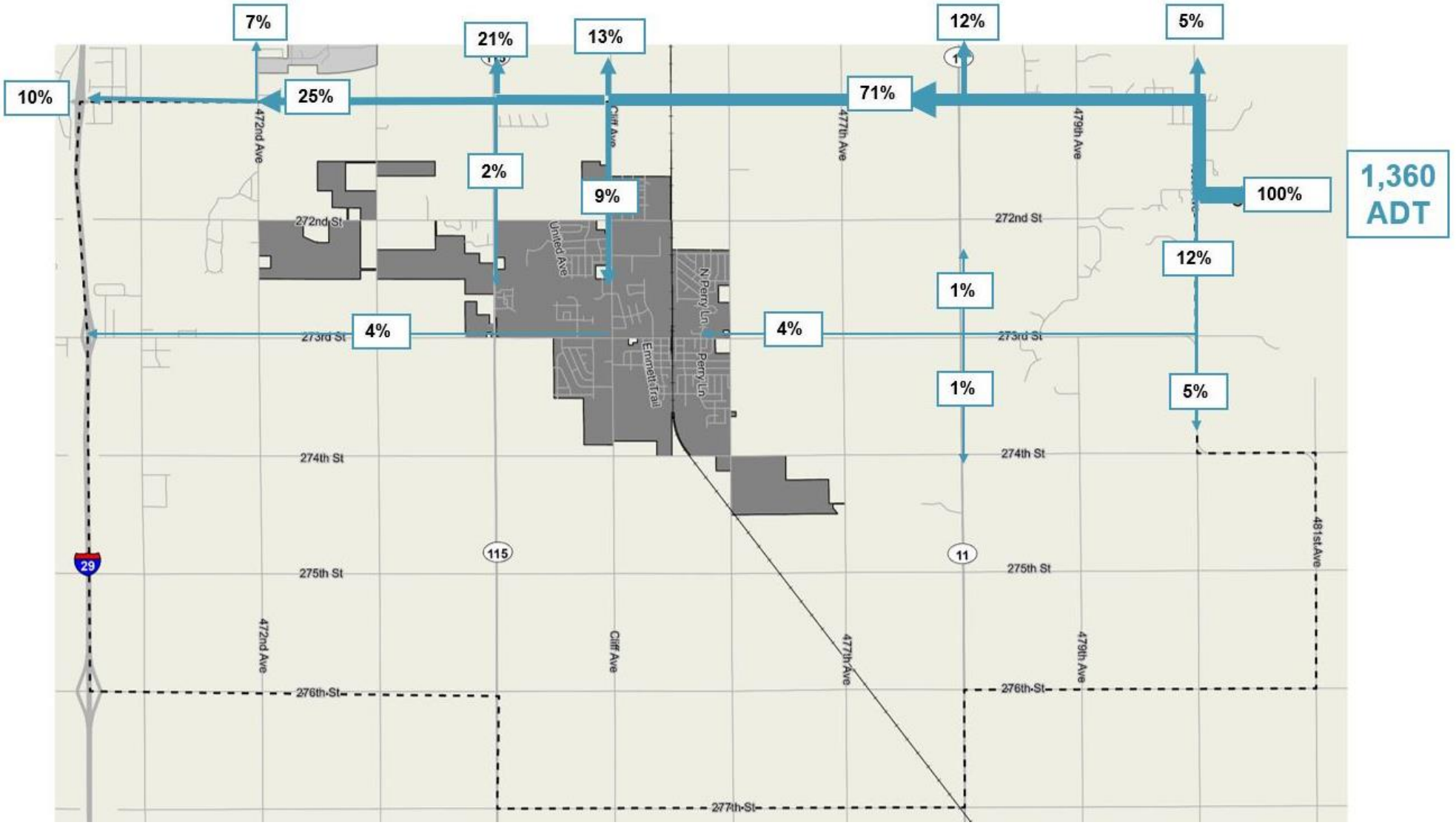
Int. No.	Intersection	Traffic Control Device	Total Crashes	Injury Severity			Manner of Collision				
				Fatal	Injury	PDO	Single Vehicle	Rear-end	Head-on	Angle	Sideswipe
1	Hwy 115 & 276th St	TWSC	17	1	10	6	2	0	0	14	1
2	481st Ave & 276th St	TWSC	8	0	2	6	1	2	0	5	0
3	Hwy 11 & 273rd St	TWSC	18	0	10	8	6	1	0	10	1
4	Hwy 115 & 271st St	Signal	31	0	10	21	3	12	1	15	0
5	Cliff Ave & 271st St	Signal	28	0	10	18	2	14	0	11	1
6	472nd Ave & 271st St	Roundabout	18	0	1	17	6	8	0	3	1
7	Tallgrass Ave & 271st St	TWSC	9	0	2	7	2	2	0	3	2
8	Hwy 11 & 271st St	AWSC	11	0	2	9	1	4	0	5	1
9	Hwy 11 & 276th St	TWSC	7	0	2	5	6	0	0	1	0
10	476th Ave & 271st St	TWSC	8	1	2	5	1	1	0	6	0
Totals:			**155**	**2**	**51**	**102**	**30**	**44**	**1**	**73**	**7**

Table 7: Harrisburg Intersection Crash Rate Rankings – Light Condition and Road Surface Condition (2016 – 2020)

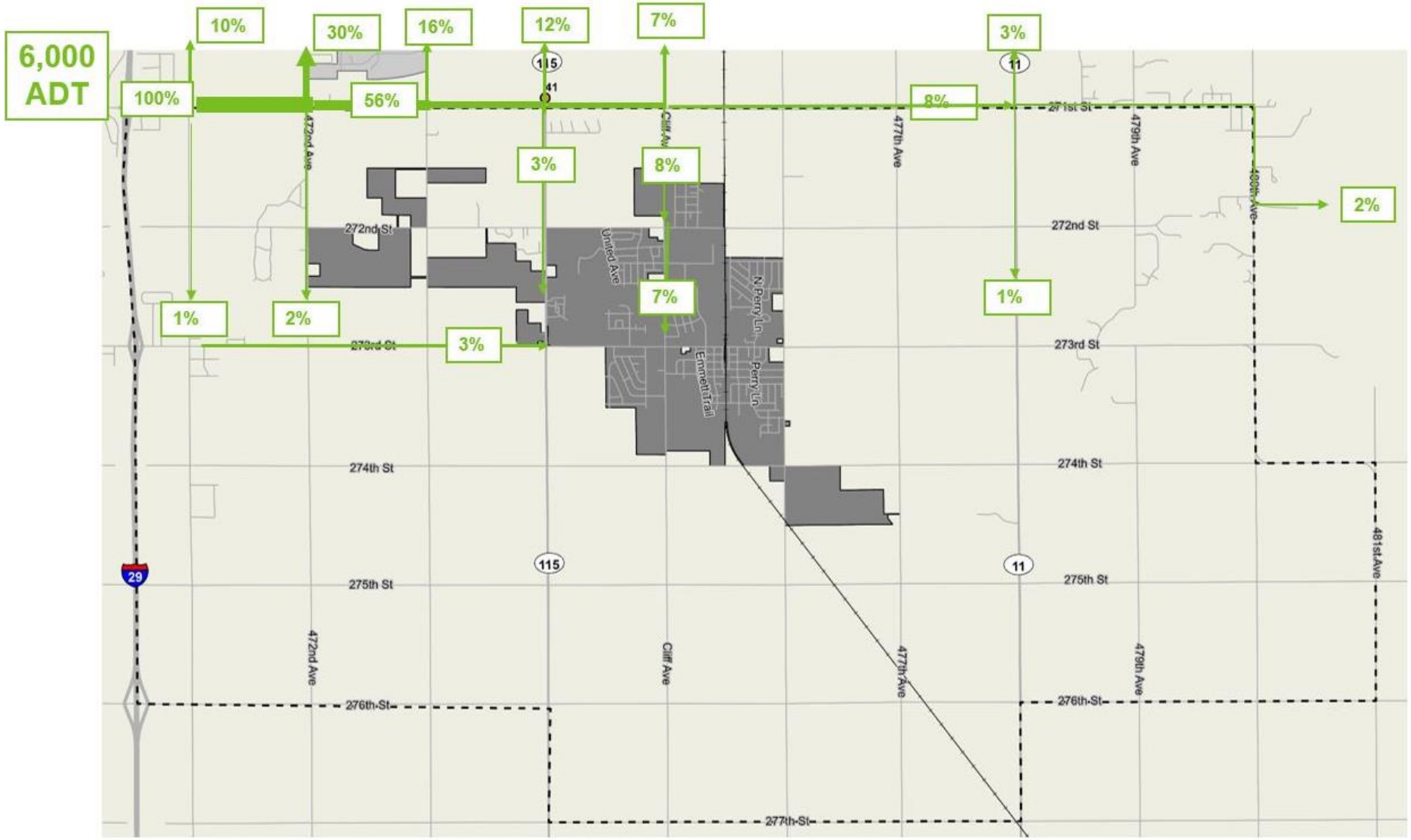
Int. No.	Intersection	Traffic Control Device	Total Crashes	Light Condition				Road Surface Condition			
				Daylight	Dark – Not Lighted	Dark – Lighted	Dawn/ Dusk	Dry	Wet	Snow	Slush/ Ice/ Frost
1	Hwy 115 & 276th St	TWSC	17	13	4	0	0	15	1	1	0
2	481st Ave & 276th St	TWSC	8	6	2	0	0	7	1	0	0
3	Hwy 11 & 273rd St	TWSC	18	7	11	0	0	15	2	0	1
4	Hwy 115 & 271st St	Signal	31	18	6	6	1	22	3	2	3
5	Cliff Ave & 271st St	Signal	28	20	2	3	3	24	3	1	0
6	472nd Ave & 271st St	Roundabout	18	14	2	1	1	12	1	4	1
7	Tallgrass Ave & 271st St	TWSC	9	7	2	0	0	5	1	0	3
8	Hwy 11 & 271st St	AWSC	11	9	2	0	0	9	1	1	0
9	Hwy 11 & 276th St	TWSC	7	3	1	0	3	7	0	0	0
10	476th Ave & 271st St	TWSC	8	3	4	0	1	6	0	1	1
Totals:			**155**	**100**	**36**	**10**	**9**	**122**	**13**	**10**	**9**

Appendix C – Origin and Destination Analysis

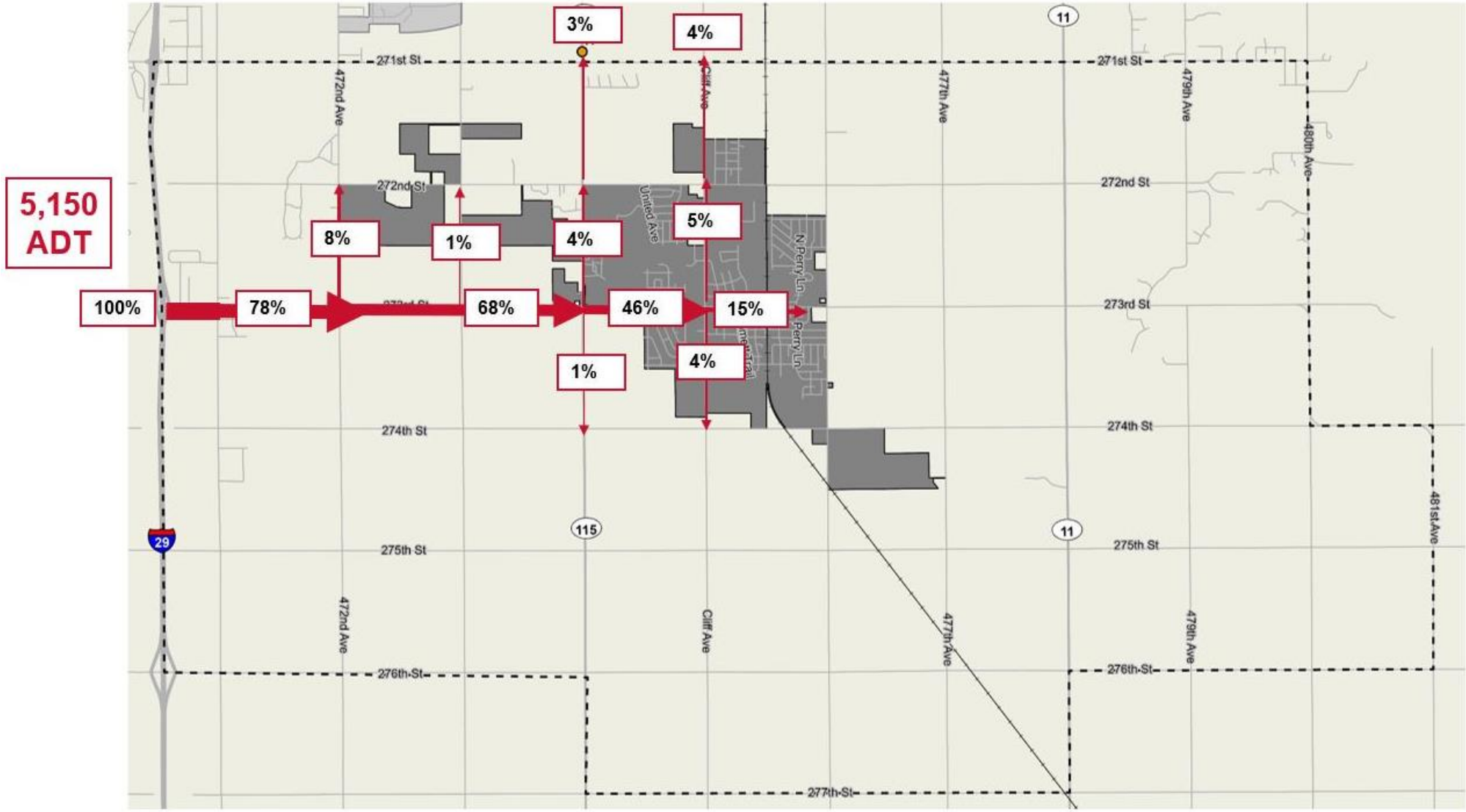
Zone 1—272nd Street (Big Sioux River Bridge) East of 480th Street



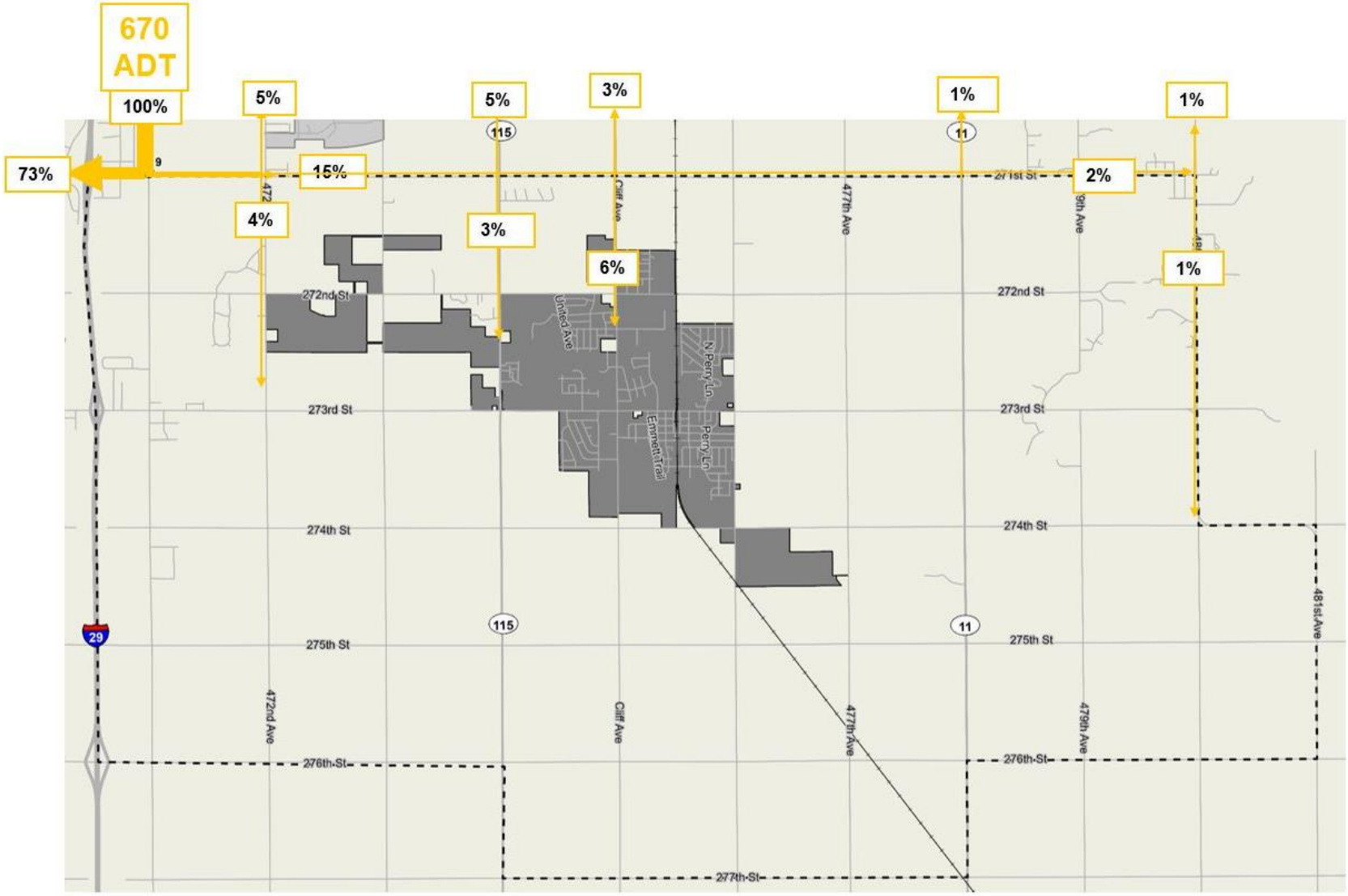
Zone 2—271st Street east of I-29



Zone 11—273rd Street east of I-29

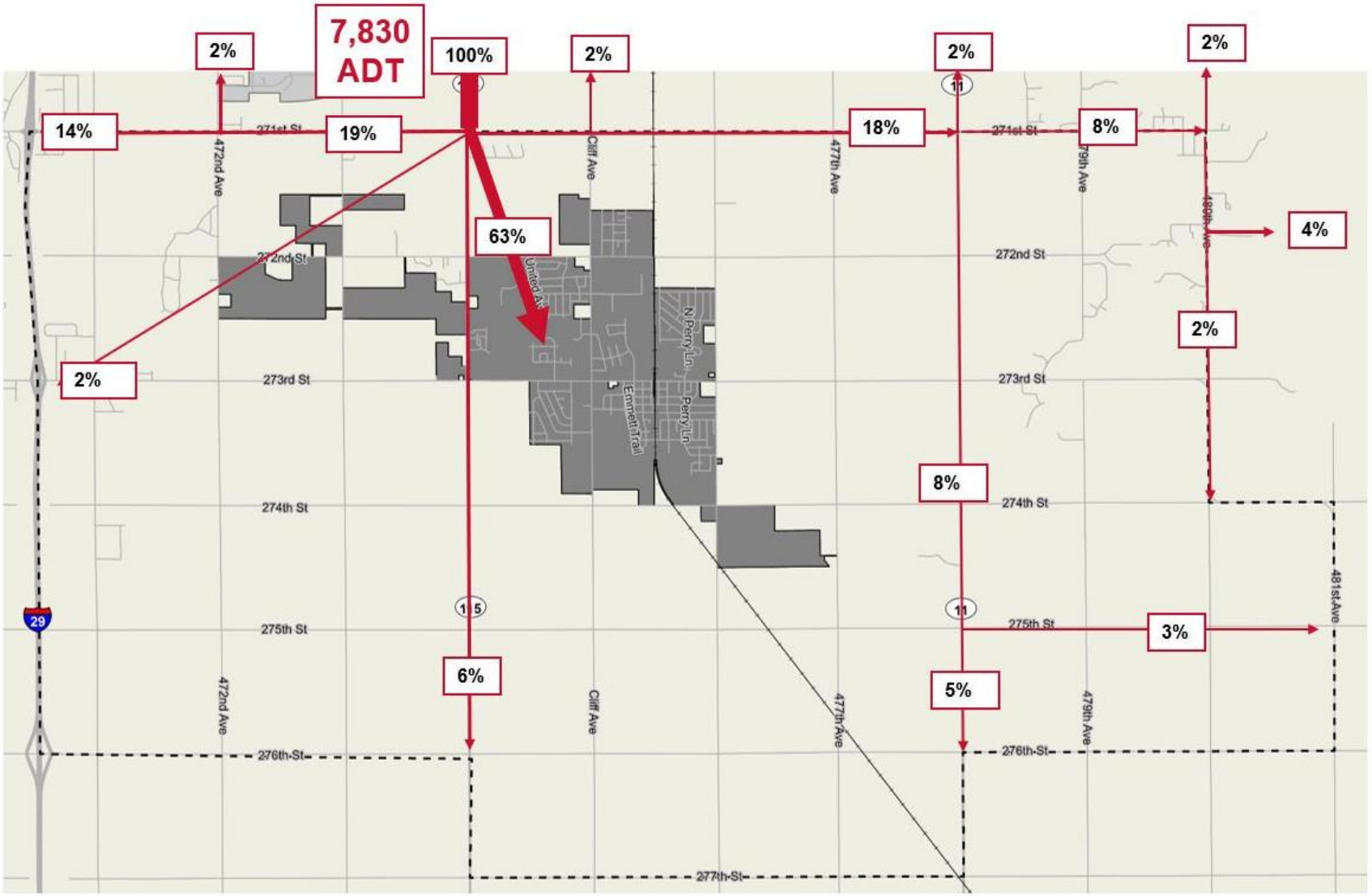


Zone 19—Tallgrass Avenue north of 271st Street

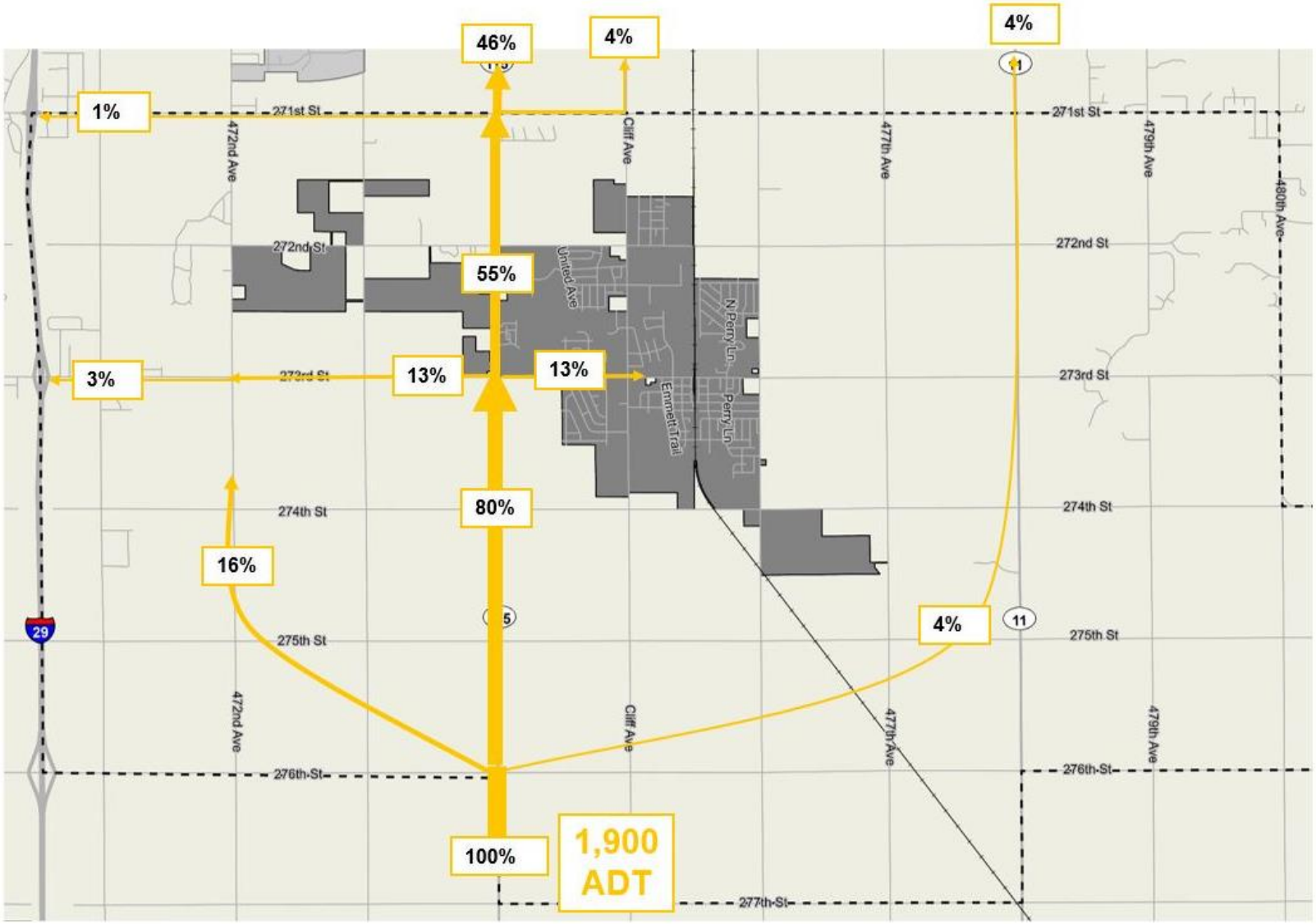


Zone 35—Highway 11 north of 271st Street

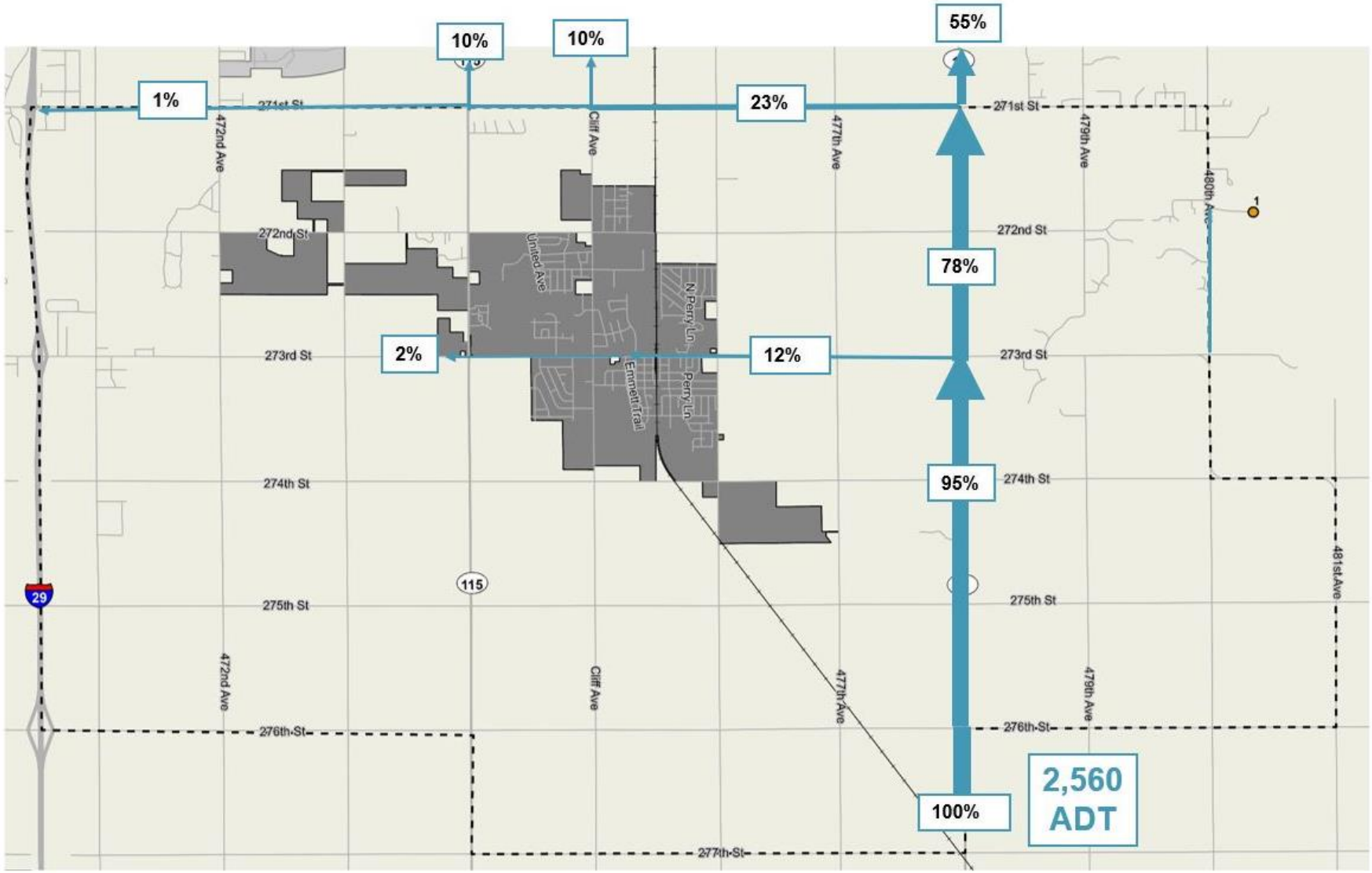
Zone 41—Highway 115 / Minnesota Avenue north of 271st Street



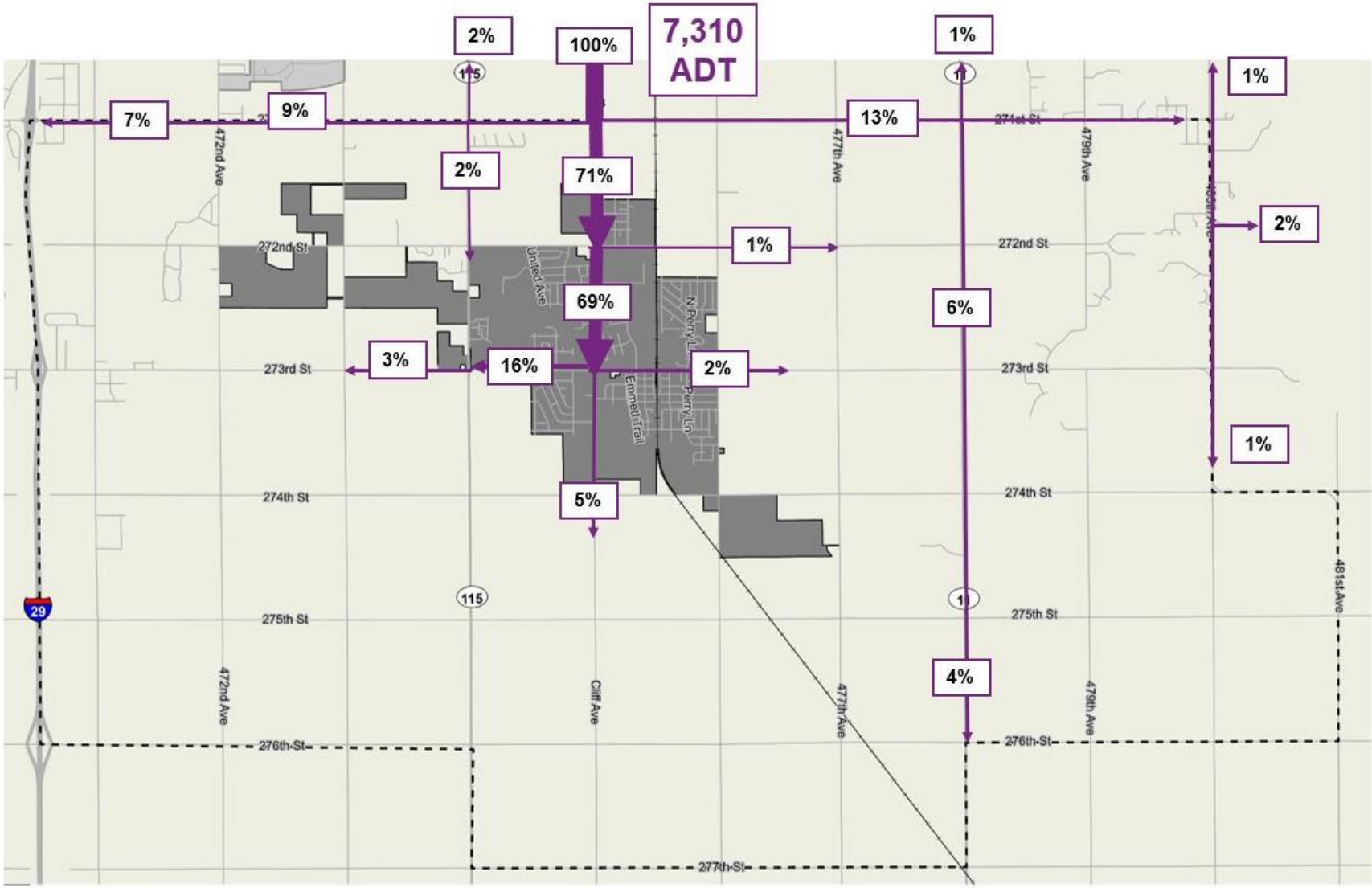
Zone 42—Highway 115 south of 276th Street



Zone 43—Highway 11 south of 276th Street



Zone 48—Cliff Avenue north of 271st Street



Appendix D – Final Plan Presentation

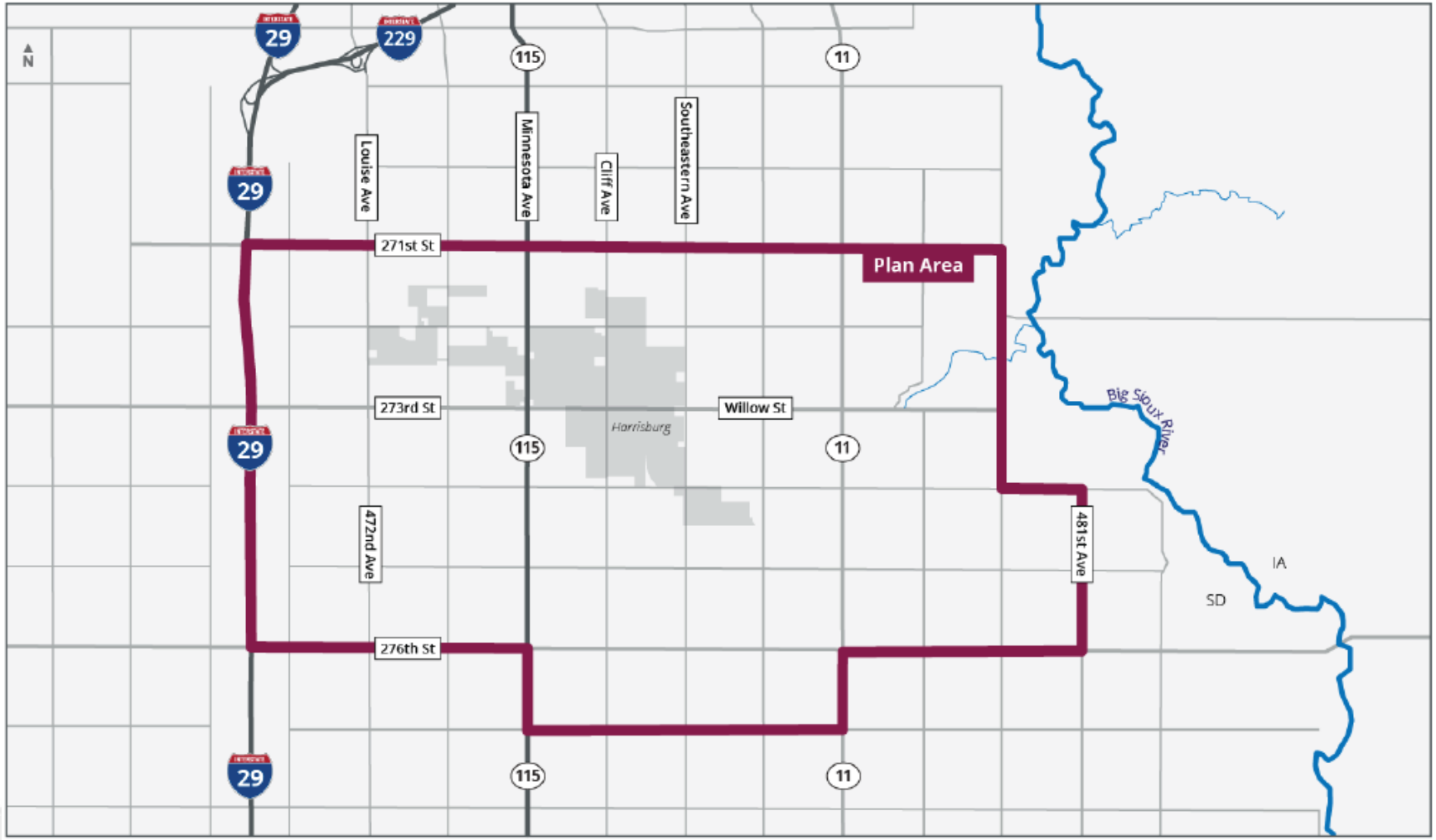
DRAFT

Harrisburg Master Transportation Plan (MTP)

Plan Presentation

Master Transportation Plan Process

Study Area


N
29
229
115
11
Louise Ave
Minnesota Ave
Cliff Ave
Southeastern Ave
271st St
Plan Area
273rd St
Willow St
Harrisburg
Big Sioux River
472nd Ave
481st Ave
IA
SD
276th St

Plan Inputs

Past Studies

New Data

Public Input

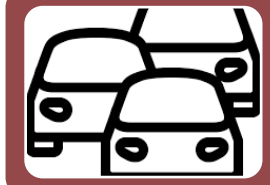
Public / Stakeholder Input

Public Input – November 2021

- Public Open House
- 30 Attendees
- Emphasis areas:
  - Safety is Important
  - Identify Strategies for Less Congestion
  - Pave Gravel Roads
  - Add More Bicycle and Pedestrian Connections
  - Maintain Current System

Plan Goal Priorities
Public and Stakeholder Feedback

Provide a Safe Transportation System



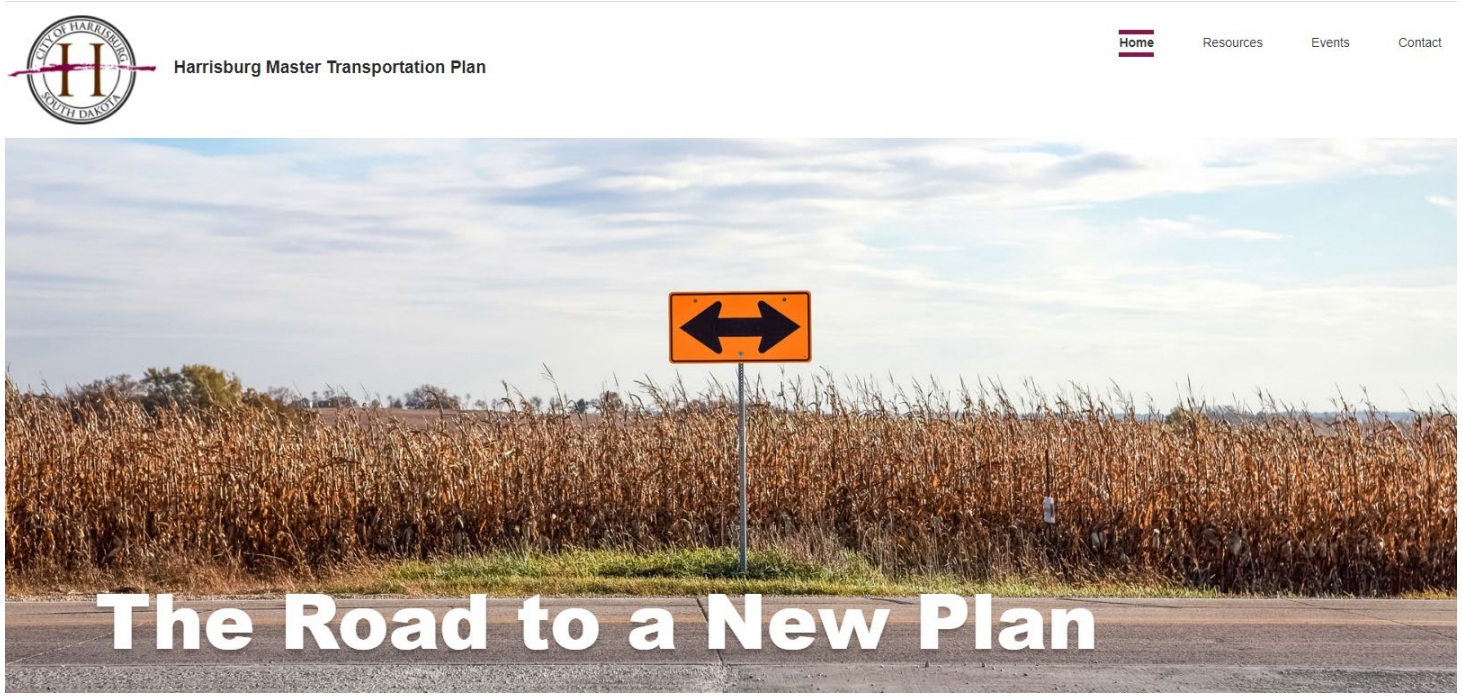
Minimize Travel Congestion

Improve Pedestrian and Bicycle Connections

Maintain the Current Street System

Public Survey: Nov-Dec 2021

- 433 responses
- Asked for Public Input on Goals and Needs
- Top 3 Goals
  - Efficiency and Reliability
  - Safety
  - Economic
- Top 3 Issues
  - Improve traffic flow on area streets during rush hour
  - Ease of travelling to work, school, shopping, and recreational areas in Harrisburg
  - Adding/improving sidewalks and pedestrian crossings



Public Input – March 2022

- Public Open House
- 35 Attendees
- Feedback Received:
  - Short-Term Improvements Needed to Cliff and Willow
  - Pave Gravel Roads
  - Safety for Vehicles and Pedestrians / Bicyclists are Important

Baseline Conditions Overview

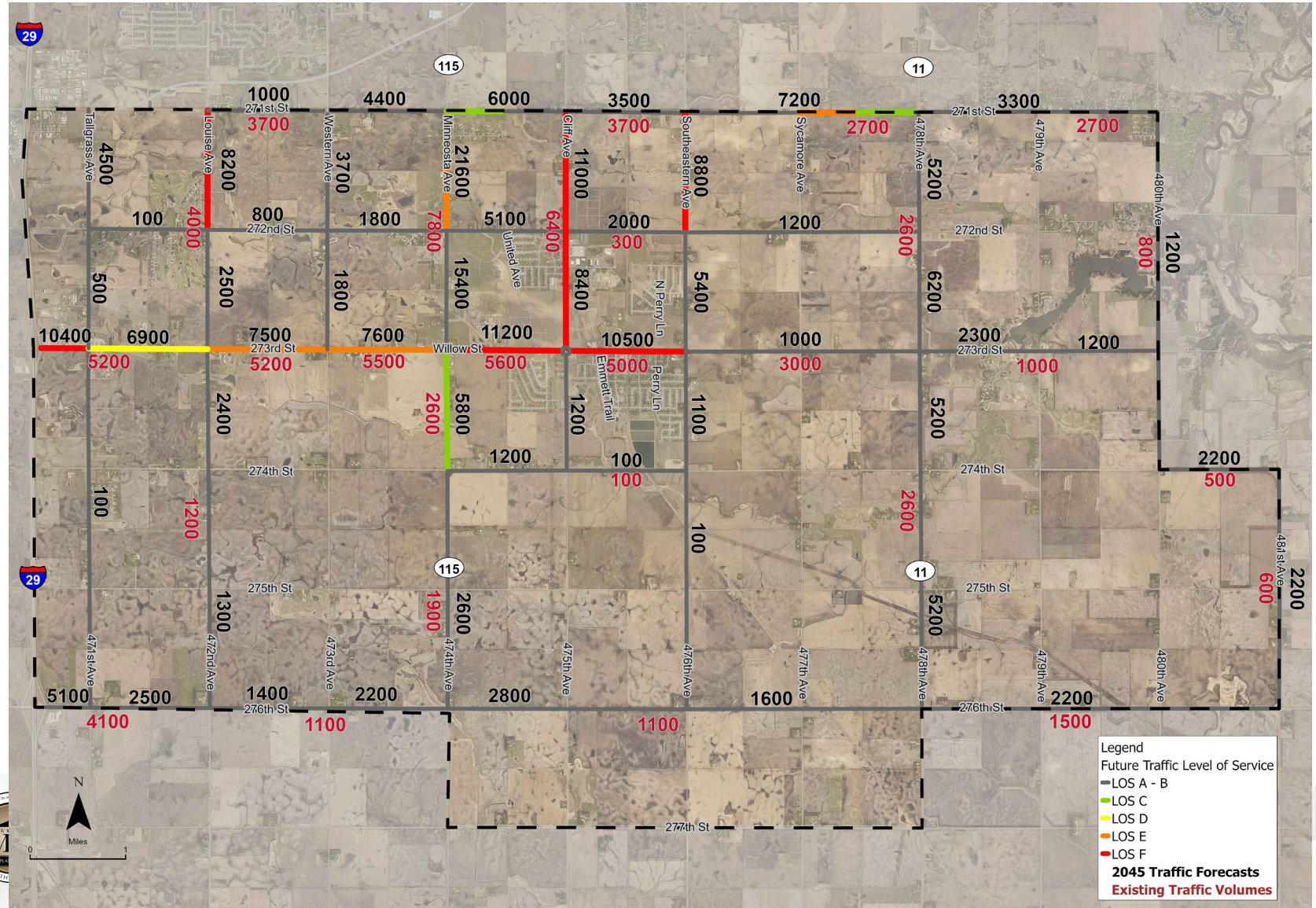
Traffic Operations (Congestion) – Today and 2045

Traffic Safety

Bicycle and Pedestrian Connections

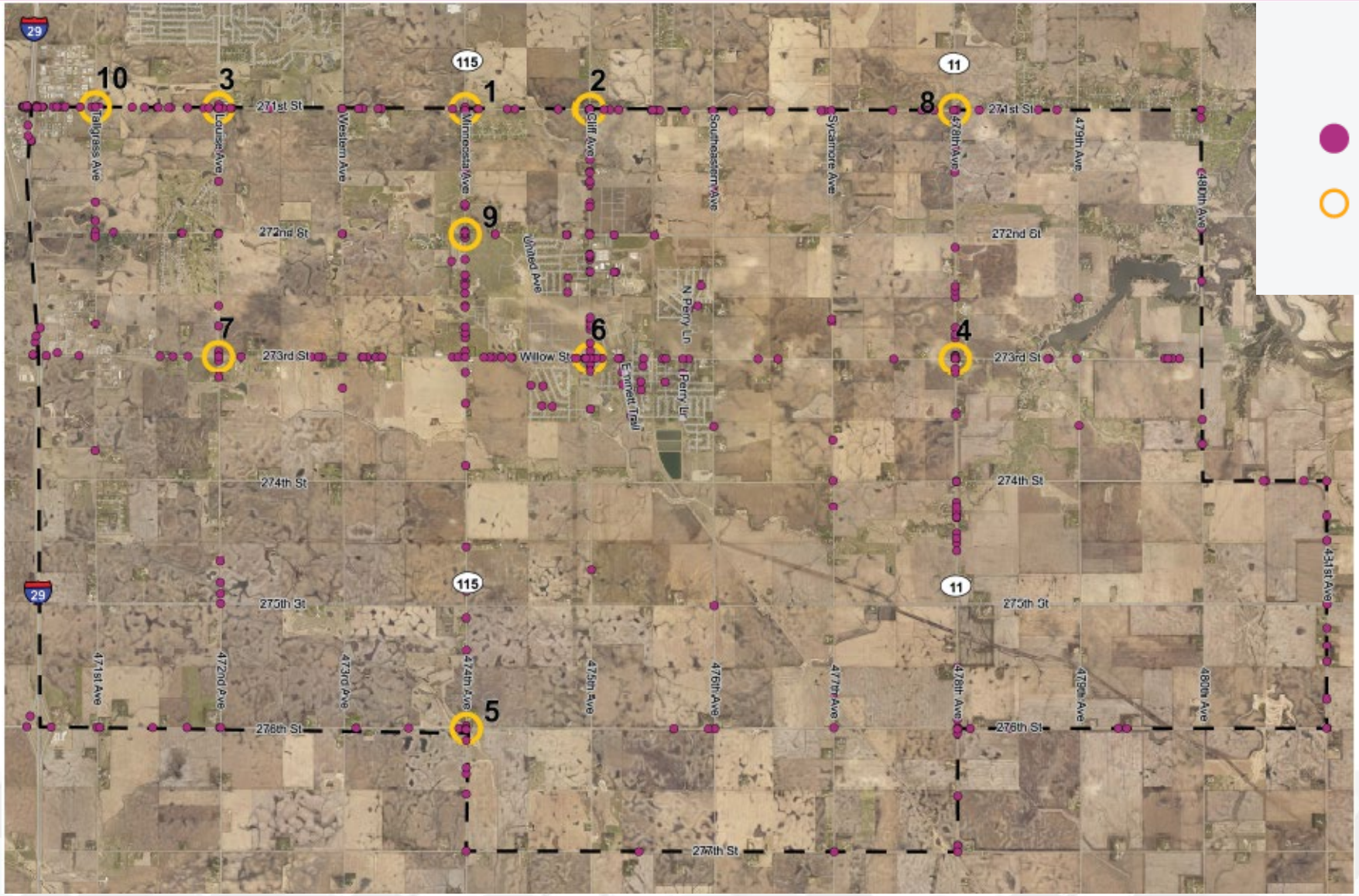
Origin-Destination Patterns

Daily Traffic Volumes (Today and 2045) and Future Congestion



CITY OF HARRISBURG

Traffic Crashes, 2016 - 2020

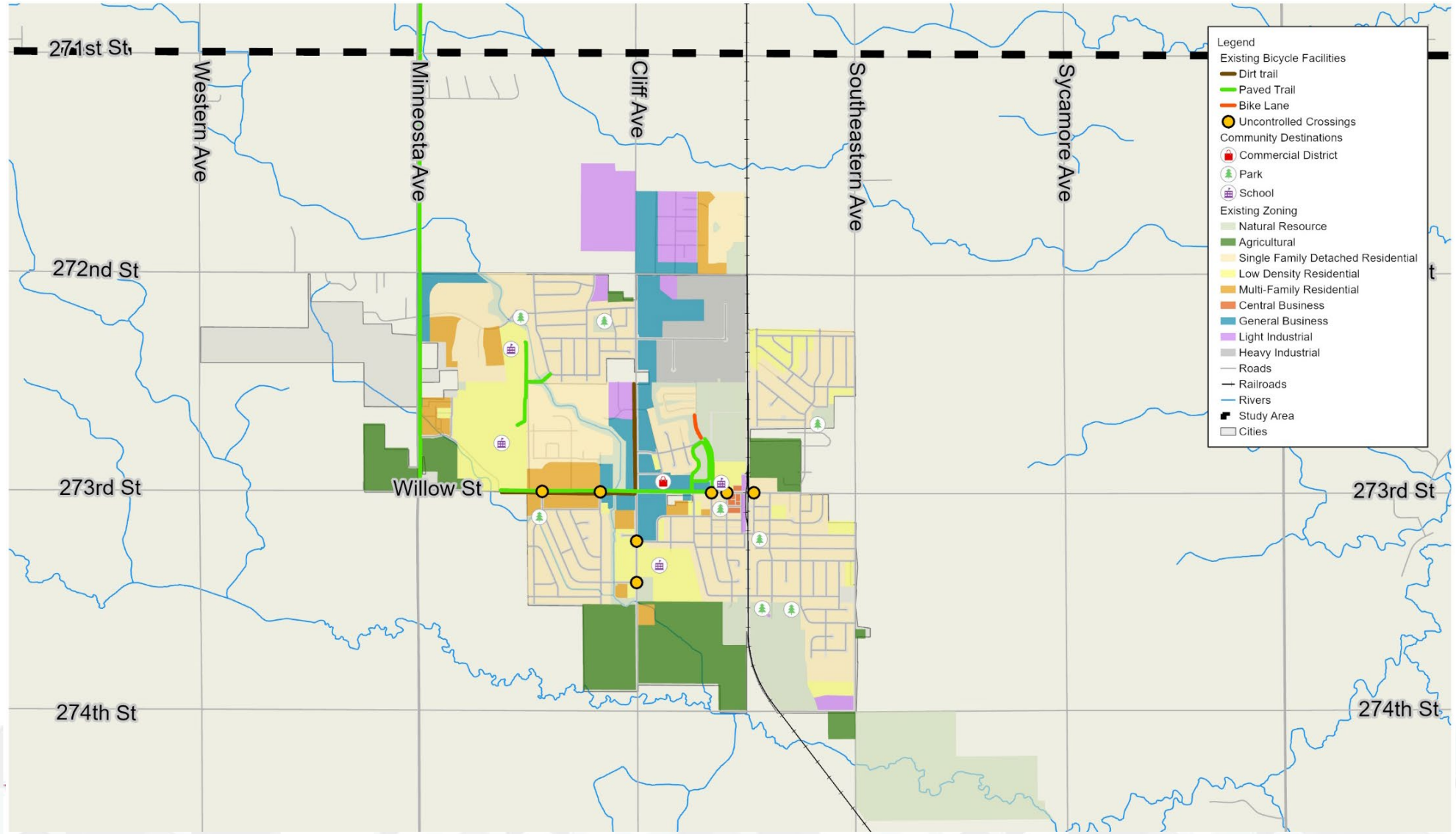


LEGEND

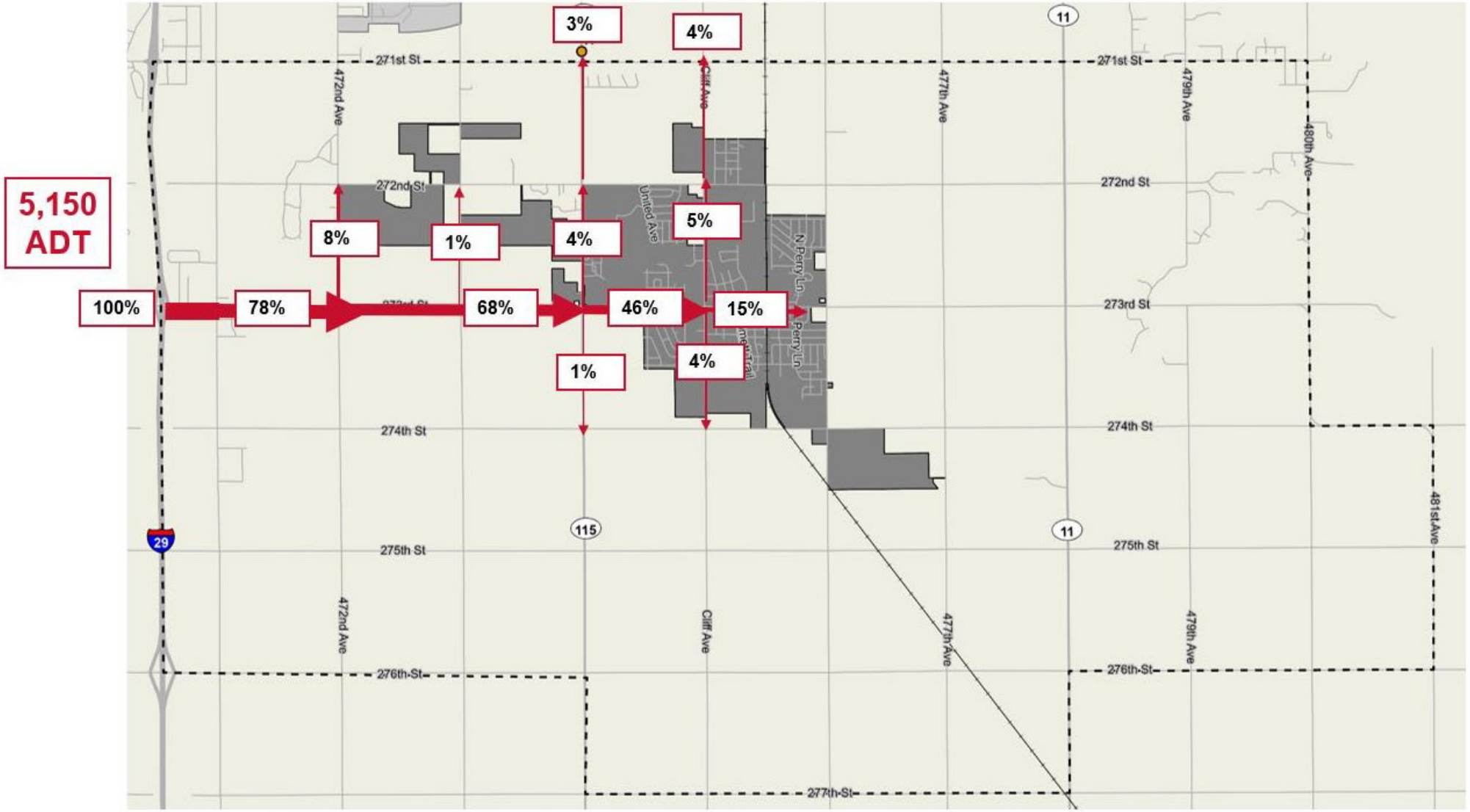
- Crashes
- Top Crash Frequency Intersections

Rank	Intersection	Crash Frequency
1	Highway 115 / 271st Street	31
2	Cliff Avenue / 271st Street	28
3	472nd Avenue / 271st Street	18
3	Highway 11 / 273rd Street	18
5	Highway 115 / 276th Street	17
6	Cliff Avenue / Willow Street	14
7	472nd Avenue / 273rd Street	11
7	Highway 11 / 271st Street	11
9	Highway 115 / 272nd Street	10
10	471st Avenue / 271st Street	9

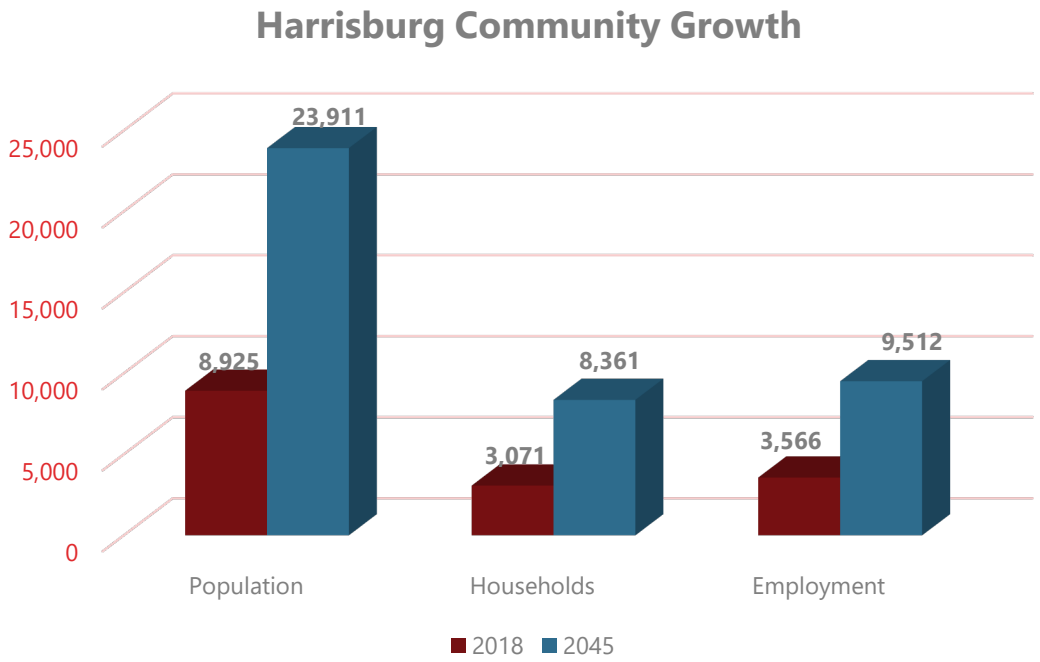
Existing Bicycle and Pedestrian Facilities



Example Origin-Destination Data: Willow St I-29 Interchange



Future Conditions - Growth



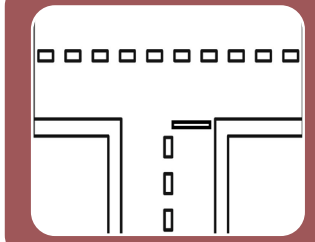
Population + 168%

Households +172%

Employment +167%

Standards Development Overview

Street Cross Sections



Access Standards

Bicycle and Pedestrian Standards

Urban vs. Rural Cross Sections

Urban Cross Section

- Curb and gutter with storm sewers for drainage
- Parking and pedestrian access from street to adjacent housing and businesses
- Typically requires less public right-of-way than rural roads

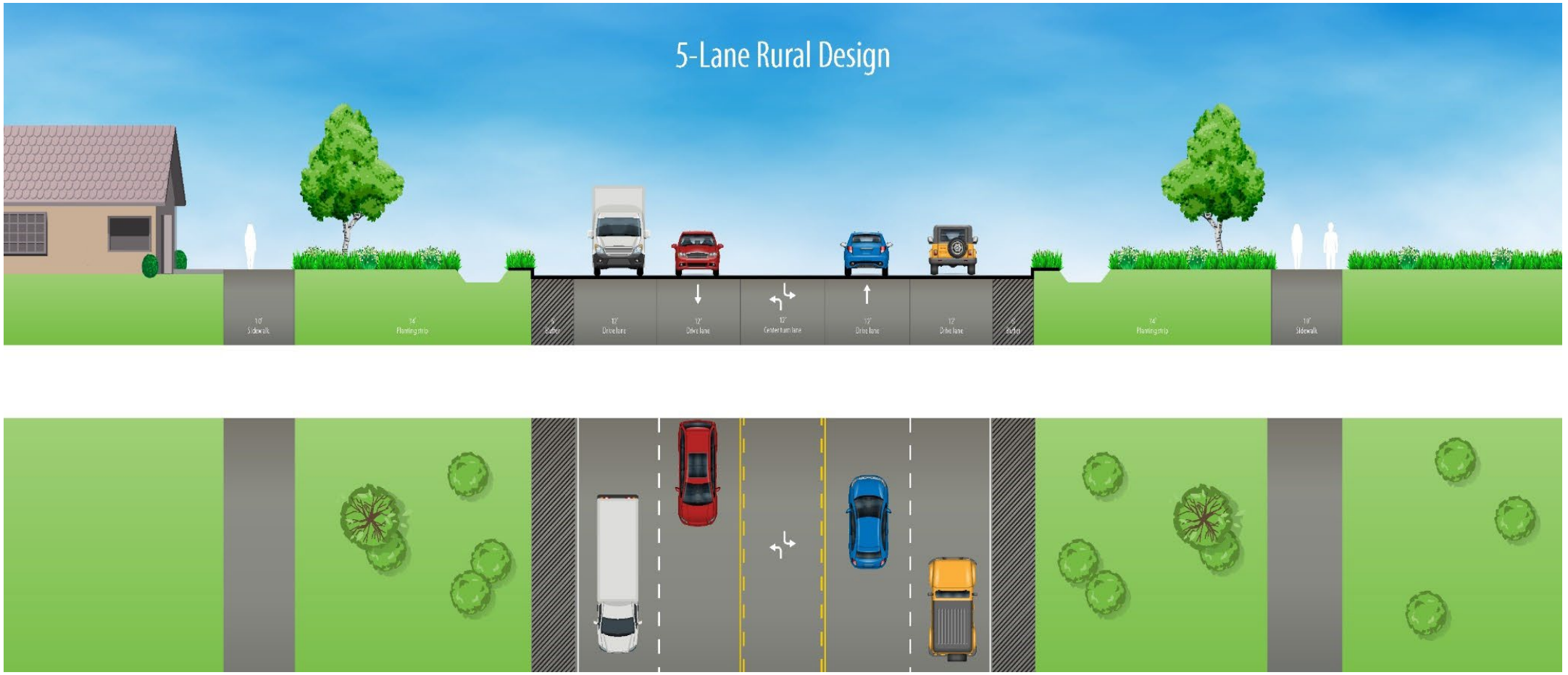
Rural Cross Section

- Ditches to manage drainage
- Pedestrian facilities, housing, and businesses set back beyond ditches
- Typically requires more public right-of-way than urban streets

3-Lane Rural Cross Section

Example Right-of-Way: 160’
Expandable to 5-lanes
40’+ greenspace separation between pedestrian way and roadway

5-Lane Rural Cross Section

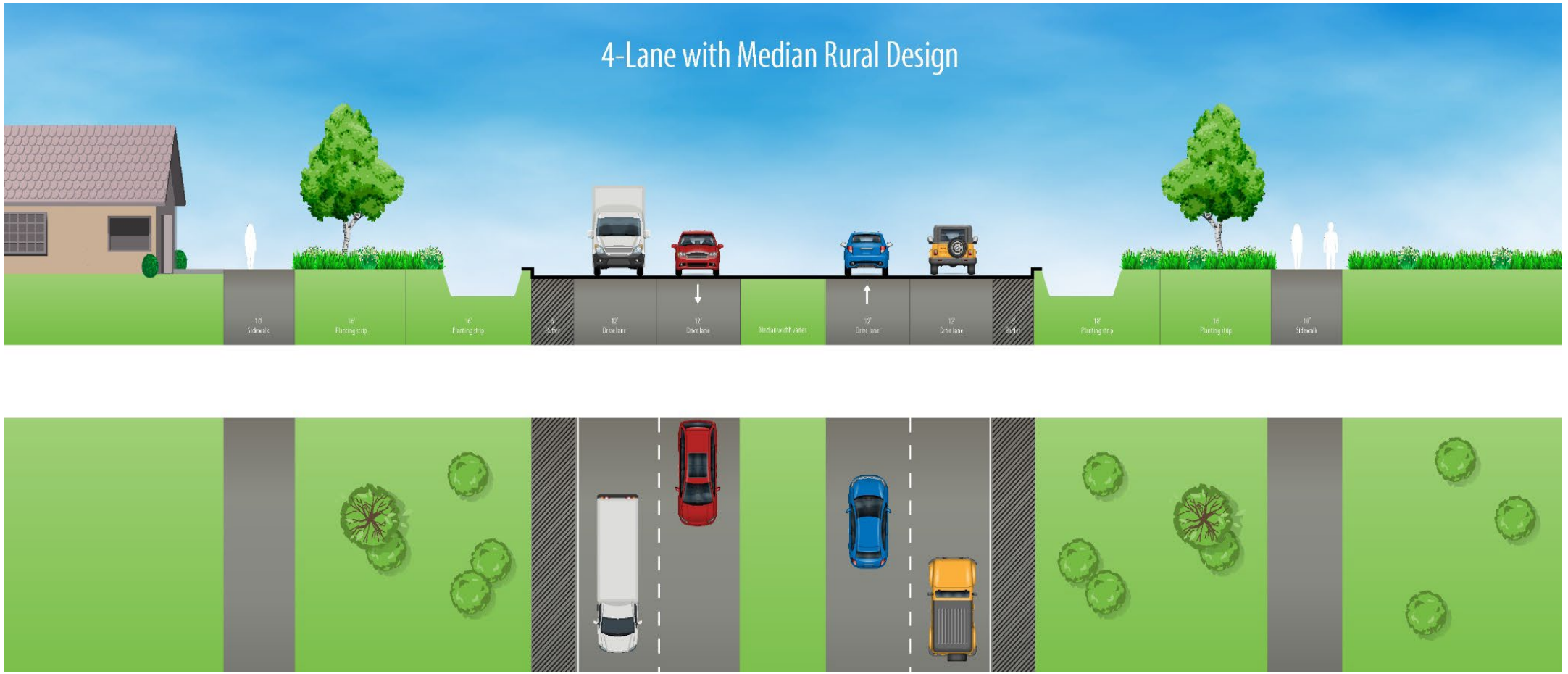


Example Right-of-Way: 160’

30’ greenspace separation between pedestrian way and roadway

Sidepath or sidewalk elements will vary by location

4-Lane Divided Rural Cross Section

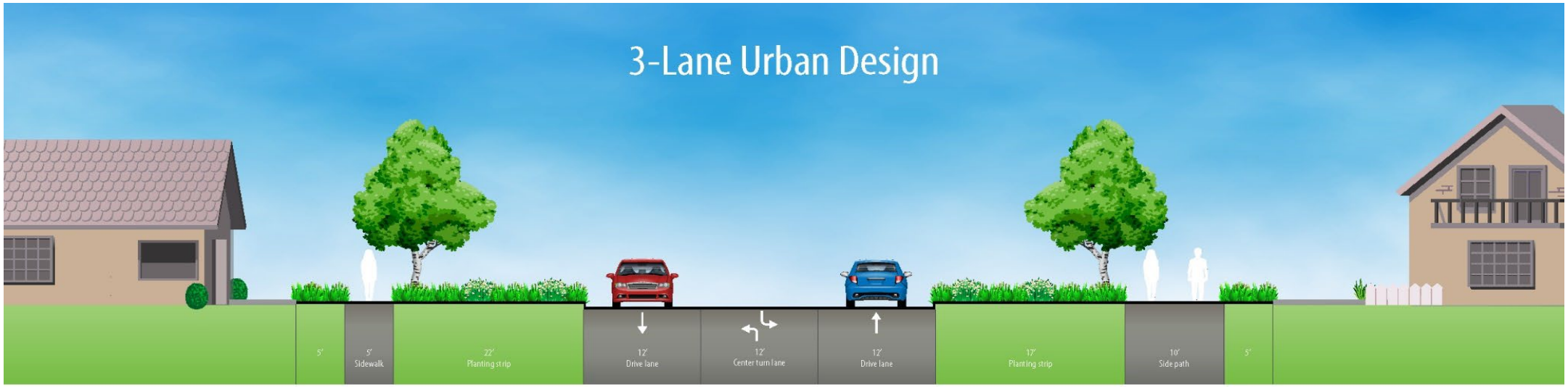


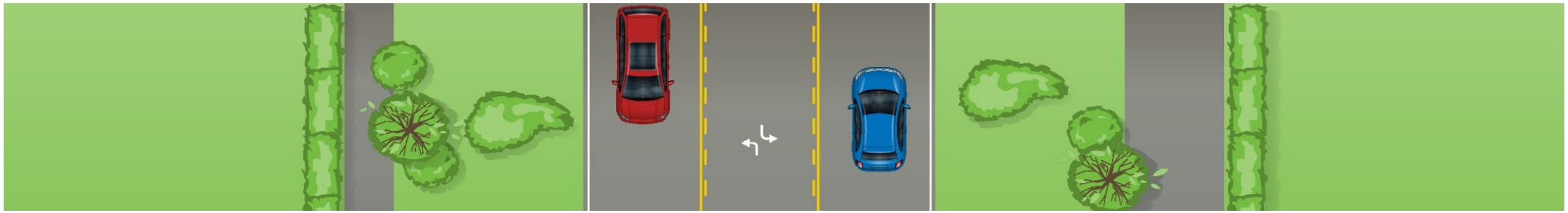
Example Right-of-Way: 160’

30’ greenspace separation between pedestrian way and roadway

Sidepath or sidewalk elements will vary by location

3-Lane Urban Cross Section





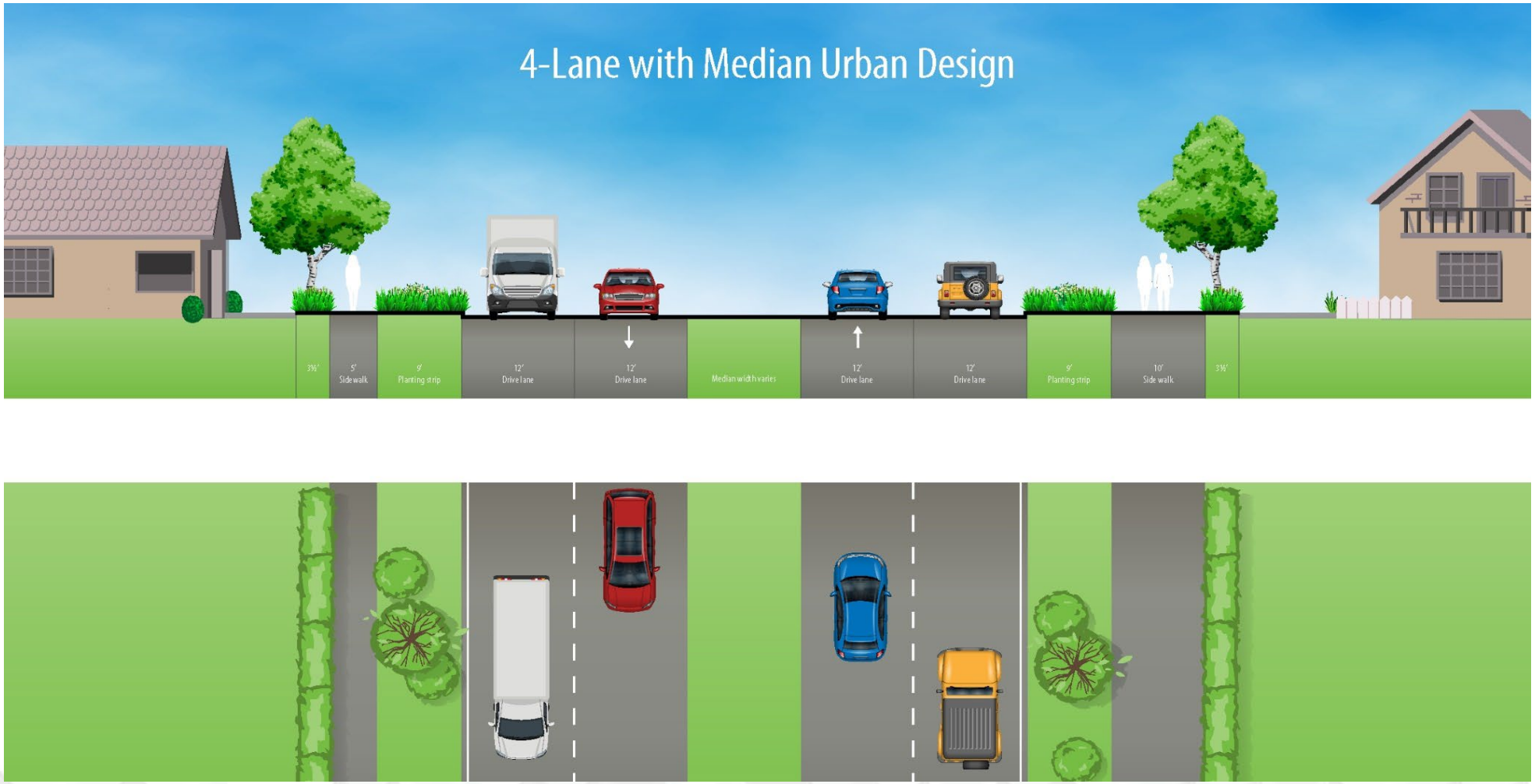
Example Right-of-Way: 100’
Expandable to 5-lanes
Pedestrian space closer to street

5-Lane Urban Cross Section

Example Right-of-Way: 100’

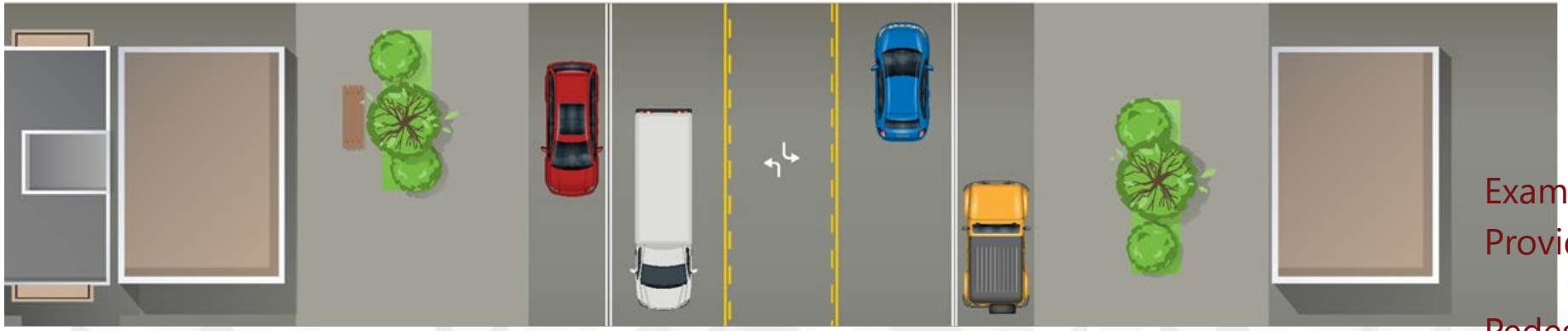
Pedestrian space closer to street

4-Lane Divided Urban Cross Section



Example Right-of-Way: 100'
Pedestrian space closer to street

3-Lane Cross Section (Downtown – 100’)



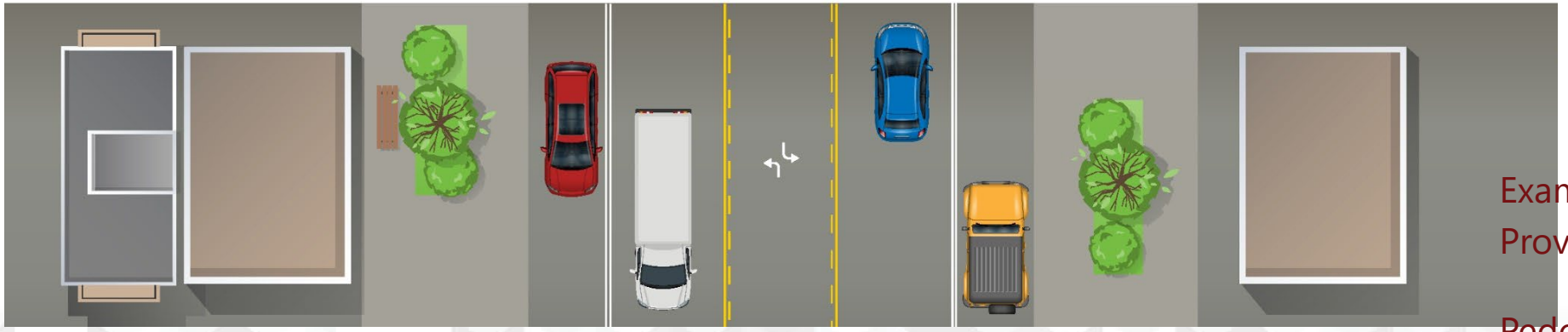
Example Right-of-Way: 100’

Provides for on-street parking (or bike lanes if desired)

Pedestrian space closer to street

Easy Access from Street to Adjacent Land Development

3-Lane Cross Section (Downtown – 80’)



Example Right-of-Way: 80’

Provides for on-street parking (or bike lanes if desired)

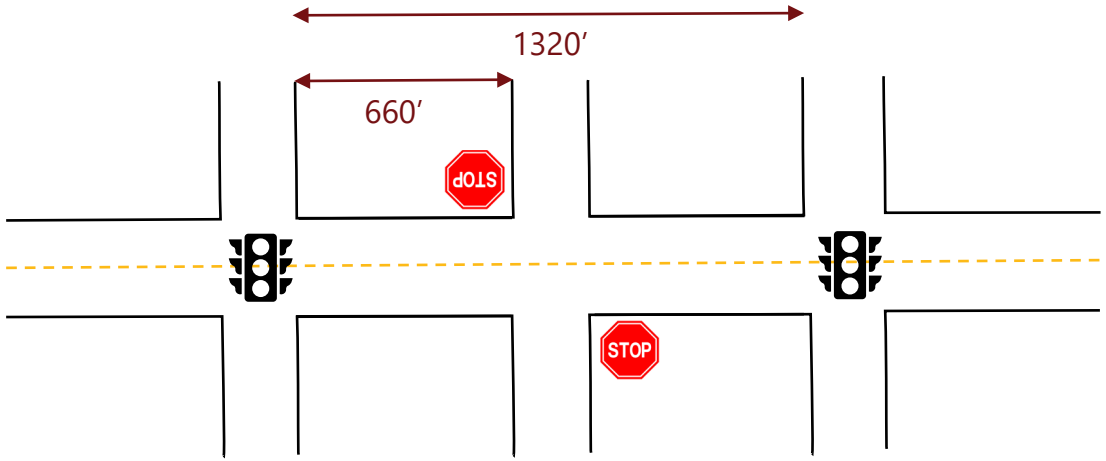
Pedestrian space closer to street

Easy Access from Street to Adjacent Land Development

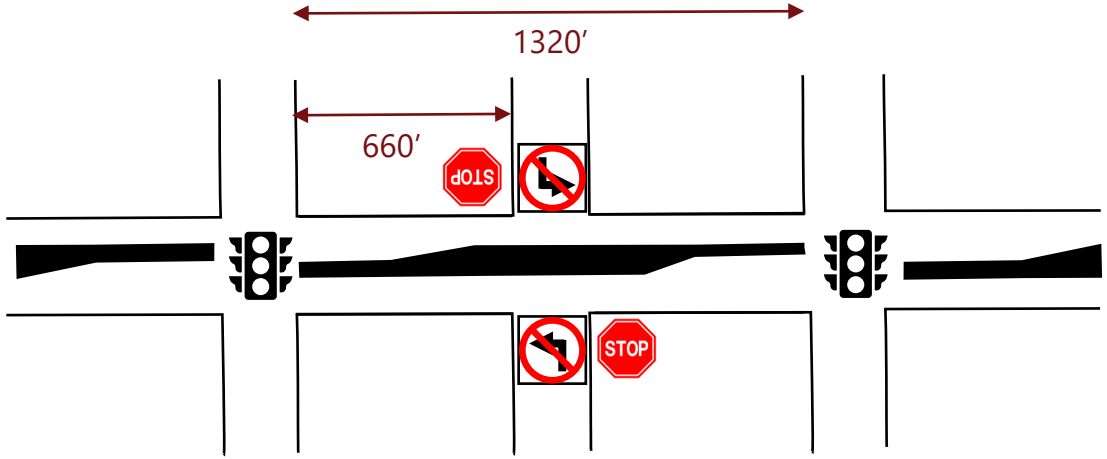
Access Standards

- As Harrisburg grows and streets are improved, update access management standards

Existing Arterial Access Spacing Standards



Example Sioux Falls Arterial Spacing Standards (Arterial II)

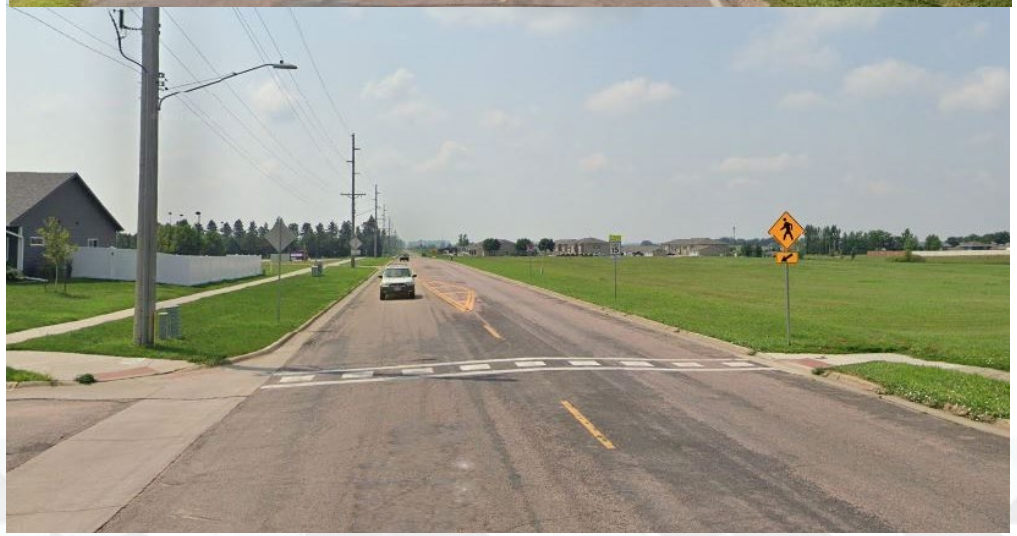


Bicycle and Pedestrian Standards Overview

- Strategies Included
- Putting it All Together

Mid-Block Crossings

- Found at locations with high pedestrian activity (parks and schools)
- Common elements include
  - Crosswalk markings
  - Signage
  - Pedestrian signals
  - Curb extensions



Rectangular Rapid Flashing Beacons (RRFB)

- Pedestrian activated device for enhancing crossing visibility
- For mid-block and uncontrolled crossings
- Common elements include:
  - Crosswalk markings
  - Signal
  - Signage

Source: Delaware Center for Transportation

Concrete Median Islands with Refuge

- Crossing area for pedestrians on high volume roads
- Suitable for mid-block crossings with high traffic volumes
- Common elements include:
  - Crosswalk markings
  - Median
  - Pedestrian signals
  - Signage

Source: Broward MPO

Implementation Example

FHWA Guide for Pedestrian Improvements at Uncontrolled Crossings

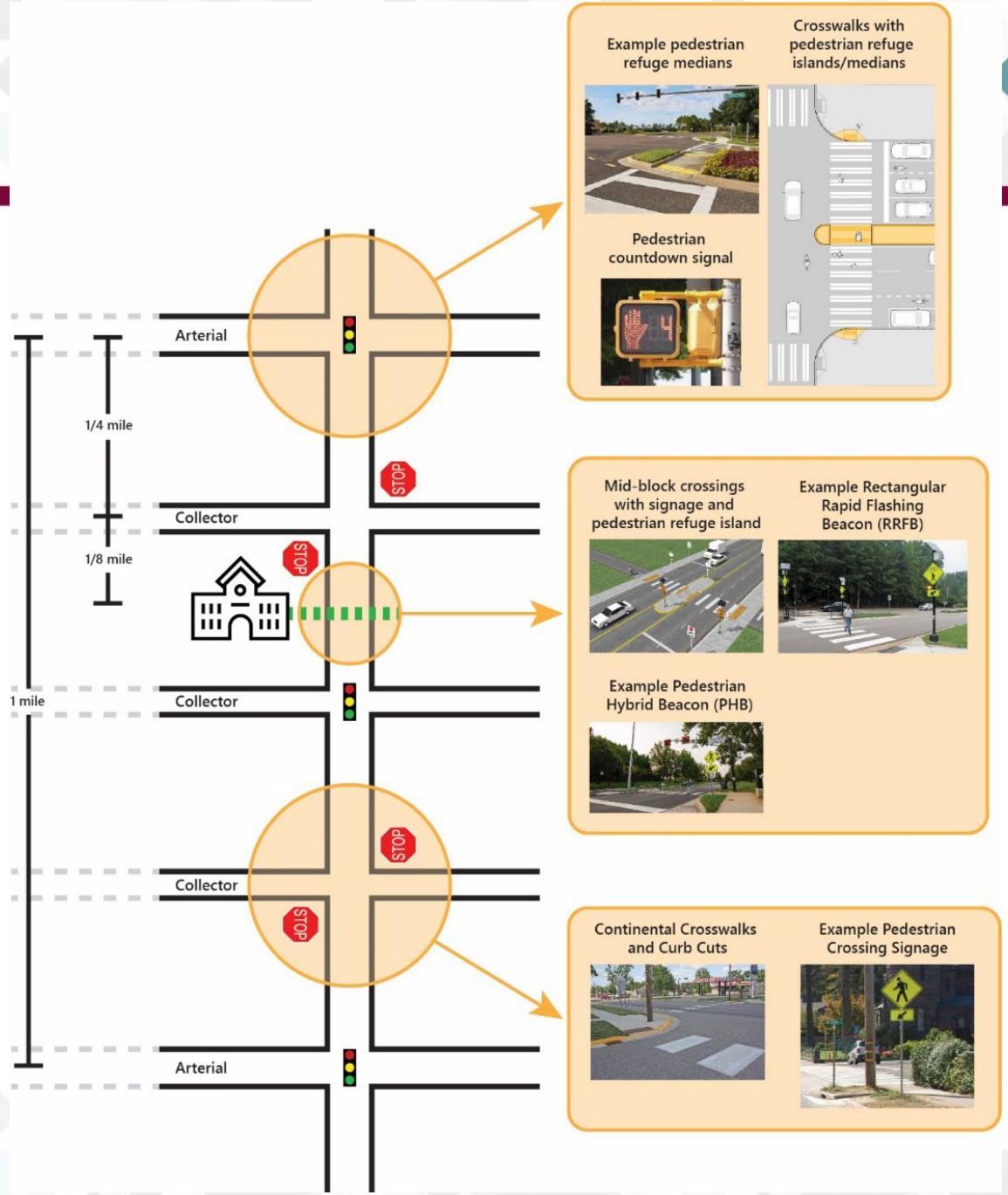
Roadway Configuration	Posted Speed Limit and AADT								
	Vehicle AADT <9,000			Vehicle AADT 9,000–15,000			Vehicle AADT >15,000		
	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph	≤30 mph	35 mph	≥40 mph
2 lanes (1 lane in each direction)	● 2 4 5 6	● 5 6 7 9	○ 5 6 ● 9	● 4 5 6	● 5 6 7 9	○ 5 6 ● 9	● 4 5 6 7 9	○ 5 6 7 9	○ 5 6 ● 9
3 lanes with raised median (1 lane in each direction)	● 2 3 4 5	● ❸ 5 7 9	○ ❸ 5 ● 9	○ 3 4 5 7 9	○ ❸ 5 ● 9	○ ❸ 5 ● 9	○ ❸ 4 5 7 9	○ ❸ 5 ● 9	○ ❸ 5 ● 9
3 lanes w/o raised median (1 lane in each direction with a two-way left-turn lane)	● 2 3 4 5 6 7 9	● ❸ 5 6 7 9	○ ❸ 5 6 ● 9	○ 3 4 5 6 7 9	○ ❸ 5 6 ● 9	○ ❸ 5 6 ● 9	○ ❸ 4 5 6 7 9	○ ❸ 5 6 ● 9	○ ❸ 5 6 ● 9
4+ lanes with raised median (2 or more lanes in each direction)	● ❸ 5 7 8 9	● ❸ 5 7 8 9	○ ❸ 5 8 ● 9	○ ❸ 5 7 8 9	○ ❸ 5 ● 8 9	○ ❸ 5 ● 8 9	○ ❸ 5 ● 8 9	○ ❸ 5 ● 8 9	○ ❸ 5 ● 8 9
4+ lanes w/o raised median (2 or more lanes in each direction)	● ❸ 5 6 7 8 9	● ❸ 5 ❻ 7 8 9	○ ❸ 5 ❻ 8 ● 9	○ ❸ 5 ❻ 7 8 9	○ ❸ 5 ❻ ● 8 9	○ ❸ 5 ❻ ● 8 9	○ ❸ 5 ❻ ● 8 9	○ ❸ 5 ❻ ● 8 9	○ ❸ 5 ❻ ● 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.*

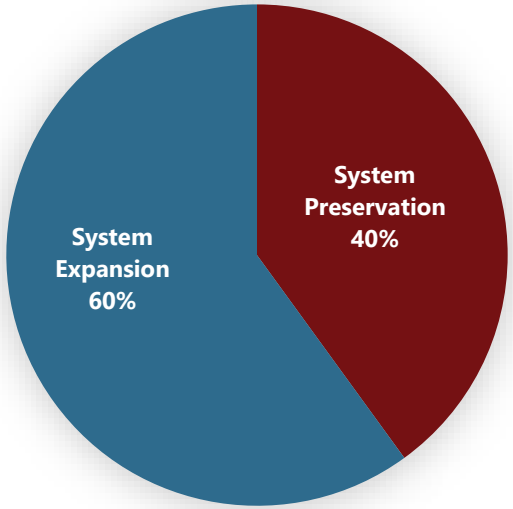
The absence of a number signifies that the countermeasure is generally not an appropriate treatment, but exceptions may be considered following engineering judgment.

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)**



Funding Projections

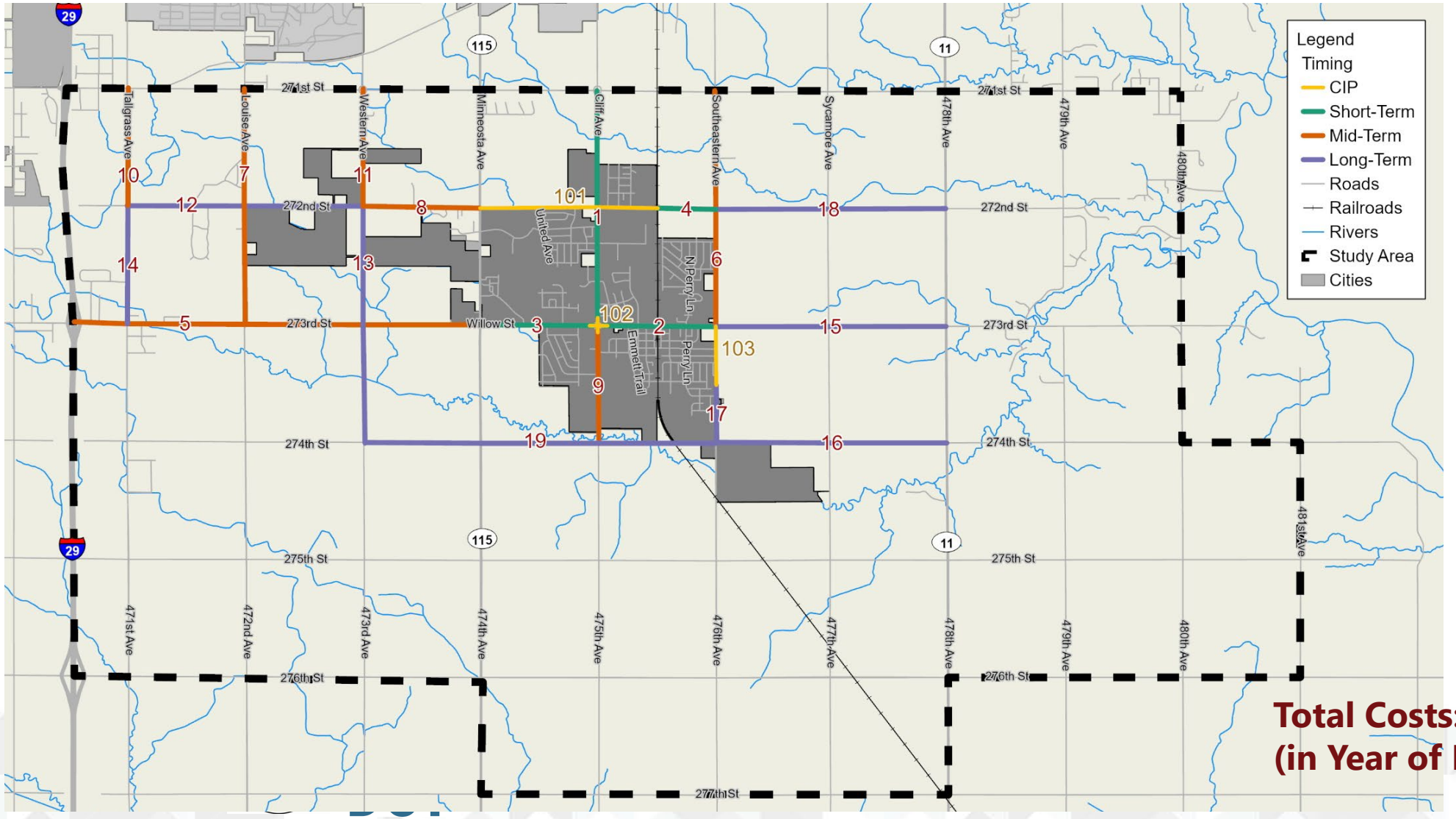
Revenue Source	Time Band			Total
	Short-term (2026 – 2030)	Mid-term (2031 – 2037)	Long-term (2038 – 2045)	
General Fund	$5,500,000	$9,500,000	$14,000,000	$29,000,000
Arterial Street Fees	$1,700,000	$2,900,000	$4,200,000	$8,800,000
Maintenance Revenues	$4,400,000	$7,700,000	$11,300,000	$23,400,000
STP Funds	$1,400,000	$2,500,000	$4,000,000	$7,900,000
TAP Funds	$300,000	$600,000	$1,000,000	$1,900,000
Total	$13,300,000	$23,200,000	$34,500,000	$71,000,000



Total Transportation Budget: $71M (in Year of Expenditure Dollars)

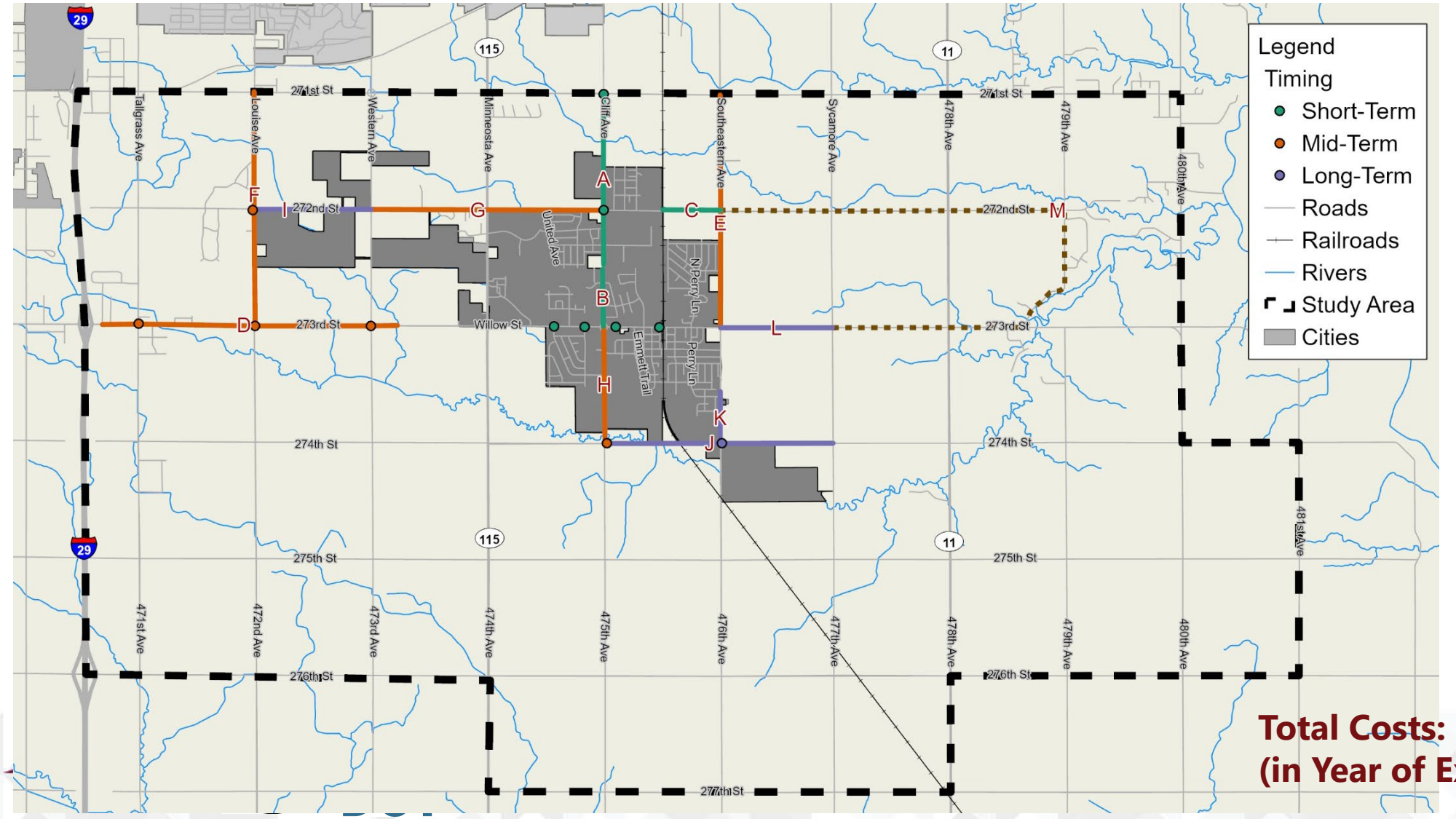
Time Band	System Preservation	System Expansion	Total
Short-term (2026 – 2030)	$5,320,000	$7,980,000	$13,300,000
Mid-term (2031 – 2037)	$9,280,000	$13,920,000	$23,200,000
Long-term (2038 – 2045)	$13,800,000	$20,700,000	$34,500,000
Total	$28,400,000	$42,600,000	$71,000,000

2045 Recommended Street Network Improvements



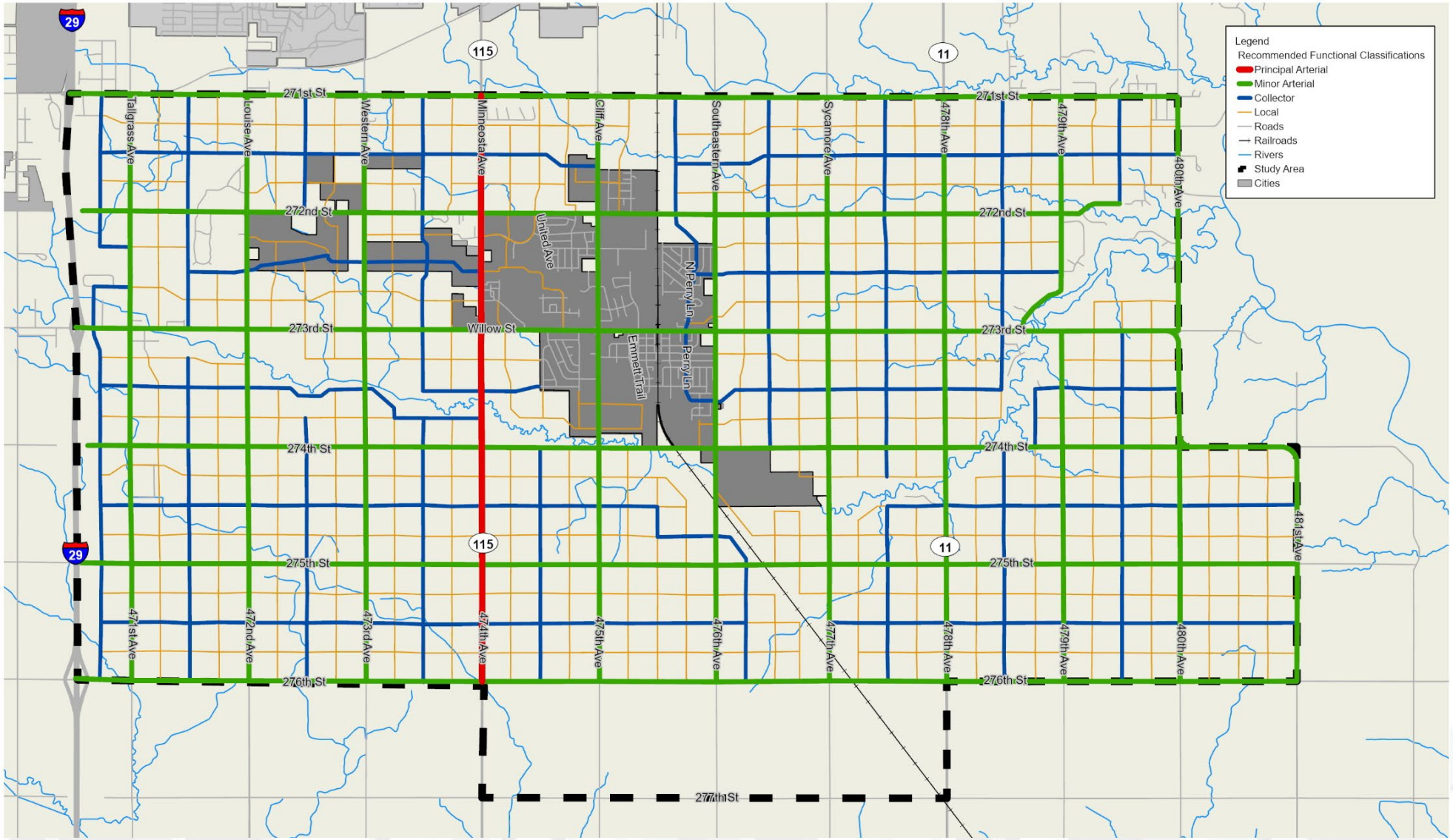
Total Costs: $205M
(in Year of Expenditure Dollars)

2045 Recommended Bicycle and Pedestrian Improvements



Total Costs: $12.3 M
(in Year of Expenditure Dollars)

Future Planned Master Street Network



Thank You

Questions?