



PRINCETON TRANSPORTATION PLAN

DECEMBER 2022

Prepared for:
City of Princeton
705 2nd Street North,
Princeton, MN 55371

WSB PROJECT NO. 19817-00



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1 INTRODUCTION

The City of Princeton, Minnesota is located approximately 50 miles north of the Twin Cities metropolitan area and 30 miles east of St. Cloud. From Princeton, the Twin Cities can be accessed by either U.S. Highway 169 or Interstate-94; St. Cloud is accessible via Trunk Highway (TH) 95, making Princeton an easily commutable city in which to live and do business.

In 2022, the State Demographer informed Princeton that the City had reached an estimated population of just over 5,000 in 2021.¹ Meeting a population threshold of more than 5,000 qualifies the city to become a designated State Aid City. State Aid designated cities are eligible to request approval for Municipal State-Aid Street (MSAS) designations on select city streets. Cities with MSAS designated roadways can qualify to receive dedicated and consistent funding for construction and maintenance purposes.

This transportation plan describes the city's existing roadway network and identifies a future transportation network that supports existing and future land uses. Specifically, this plan:

- Identifies existing and future roadways.
- Provides recommendations for a transportation network that meets the demands of existing development and anticipated demand from planned growth areas.
- Recommends a functional classification network to accommodate existing development and future growth, with a focus on collector roadways, which would be under the city's jurisdiction.
- Identifies routes for a MSAS system; this needs to be established now that the city has reached the 5,000 population mark and is eligible to become a State Aid City.
- Provides typical sections for local streets that can be considered when reconstructing existing roads or developing new roads.
- Establishes a future bicycle and pedestrian infrastructure system to enhance multimodal transportation options.
- Considers the need for an additional Rum River crossing.

1.1 Purpose of Plan

The purpose of this document is to establish a transportation plan for Princeton that, when implemented, will best accommodate existing transportation needs and meet future needs. Princeton last

¹ More detailed demographic information as well as employment information is included in the Princeton Comprehensive Plan (2020).

completed a Transportation Plan in 2008 and a Comprehensive Plan in 2020. The 2020 Comprehensive Plan noted that the Transportation Policies in the 2008 Transportation Plan were still relevant and would remain in place until a Transportation Study was conducted and approved. The 2008 plan includes a city-wide Infrastructure Planning Objective that states: “Invest in infrastructure that will position Princeton with its best options for development and growth.” This objective was accompanied by a task to: “Conduct a Transportation Study to plan for the need to preserve future transportation corridors.”

This transportation plan will serve as a tool to develop the city's transportation network to meet existing transportation needs and to accommodate future growth. Using this plan as a guide, the city can focus and prioritize on multimodal transportation system investments in the next several years.

2 EXISTING ROADWAY CONDITIONS

This section documents characteristics of the existing roadway network in the city, including information on jurisdiction, functional classification, number of travel lanes, traffic volumes (where available), and access management.

2.1 Jurisdictional Classification

Roadways in Princeton are under the jurisdiction of MnDOT (US 169 and Trunk Highway [TH] 95), Mille Lacs County (County State-Aid Street [CSAH] 2, CSAH 29), Sherburne County (CSAH 29, CSAH 31, CSAH 4, CSAH 1, County Road [CR] 157), and the City of Princeton.

Figure 1 depicts the existing roadways by jurisdiction. See **Section 5.1** of this Plan for discussion regarding the steps that are required when an entity wants to request reassignment of a roadway jurisdiction.

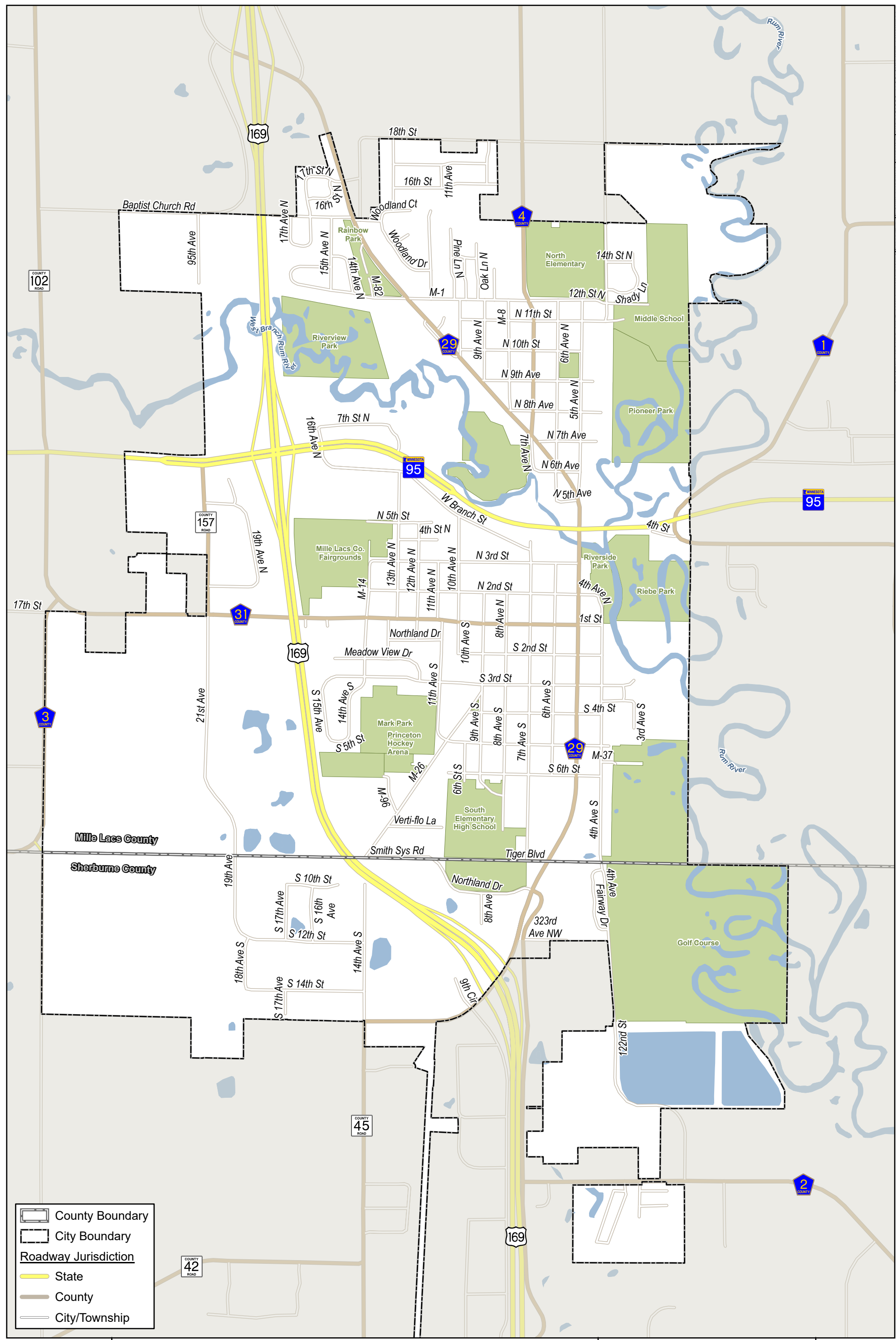


Figure 1 - Existing Roadway Jurisdiction
 Transportation Plan Update
 Princeton, Minnesota



2.2 Functional Classification

Functional classification refers to the role roads play in the transportation system – including the intended level of mobility and land access provided. Roads are classified based on the number and type of trips carried, surrounding land uses, and the level of development (i.e. urban or rural).

A functional class network is intended to distribute traffic on the transportation network based on trip lengths and types. Ideally, roadways are located, spaced, and designed to perform a designated function. Roadway networks are composed of these classifications:

- Principal arterial
- Minor arterial
- Major collector
- Minor collector
- Local street

Planning for and operating a roadway system consistent with the defined functional classification system provides a variety of benefits, including:

- Supporting a safe and efficient transportation system that meets user needs;
- Providing mobility benefits to the regional transportation systems by maintaining network balance;
- Restricting new driveways and access points on high-speed and/or congested corridors;
- Reducing through traffic within neighborhoods;
- Preserving mobility from changes in land use and development; and
- Supporting economic growth and development in appropriate locations.

The current roadway functional classification map for the city of Princeton is shown on **Figure 2. Table 1** shows the recommended spacing guidelines of functionally classified roadways for developed areas, developing areas, and rural areas. Each roadway functional classification has typical roadway characteristics which are documented in **Table 2**.

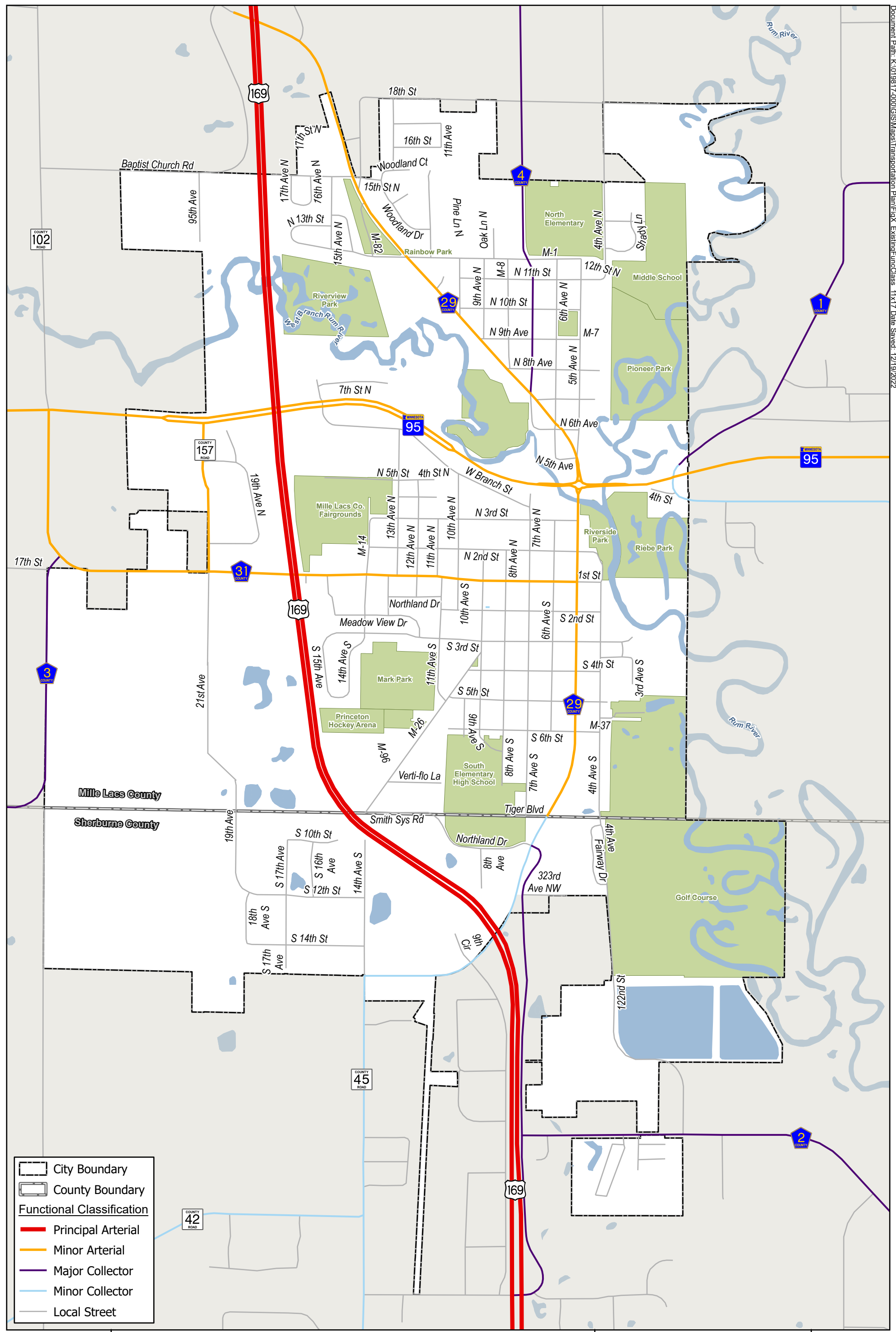
Table 1 - Spacing Guidelines for Functionally Classified Roadways

Land Use Characteristics	Principal Arterials	Minor Arterials	Collectors (Major and Minor)	Local Streets
Developed Areas	2 to 3 miles	1/4 to 1/2 mile	1/8 to 1/2 mile	As needed to access land uses
Developing Areas	3 to 6 miles	1 to 2 miles	1/2 to 1 mile	As needed to access land uses
Rural Areas	6 to 12 miles	4 or more miles	As needed to access land uses	As needed to access land uses

Source: Metropolitan Council, Metropolitan Development Guide (Appendix F) and Federal Highway Administration, Highway Functional Classification (FHWA) as referenced by MnDOT <http://www.dot.state.mn.us/trafficeng/topics/roadwayfunctionalclassificationpp.pdf>

While this transportation plan does include recommendations for functional classification changes, primarily from local roadways to collectors, these recommendations pertain to roadways that are and would remain under the City of Princeton's jurisdiction. Recommended upgrades from local roadways to collectors would not likely result in a change of jurisdiction.

See **Section 5.2** of this Transportation Plan for a high-level overview of the required steps a city must follow when applying to reclassify existing roadway functional classes. **Figure 2** maps all of the major and minor collectors within and adjacent to Princeton. Currently, collector roadways, major and minor, make up less than one percent of Princeton's transportation network; 1.9 miles are major collectors and approximately 0.9 mile of minor collectors. Collector roadways are frequently owned and operated by cities and townships. However, in Princeton, all major and minor collectors are under county jurisdictions. As Princeton is now eligible to be designated as a State Aid City, **Section 3.4** evaluates the local roadway network to identify candidates for collectors that may be designated as MSAS routes.



- City Boundary
- County Boundary
- Functional Classification**
- Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local Street

Figure 2 - Existing Roadway Functional Classification
 Transportation Plan Update
 Princeton, Minnesota

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Table 2 - General Roadway Characteristics for Each Roadway Functional Class

	Local	Collector (Major and Minor)	Minor Arterials	Principal Arterial
State Aid Designation	MSAS or none	MSAS, CSAH or none	CSAH	None
System Mileage	65-75%	20-25%	6-12%	2-4%
Percentage of Vehicle Miles Travelled (VMT)	5-20%	20-35%	45-75%	30-55%
System Spacing	As needed to provide access to property	1/2 mile – 1 mile	1 – 2 miles	6 – 12 miles
Traffic Volumes Annual Average Daily Traffic (AADT)	Less than 1,000	250 – 2,500+	1,000 – 10,000+	5,000 – 50,000+
Posted Speed	Max. 30mph	35 – 45 mph	45 – 65 mph	55 – 70 mph
Roadway Type	2-Lane Undivided	2-Lane or 4-Lane Divided or Undivided	2-Lane or 4-Lane Divided or Undivided	4-Lane or more Divided
System and Place Connections	-Serves neighborhoods or local destinations -Connects to other local roads or collectors	-Serves neighborhoods, commercial and employment centers -Connects to arterials or other collectors	-Serves major employment centers, economic generators, and communities -Connects to other arterials	-Connects regional job concentrations and freight terminals within the urban service area -Connects to arterials
Land Use/Access	-High amount of direct property access -High amount of roadway intersections	-Low to medium amount of direct property access -Low to medium amount of roadway intersections	-Low amount of direct property access -High amount of roadway intersections	-No direct property access -Low amount of grade separated roadway intersections. No at-grade intersections
Lane/Inside Shoulder/Outside Shoulder Widths	10-11 ft / 0 ft/ 0-2 ft	10-12 ft / 0 ft/ 1-6 ft	10-12 ft / 0 ft/ 4-8 ft	11-12 ft / 0-6 ft/ 10-12 ft
Intersection Spacing Density	>10 intersections per mile	5-10 intersections per mile	fewer than 5 intersections per mile	fewer than 5 intersections per mile
Parking	Unrestricted; permitted as necessary	Restricted	Not Allowed	Not Allowed

Source: MnDOT and Highway FHWA (2013)

2.2.1 Principal Arterials

As the highest roadway classification, the main purpose of principal arterials is to provide mobility for regional trips. Principal arterials are intended to interconnect regional business concentrations.

Principal arterials are typically under the jurisdiction of MnDOT. Generally, the goal is to maintain average speeds of 40 mph during peak traffic periods on principal arterials. There is typically little to no direct land access provided by these roadways. Intersections with principal arterials are generally limited to interstate freeways, other principal arterials, and minor arterials. Access points are typically grade-separated or controlled with a signal and are spaced one to two miles apart.

The only principal arterial in Princeton is the north-south oriented US 169, which connects the Twin Cities Metropolitan Area and other cities, including Elk River. MnDOT has identified US 169 as an Interregional Corridor, indicating its importance in serving the economic interests of the state.

Currently, the annual average daily traffic (AADT) on US 169 is 19,300, which falls within the typical traffic volume range on rural principal arterials of 5,000 to over 50,000 vehicles per day. US 169 makes up 6.7 percentage of Princeton's total transportation network mileage, with nearly three miles of this highway being located within the city.

US 10 in St. Cloud is approximately 30 miles west of Princeton; TH 65 in city of Cambridge is approximately 19 miles to the east of Princeton. These roadways are the next closest north-south principal arterials east and west of Princeton. There are no east-west oriented principal arterials in Princeton.

The Federal Highway Administration's (FHWA) guidance indicates (**Table 1**) that principal arterials should be spaced two to six miles apart in developed and developing areas and six to twelve miles apart in rural areas. While principal arterials in this area are spaced further than the recommended FHWA distances, there has not been significant traffic increases or changes in travel pattern to prompt an additional principal arterial route.

2.2.2 Minor Arterials

Minor arterial roadways connect important locations with access points and to other roadways. Minor arterials are intended to serve trips of four to eight miles in length, connect cities and towns within a region, and link to regional business and commercial concentrations.

Minor arterial roadways in Princeton are listed in **Table 3** and shown on **Figure 2**. Two minor arterials are under the jurisdiction of counties, while one is under MnDOT's jurisdiction. Currently, minor arterials make up 16.1 percent of the Princeton's transportation network; 7.48 miles are minor arterials.

Table 3 - Minor Arterial Roadways

Roadway	From	To	Number Travel Lanes (total)
CSAH 29	Southern City Limit	Northern City Limit	2
CSAH 31	CSAH 29	Western City Limit	2
TH 95	Western City Limit	Eastern City Limit	2

City of Princeton is considered to be a rural area based on the urban boundaries U.S. Census Bureau has established within Minnesota. In rural areas, minor arterials are spaced as needed.² Generally, this spacing is met within Princeton as there are not many minor arterials within city limits. The distance between CSAH 31 and TH 95 is slightly over a quarter mile. This spacing works as CSAH 31 is the only other major east-west route besides TH 95.

2.2.3 Major/Minor Collectors

Collectors roads “collect” or gather traffic from local roads and connect that traffic to arterial roads. Collectors provide a balance of mobility and land-use access functions and link to minor arterials, other collectors, and local streets. Major and minor collectors link to larger developments and community amenities, generally favoring access to the transportation system over mobility. Collectors are generally lower speed than arterial routes and are intended to serve trips of one to four miles in length. Major collectors serve higher density residential areas and concentrations of commercial and industrial areas.

There are two existing major collectors in Princeton, as shown in **Table 4** and on **Figure 2**.

² FHWA guidance notes that within developing areas, minor arterials are spaced one to two miles apart.

Table 4 - Major and Minor Collector Roadways

Roadway	Major or Minor Collector	From	To	Number Travel Lanes (total)
CSAH 4	Major Collector	Northern City Limit	CSAH 29	2
CSAH 2	Major Collector	CSAH 29	Southern City Limit	2
CSAH 1	Minor Collector	TH 95	Eastern City Limit	2

Minor collectors generally are shorter in length than major collectors. These roads accommodate lower volumes, and have lower posted speeds than major collectors. The only minor collector in Princeton is a small segment of CSAH 1.

2.2.4 Local Streets

Local streets serve adjacent properties and are designed as low-speed, low-capacity roadways. Local streets primarily serve residential areas and are most commonly owned and operated by cities and townships, which is the case for the City of Princeton. Medium distance travel is purposefully directed away from these streets and onto the collector and arterial system.

As shown in **Table 1** and on **Figure 2**, local streets do not have designated spacing guidelines and are instead spaced on an as needed basis. Currently, Princeton's 31.26 miles of local streets make up close to 70 percent of city's transportation network.

2.3 Traffic Volumes

Existing traffic volumes on trunk highways, county roads, and selected local streets are shown in **Figure 3**. All traffic volumes on MnDOT and county roadways are from MnDOT's most recent traffic counts which were collected between 2018 and 2020.

Traffic counts on local streets were taken in May 2022, as part of developing this plan. The 10 selected local streets on which counts were taken were identified as potential MSAS candidate routes and used to support this transportation plan. The May 2022 counts are shown on **Figure 3**.

2.4 Pavement Conditions

The city completed a pavement management plan in October 2022. This involved inspecting and rating approximately 29 miles of pavement on streets in Princeton. Roadways not under city jurisdiction, including state, county, and privately owned roadways, were not included in the inspection. As part of the pavement

analysis, the city’s capital improvement plan and current pavement maintenance budget were reviewed. Recommendations were made to help cost-effectively preserve the pavement network in Princeton.

All sections of inspected roadway were assigned a Pavement Condition Index (PCI) value ranging from 0 to 100. Seventy-nine percent of the pavement network is in either “Excellent” or “Good” condition while only four percent of the roadways are in “Poor” or “Failed” condition. **Table 5** below shows the breakdown of local roadway miles based on their PCI and details the pavement condition ratings of city owned roadways. The majority of city roadways are in excellent (36.6%) or good (42.7%). The remainder of roadway mileage condition includes fair (16.8%), poor (3.1%), and failed (0.8%).

Table 5 – Pavement Condition Index (PCI) Breakdown

Pavement Condition Index (PCI)	Mileage	Percentage of System by Area (percent)
Excellent Category (85.01 – 100.00)	10.5	36.6
Good Category (75.01 – 85.00)	11.7	42.7
Fair Category (58.01 – 75.00)	5.1	16.8
Poor Category (40.01 – 58.00)	1.1	3.1
Failed Category (0.00 – 40.00)	0.4	0.8
Total	28.8 Miles	100%

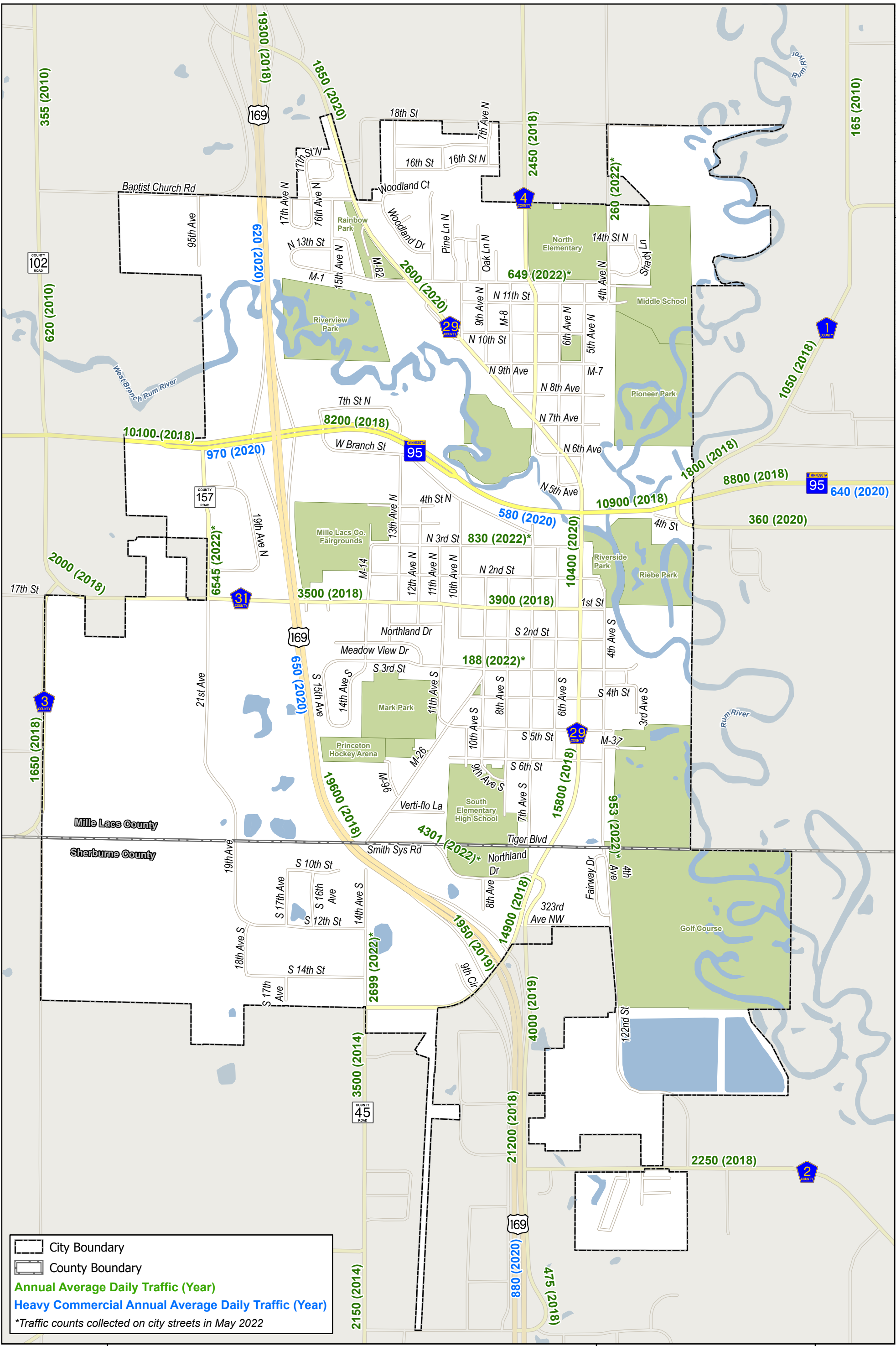


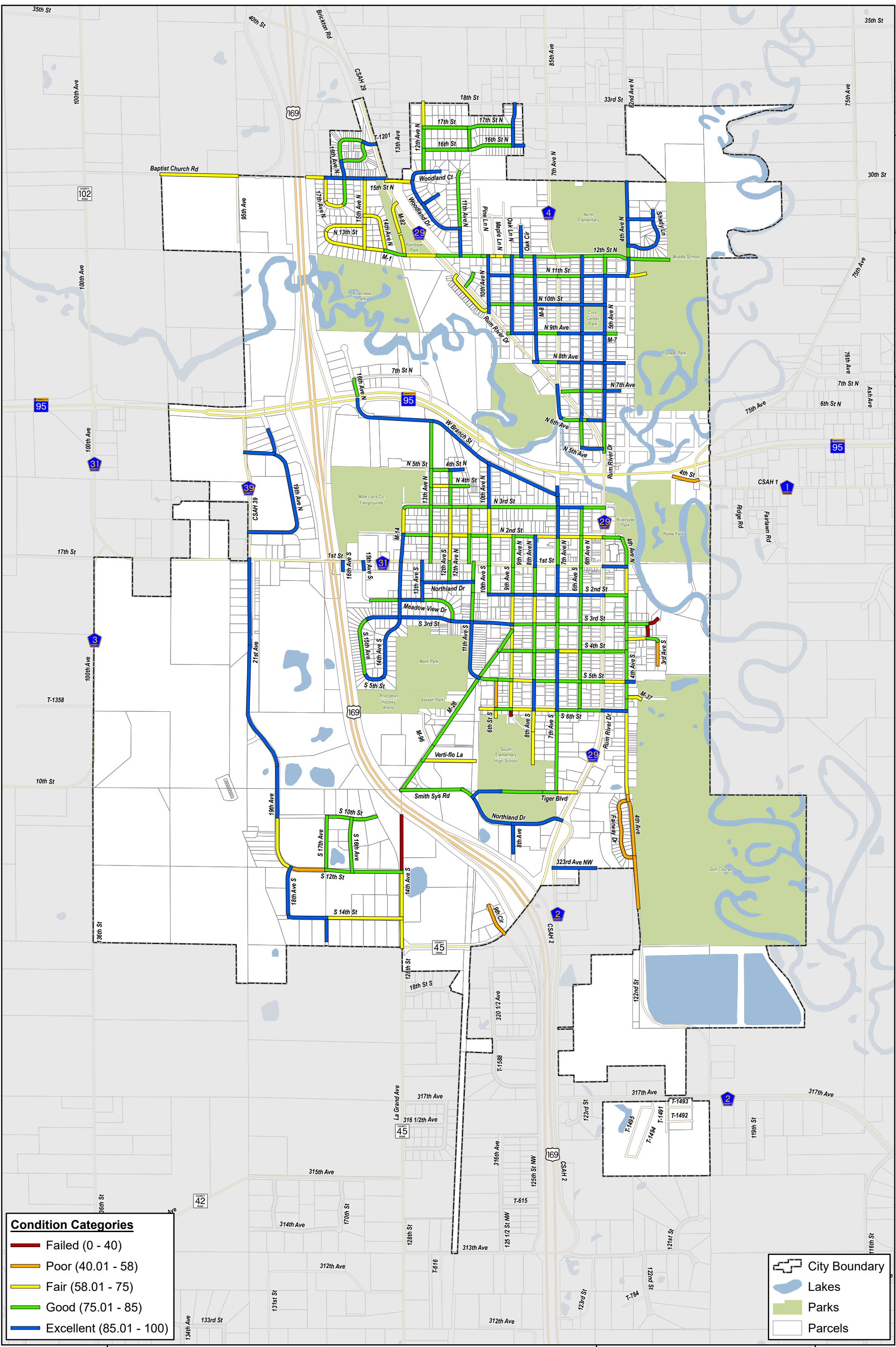
Figure 3 - Existing Traffic Volumes

Transportation Plan Update
Princeton, Minnesota



0 1,500 US Feet





Condition Categories	
—	Failed (0 - 40)
—	Poor (40.01 - 58)
—	Fair (58.01 - 75)
—	Good (75.01 - 85)
—	Excellent (85.01 - 100)

	City Boundary
	Lakes
	Parks
	Parcels

Figure 4 - Pavement Condition of Roadways Under City Jurisdiction
 Transportation Plan Update
 Princeton, Minnesota

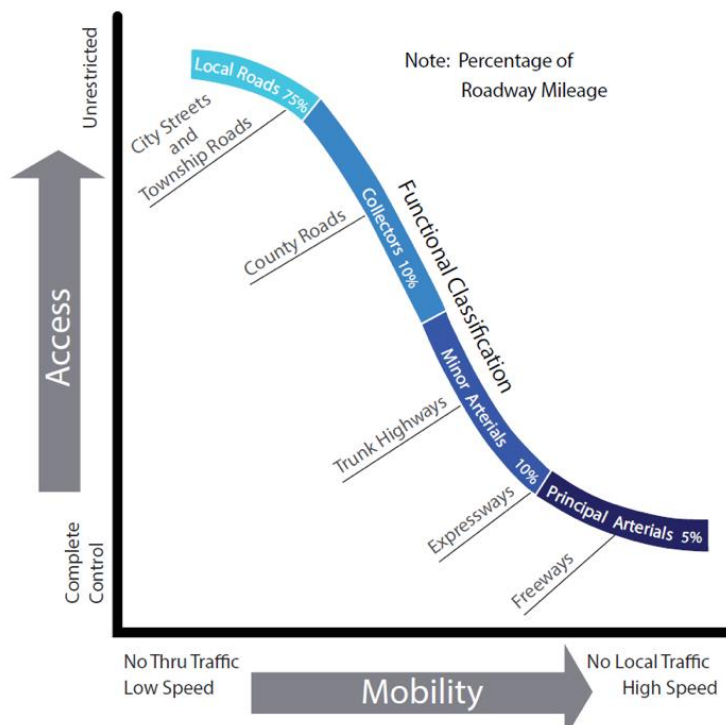


2.5 Access Management

Access management balances the need for getting to local, adjacent land uses with the need for mobility on the transportation network.

Image 1 shows the relationship between access and mobility based on the roadways designated functional classification.

Image 1 – Functional Classification Relationship



Source: FHWA

Well managed roadway access can improve safety by limiting conflict points between local and through traffic on higher classification roads. It can also help maintain capacity on arterial and collector roadways. Access management goals by functional classification include:

- Arterials – support relatively long, high speed traffic movements, access on arterials is focused on mobility and thus access should be limited.
- Collectors - provide a greater degree of access given their combined mobility/access function.
- Local streets – provide access to adjacent land uses by controlling the spacing and design of intersections and private access points onto the public roadway system.

Table 6 details the type of access that is typically allowed on roadways based on their functional classification in the City of Princeton.

Table 6 – Roadway Accesses by Functional Classification

Typical Facility Characteristics	Principal Arterial		Minor Arterial	Collector (Major and Minor)	Local
	Interstate/ Freeway	Non-Freeways			
Accessibility Hierarchy	Severely Restricted	Highly Restricted	Restricted	Permitted	Unrestricted
Arterial Street Access Allowance	All Arterials (Interchanges)	All Arterials	All Arterials	Non-Freeways & Minor Arterials	Minor Arterials
Collector Street Access Allowance	None	Restricted	Restricted	Unrestricted	Unrestricted
Local Street Access Allowance	None	None	Restricted	Unrestricted	Unrestricted
Driveway Access Allowance	None	None	Restricted	Permitted	Unrestricted

Government agencies with roadway jurisdiction define access management guidelines for their roads. Within Princeton, MnDOT's guidelines from its Access Management Manual (January 2, 2008) apply to principal arterial, US 169. Sherburne and Mille Lacs Counties have access management guidelines that are applied to their respective county roadways. MnDOT and Sherburne County access management guidelines are provided in **Appendix A**.

City of Princeton's access standards and spacing guidelines on local roads should effectively manage ingress/egress onto city streets and provide access controls for new developments and redevelopments. Access management guidelines for roadways under the jurisdiction of the City of Princeton are included in **Section 3.6**. All recommendations related to future roadway planning within city limits should follow the new city access guidelines as well as county and state access guidelines.

3 FUTURE ROADWAY IMPROVEMENTS AND NETWORK PLANNING

This section documents planned improvements to the transportation network including projects on MnDOT, county, and city roadways. This section also identifies existing and future

transportation network needs based on existing conditions and anticipated growth within and adjacent to the City of Princeton.

3.1 Planned and Programmed Roadway Improvements

The following roadway improvements have been identified by the city, Mille Lacs County³, or MnDOT:

City of Princeton

- 19th/21st Avenue Connection (2022) – allowing for through traffic on 21st Avenue by the Princeton Municipal Airport
- 7th Avenue North (2023) – address deteriorating facility [Source: 2022 Capital Improvement Program]
- Reopen 4th Avenue South (2024) – improve operating efficiency [Source: 2022 Capital Improvement Program]

Mille Lacs County

- CSAH 4/85th Avenue from CSAH 29 to 33rd Street (2022)
 - Anticipated work includes: bituminous overlay, bituminous mill & overlay, aggregate shoulder, striping [Source: Mille Lacs County Transportation Capital Improvement Plan 2019 – 2025]
- CSAH 3 from CSAH 1 [Sherburne County] to CSAH 31 (2026)
 - Anticipated work includes: grading, aggregate base, bituminous base, aggregate surfacing, bituminous surfacing, curb & gutter, construct detour, subgrade correction, bituminous pavement replacement, widening, aggregate shoulder, shoulder paving, slope flattening, shoulder widening, drainage/less 10ft culvert, striping, reconstruction [Source: Mille Lacs County Transportation Capital Improvement Plan 2019 – 2025]

MnDOT

- Multiple US 169 bridge deck overlays over CSAH 31, West Rum River Branch, North Rum River Drive, and South Rum River Drive (2025) [Source: MnDOT STIP 2022-2025]

In addition to planned and programmed roadways improvements, the city has identified the following locations and potential projects as possibilities for future consideration.

- Closing the W Branch Street access to TH 95 – With the closing of the south side W Branch Street access to TH 95, the city would like to further extend 13th Avenue N to intersect with TH 95 and propose a roundabout.

³ Sherburne County has no identified projects within the city limits of Princeton.

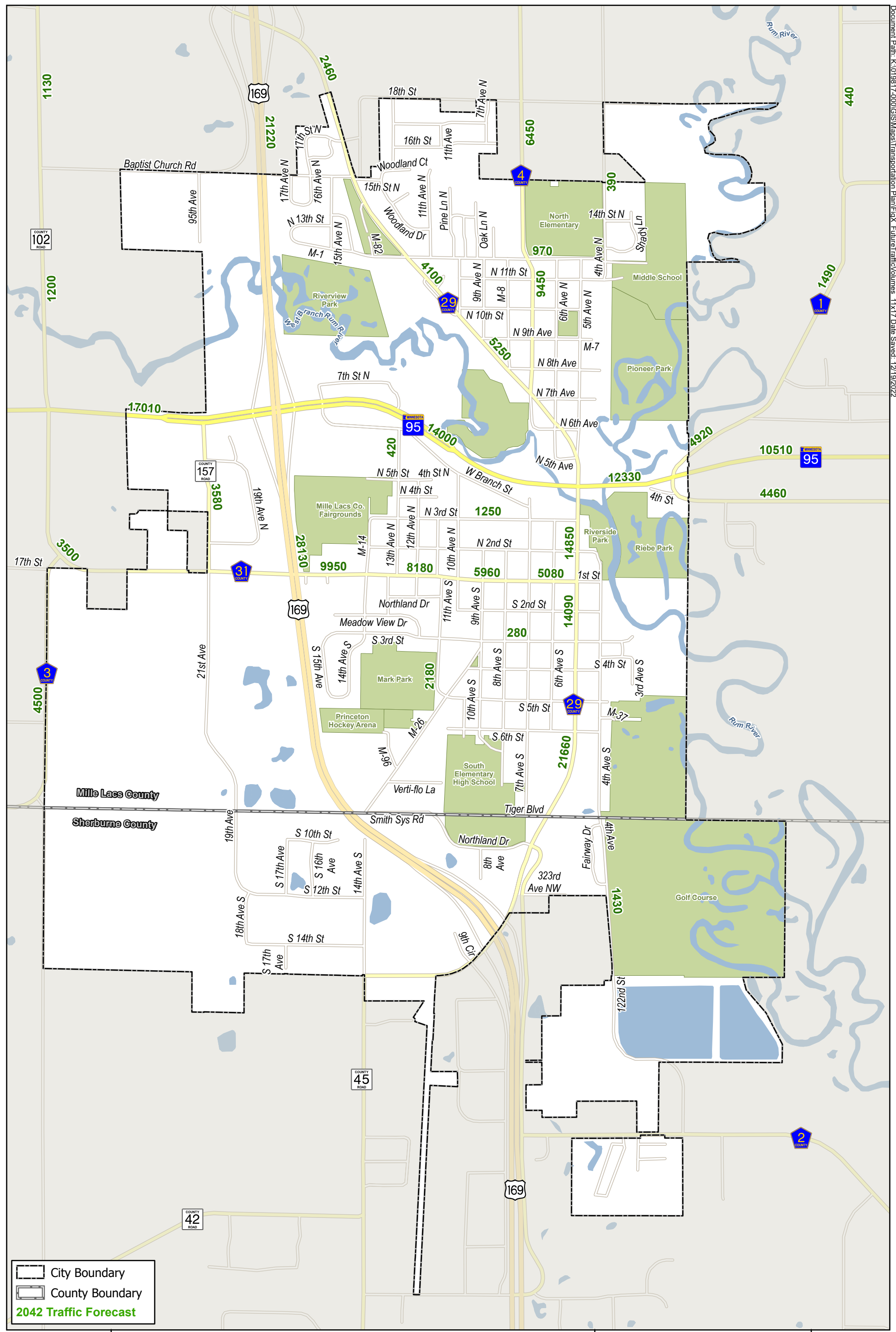
- Converting the existing 5th Avenue N southern terminus into a cul-de-sac, which would result in 5th Avenue N no longer connecting with CSAH 29/N Rum River Dr.
- Potential roundabout at the intersection of CSAH 4/7th Avenue N and 12th Street N.
- Horizontal curve correction at the intersection of Old County Road 18 and Northland Drive.

The list above was identified during development of this Transportation Plan. No funding has been secured and there are no schedules for these potential improvements. Further study would be needed before any of the above proposals were advanced.

3.2 2042 Traffic Forecasting

MnDOT historical traffic data trends (1994-2018 data) were used to forecast future Annual Daily Traffic (ADT) volumes. Any negative growth trends or abnormal growth years (above 10 percent annual growth on roadways with over 1,500 daily vehicles) were omitted from the analysis. Data from 2020 was also omitted from the analysis because of the unusual traffic patterns that resulted from the COVID-19 pandemic. Based on these assumptions, annual growth in Princeton ranged from 0.23 percent to 3.75 percent per year. Growth rates vary amongst roadways to reflect historic trends of individual roadways. These growth rates were then applied to existing traffic volumes on MnDOT and county roadways to forecast 2042 numbers.

Since historic traffic data was not available for local roadways, a two percent annual growth was applied to forecast future volumes based on similar growth trends on local roadways. **Figure 5** shows future traffic volumes on roadways within the City of Princeton.



City Boundary
 County Boundary
2042 Traffic Forecast

Figure 5 - 2042 Traffic Forecast
 Transportation Plan Update
 Princeton, Minnesota

N

 0 1,500 US Feet



3.3 Future Jurisdictional Classification

Jurisdictional transfers or “turnbacks” involve the reassigning of roadway jurisdiction from state to county ownership, or also from county to local ownership. Transfers can also go the other way, from local to county jurisdiction, or from county to MnDOT jurisdiction; this transfer process is sometimes called a “turn-up.”

The City of Princeton does not have any programmed jurisdictional transfers. The city has considered the potential to transfer two existing CSAH routes under the jurisdiction of Mille Lacs County, to Princeton. These routes are included in **Table 7**. No timeline has been determined for the turnback. Further discussions between the different agencies would be necessary before formal turnback processes proceed.

Table 7 – Potential Jurisdictional Transfer Roadways

Potential Turnback Roadway Segment	From	To	Distance (miles)
CR 157/21st Avenue N	CSAH 31/1st Street	TH 95	0.47
CSAH 4/7th Avenue N	N Rum River Drive/CSAH 29	12th Street N	0.4

3.4 MSAS Route Recommendations

For local roadways to be considered a MSAS route, candidate roadways must meet the following MSAS criteria set forth by MnDOT State Aid:

- Carries a relatively heavier traffic volume, OR is functionally classified as collector or arterial;
- Connects the points of major traffic interest within an urban municipal; and
- Provides an integrated and coordinated highway system affording, within practical limits, a State Aid Highway network consistent with projected traffic demands.

Figure 6 and **Table 8** highlight the ten candidate MSAS routes identified by the city. Existing traffic volumes were collected on these 10 roadways in May 2022 (**Section 2.3**). Also, the potential reclassification of these ten routes were considered (**Section 2.3**).

The City of Princeton will continue to consider potential MSAS routes in addition to, or instead of those shown on **Figure 6**. Changing community conditions, including land uses and population changes could result in the need to re-evaluate potential MSAS routes. In this event, the city will review and evaluate the readiness of any other roadways to become a MSAS route.

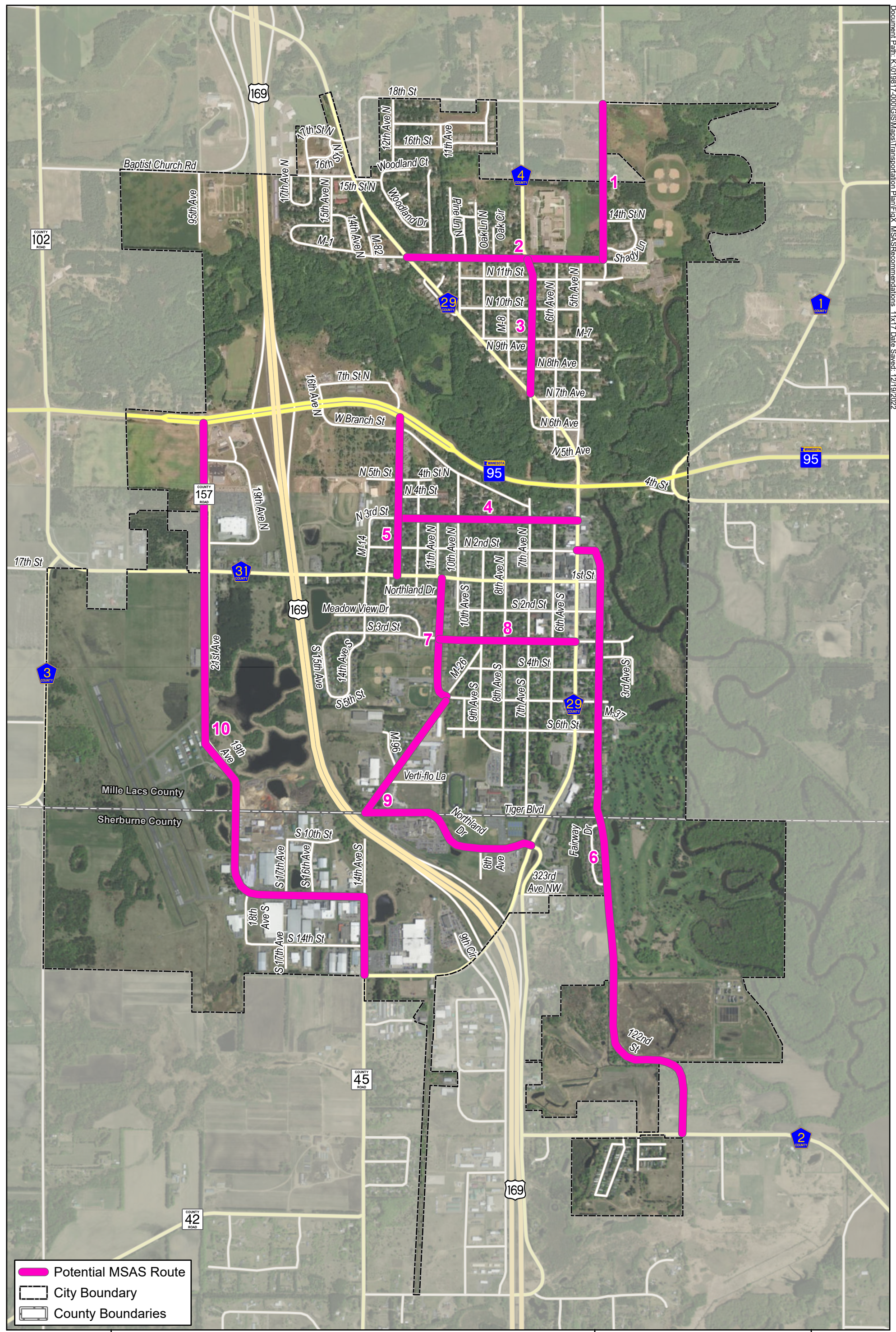
Table 8 – Candidate MSAS Routes

Fig 6 Map Ref.	Potential Reclassification Roadway	From	To
1	4th Avenue N	18th Street	12th Street N
2	12th Street N	N Rum River Drive/CSAH 29	82nd Avenue
3	CSAH 4/7th Avenue N	12th Street N	N Rum River Drive/CSAH 29
4	N 3rd Street	N Rum River Drive/CSAH 29	13th Avenue N
5	13th Avenue N	W Branch Street	1st Street/CSAH 31
6	N 2nd Street/4th Avenue N&S/120th Street	N Rum River Drive/CSAH 29	317th Avenue NW
7	11th Avenue S	1st Street/CSAH 31	Old CR 18 S
8	S 3rd Street	11th Avenue S	N Rum River Drive/CSAH 29
9	Old CR 18/Northland Drive	11th Avenue S	CSAH 29
10	21st Avenue S/19th Avenue S/12th Street S/14th Avenue S	TH 95	CR 45/14th Avenue S

3.5 Future Functional Classification

Princeton currently does not have any roadways that are functionally classified as collectors or arterials under city jurisdiction. Roadways must be functionally classified as a collector (minor or major) or higher to be designated as a MSAS route.

Because Princeton was notified of achieving a population of over 5,000 in 2022, this plan has identified ten local roadways identified as candidate MSAS routes (see **Section 3.4**). Of the ten local roadways identified, nine roadways are recommended for reclassification from a local to a collector roadway (see **Table 9** and **Figure 7**). A detailed table documenting evaluation of existing roadways functional classification is provided in **Appendix B**.






 Potential MSAS Route
 City Boundary
 County Boundaries

Figure 6 - Candidate MSAS Routes

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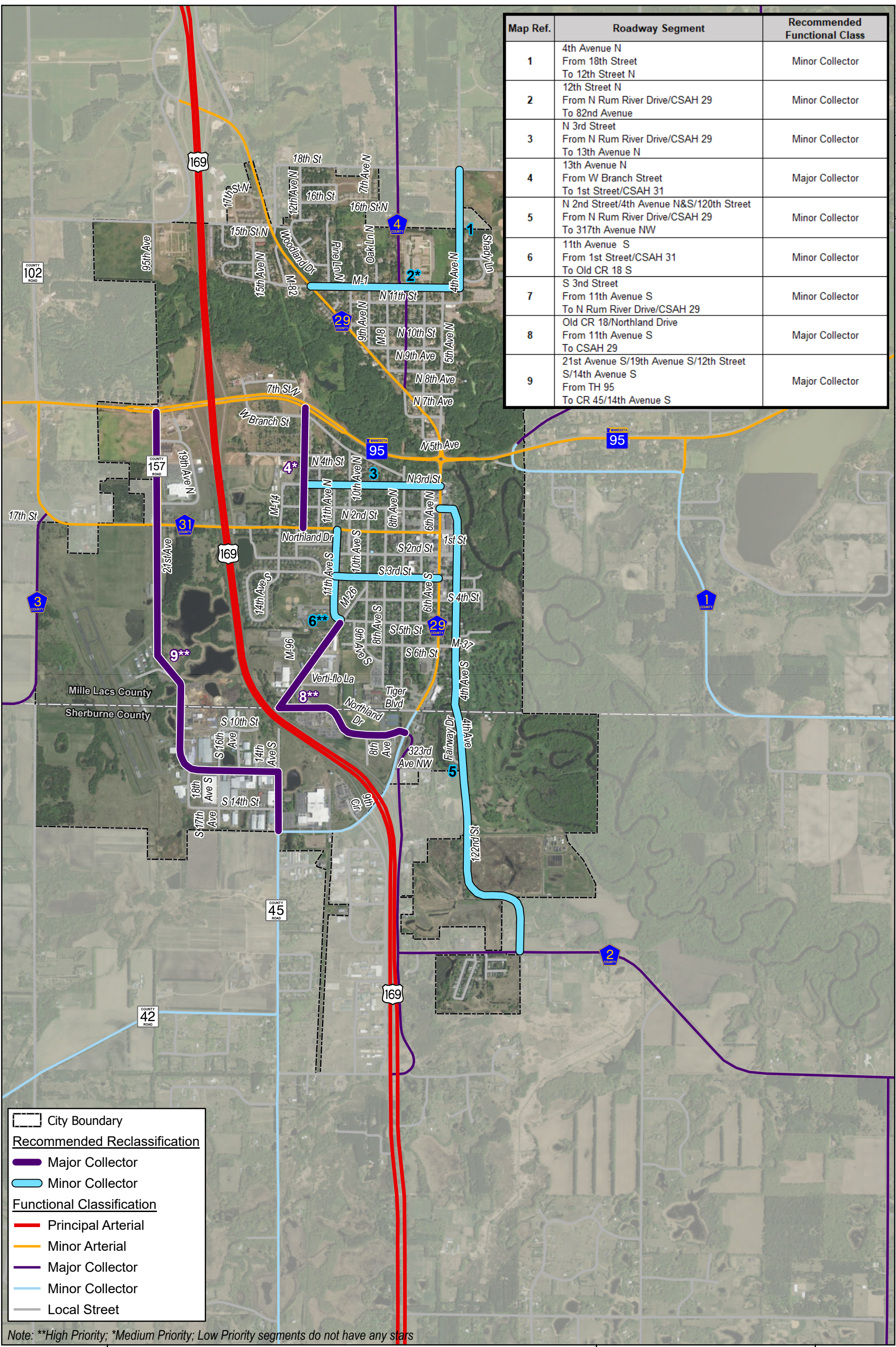
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Table 9 – Roadways Recommended for Reclassification of Functional Class

Fig 7 Map Ref.	Potential Reclassification Roadway	Current Functional Class	Recommended Functional Class
1	4th Avenue N From 18th Street To 12th Street N	Local	Minor Collector
2	12th Street N From N Rum River Drive/CSAH 29 To 82nd Avenue	Local	Minor Collector
3	N 3rd Street From N Rum River Drive/CSAH 29 To 13th Avenue N	Local	Minor Collector
4	13th Avenue N From W Branch Street To 1st Street/CSAH 31	Local	Major Collector
5	N 2nd Street/4th Avenue N&S/120th Street From N Rum River Drive/CSAH 29 To 317th Avenue NW	Local	Minor Collector
6	11th Avenue S From 1st Street/CSAH 31 To Old CR 18 S	Local	Minor Collector
7	S 3rd Street From 11th Avenue S To N Rum River Drive/CSAH 29	Local	Minor Collector
8	Old CR 18/Northland Drive From 11th Avenue S To CSAH 29	Local	Major Collector
9	21st Avenue S/19th Avenue S/12th Street S/14th Avenue S From TH 95 To CR 45/14th Avenue S	Minor Arterial (CR 157 from TH 95 to CSAH 31) Local (19th Avenue S/12th Street S/14th Avenue from CSAH 31 to CR 45)	Major Collector

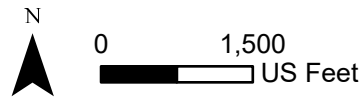
Map Ref.	Roadway Segment	Recommended Functional Class
1	4th Avenue N From 18th Street To 12th Street N	Minor Collector
2	12th Street N From N Rum River Drive/CSAH 29 To 82nd Avenue	Minor Collector
3	N 3rd Street From N Rum River Drive/CSAH 29 To 13th Avenue N	Minor Collector
4	13th Avenue N From W Branch Street To 1st Street/CSAH 31	Major Collector
5	N 2nd Street/4th Avenue N&S/120th Street From N Rum River Drive/CSAH 29 To 317th Avenue NW	Minor Collector
6	11th Avenue S From 1st Street/CSAH 31 To Old CR 18 S	Minor Collector
7	S 3rd Street From 11th Avenue S To N Rum River Drive/CSAH 29	Minor Collector
8	Old CR 18/Northland Drive From 11th Avenue S To CSAH 29	Major Collector
9	21st Avenue S/19th Avenue S/12th Street S/14th Avenue S From TH 95 To CR 45/14th Avenue S	Major Collector



Note: **High Priority; *Medium Priority; Low Priority segments do not have any stars

Figure 7 - Recommended for Reclassification of Functional Class

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3.6 Access Management Guidelines

Access management guidelines provide direction for any access decisions that need to be made regarding roadways under the jurisdiction of the City of Princeton. **Table 10** and **Table 11** show the recommended City of Princeton access management and access spacing guidelines. These guidelines are consistent with MnDOT State-Aid design standards. Any future MSAS routes must meet State-Aid design standards. Thus, Princeton should implement these access guidelines when evaluating access management and access spacing along local roadways.

Some highlights from the city's access management guidelines include:

- Residential, commercial, and industrial access will be directed to local streets where possible.
- Property that is being developed or where the land uses are changing may be required to provide internal access to the site to reduce the number of driveways or street accesses onto the city roadway system.
- As development or redevelopment occurs, right-in/right-out and 3/4 accesses should be considered if traffic engineering analysis shows these treatments will provide safe and effective movement of vehicles and pedestrians.
- The use of shared accesses into businesses should be examined and considered on a case-by-case basis.

Table 10 - City of Princeton Access Management Guidelines for Collector and Local Roadways

Roadway Functional Classification	Speed	Intersection Spacing		Signal Spacing	Private Access
		Full	Restricted (right-in/out)		
Collectors	50 – 55 mph	1/2 mile	1/4 mile	1/2 mile	660 foot minimum or subject to conditions ¹
	40 – 45 mph	1/4 mile	N/A	1/4 mile	660 foot minimum or subject to conditions ¹
	< 40 mph	300 – 660 feet depending upon block length		1/8 mile	Permitted subject to conditions ¹
Local	50 – 55 mph	1/4 mile		N/A	330 foot minimum
	40 – 45 mph	1/4 mile		N/A	330 foot minimum
	< 40 mph	300 – 660 feet depending upon block length		As warranted	330 foot minimum

¹Access to Major Collectors should be limited to public street access. Consolidation of existing private accesses on Major Collectors is encouraged where possible and new private access to Major Collectors should only be allowed as necessary.

Table 11 - City of Princeton Roadway and Driveway Access Standards

Driveway Dimensions	Residential	Commercial or Industrial
Recommended Driveway Access Width ¹ & ²	16 feet preferred in urban areas 24 feet preferred in rural areas	32 feet preferred (in urban and rural)
Minimum Distance between Driveways	20 feet (Urban) 50 feet (Rural)	20 feet (in urban) 30 feet (in rural)
Minimum Corner Clearance from a Collector Street	60 feet	60 feet

¹Driveway widths may be greater than the recommended width. However, driveway widths should not exceed 50 feet. Required widths will be determined with vehicle wheel path templates.

²One-way driveway dimensions may be reduced.

3.7 Future Street Type Framework

Future streets in Princeton should be designed to fit the surrounding context, meet their assigned functional classification role, satisfy user needs, and accommodate existing and future traffic volumes. To aid in future street design, the City of Princeton developed a Future Street Type Framework, which is included in **Appendix C**.

The framework includes geometric recommendations that are flexible and may be modified during the design and project development process, whether it is a street resurfacing, street reconstruction, or new street construction project. The framework is not intended to serve as rigid design guidance, but as a starting point for city staff and partners. This flexibility in design ultimately results in streets that are better designed to meet the needs of users while also reflecting the surrounding context.

The following three street types have been identified in the framework based on a review of typical land use contexts within the City of Princeton:

- Downtown
- Neighborhood Residential
- Rural / Agricultural / Industrial

For each of the three street types identified – Downtown; Neighborhood Residential; and Rural / Agricultural / Industrial – the framework includes the following:

- Description of street type
- Cross section graphic(s)
- Suggested street design characteristics and dimensions, which may include:
 - Drive lanes
 - Turn lanes
 - On-street parking
 - Boulevards
 - Sidewalks
 - Shared Use Paths/Trails
 - Bikeways
 - Shoulders
- Typical range of public right-of-way

Individual streets may include segments that can be classified as different street types. These different segments should be designed to reflect the adjacent land uses and the people who use them. A brief description of each of the three street types is provided below, and more detail is provided in **Appendix C**.

3.7.1 Downtown Streets

Downtown street segments in Princeton serve a heavily commercial land use and typically have moderate motor vehicle volumes and high pedestrian volumes due to the presence of businesses, shops, and attractions. Downtown streets should have wide sidewalks, boulevards, enhanced street crossings, on-street parking to serve businesses and customers, and some may have bikeways.

3.7.2 Neighborhood Residential Streets

Neighborhood residential street segments in Princeton typically have low motor vehicle volumes and speeds and are located in residential neighborhoods. Neighborhood residential streets have moderate pedestrian volumes and should have sidewalks on at least one side of the street, but ideally on both sides of the street. Neighborhood Residential Streets should be designed in a way that encourages slow motor vehicle speeds, safety for people walking, healthy street trees, and well-defined routes to nearby parks, schools, and other neighborhood amenities.

3.7.3 Rural/Industrial/Agricultural Streets

Rural / Industrial / Agricultural street segments in Princeton generally have rural cross sections (no curb and gutter) and run through agricultural, industrial, low-density residential, open space, and other contexts with deep development setbacks from the roadway. Off-street shared use paths should be considered if the street connects to destinations such as a park, school, or major employment areas. These streets often have paved shoulders and may include turn lanes at cross streets, but do not provide on-street parking.

3.8 Rum River Crossing Analysis

Rum River, a state designated Wild and Scenic River, passes through several communities, including Princeton, Onamia, Milaca, Cambridge, Isanti, and St. Francis. The 151-mile-long river connects Mille Lacs Lake with the Mississippi River. There are 39 vehicular river crossings based on MnDOT's bridge data (these do not include pedestrian/bicycle only crossings).

There is a Rum River crossing within city limits, on TH 95. This crossing provides regional connectivity between central Minnesota communities like Princeton to the Minnesota-Wisconsin border. As a regional route, TH 95 is generally intended to carry thru-traffic. The City of Princeton has considered a potential new Rum River crossing intended to serve local trips within the city and nearby, adjacent areas. This section summarizes a high-level analysis that was completed to evaluate two potential river crossing locations.

3.8.1 Potential Rum River Crossing Locations

Two potential Rum River crossing locations were identified and evaluated as shown on **Figure 8**. A description of the crossing area along with potential opportunities and constraints to constructing a new river crossing are described below.

Location 1

Location 1 is approximately between 33rd Street on the west and CR 137 on the east side of the river, approximately 1.2 miles north of the existing, TH 95 river crossing. 33rd Street is an east-west township road. A few rural, residential homes and the JQ Fruit Farm & Orchard are located near the eastern termini of 33rd Street. The city anticipates future residential development along both sides of 82nd Avenue south of 33rd Street. On the east side of the river, there are rural residences and agricultural lots along the west side of CR 137 and CSAH 1.

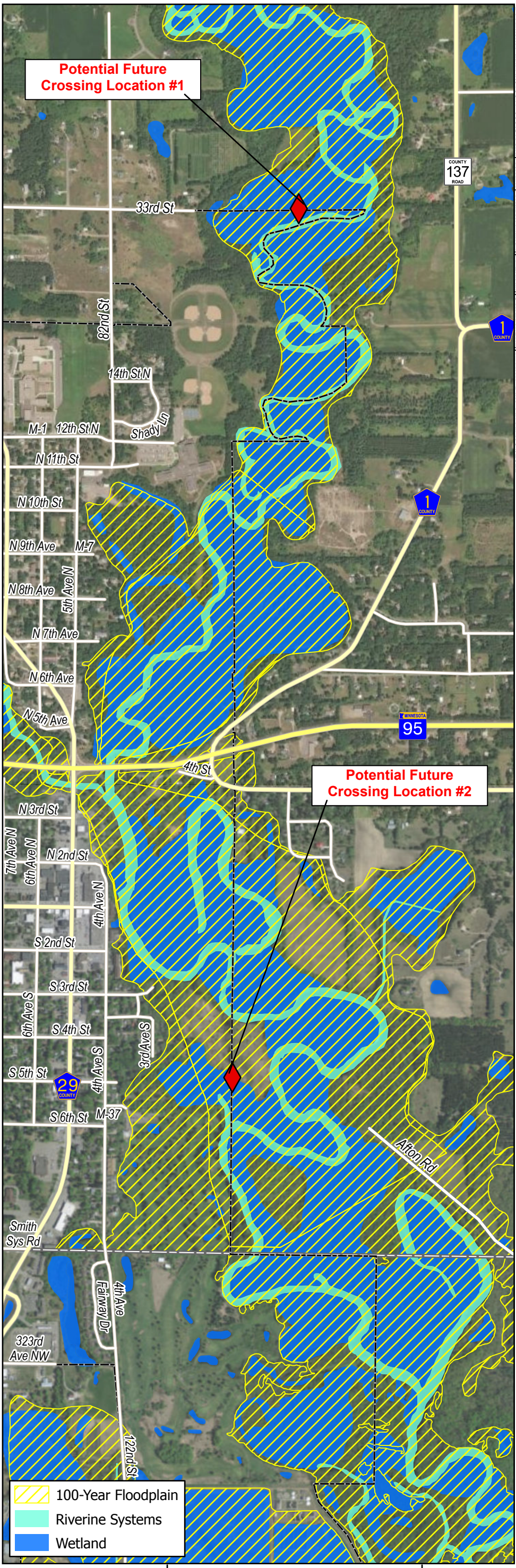
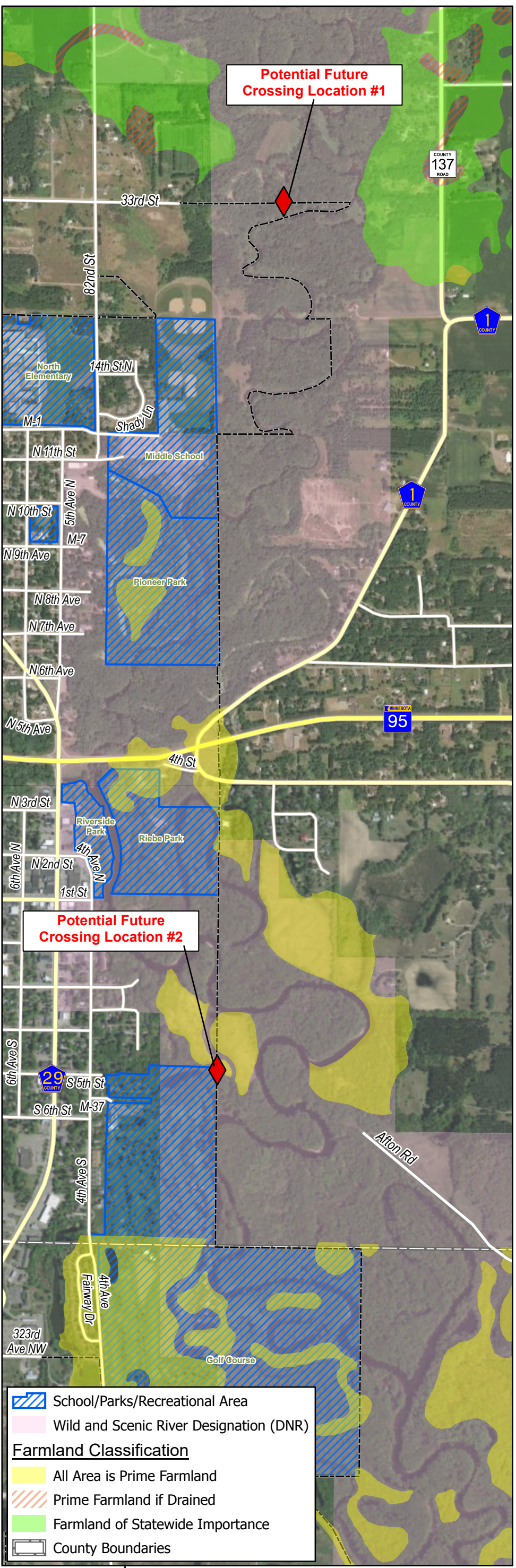
The Rum River is a Minnesota Department of Natural Resources (MnDNR) designated Wild and Scenic River. A bridge constructed in the vicinity of Location 1 would cross over 100-year floodplain and wetlands.

Location 2

Location 2 is located approximately 0.7 mile south of the existing TH 95 crossing –between the eastern termini of S 5th Street on the west side and the western termini of Afton Road on the east side of the river.

The west side of the river by Location 2 is more developed than Location 1. The area is surrounded by residential homes. The Princeton Golf Course is located approximately a block south from the eastern termini of S 5th Street. The east side of the river by Location 2 continues to be rural with few rural residential homes located along the west side of CSAH 1.

Similar to Location 1, the potential crossing at Location 2 is also within the MnDNR's designated Wild and Scenic River. This location would also be constructed within a 100-year floodplain region and would affect wetlands. Additionally, prime farmland has been identified on both sides of the riverbanks.



School/Parks/Recreational Area
 Wild and Scenic River Designation (DNR)
Farmland Classification
 All Area is Prime Farmland
 Prime Farmland if Drained
 Farmland of Statewide Importance
 County Boundaries

100-Year Floodplain
 Riverine Systems
 Wetland

Figure 8 - Existing Resources Along Rum River

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0 1,200 US Feet



3.8.2 TH 95 River Crossing Capacity

Roadway capacity indicates how many vehicles may use a roadway before it experiences congestion. Capacity is largely dependent on the number of lanes and whether a roadway is divided. **Table 12** lists planning-level thresholds that indicate a roadway’s capacity. Additional variation (more or less capacity) on an individual segment is influenced by a number of factors including: amount of access, type of access, peak hour percent of traffic, directional split of traffic, truck percent, opportunities to pass, amount of turning traffic, availability of dedicated turn lanes, parking availability, intersection spacing, and signal timing.

Based on existing and forecast traffic volumes over TH 95, the existing Rum River crossing is not anticipated to exceed or approach its capacity threshold for a two-lane divided roadway.

Table 12 – Planning-Level Capacity Thresholds

Facility Type	Daily Capacity Range (ADT)
Two-Lane Undivided Urban	8,000 – 10,000
Two-Lane Undivided Rural	14,000 – 15,000
Two-Lane Divided Urban (Three-Lane Urban)	14,000 – 17,000
Four-Lane Divided Urban	28,000 – 32,000
Four-Lane Expressway Rural	40,000 – 45,000
Four-Lane Freeway	60,000 – 80,000

Source: MnDOT

3.8.3 River Crossing Spacing Evaluation

Existing and future traffic and river crossing spacing were evaluated for this high-level analysis. Rum River crossings adjacent to the TH 95 crossing in Princeton include CSAH 3/60th Street to the north in Princeton Township, which is approximately four miles north of the TH 95 crossing; and CSAH 7 to the south in Spencer Brook Township, approximately 7.4 miles to the southeast. Based on the traffic volumes reported by MnDOT, both vehicular crossings at CSAH 3 and CSAH 7 – north and south of the TH 95 Rum River crossing in Princeton— most likely serve local trips rather than regional trips given the relatively low traffic volumes; CSAH 3 over Rum River has an ADT of 590 (2014) and CSAH 7 has an ADT of 520 (2016). Both of these bridges carry approximately 95 percent less traffic than the TH 95.

On average, there is one vehicular Rum River crossing approximately every 3.9 miles along the river from Mille Lacs Lake to the Mississippi River. A large percentage of the river passes through rural areas in Greater Minnesota. Therefore, with the exception of a few State and US highways, particularly those in northern Minnesota, vehicular Rum River crossings typically serve local traffic.

The distance between TH 95 and 60th Street Rum River crossing meets the average crossing spacing along the Rum River corridor. The crossing south of TH 95 is more than the average 3.9 miles between crossings along Rum River, making it one of the longest distances between two vehicular crossing points over the Rum River.

3.8.4 Potential River Crossing Constraints

As mentioned above, the Rum River in the vicinity of Princeton has been designated as a Wild and Scenic River by the MnDNR based on its outstanding scenic, recreational, natural, historic and scientific values. State legislation is intended to preserve and protect this resource. The river is also a designated State Water Trail. Based on the National Wetland Inventory (NWI) data, there are wetlands located at both river crossing locations considered. Based on the existing parcel and right-of-way (ROW) data, a future crossing at either of the potential locations will most likely require additional ROW acquisition.

In addition to the resources mentioned above, any future study of potential river crossing locations will need to address numerous other environmental and social considerations. Based on the complete inventory of resources in the area, the agency leading the development of a bridge would need to coordinate with agencies that have jurisdiction over specific resources to confirm potential impacts as well as any required mitigations.

3.8.5 Future Steps

This high-level river crossing analysis considered extending existing roadways within the City of Princeton over the Rum River. Additional river crossing corridor studies would be needed before formally citing a future bridge. This process would provide better insight of impacts and costs. A future Rum River bridge project in the City of Princeton would require a high-level of coordination and likely partnerships between agencies and organizations. As of the time this plan is developed, no funding or schedule is in place for additional bridge studies or construction.

4 NON-MOTORIZED TRANSPORTATION

This section documents the existing and planned non-motorized transportation network in the City of Princeton, identifies and prioritizes future trail segments, and establishes objectives for advancing non-motorized transportation opportunities. Resources that can be used to support these efforts in the future are also provided.

4.1 Existing Non-Motorized Transportation Network

4.1.1 Existing Sidewalks

Princeton's existing sidewalk network is shown in **Figure 9**. Many streets within the core areas of Princeton east of US 169 and south of TH 95 have existing sidewalks on one or both sides of the street. These older areas of the city exhibit a traditional urban street grid which provides good pedestrian connectivity. Sidewalks are not located in areas just east of the Mille Lacs County Fairgrounds

or just north of Princeton High School. Most streets north of TH 95 do not have sidewalks, though there are sidewalks along 12th St N and 5th Ave N that connect to the Princeton Primary and Intermediate School campus. A sidewalk along CSAH 31/1st St and CR 157/21st Ave N allows users to cross US 169 and access Walmart, Aldi, and other commercial destinations west of US 169.

The City of Princeton's engineering design standards require construction of sidewalks on at least one side of every street in new subdivisions, as well as the replacement of sidewalks in existing subdivisions when warranted by maintenance. This has resulted in the presence of sidewalks in areas of town with newer development.

4.1.2 Existing Trails

Princeton's existing trail network is shown in **Figure 9**. Multiuse trails serve both transportation and recreational functions for bicyclists and pedestrians. Existing trail segments in Princeton include:

- West of US 169 along CSAH 31, CR 157, and 19th Ave N
- From S Rum River Dr to S 5th St along Northland Dr and the west side of the Princeton High School campus
- Around M Health Fairview Northland Medical Center (loop trail)
- CSAH 29/S Rum River Dr underpass at US 169, connecting to M Health Fairview loop
- Great Northern Trail Segment from S Rum River Dr to 313th Ave
- Within Mark Park
- Within Pioneer Park

In combination with the network of existing sidewalks, these trails enhance non-motorized access to schools, parks, and commercial destinations.

4.1.3 Key Destinations

The City of Princeton prioritizes non-motorized transportation network connections between key origins and destinations for pedestrians and bicyclists. Key destinations, shown in **Figure 9**, include:

- Schools, including Princeton Primary School, Intermediate School, Middle School, and High School
- Parks and recreation areas
- M Health Fairview Northland Medical Center
- Commercial areas, including downtown Princeton, Walmart/Aldi area west of US 169, and Coborn's/Mike's Discount Foods area near the CSAH 29 & US 169 interchange
- 125th St Park & Ride

4.1.4 Major Barriers

There are several major roadway and waterway barriers affecting non-motorized travel in Princeton. US 169, a north-south limited access principal arterial, includes nonmotorized crossings of US 169 at TH 95 (overpass), CSAH 31/1st St (underpass),

and CSAH 29/S Rum River Dr (underpass). However, this road separates much of Princeton from commercial/industrial areas in the western portion of the city and the Princeton Municipal Airport.

TH 95, a two-lane, east-west, minor arterial, separates the northern and southern portion of Princeton. While most of the destinations discussed in **Section 4.1.1** are located south of TH 95, Princeton Primary, Intermediate, and Middle Schools along with several parks and residential areas are located to the north. There is one existing TH 95 crossing with dedicated non-motorized facilities at CSAH 29/N Rum River Dr.

The Rum River runs north-south along the eastern edge of Princeton and has one river crossing for non-motorized users at TH 95. The river also poses a barrier to non-motorized transportation.

4.2 Future Non-Motorized Transportation Network

4.2.1 Future Sidewalks

The City of Princeton has identified several areas where new sidewalks should be constructed to expand the non-motorized transportation network. Future sidewalk locations were identified to fill gaps in the existing network, connect to schools, parks, and commercial areas, and/or create major east-west or north-south routes where none currently exist. These locations are shown in **Figure 9** and include:

- Additional east-west and north-south connections in residential areas north of TH 95
- 19th Ave N loop around Walmart/Aldi commercial area
- Additional east-west and north-south connections just north of Princeton High School
- Additional east-west and north-south connections south and east of the Mille Lacs County Fairgrounds

In addition to these locations, the addition of new sidewalks should be considered as part of any planned or programmed street improvement projects.

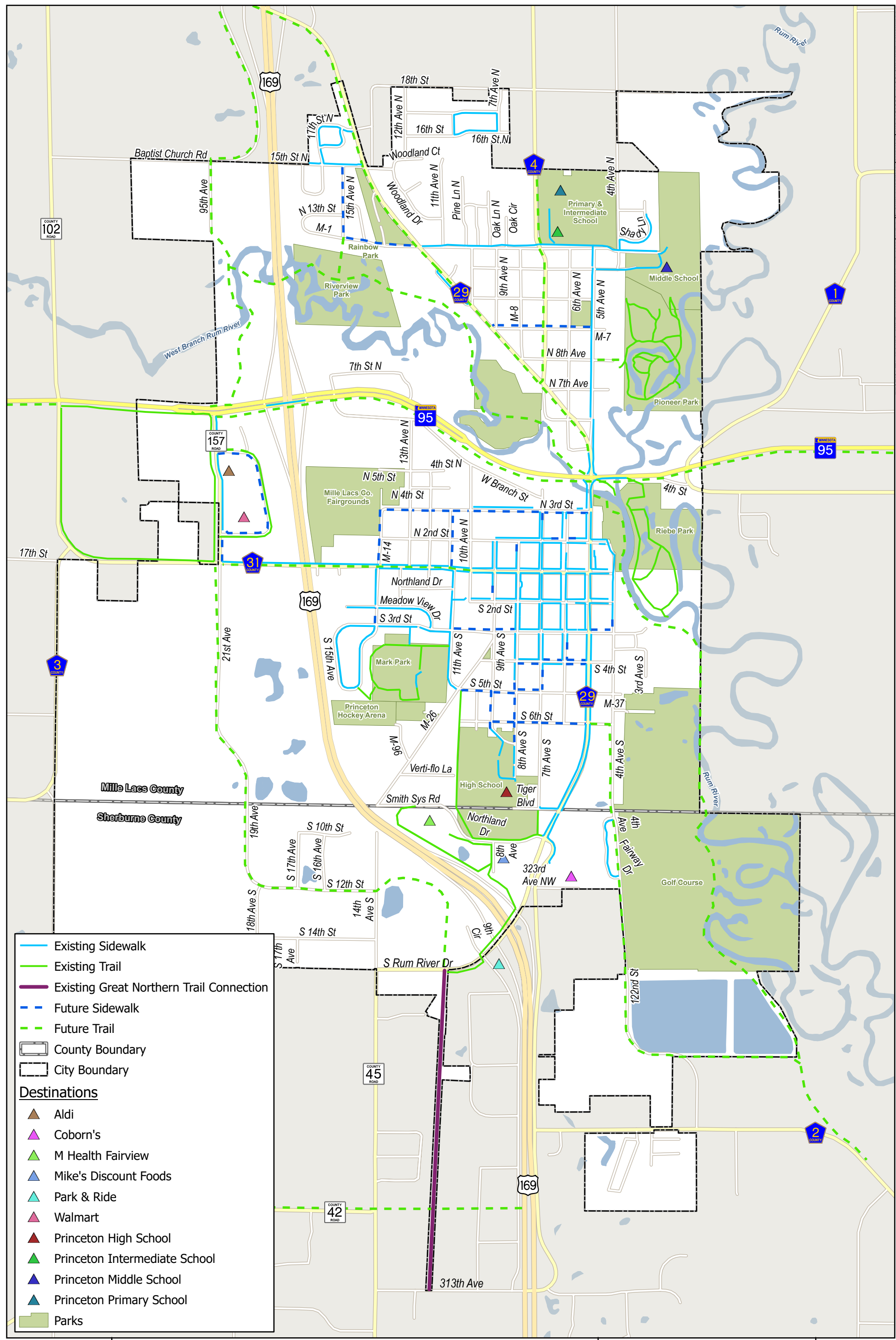


Figure 9 - Existing and Future Pedestrian and Bicycle Facilities

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4.2.2 Future Trail Segment Locations

In addition to future sidewalks, the City of Princeton has identified locations where potential future trail segments could be constructed to improve bicycle and pedestrian connectivity. The locations of these segments are shown in **Figure 9**. In general, future trail locations have been selected to provide connections to schools, parks and other major recreational destinations, and/or to provide a separated facility for people walking and biking along major roadways. These future trail segments are discussed in more detail in **Section 4.2.3**.

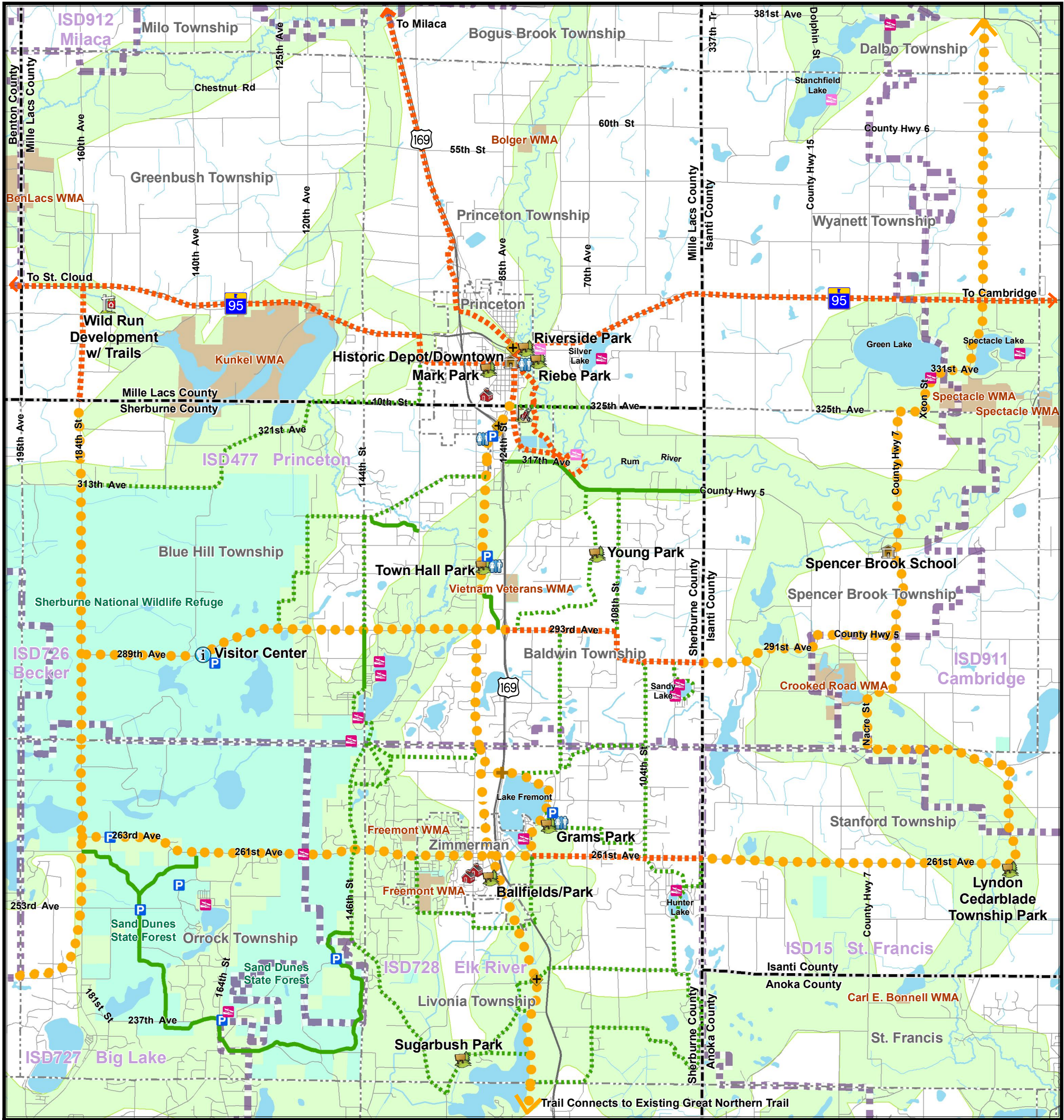
The Mille Lacs County Master Park and Trail Plan and Sherburne County Park, Trail, and Active Living Plan identify future trail corridors that would link population centers to neighboring cities and recreation areas. The two counties are currently collaborating on the creation of a master plan for the Great Northern Trail, which would extend a distance of 30 miles from Elk River to Milaca when completed, connecting communities along US 169 including Princeton. The route will roughly follow US 169 and be located within Great Northern Railroad right of way. A one-mile segment of the trail in the City of Princeton is already paved (**Figure 9**), along with a nine-mile segment between Elk River and Zimmerman.

The Rum River Recreation and Resources Board (the Board), which held its first meeting in 2010, is comprised of representatives from the Townships of Greenbush, Baldwin, Princeton and Livonia, the City of Princeton, and the Princeton School District. The Board's goals include establishing trails, parks, and open space in support of the region's economic viability and environmental health. In addition to the Great Northern Trail route being pursued by Mille Lacs and Sherburne Counties, the Board's Regional Trail and Open Space Corridor Plan includes three future trail alignments that would connect to Princeton:

- East-west trail along TH 95 that would detour south to travel through Princeton along CSAH 31/1st St.
- Two potential trail alignments traveling southwest out of Princeton, one along existing roadways and one through the Princeton Golf Course.

These future trails are shown in **Figure 10**, a map extracted from the Board's Regional Trail and Open Space Corridor Plan. The Board's Regional Trail and Open Space Corridor Plan should be used as a guiding tool when planning for future trails within the city. This will ensure trail network connectivity with local and regional trails in the area.

Figure 10 - Rum River Recreation and Resources Board Preliminary Regional Trails and Open Space Plan



Rum River Recreation and Resources Board (4R Board)
Preliminary Regional Trails and Open Space Plan



- Park
- Golf Course
- School
- Historic Site
- Visitor Center
- Public Water Access
- Potential Public Water Access
- Housing Project
- Restroom Facility
- Parking
- At Grade Crossing
- Potential Underpass/Bridge
- Existing Trail
- Planned City or Township Trails
- Planned County Trails
- 4R Board Potential Regional Projects
- DNR Wildlife Management Areas
- Potential Greenway Corridors
- Public Conservation Land
- County Boundary
- City or Township Boundary
- School District Boundary
- Open Water

*Funding for the plan provided by 1,000 Friends of Minnesota through McKnight Foundation grant, and by the MnDNR from the Environmental Trust Fund administered by the Legislative and Citizen Commission on Minnesota Resources (LCCMR).

February 18, 2011



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4.2.3 Future Trail Segment Prioritization

Future trail segments, listed in **Table 13** and shown in **Figure 11**, were evaluated to assign a level of priority for implementation. These future trail segments considered are general alignments. Exact design and location of future trails will need to be studied in greater detail by the city before construction. Portions of proposed trails could also be combined and/or constructed in phases as opportunities arise.

Table 13 - Future Trail Segments

Figure 11 Map ID	Along	From	To
1	S Rum River Dr	Northland Dr	US 169 NB on-ramp
2	US 169, Airport Rd, 21st Ave S	S Rum River Dr	CSAH 31
3	Baptist Church Rd, US 169, CR 157	N Rum River Dr	5th St N
4	4th Ave S, 120th St W	CSAH 29	CSAH 2
5	CSAH 29	Baptist Church Rd	N 5th Ave
6	CSAH 4	Princeton Primary School	CSAH 29
7	CSAH 31	21st Ave N	4th Ave N/Segment 11
8	TH 95	West of city limits	East of city limits
9	N 8th St	5th Ave N	Pioneer Park
10	West Branch Rum River	12th St N or Segment 3	TH 95
11	Rum River	TH 95 or CSAH 29	CSAH 2
12	CR 42	125th St	West of city limits
13	4th Ave S	S 6th St	Riverside Park, TH 95
14	11th Ave S	CSAH 31	Old County Rd 18 S

The priority ranking for each trail segment is listed in **Table 14**. High priority segments are generally shorter links that connect key destinations or fill network gaps. Medium priority segments generally have the potential to be of high recreational or transportation value by connecting key destinations but may have notable constraints that could create challenges and increase costs for implementation, such as river or roadway crossings and proximity to natural resources. Low priority segments generally provide less recreational or transportation value and/or may not make sense to implement in the short term.

This exercise is intended to be a starting point for trail implementation rather than a defined list. Opportunities may arise to implement these or other trail segments along with city, county, or MnDOT projects. Conditions may also change in ways

that affect the priority level or feasibility of a proposed trail segment. For these reasons, this list should be reviewed and updated periodically.

Table 14 - Future Trail Segment Priority

Figure 11 Map ID	Priority	Comments
1	High	Short segment along an existing roadway that fills a gap between existing trails along Northland Dr, US 169, and S Rum River Dr.
6	High	Along an existing roadway. Would create a new connection to Princeton Primary and Intermediate Schools.
9	High	Short segment that fills a gap between existing sidewalk along 5th Ave N and entrance to Pioneer Park.
7	High	High value as an east-west connection between downtown and existing commercial area and future Great Northern Trail. Improves connections once Segment 14 is complete.
13	High	North-south route with less traffic than CSAH 29, would connect downtown and Riverside Park to several future trail segments.
14	High	North-south extension of existing trail from Northland Dr. fills network gap and connects to existing trails in Mark Park. Improves connections once Segment 7 is complete.
2	Medium	High potential recreational value as part of future Great Northern Trail alignment, but may be challenging due to segment length, number of property owners involved, and natural resource constraints.
3	Medium	High potential recreational value as part of future Great Northern Trail alignment, but complex due to segment length, natural resource constraints, and river crossing.
10	Medium	High potential scenic and recreational value including potential connection to future Great Northern Trail, but challenging in terms of segment length, potential river crossings, and crossing of US 169.
11	Medium	High potential recreational value, but potentially challenging in terms of segment length and proximity to natural resources.
4	Low	Likely easier to implement than Segment 11 since trail would be along existing roadway rather than through natural resource area but would provide reduced scenic/recreational value.
5	Low	Potential connection to future Great Northern Trail that may be easier to implement than Segment 10, but trail location along a county road would be less desirable than through a natural area from a recreational perspective.
8	Low	Would create an additional east-west trail connection to link several potential north-south trails, but location along a trunk highway would be a less desirable trail setting and would make the most sense to implement along with a future MnDOT project.

Figure 11 Map ID	Priority	Comments
12	Low	Potential value as a future regional connection and would link several outlying residential areas to the existing Great Northern Trail segment, but location far from the core pedestrian and bicycle network limits usefulness in the short term.

4.3 Roadway Crossing Treatments

Special attention should be paid to locations where trails and roadways intersect to minimize the potential for conflicts with vehicle traffic. Treatments that reduce crossing distances, warn drivers of people crossing, or stop vehicle traffic entirely can be used to create safer crossings. The exact solution should be adapted for each context. Additional design guidance is available in the resources listed in **Section 5.6**.

4.4 Intersection Treatments

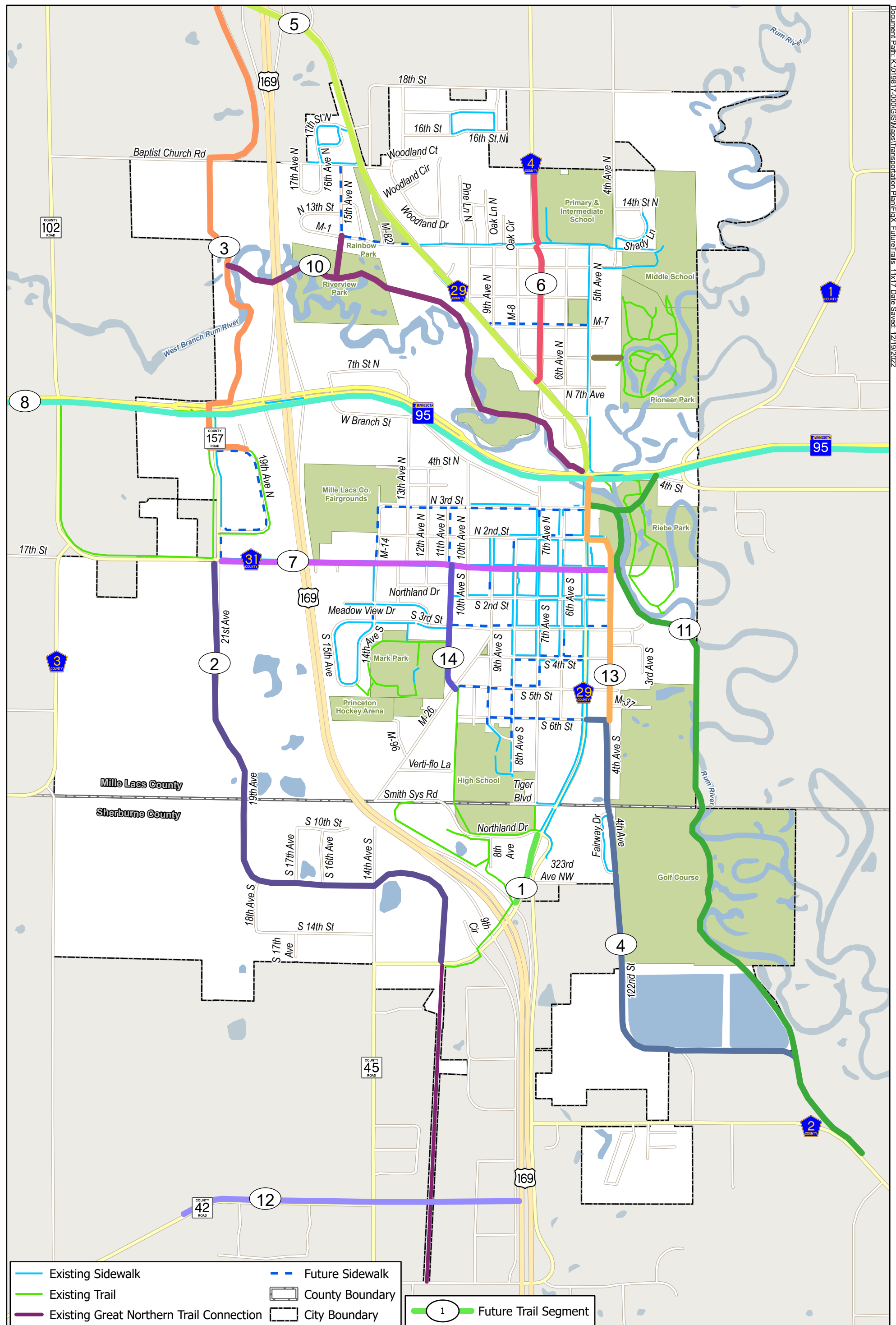
Intersection design is a critical consideration for improving pedestrian and bicycle safety. Where appropriate, designs such as roundabouts can reduce conflict points and improve safety for nonmotorized users. Various treatments can also be provided to improve safety at signalized or stop-controlled intersections such as bump-outs, median crossing refuges, leading pedestrian intervals, and more. Additional design guidance is available in the resources listed in **Section 5.6**.

4.5 Sidewalk and Trail Maintenance

Sidewalk and trail maintenance have a major impact on accessibility for pedestrians and bicyclists. Uneven or cracked surfaces can also make some routes impassable for people using wheelchairs or other mobility devices. Several maintenance practices can improve non-motorized accessibility, including the reconstruction and addition of accessible curb ramps when pavement management projects take place to provide access to existing pedestrian facilities at intersections where they do not currently exist.

Construction or reconstruction of any sidewalk or trail project will, to the extent feasible, incorporate design and construction practices consistent with the most current Americans with Disabilities Act (ADA) design practices. Trail sweeping and brush clearing on an annual basis can also improve safety, accessibility, and the overall trail user experience.

Trail and sidewalk maintenance during the winter months is also important for serving nonmotorized users, especially those who rely on these modes for transportation. The City of Princeton currently requires residential owners or occupants to remove snow and ice from public sidewalks within 12 hours from 8:00 AM of the first day after the snow event ends. This helps keep sidewalk routes usable year-round.



- Existing Sidewalk
- Existing Trail
- Existing Great Northern Trail Connection
- Future Sidewalk
- County Boundary
- City Boundary
- 1 Future Trail Segment

Figure 11 - Future Trail Segments
 Transportation Plan Update
 Princeton, Minnesota



4.6 Trailhead and End of Trip Facilities

As new trails are developed, providing bicycle repair stations, restrooms, maps/signage, and other supporting facilities at trailheads and along routes will be key to maintaining a good traveler experience. Opportunities to provide these amenities will be explored as trails are implemented.

Secure bike parking is an essential component of any trail network, whether it is primarily used for commuting or recreation. It is important for trail users to have a safe and convenient place to securely lock their bikes once they reach the end of their trip. Providing secure bike parking at trailheads and in parks connected to the trail system allows users to stop and take advantage of park amenities along the way. The Association of Pedestrian and Bicycle Professionals publication *Essentials of Bike Parking: Selecting and Installing Bicycle Parking that Works* is a useful reference to inform bike rack selection, siting, installation, and other issues relating to providing parking in different contexts.

4.7 Safe Routes to School

Princeton's current Safe Routes to School (SRTS) plan was completed by the East Central Development Commission in 2013. The Plan established a vision and goals for SRTS in Princeton, and engaged city and school staff, students, and the community in the process of identifying recommendations to make it safer and easier for students in Princeton to walk and bike to school. Plan recommendations included the installation of new sidewalks along key school routes, which the city has implemented in several locations.

Since the completion of the plan, Princeton has consolidated two elementary schools into a single primary and intermediate school campus, located at the north end of the community. An updated SRTS plan would create an opportunity to identify new issues and opportunities and reflect changes in school configuration as well as new sidewalks and trails.

5 IMPLEMENTATION PLAN

This section of the plan provides strategies, tools, and practices that can assist the city with implementation of the recommendations included in this Transportation Plan. Adoption of this plan by the Princeton City Council establishes priorities and guidelines on which to base future transportation decisions. Ideally, all agencies with roadway jurisdiction within Princeton, including counties and MnDOT, should review the plan to ensure that they support the city's efforts to implement the plan.

It is recommended that the plan be reviewed at least every five to ten years to ensure that information detailed in the plan is up to date based on future developments, population trends, changing financial resources, and public and local government input.

5.1 Jurisdictional Realignment Process

The Transportation Plan identifies two potential jurisdictional turnback roadways as noted in **Section 2.1** of this Transportation Plan. If and when the city and Mille

Lacs County decide to pursue a jurisdictional transfer, the city should develop a Memorandum of Understanding (MOU) that outlines the turnback process. The memorandum would address issues as such:

1. Schedule or timeframe of proposed transfers
 - a. Coordination with all appropriate roadway jurisdictions
2. System issues and legal requirements
3. Planning and programming issues
4. Project development, design, and construction issues
5. Operational and maintenance issues

5.2 Reclassification of Roadway Functional Classification

Nine roadways have been identified in this Transportation Plan for reclassification. Reclassification of existing roadways are based on system continuity, access control, roadway traffic, connectivity to local and regional destinations, and their potential to become MSAS routes. The city should follow the Functional Classification Change process ([MnDOT October 2021](#)) outlined by MnDOT for existing local roadways.

5.3 Establishing MSAS Routes

The City of Princeton was informed of eligibility to become a MSAS City in 2022, during development of this transportation plan. This plan has identified ten existing roadways as candidate MSAS routes. The purpose of MSAS routes is to provide roadway users of secondary roadways with:

- Safe streets;
- Adequate mobility and structural capacity on streets; and
- An integrated transportation network.
(Source: State Aid Municipal Screening Board Data Spring 2022)

As listed on State Aid [MSAS/CSAH System Revision Request Form](#), local streets may be selected to be designated as a MSAS routes if it meets one of the three selection criteria below:

- Projects to carry a relatively heavier traffic volume, or is functionally classified as a collector or arterial;
- Connects the points of major traffic intersect within an urban municipality;
or,
- Provides an integrated and coordinated highway system affording, within practical limits, a State Aid highway network consistent with projected traffic demands.

Becoming a MSA city provides Princeton access to State-aid funds, funds collected by the state according to the constitution and law, that could be used by the city for aid in the construction, improvement, and maintenance of MSA routes. Detailed steps on how to designate local roadways as MSA routes can be found [here](https://www.dot.state.mn.us/stateaid/msas.html) (<https://www.dot.state.mn.us/stateaid/msas.html>).

5.4 Implementing of Access Management and Spacing Guidelines

This Transportation Plan proposes access management and spacing guidelines for streets under city jurisdiction. These guidelines are intended to improve communication, enhance safety, and maintain the capacity and mobility of the important transportation corridors. The city should apply these guidelines when reviewing requests for additional access (e.g. new public streets, commercial driveways, residential, and field accesses), which are evaluated by numerous agencies. To ensure safety, access, and mobility for all roadway users, the city should refer to the access management guidelines and standards detailed in **Table 10** and **Table 11** in **Section 3.6**.

5.5 Implementing Motorized and Non-Motorized Transportation Facilities

Regular upkeep and maintenance of transportation infrastructures are important to ensure normal useful life expectancy of roadways. The city's Subdivision Ordinance Chapter 13: Engineering Design Standards under Section G outlines the life expectancy of streets and utility services within the city. As suggested under [Subdivision Ordinance Chapter 13 Section G](#), surface improvements include concrete curb and gutter, bituminous roadways, and sidewalks. The life expectancy of concrete curb and gutter and bituminous roadways is 30 years while the life expectancy of sidewalks is 50 years. All new roadways and improvements will meet engineering design standards detailed in [Subdivision Ordinance Chapter 13](#) and as different transportation facilities approach or reach their life expectancy, they should take the proper actions to ensure the safety, access, and mobility of all roadway users. Further specific recommendations and guidance on transportation surface improvements can be found in the city's Pavement Management Plan.

Additionally, the City of Princeton's Public Works Department will continue to be responsible for local street maintenance such as pot-hole patching, sweeping, and snow plowing in the winters as necessary.

Implementation of sidewalks and trails will take place either through standalone projects or in conjunction with roadway projects. While reconstruction projects offer the most design flexibility and opportunity to complete missing links in the non-motorized transportation network, maintenance work such as resurfacing or rehabilitation can create opportunities for reconfiguring roadways within the existing right of way.

As opportunities arise, the city can incorporate new sidewalks and trails into street projects and program them as part of the Capital Improvement Plan. This will help connect isolated sidewalk and trail segments to the overall network through new connections that fill system gaps and serve key destinations as discussed in **Section 4**. Future sidewalk and trail projects may require coordination with Mille Lacs and Sherburne Counties and MnDOT as applicable with regard to their respective roadway improvements and key roadway/river crossings. Future trail routes should also be coordinated with the land subdivision and development process.

The city may also pursue an update to the existing Safe Routes to School (SRTS) plan to reflect changes in school campus configuration and identify new issues and opportunities.

5.6 Design Resources

5.6.1 Roadway

There are several design resources that can be used as helpful guidelines when considering roadway improvements within Princeton. These resources can also assist with the process of determining what type of facility will best meet motorized transportation needs. Below is a list of design resources that would be applicable to roadway transportation projects in Princeton:

- [MnDOT Road Design Manual](#)
- [Sherburne County Road Design Standards \(Sherburne County Subdivision Ordinance, Section 11\)](#)
- [Mille Lacs County Development Ordinance](#)

5.6.2 Sidewalks and Trails

MnDOT's Bicycle Facility Design Manual, updated in 2020, provides context-specific design solutions for the planning and design of bicycle facilities and is based on national design standards. Ensuring that all bicycle facilities conform to the design guidance outlined in the Manual provides consistency and predictability for bicyclists and all modes of travel that share facilities or interact with bicyclists, including automobiles and pedestrians. MnDOT also completed a Statewide Pedestrian System Plan in 2021, which provides design guidance and recommendations for pedestrians.

The following resources should also be used to inform the planning and design of bicycle and pedestrian facilities:

- Bikeway Selection Guide – Federal Highway Administration (FHWA)
- Guide for the Development of Bicycle Facilities – American Association of State Highway and Transportation Officials (AASHTO)
- Guide for the Planning, Design, and Operation of Pedestrian Facilities – American Association of State Highway and Transportation Officials (AASHTO)
- NACTO Urban Bikeway Design Guide, Second Edition, National Association of City Transportation Officials
- Complete Streets Implementation Resource Guide for Minnesota Local Agencies – MnDOT

In addition to these sources of design guidance, all bicycle and pedestrian facilities must conform to the ADA accessibility guidelines outlined in Public Right of Way Accessibility Guidelines (PROWAG). Signage and other traffic control elements should conform to the Minnesota Manual on Uniform Traffic Control Devices (MMUTCD).

5.7 Funding Opportunities

Numerous state and federal grant opportunities are available to implement motorized and non-motorized transportation improvements. The city will likely need to employ several funding and implementation strategies to provide the transportation infrastructure needed to meet expected growth and proper maintenance of transportation infrastructures to ensure the maximum life expectancy.

As a MSA city, Princeton now has access to State-aid funds and can apply for other transportation funds without the sponsorship of a county. For example, the Surface Transportation Block Grant (STBG) Program requires townships and cities with population of less than 5,000 to request sponsorship from a county to apply for funding and implement project. While it is not a disadvantage for Princeton to receive funding through a county sponsor, applying for and receiving funds directly will provide the city with more flexibility, minimize dependency on counties, and reduce the need for intergovernmental coordination.

The completion of this plan will provide the city with the opportunity to apply for competitive funds to help finance transportation projects within Princeton. Below is list of grant opportunities that may provide additional funding opportunities for Princeton as it continues to grow:

- **Surface Transportation Block Grant (STBG) Program** – Funding opportunity for flexible funding to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.
- **Highway Safety Improvement Program (HSIP)** – Funding available to improve roadway safety
- **State-Aid Funds** – Funding for designated MSAS routes
- **MnDOT Local Bridge Replacement Program** – Funding for constructing new or reconstruct deficient bridges
- **MnDOT Local Roadway Improvement Program (LRIP)** – – Funding to assist the state and local jurisdictions resolve spot transportation issues such as channelization or signal projects on the state system
- **Transportation Alternatives:** Funding opportunity for local and regional agencies for pedestrian and bicycle facilities and programs
- **DNR Local Trail Connections Program:** Funding opportunity for trails that connect to key regional recreation destinations
- **DNR Federal Recreational Trails Program:** Funding opportunity for construction of new or relocated recreational trails
- **MnDOT Safe Routes to School Infrastructure Grants:** Funds to support the construction of sidewalks, trails, crossings, etc. to help students walk or bike to school

Appendix A

MnDOT & Sherburne County Access Guidelines

Table 1: MnDOT Access Categories (by role/functional classification)

Category	Land Use or Facility Type	Functional Classification	Typical Posted Speed
1 – High Priority Interregional Corridor (IRC) No Applicable City of Princeton Routes			
1F	Interstate Freeway	Interstate Highway	55 – 75 mph
1AF	Non-Interstate Freeway	Principal Arterial	55 – 65 mph
1A	Rural	Principal Arterial	55 – 65 mph
1B	Urban / Urbanizing	Principal Arterial	40 – 55 mph
1C	Urban Core	Principal Arterial	30 – 40 mph
2 – Medium Priority Interregional Corridor (IRC) No Applicable City of Princeton Routes			
2AF	Non-Interstate Freeway	Principal Arterial	55 – 65 mph
2A	Rural	Principal Arterial	55 – 65 mph
2B	Urban / Urbanizing	Principal Arterial	40 – 55 mph
2C	Urban Core	Principal Arterial	30 – 40 mph
3 – Regional Corridors No Applicable City of Princeton Routes			
3AF	Non-Interstate Freeway	Principal Arterial	55 – 65 mph
3A	Rural	Principal / Minor Arterial	45 – 65 mph
3B	Urban / Urbanizing	Principal / Minor Arterial	40 – 45 mph
3C	Urban Core	Principal / Minor Arterial	30 – 40 mph
4 – Principal Arterials in the Twin Cities and Primary Regional Trade Centers (Non-IRCs) No Applicable City of Princeton Routes			
4AF	Non-Interstate Freeway	Principal Arterial	55 – 65 mph
4A	Rural	Principal Arterial	45 – 55 mph
4B	Urban / Urbanizing	Principal Arterial	40 – 45 mph
4C	Urban Core	Principal Arterial	30 – 40 mph
5 – Minor Arterials No Applicable City of Princeton Routes			
5A	Rural	Minor Arterial	45 – 55 mph
5B	Urban / Urbanizing	Minor Arterial	40 – 45 mph
5C	Urban Core	Minor Arterial	30 – 40 mph
6 – Collectors No Applicable City of Princeton Routes			
6A	Rural	Collector	45 – 55 mph
6B	Urban / Urbanizing	Collector	40 – 45 mph
6C	Urban Core	Collector	30 – 40 mph
7 – Specific Area Access Management Plan No Applicable City of Princeton Routes			
7	All	All	All

Table 2: Sherburne County Access Spacing Guidelines ⁽¹⁻⁸⁾

Roadway Functional Classification	Speed	Intersection Spacing		Signal Spacing	Private Access ⁽⁸⁾
		Full Access	Conditional Secondary		
Minor Arterial	50 – 55 mph	1/2 mile	1/4 mile	1/2 mile	660 foot where feasible or subject to conditions
	40 – 45 mph	1/4 mile	1/8 mile	1/4 mile	660 foot where feasible or subject to conditions
	< 40 mph	300 – 660 feet depending upon block length		1/4 mile	Permitted subject to conditions
Collectors	50 – 55 mph	1/2 mile	1/4 mile	1/2 mile	660 foot where feasible or subject to conditions
	40 – 45 mph	1/4 mile	NA	1/4 mile	660 foot where feasible or subject to conditions
	< 40 mph	300 – 660 feet depending upon block length		1/8 mile	Permitted subject to conditions
Local	50 – 55 mph	1/4 mile		NA	330 foot where feasible
	40 – 45 mph	1/4 mile		NA	330 foot where feasible
	< 40 mph	300 – 660 feet depending upon block length		As warranted	330 foot where feasible

(1) Proposed road intersections must meet minimum county sight distance requirements.

(2) Residential accesses should meet minimum stopping sight distances.

- (3) Sherburne County has the authority to require a traffic study (scope determined by the county) for all developments at the developer's expense.
- (4) By policy, the county requires elimination, consolidation and shared accesses.
- (5) Access permits are required. The access permit will control the width, placement and construction standards.
- (6) Additional access may be permitted as right-in/out or temporary; however, other conditions must be satisfied.
- (7) Turn lanes are required under several conditions.
- (8) Private access and conditions are defined in separate tables.

Appendix B

Functional Classification Evaluation Criteria

Does not meet criteria
Close to meeting criteria
Does meet criteria



Functional Classification Evaluation Criteria and Analysis

Roadway Segment	Current Functional Classification	Segment Length (Miles)	Route Route Spacing	System Connections	Place Connections	Intersection Density (accesses per mile)	Land Access	Priority	Recommended Functional Classification
4th Avenue N From 18th Street To 12th Street N	Local/Township	0.49	North-south route Approx. 1/4 mile	Local Streets (12th Street N and 33rd Street)	Princeton Middle School at the southern termini of the roadway. The city anticipates housing development along 82nd Avenue in the future.	6	Connects to schools and potential future developments along the roadway. Limited amount of direct property access	Low	Minor Functional class of roadway is development driven.
12th Street N From N Rum River Drive/CSAH 29 To 82nd Avenue	Local	0.61	East-west route NA	Minor Arterial (CSAH 29) Major Collector (CSAH 4) Local Streets	Princeton Intermediate School, Princeton Just for Kix Dance Classes, Princeton Tennis Courts, Princeton Middle School, Rainbow Park	28	Primarily within residential area. High amount of direct property access	Medium	Minor The segment has a high intersection density and amount of direct property access. However, the roadway does provide access to multiple local destinations, including schools and recreational areas where there is consistent amount of traffic.
CSAH 4/7th Avenue N From 12th Street N To N Rum River Drive/CSAH 29	Local	0.42	North-south route NA	Major Collector (CSAH 4) Local Street (12th Street N)	Predominantly single family residential.	14	Residential heavy and no local destinations. High/medium amount of direct property access	High	Major Collector Jurisdictional transfer of the roadway would have to occur from county to city. As a CSAH route, this roadway would automatically qualify as a MSAS route.
N 3rd Street From N Rum River Drive/CSAH 29 To 13th Avenue N	Local	0.55	East-west route Approx. 950 feet (from CSAH 31)	Minor Arterial (CSAH 29) Local Street (14th Avenue N)	Reynolds Balloon & Party, Oaks Apartments (medium density residential), Racers Exchange, Mille Lacs County Fairgrounds	15	Primarily within residential area. High amount of direct property access	Low	Minor While this east-west segment may be better spaced out from CSAH 31 than N 2nd Street, this roadway does not serve as many local destinations.

Roadway Segment	Current Functional Classification	Segment Length (Miles)	Route Route Spacing	System Connections	Place Connections	Intersection Density (accesses per mile)	Land Access	Priority	Recommended Functional Classification
13th Avenue N From W Branch Street To 1st Street/CSAH 31	Local	0.45	North-south route Less than 1/4 mile	Major Collector (CSAH 31) Local Street (W Branch Street)	Oak Knoll Cemetery The city is interested in looking at through access to TH 95: a roundabout that connects 13th	13	No major connections to local destinations directly. High/medium amount of direct property access	Medium	Major
N 2nd Street/4th Avenue N&S/120th Street From N Rum River Drive/CSAH 29 To 317th Avenue NW	Local	2.03	North-south route Approx. 330 feet (from CSAH 29)	Minor Arterial (CSAH 29) Major Collector (CSAH 2)	Princeton Area Library, Princeton Golf Course, multiple access to/from business parking lots (This roadway extends south towards Growth Area 6. Growth Area 6 is outside of city limits but identified as one of the seven growth areas.)	6	Primarily within residential area with some local destination places closer to the eastern end of the corridor. High/medium amount of direct property access	Low	Minor Proximity to CSAH 29 may be considered too close for roadway to be a collector.
11th Avenue S From 1st Street/CSAH 31 To Old CR 18 S	Local	0.39	North-south route Approx. 0.43 mile (from CSAH 29)	Minor Arterial (CSAH 31) Local Streets	Mark Park (Recreational facility with sports fields and other amenities)	13	Primarily within residential area. Medium amount of direct property access	High	Minor
S 3rd Street From 11th Avenue S To N Rum River Drive/CSAH 29	Local	0.42	East-west route Approx. 985 feet (from CSAH 31)	Minor Arterial (CSAH 29) Local Street (11th Avenue S)	Central Minnesota Custodial Services, First Bank and Trust, Crystal Court Apartments	21	Primarily within residential area with few local destination places closer to the eastern end of the corridor. High amount of direct property access	Low	Minor Proximity to CSAH 31 may be considered too close for roadway to be a collector and segment may be too short.
Old CR 18/Northland Drive From 11th Avenue S To CSAH 29	Local	1.00	North-south/east-west route Approx. 0.44 mile (from CSAH 29)	Major Collector (CSAH 2) Local Street (11th Avenue S)	Mark Park (Recreational facility with sports fields and other amenities), Palmer Bus Services, Plastics Products Co, Airway Products, Fairview Northland Medical Center, Princeton High School, Mikes Discount Foods, Kwik Trip, McDonald's, Princeton Tennis Courts, Caribou Coffee	6	Industrial, institutional, recreational, and commercial land uses that would attract traffic. Limited amount of direct property access	High	Major

Roadway Segment	Current Functional Classification	Segment Length (Miles)	Route Route Spacing	System Connections	Place Connections	Intersection Density (accesses per mile)	Land Access	Priority	Recommended Functional Classification
21st Avenue S/19th Avenue S/12th Street S/14th Avenue S From TH 95 To CR 45/14th Avenue S	Minor Arterial (CR 157 from TH 95 to CSAH 31) Local	1.65	East-west/north-south route NA	Minor Arterial (TH 95) Local Streets	Princeton Municipal Airport, Wood Chip Princeton, Sylva Corporation, US Distilled Products, Inline Packaging, Walmart This roadway is within Growth Area 4 by the airport. This area has multiple existing industrial businesses and the city anticipates further industrial growth in the area.	2	Accesses to industrial businesses. The western roadway termini end at the airport. Medium amount of direct property access	High	Major There have been discussions about transferring CR 157 from TH 95 to CSAH 31 to the city. Currently, the city is constructing a new roadway segment to connect the existing southern termini of 21st Avenue S with Airport Road. The addition of CR 157 to this segment adds an additional 0.47 mile. to the segment.

Appendix C

Princeton Street Type Framework

Princeton Future Street Type Framework

Street Type Overview

The design of a street should be appropriate for its surrounding context while also balancing its role in the functional classification system. Rather than designing streets solely based on their existing or anticipated traffic volumes, streets should be designed to serve the needs of its users. This Street Type Framework allows the City more flexibility in street design and ultimately results in streets that are better designed to meet the needs of their surrounding contexts. The following five street types have been identified based on a review of typical land use contexts within the City of Princeton:

- Downtown
- Neighborhood Residential
- Rural / Agricultural / Industrial

The purpose of the Street Type Framework is not to establish rigid design guidance for the City of Princeton, but to provide a general guide for how streets should be designed to reflect the character and needs of their surrounding land uses. The geometric recommendations are flexible and may be modified during the design and project development process for each street resurfacing or reconstruction.

An individual street can be made up of multiple segments that are classified as different street types. For example, 1st Street / CR 31 could be classified as 'Downtown', 'Neighborhood Residential', or 'Rural / Agricultural / Industrial' depending on the location of the street segment. Each of those segments has varying needs based on the adjacent land use, and the street design should reflect that.

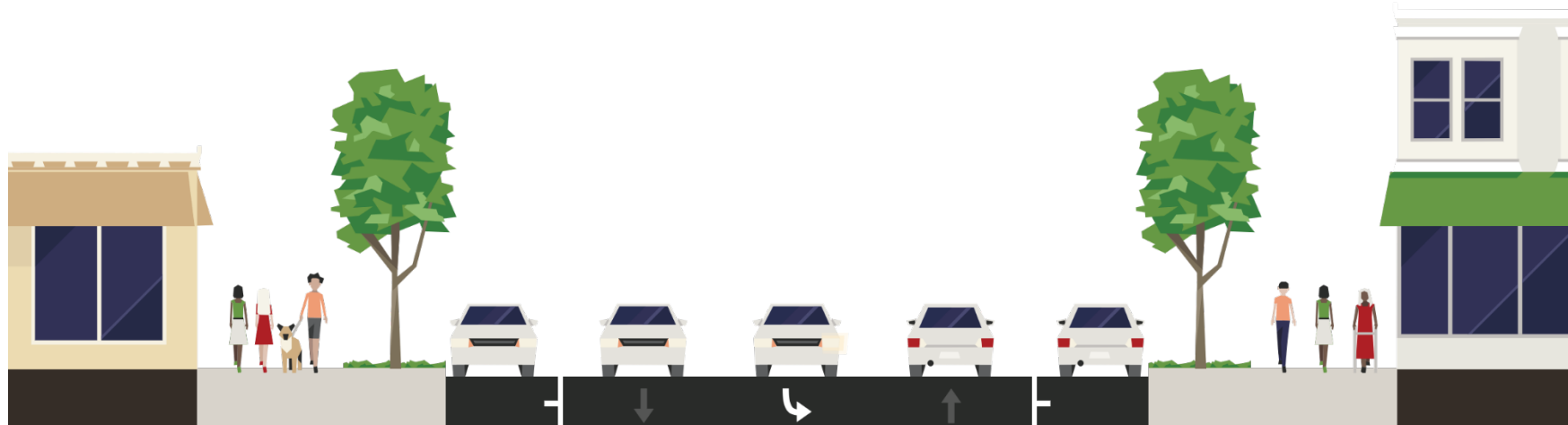
The following pages describe each Street Type in more detail and include the following:

- Description of Street Type
- Cross section graphic(s)
- Street design characteristics and dimensions, which may include:
 - Drive lanes
 - Turn lanes
 - On-street parking
 - Boulevards
 - Sidewalks
 - Shared Use Paths/Trails
 - Bikeways
 - Shoulders
- Typical range of public right-of-way

Downtown Streets

Downtown Street segments in Princeton serve a heavily commercial land use and typically have moderate motor vehicle volumes and high pedestrian volumes due to the presence of businesses, shops, and attractions. Wide sidewalks and on-street parking are common in downtown streets to serve businesses and customers. Curb extensions are recommended in downtown streets to improve pedestrian safety by reducing street crossing widths, improving sightlines, and increasing visibility of pedestrians. Downtown Streets typically have wider boulevard space to enhance the pedestrian realm. This space may be used for plantings, trees, café seating, street furniture, or bike parking. South Rum River Drive between South 6th Street and North 3rd Street is an example of a Downtown Street, as well as the cross streets 1-2 blocks around this segment of South Rum River Drive. Bikeways may be included in some downtown streets.

Downtown Streets - Alternative 1

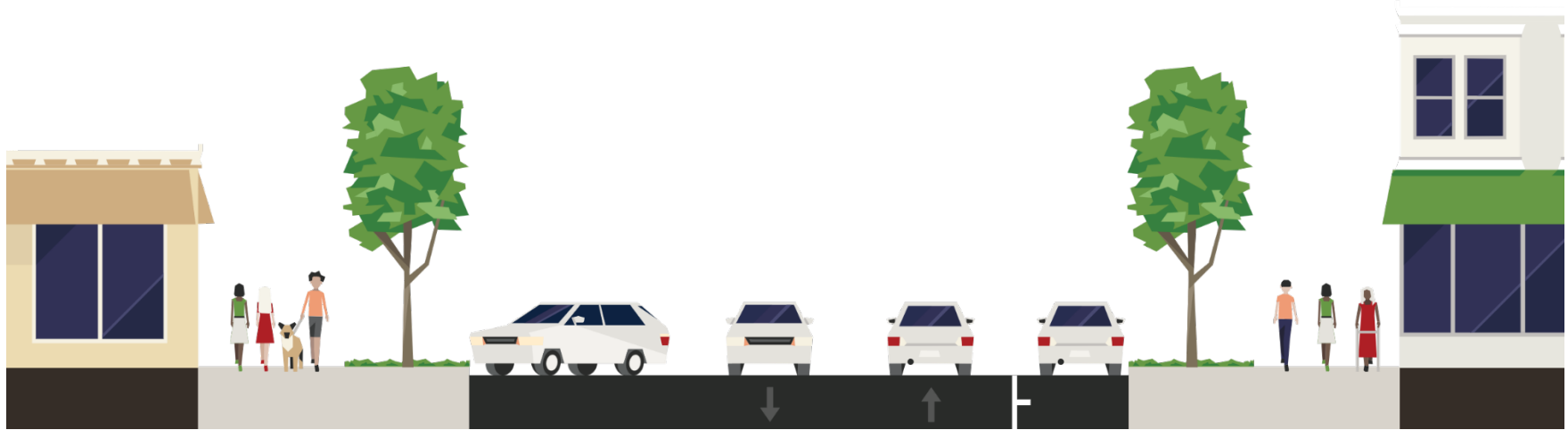


Sidewalk	Boulevard	Parallel Parking	Travel Lane	Turn Lane	Travel Lane	Parallel Parking	Boulevard	Sidewalk
10'	7'-8'	8'	10-11'	10'	10-11'	8'	7'-8'	10'

**If the City of Princeton becomes a State Aid city in the future, 11' drive lanes may be required under MSAS State Aid design rules.*



Downtown Streets - Alternative 2

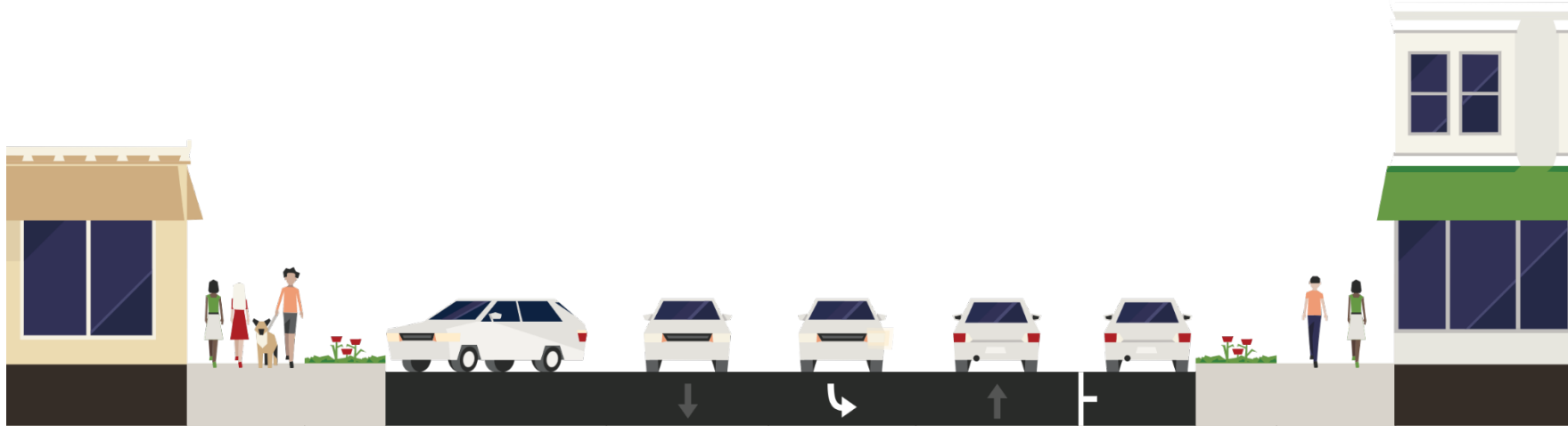


Sidewalk	Boulevard	Angled Parking	Travel Lane	Travel Lane	Parallel Parking	Boulevard	Sidewalk
10'	8.5'-9.5'	15'	10'-11'	10'-11'	8'	8.5'-9.5'	10'

**If the City of Princeton becomes a State Aid city in the future, 11' drive lanes may be required under MSAS State Aid design rules.*



Downtown Streets - Alternative 3

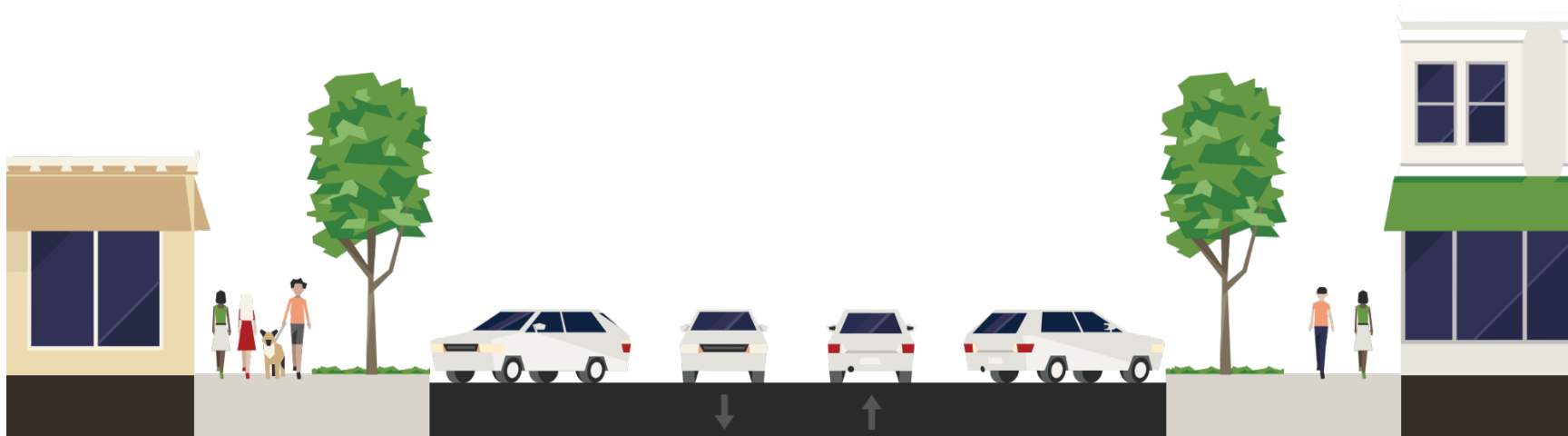


Sidewalk	Boulevard	Angled Parking	Travel Lane	Turn Lane	Travel Lane	Parallel Parking	Boulevard	Sidewalk
8'-9'	5.5'	15'	10-11'	10'	10-11'	8'	5.5'	8'-9'

**If the City of Princeton becomes a State Aid city in the future, 11' drive lanes may be required under MSAS State Aid design rules.*



Downtown Streets - Alternative 4

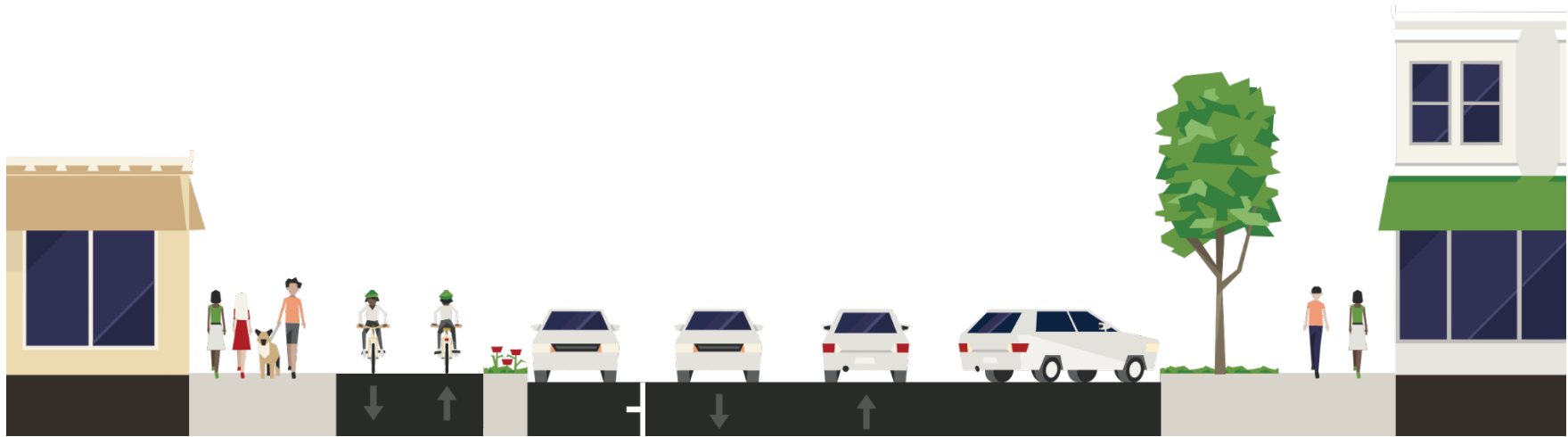


Sidewalk	Boulevard	Angled Parking				Boulevard	Sidewalk
8'	7-8'	15'	10'-11'	10'-11'	15'	7-8'	8'

**If the City of Princeton becomes a State Aid city in the future, 11' drive lanes may be required under MSAS State Aid design rules.*



Downtown Streets - Alternative 5



Sidewalk		Buffer	Two-Way Bikeway	Buffer	Parallel Parking	Travel Lane	Travel Lane	Angled Parking	Boulevard	Sidewalk
8'	2	10'	3	8'	10'-11'	10'-11'	15'	6'-8'	8'	

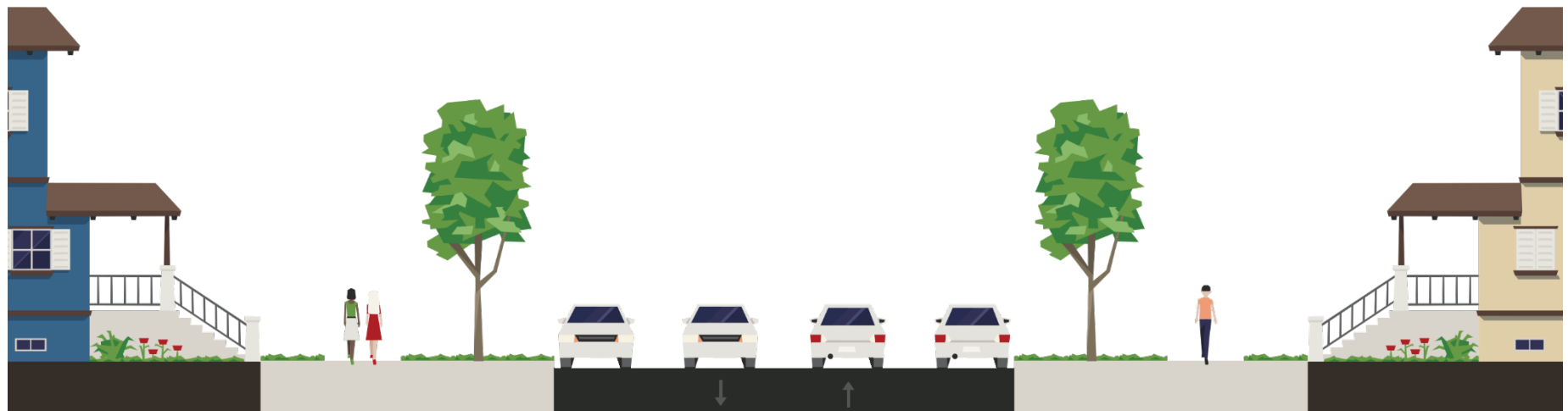
**If the City of Princeton becomes a State Aid city in the future, 11' drive lanes may be required under MSAS State Aid design rules.*



Neighborhood Residential Streets

Neighborhood Residential Street segments in Princeton typically have low motor vehicle volumes and speeds and are located in residential neighborhoods. Neighborhood residential streets have moderate pedestrian volumes and should have sidewalks on at least one side of the street, but ideally on both sides of the street. Neighborhood Residential Streets typically have parallel parking on both sides of the street. The travel lanes and parking lanes are usually not striped/delineated. Neighborhood Residential Streets should be designed in a way that encourages slow motor vehicle speeds, safety for people walking, healthy street trees, and well-defined routes to nearby parks, schools, and other neighborhood amenities.

Neighborhood Residential Streets - Alternative 1

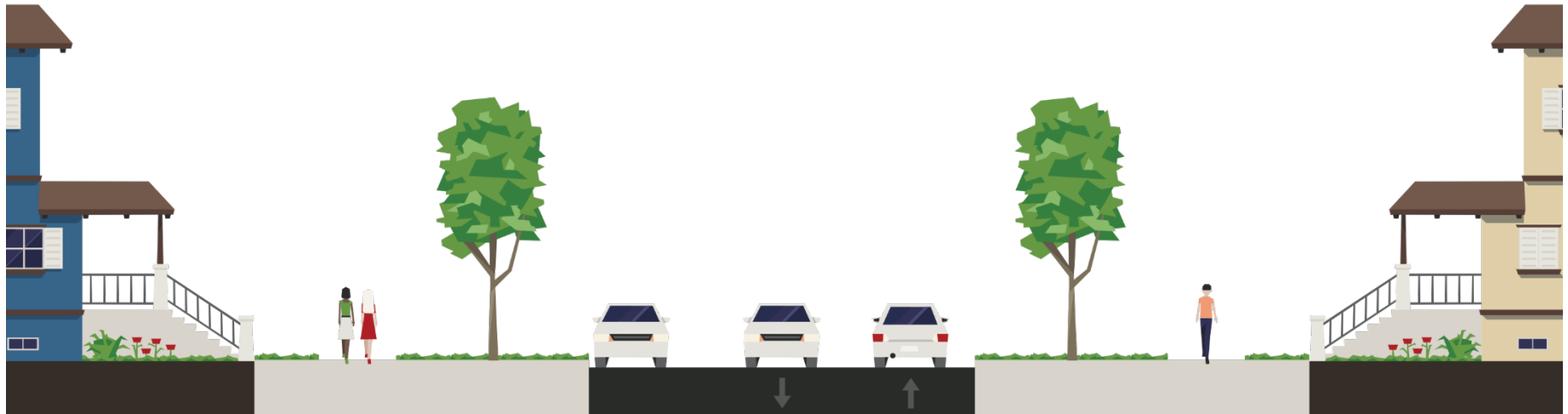


Landscape	Sidewalk	Boulevard	Parallel Parking	Travel Lane	Travel Lane	Parallel Parking	Boulevard	Sidewalk	Landscape
5'	6'	11-12'	8'	10'-11'	10'-11'	8'	11-12'	6'	5'

**If the City of Princeton becomes a State Aid city in the future, 11' drive lanes may be required under MSAS State Aid design rules.*



Neighborhood Residential Streets - Alternative 2



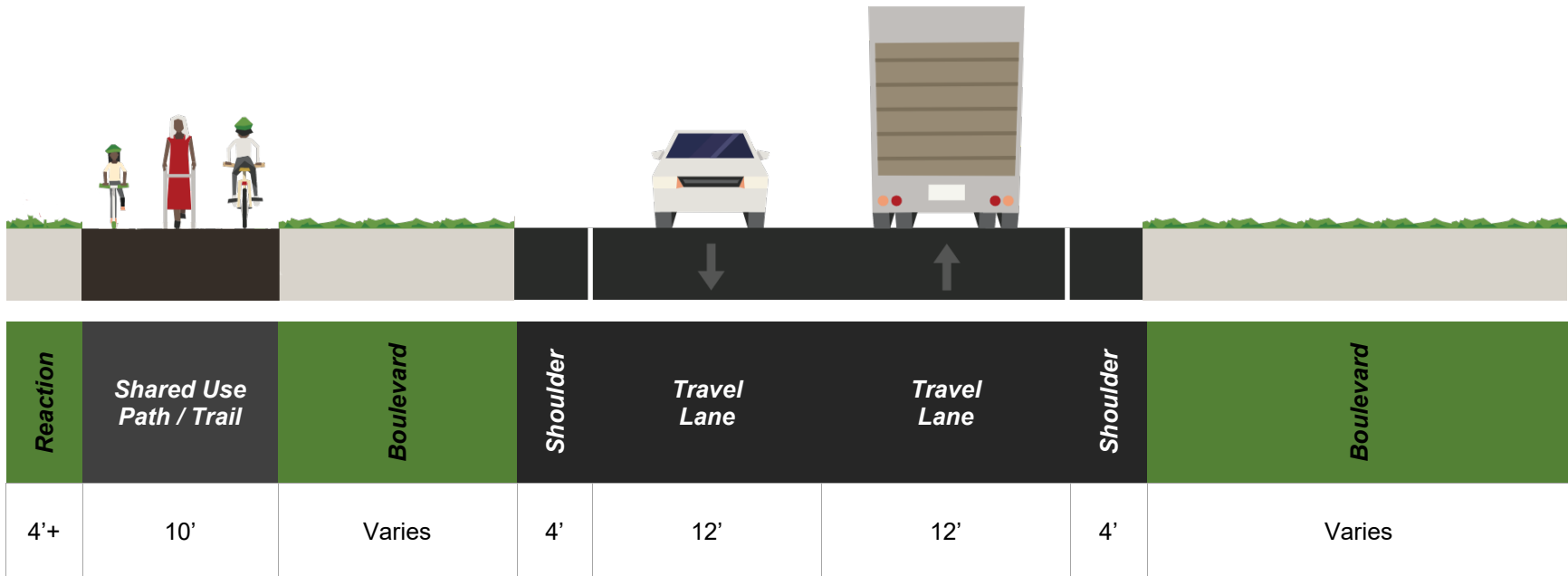
Landscaping	Sidewalk	Boulevard	Parallel Parking	Travel Lane	Travel Lane	Boulevard	Sidewalk	Landscaping
5'	6'	14-15'	10'	10'-11'	10'-11'	14-15'	6'	5'

**If the City of Princeton becomes a State Aid city in the future, 11' drive lanes may be required under MSAS State Aid design rules.*



Rural / Industrial / Agricultural Streets

Rural / Industrial / Agricultural Street segments in Princeton generally have rural cross sections and run through agricultural, industrial, low-density residential, open space, and other contexts with deep development setbacks from the roadway. They emphasize motor vehicle throughput but still provide access to neighborhoods and parks. These streets typically have low pedestrian use and moderate motor vehicle volumes and speeds. Off-street shared use paths should be considered if the street provides a connection to destinations such as a park, school, or major employment areas. These streets often have paved shoulders and may include turn lanes at cross streets, but do not provide on-street parking.



*May include turn lanes at some intersections.

