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City of Hopkins

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Date: August 2, 2024

Subject: 11th Avenue Corridor Planning Study

Introduction

SRF has completed a corridor planning study along 11th Avenue South between Mainstreet and Smetana Road in Hopkins, Minnesota (see Figure 1: Project Location). The main objectives of the study are to review existing traffic and parking conditions along the corridor, determine potential corridor wide and intersection specific modifications to improve safety and mobility for all users, and develop concept layouts and cost estimates for intersection alternatives identified along 11th Avenue South. The following information provides the assumptions, analysis, and study findings offered for consideration.

Existing Conditions

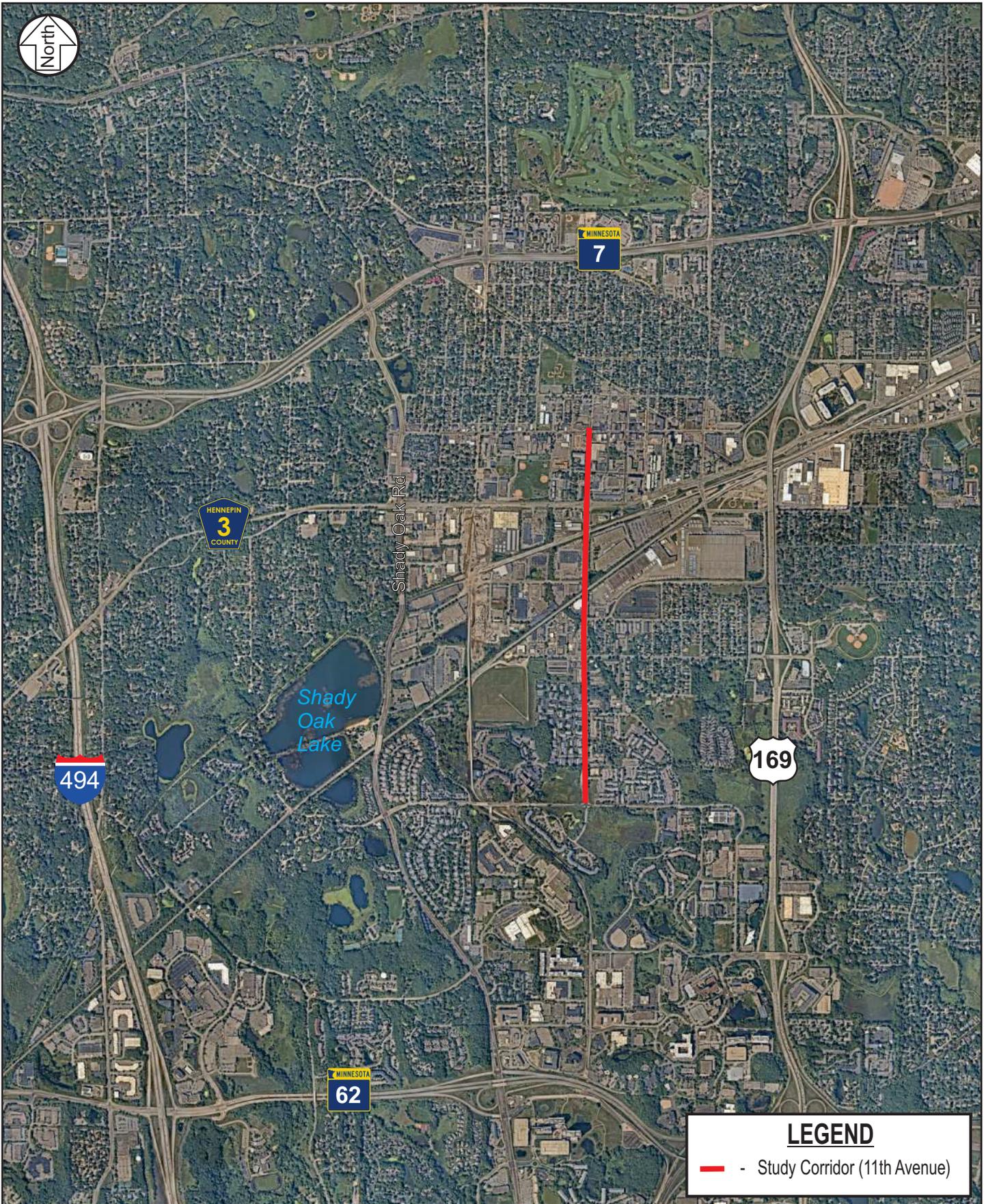
Existing conditions were reviewed to establish a baseline to identify any potential issues and opportunities, as well as determine improvement alternatives. The evaluation of existing conditions includes a review of traffic volumes and speeds, roadway characteristics, and an intersection capacity analysis, which are summarized in the following sections.

Data Collection

Weekday a.m. and p.m. peak period vehicular turning movement and pedestrian/bicyclist counts were collected by SRF during the week of March 11, 2024, at the following study intersections along 11th Avenue South:

- Mainstreet
- 1st Street S
- 5th Street S
- 6th Street S
- 7th Street S
- Westbrooke Way
- Smetana Road

In addition to the collected counts, previously collected counts from April 2023 at the intersection of 11th Avenue South and Excelsior Boulevard were used for the analysis.



Project Location
 11th Avenue Corridor Planning Study
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Figure 1

Roadway Characteristics

A field assessment was completed to identify various roadway characteristics within the transportation system study area, such as functional classification, general configuration, and posted speed limit. A summary of these roadway characteristics is shown in Table 1.

Table 1. Existing Roadway Characteristics

Roadway	Functional Classification ⁽¹⁾	General Configuration	Posted Speed Limit (mph)
11th Avenue S	Major Collector	4-lane undivided ⁽²⁾	30
Mainstreet	Local Road	2-lane undivided	30
1st Street S	Local Road	2-lane undivided	30
Excelsior Boulevard	Minor Arterial	4-lane divided	40
5th Street S	Local Road	2-lane undivided	30
6th Street S	Local Road	2-lane undivided	30
7th Street S	Local Road	4-lane divided	30
Westbrooke Way	Local Road	2-lane undivided	30
Smetana Rd	Major Collector ⁽³⁾	2-lane undivided	30

(1) Functional classification based on the *City of Hopkins' 2040 Comprehensive Plan*.

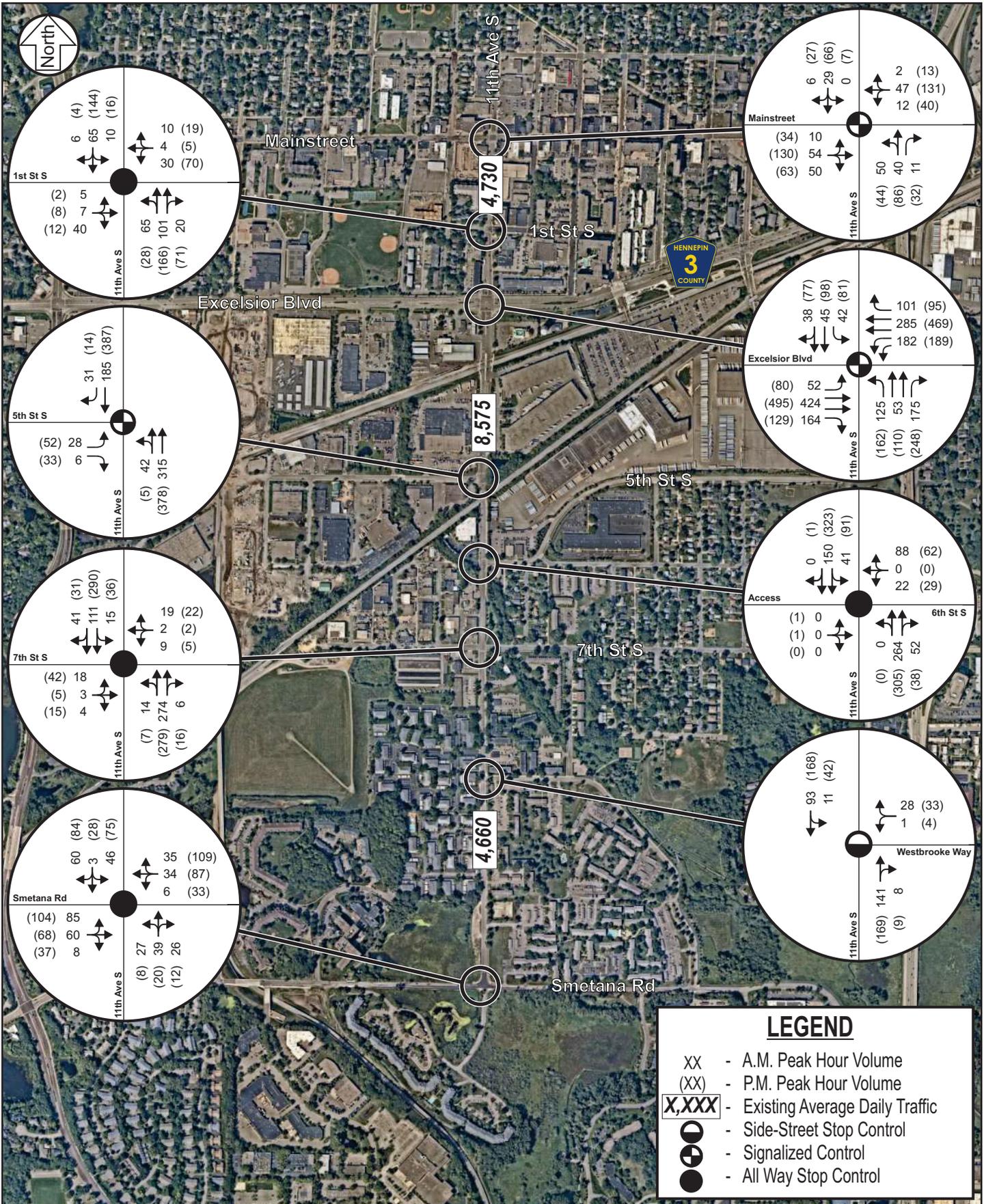
(2) Note that 11th Avenue S changes to a 2-lane undivided roadway south of the marked pedestrian crossing that is just to the north of Landmark Trail N.

(3) Smetana Road is a Major Collector east of 11th Avenue S and a local road west of 11th Avenue S.

From a traffic control perspective, the 11th Avenue South intersections of Mainstreet, Excelsior Boulevard, and 5th Street South are signalized. The intersection of 11th Avenue South and Westbrooke Way is unsignalized with side-street stop control, while the other study intersections are unsignalized with all-way stop control. Existing geometrics, traffic controls, and traffic volumes in the study area are shown in Figure 2.

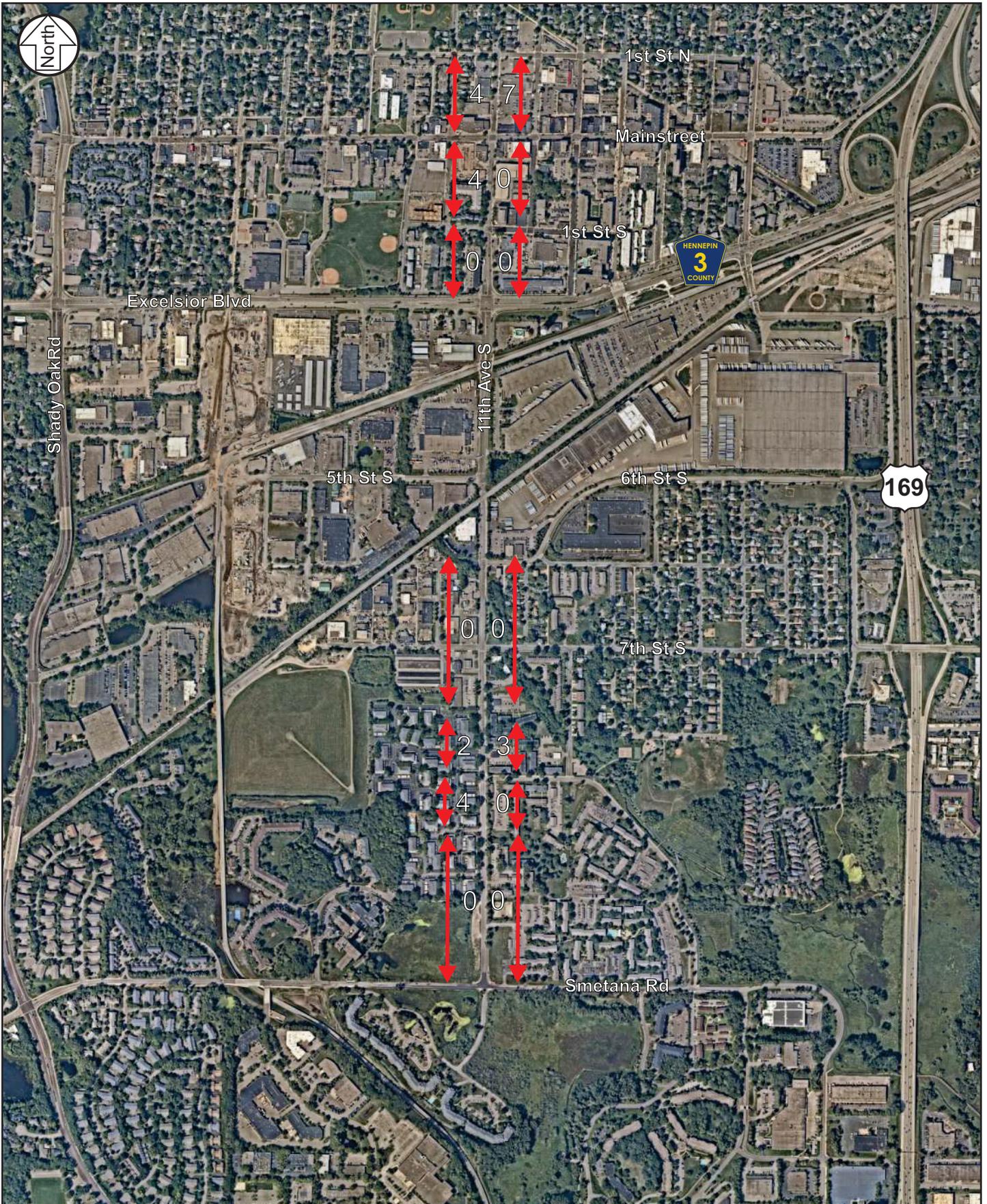
Parking Counts

Parking counts were conducted in April 2024 during the midday peak on a Friday and overnight on a Sunday. The collected parking counts are shown in Figure 3. Note that the parking counts show the maximum number of parked vehicles during all three periods of data collection. Based on the parking surveys, on-street parking along 11th Avenue South is not significantly utilized.



Existing Conditions
 11th Avenue Corridor Planning Study
 City of Hopkins

Figure 2



Parking Counts
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Figure 3

Transit and Multi Modal Characteristics

The 11th Avenue corridor within the study area is currently serviced by Metro Transit Route 612, which connects to stops in Minneapolis, St. Louis Park, and Minnetonka. In the near future, a METRO Green Line station will be opened approximately one-quarter mile east of 11th Avenue South, just south of Excelsior Boulevard and the Minnesota River Bluffs LRT Regional Trail. The Green Line will provide service from Eden Prairie to St. Paul.

A multi-use trail is located along the east side of 11th Avenue South from Excelsior Boulevard to Smetana Road. There are also multi-use trail connections to both Nine Mile Creek Regional Trail and the Minnesota River Bluffs LRT Regional Trail.

Sidewalk is located along the west side of 11th Avenue South from Mainstreet to 6th Street South and 7th Street South to Wagon Wheel Road; and along the east side of 11th Avenue South from Mainstreet to Excelsior Boulevard.

A detailed review of the existing multi-use trails and sidewalks, driveway access locations, pedestrian crossing locations, curb bump out locations, missing trail/sidewalk connections, and roadway widths along the 11th Avenue South are shown in Figures 4 to 6.

Speed and Daily Volume Data

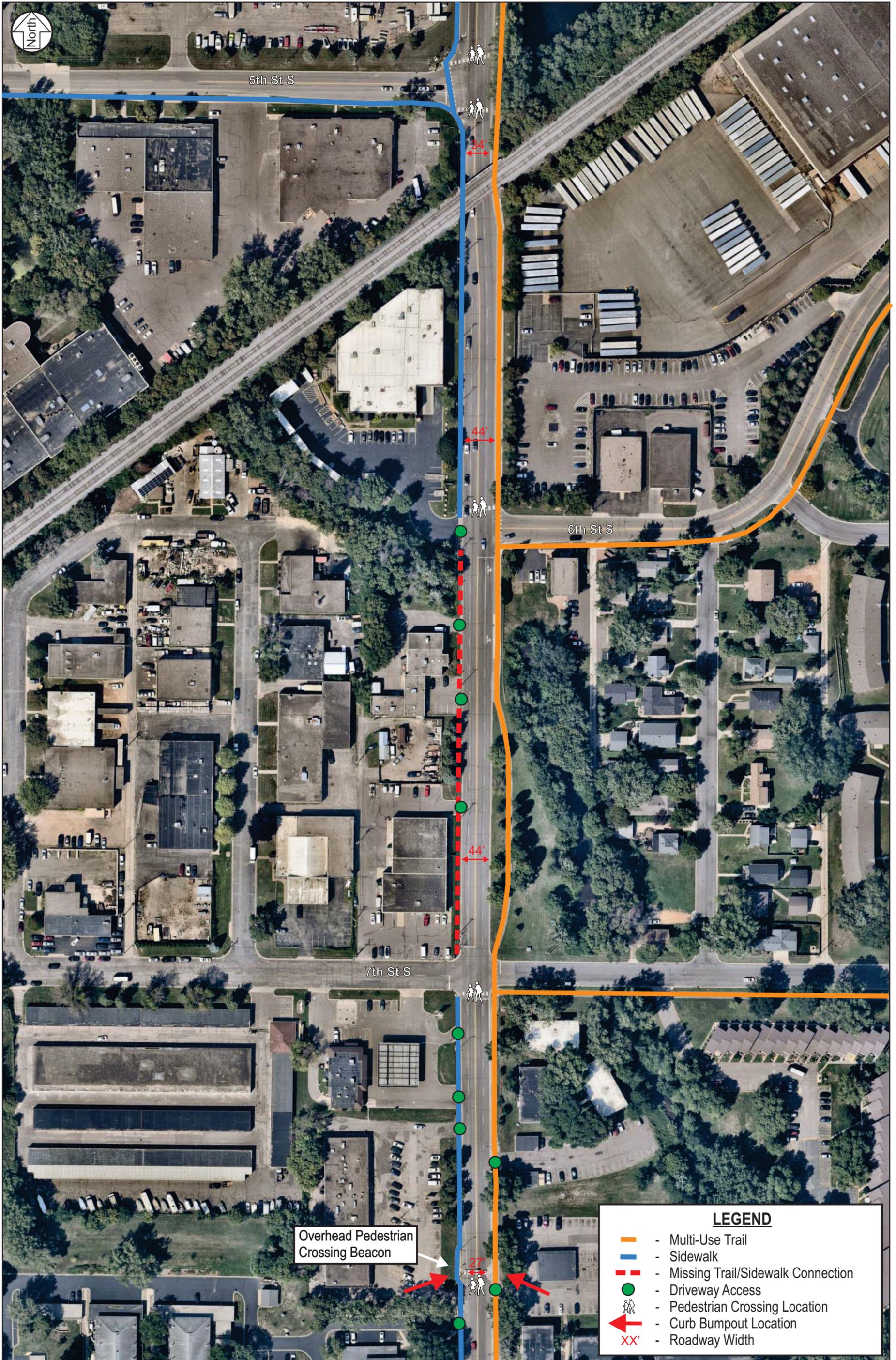
Speed and daily volume data was collected during the week of April 1, 2024, for a 24-hour period at three (3) locations along 11th Avenue South. Currently, 11th Avenue South within the study area is a 30 mile per hour (mph) roadway. Table 2 outlines the existing speed and volume data at the three study locations.

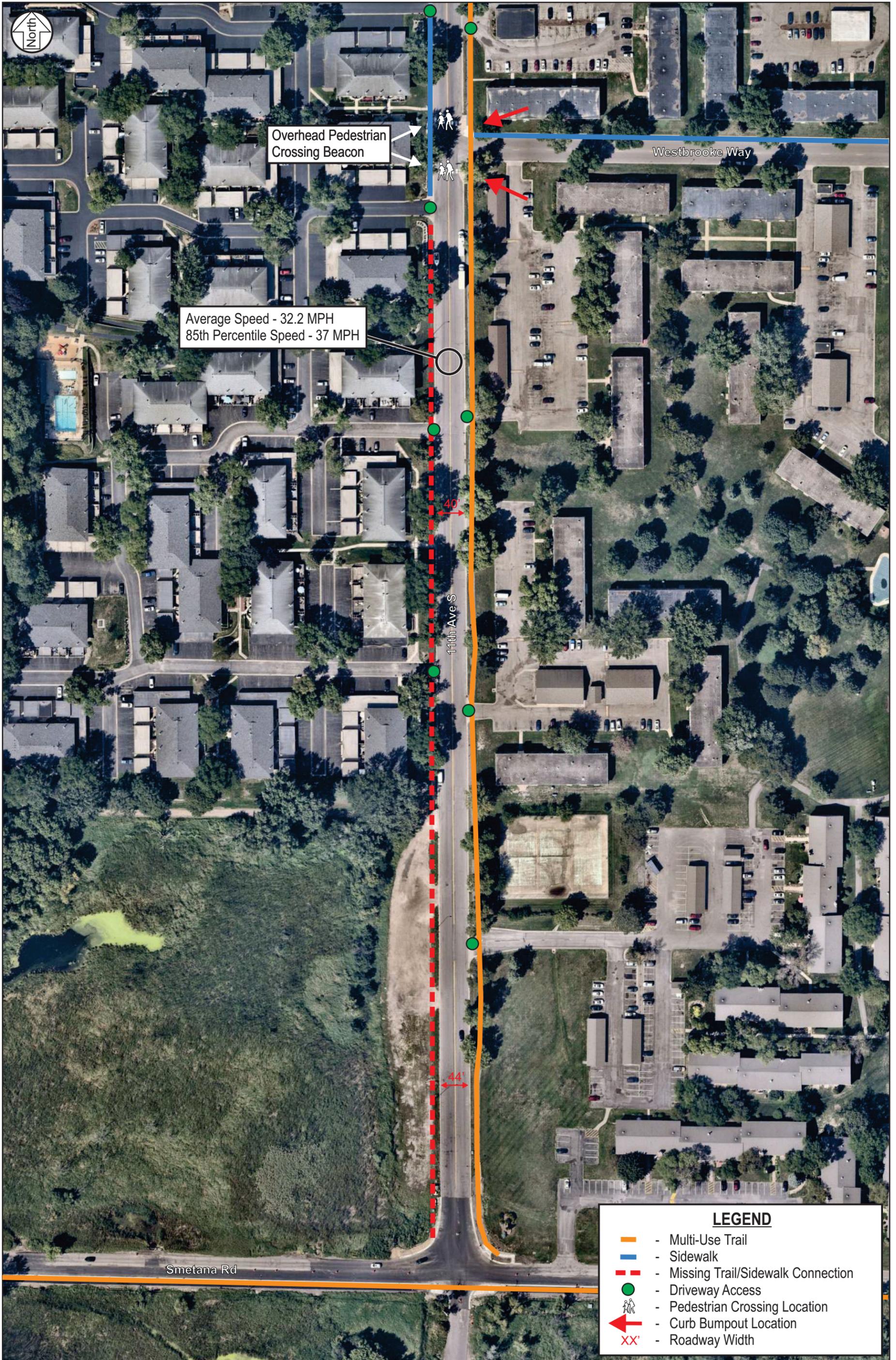
Table 2. Existing Speed and Volume Data

11th Avenue Data Collection Location	Average Speed	85th Percentile Speed	Average Daily Traffic
North of 1st Street S	26.6 MPH	31 MPH	4,730
North of 5th Street S	33.2 MPH	38 MPH	8,575
North of Trailwood Lane N	32.2 MPH	37 MPH	4,660

Based on the results, the average speed at both locations south of Excelsior Boulevard exceed the posted speed limit. The average speed at the location north of Excelsior Boulevard does not exceed the speed limit, however, the 85th percentile does exceed the speed limit at this location.







Intersection Capacity Analysis

An intersection capacity analysis was completed using Synchro/SimTraffic software (version 11) to establish a baseline condition to which potential alternatives could be compared. Capacity analysis results identify a Level of Service (LOS) which indicates how well an intersection is operating. Intersections are graded from LOS A through LOS F. The LOS results are based on average delay per vehicle, which correspond to the delay threshold values shown in Table 3. LOS A indicates the best traffic operation, while LOS F indicates an intersection where demand exceeds capacity. Overall intersection LOS A through LOS D is generally considered acceptable by drivers in the Twin Cities Metropolitan Area.

Table 3. Level of Service Criteria for Signalized Intersections

LOS Designation	Signalized Intersection Average Delay/Vehicle (seconds)	Unsignalized Intersection Average Delay/Vehicle (seconds)
A	≤ 10	≤ 10
B	> 10 - 20	> 10 - 15
C	> 20 - 35	> 15 - 25
D	> 35 - 55	> 25 - 35
E	> 55 - 80	> 35 - 50
F	> 80	> 50

For side-street stop/yield-controlled intersections, special emphasis is given to providing an estimate for the level of service of the side-street approach. Traffic operations at an unsignalized intersection with side-street stop/yield control can be described in two ways. First, consideration is given to the overall intersection level of service. This takes into account the total number of vehicles entering the intersection and the capability of the intersection to support these volumes.

Second, it is important to consider the delay on the minor approach. Since the mainline does not have to stop, the majority of delay is attributed to the side-street approaches. It is typical of intersections with higher mainline traffic volumes to experience high-levels of delay (i.e. poor levels of service) on the side-street approaches, but an acceptable overall intersection level of service during peak hour conditions.

Results of the existing capacity analysis, shown in Table 4, indicate that all study intersections currently operate at an acceptable overall LOS B or better during the a.m. peak hour, and an acceptable overall LOS C or better during the p.m. peak hour, with the existing geometric layout and traffic controls. 95th percentile queues for the northbound shared left/through lane at 1st Street South are approximately 75 feet during the a.m. peak hour and 70 feet during the p.m. peak hour. During the p.m. peak hour, 95th percentile queues for the southbound approaches at 6th Street South and 7th Street South are approximately 105 feet and 90 feet, respectively. The westbound approach at Smetana Road has 95th percentile queues of approximately 75 feet during the p.m. peak hour. There are no existing significant queueing issues within the study area.

Table 4. Existing Intersection Capacity Analysis

11th Avenue Intersection	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Delay	LOS	Delay
Mainstreet ⁽¹⁾	B	13 sec.	B	12 sec.
1st Street S ⁽²⁾	A	8 sec.	A	9 sec.
Excelsior Boulevard ⁽¹⁾	B	18 sec.	C	22 sec.
5th Street S ⁽¹⁾	A	3 sec.	A	5 sec.
6th Street S/Access ⁽²⁾	A	9 sec.	B	11 sec.
7th Street S ⁽²⁾	A	9 sec.	A	9 sec.
Westbrooke Way ⁽³⁾	A/A	9 sec.	A/B	11 sec.
Smetana Road ⁽²⁾	A	9 sec.	A	9 sec.

(1) Indicates a signalized intersection, where the overall LOS is shown. The delay shown represents the overall intersection.

(2) Indicates an unsignalized intersection with all-way stop control, where the overall LOS and delay are shown.

(3) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst approach LOS. The delay shown represents the worst side-street approach delay.

Alternative Options

Based on the existing volumes, operations, and pedestrian facilities within the study area, there are options for potential modifications throughout the study area. This includes modifying the roadway section within the right-of-way to reallocate more space for pedestrians and bicyclists, along with filling any gaps. Additionally, crossing improvements were identified for consideration throughout the corridor. There are four (4) distinct areas of the corridor with slightly different needs. These include:

- Smetana Road to Landmark Trail
- Landmark Trail to 5th Street S
- 5th Street S to 1st Street S
- 1st Street S to Main Street

Portions of the segment of 11th Avenue between 5th Street S and 1st Street S have recently been reconstructed as part of the ongoing Green Line Extension project, which included an enhanced pedestrian crossing just north of the LRT tracks. Additionally, the lanes within the area are generally needed to accommodate the traffic volumes and queues at the Excelsior Boulevard intersection. Therefore, no modifications are proposed for this area.

Smetana Road to Landmark Trail

This segment of 11th Avenue is currently a two (2) lane roadway that is approximately 44 feet wide and no painted shoulders. There is an enhanced pedestrian crossing at Westbrooke Way with an overhead flashing beacon and curb extensions (east side of roadway only). Average and 85th percentile travel speeds along the corridor exceed the posted speed limit.

There was minimal parking observed along the corridor, with six (6) vehicles parked on the west side and three (3) vehicles on the east side at their highest peak demand periods.

Based on this information, the following options could be considered:

- **2 Lane (South of Westbrooke Way) – Option 1**
 - 12 foot lanes
 - add 6 foot sidewalk on west side south of Westbrooke Way with 2 foot boulevard
 - 4 foot shoulder (west side, south of Westbrooke Way)
 - 8 foot shoulder (east side)
- **2 Lane (South of Westbrooke Way) – Option 2**
 - 12 foot lanes
 - add 6 foot sidewalk on west side south of Westbrooke Way with 2 foot boulevard
 - 3 foot shoulder (west side, south of Westbrooke Way)
 - 3 foot shoulder (east side)
 - 6 foot boulevard (east side)
- **2 Lane (North of Westbrooke Way) – Option 1**
 - 12 foot lanes
 - 10 foot shoulders
- **2 Lane (North of Westbrooke Way) – Option 2**
 - 12 foot lanes
 - 4 foot shoulders
 - 6 foot boulevards
- **3 Lane (37 to 41 feet wide)**
 - 12 foot lanes
 - 4 foot shoulders, no parking

It is recommended to enhance the pedestrian crossing at Westbrooke Way with curb extensions on both sides of the roadway and push button activated rectangular rapid flashing beacons (RRFB). Additionally, a new pedestrian crossing located at the trail connection between the Raspberry Woods townhomes and 11th Avenue is recommended to include curb extensions. A RRFB could be considered at this location, if desired. Note, there is not a sidewalk or trail along the west side of 11th Avenue between approximately Westbrooke Way and Smetana Road. It is recommended to install a sidewalk connection between Westbrooke Way and the trail to the Raspberry Woods townhomes along the west side of the roadway. Additional sidewalk or trail to Smetana Road could be considered in the future if additional trail/sidewalk connections are constructed. Given the wetland conditions within the area, it may not be feasible for those connections to be made.

Based on the sidewalk/trail needs on the west side of the roadway, it is recommended that either 2 lane roadway configurations be considered for 11th Avenue between Smetana Road and Landmark Trail. The reduced roadway space will allow for the sidewalk/trail connection on the west side of the roadway without requiring additional right-of-way and for safer pedestrian crossings. The current roadway configuration allows for high travel speeds and accommodates significantly more on-street parking than is necessary. It is not expected that a 3 lane roadway configuration will be necessary from an operations perspective, as sufficient gaps are available for left-turning vehicles. Given the recommended 2 lane configuration, it is not expected that traffic would operate any differently from a delay or queueing perspective. A layout the two configurations is shown in Figures 7 and 8. Additionally, a Streetmix layout is included as an attachment.

Landmark Trail to 5th Street S

This segment of 11th Avenue is currently a two (2) lane roadway near Landmark Trail and the pedestrian crossing then expands to a 4 lane section near the shopping center to 5th Street S. The roadway is approximately 44 feet wide and currently travel speeds can exceed the speed limit. There is an enhanced pedestrian crossing north of Landmark Trail at the shopping center with an overhead flashing beacon and curb extensions (east side of roadway only).

There was no on-street parking allowed within this segment of the roadway. This segment of 11th Avenue passes underneath the railroad bridge immediately south of 5th Street S. Note, the intersections at 7th Street S and 6th Street S are all-way stop controlled and the intersection at 5th Street S is signalized.

There is sidewalk on both sides of the roadway between Landmark Trail and 7th Street S and 6th Street S to 5th Street S. Between 7th Street S and 6th Street S, there is trail (Nine Mile Creek Regional Trail) only on the east side of the roadway. Three Rivers Park District is currently reviewing options to replace the sidewalk on the east side of 11th Avenue between 7th Street S and 5th Street S to a 10 foot wide trail segment with boulevards. This trail expansion/connection would require modifying the roadway cross section and reducing travel lanes. Based on this desire, it is unlikely the current 4 lane roadway layout could remain.

Therefore, based on this information, the following general roadway geometric options could be considered:

- 2 Lane – 12 foot lanes, 4 foot shoulders – No Parking
- 2 Lane with Parking one side – 12 foot lanes, 8 foot parking lane (one side), 4 foot shoulder (one side)
- 3 Lane – 12 foot lanes– No Parking, center left-turn lane, 4 foot shoulders





It is anticipated that the enhanced pedestrian crossing just north of Landmark Trail would remain in that location, however, a formal curb extension on both sides of the roadway is recommended to be constructed, along with replacing the overhead flashing beacon with a push button activated RRFB.. If feasible, it is recommended to fill in the sidewalk gap along 11th Avenue between 6th Street S and 7th Street S. This would allow a pedestrian crossing on the south side of the 6th Street S intersection, which would have fewer left-turning vehicles conflicts and is located on the approach where pedestrians are ultimate destined given the residential land uses to the southeast of the intersection. If a 3 lane configuration was desired, there is potential that the pedestrian crossing on the south approach of the 6th Street S intersection could include a median refuge given the low northbound left-turning volumes. In addition to the lane modifications, there could be consideration of modifying the traffic control at the 7th Street S, 6th Street S, and 5th Street S intersections. The 7th Street S and 6th Street S intersections could potentially be modified to a side-street stop control, while the 5th Street S intersection could be modified to either an all-way stop or side-street stop control. A review of the potential operational changes is shown in Table 5 for the various lane and traffic control scenarios.

Table 5. Alternative Traffic Control and Lane Geometry Intersection Capacity Analysis – 7th Street S to 5th Street S

11th Avenue Intersection	Alternative	A.M. Peak Hour		P.M. Peak Hour	
		LOS	Delay	LOS	Delay
5th Street S	Existing ⁽¹⁾	A	3 sec.	A	5 sec.
	Signal - 3 Lane ⁽¹⁾	A	4 sec.	A	6 sec.
	Signal - 2 Lane ⁽¹⁾	A	3 sec.	A	5 sec.
	AWSC - 3 Lane ⁽²⁾	B	11 sec.	B	15 sec.
	AWSC - 2 Lane ⁽²⁾	B	12 sec.	B	15 sec.
	SSSC - 3 Lane ⁽³⁾	A/B	14 sec.	A/C	15 sec.
	SSSC - 2 Lane ⁽³⁾	A/B	14 sec.	A/C	15 sec.
6th Street S	Existing ⁽²⁾	A	9 sec.	B	10 sec.
	AWSC - 3 Lane ⁽²⁾	B	11 sec.	B	13 sec.
	AWSC - 2 Lane ⁽²⁾	B	10 sec.	B	13 sec.
	SSSC - 3 Lane ⁽³⁾	A/B	13 sec.	A/C	21 sec.
	SSSC - 2 Lane ⁽³⁾	A/B	13 sec.	A/C	22 sec.
7th Street S	Existing ⁽²⁾	A	9 sec.	B	10 sec.
	AWSC - 3 Lane ⁽²⁾	B	10 sec.	B	12 sec.
	AWSC - 2 Lane ⁽²⁾	B	10 sec.	B	11 sec.
	SSSC - 3 Lane ⁽³⁾	A/B	13 sec.	A/C	18 sec.
	SSSC - 2 Lane ⁽³⁾	A/B	13 sec.	A/C	18 sec.

(1) Indicates a signalized intersection, where the overall LOS is shown. The delay shown represents the overall intersection.

(2) Indicates an unsignalized intersection with all-way stop control, where the overall LOS and delay are shown.

(3) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst approach LOS. The delay shown represents the worst side-street approach delay.

It is expected that all of the geometric or traffic control modification scenarios will allow for acceptable operations. However, additional considerations are given at the study intersections. At the 5th Street S intersection, there may be sight distance issues for eastbound vehicles due to the railroad bridge. Additionally, there may be considerations for heavy vehicles at this intersection given their need for larger gaps in traffic. A detailed Intersection Control Evaluation (ICE) report may be needed to formally determine the appropriate traffic control at the intersection.

At the 6th Street S intersection, it is expected that the current all-way stop control is not needed for efficient traffic operations. This intersection may be able to be reduced to a side-street stop control. At the 7th Street S intersection, a modification to a side-street stop control could be considered, however, given the pedestrian crossings and land uses surrounding the intersection, the all-way stop control may be best suited for the intersection for safe pedestrian crossings and safe and efficient heavy vehicle maneuvers.

From a geometric perspective, the segment of 11th Avenue between Landmark Trail and 5th Street is likely best suited for a 3 lane roadway with numerous public roadway and business accesses, including a shopping center and gas station. This includes one lane in each direction and a center left-turn lane. This layout would also best accommodate the proposed trail connection for the Nine Mile Creek Trail with Three Rivers Park District. There is not currently an observed need for parking along this stretch of the corridor, given the land uses have ample parking available. Therefore, there could be a lane reduction, which will allow for expansion of the trail segments, the filling of sidewalk gaps, safer pedestrian crossing due to reduced crossing distances and removing multi-threats, and traffic calming. A layout of this segment of 11th Avenue is shown in Figure 9. Additionally, a Streetmix layout is attached.

1st Street S to Mainstreet

This segment of 11th Avenue is currently a 4 lane section with two (2) northbound lanes (one northbound lane traps into a northbound right-turn lane at Mainstreet) and one (1) southbound lane and a southbound parking lane. The roadway is approximately 42 to 44 feet wide. The intersection at 1st Street S is all-way stop controlled and the intersection at Mainstreet is signalized. There is sidewalk on both sides of the roadway, however, on the east side of the roadway, there are light posts within the sidewalk area, which also carries a heavy pedestrian volume. During the peak demand time, there were four (4) cars parked on the west side of the roadway. Note, a residential development is currently being constructed on the west side of the roadway and it is expected that the primary garage access will be along 11th Avenue between 1st Street S and Mainstreet. Additionally, a large public parking facility is located on the east side of the roadway with an entrance along 11th Avenue.

Therefore, based on this information, the following general roadway geometric options could be considered:

- 2 Lane –12 foot lanes, 4 foot shoulders – No Parking, add sidewalk on east side
- 2 Lane with Parking one side – 12 foot lanes, 8 foot parking lane, 2 to 4 foot shoulder, add sidewalk on east side
- 3 Lane –12 foot lanes– No Parking, center left-turn lane, add sidewalk on east side



In addition to the lane modifications, there could be consideration of modifying the traffic control at the 1st Street S intersection to a side-street stop control. An intersection capacity analysis was completed to compare the operations between these traffic control and geometric alternatives and is shown in Table 6. It is expected that all of the geometric or traffic control modification scenarios will allow for acceptable operations, however, the all-way stop control at the 1st Street S intersection may continue to be considered to allow for safe pedestrian movements, given the proximity to downtown Hopkins and City Hall.

Table 6. Alternative Traffic Control and Lane Geometry Intersection Capacity Analysis – 1st Street S to Mainstreet

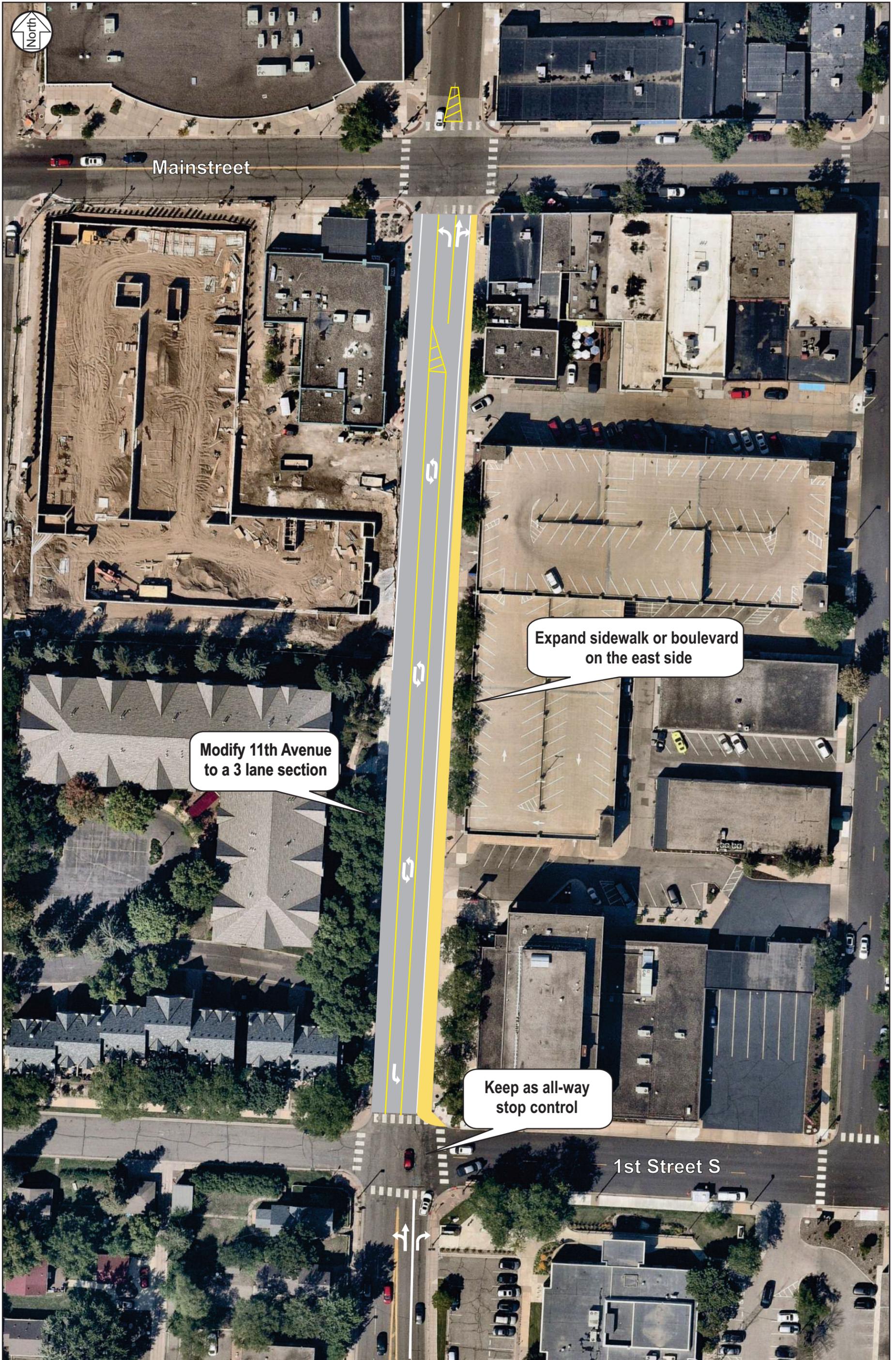
11th Avenue Intersection	Alternative	A.M. Peak Hour		P.M. Peak Hour	
		LOS	Delay	LOS	Delay
Mainstreet	Existing ⁽¹⁾	B	13 sec.	B	12 sec.
	Signal - 3 Lane ⁽¹⁾	B	13 sec.	B	12 sec.
	Signal - 2 Lane ⁽¹⁾	B	13 sec.	B	12 sec.
1st Street S	Existing ⁽²⁾	A	8 sec.	A	9 sec.
	AWSC - 3 Lane ⁽²⁾	A	8 sec.	A/B	10 sec.
	AWSC - 2 Lane ⁽²⁾	A	8 sec.	A/B	10 sec.
	SSSC - 3 Lane ⁽³⁾	A/B	12 sec.	A/C	15 sec.
	SSSC - 2 Lane ⁽³⁾	A/B	12 sec.	A/C	15 sec.

(4) Indicates a signalized intersection, where the overall LOS is shown. The delay shown represents the overall intersection.

(5) Indicates an unsignalized intersection with all-way stop control, where the overall LOS and delay are shown.

(6) Indicates an unsignalized intersection with side-street stop control, where the overall LOS is shown followed by the worst approach LOS. The delay shown represents the worst side-street approach delay.

Given the apartment access and the public parking facility access, a 3 lane section between 1st Street S and Mainstreet may provide for the safest and most efficient roadway design within this segment. The center left-turn lane will remove turning conflicts. Based on the existing parking counts, there is minimal parking demand along this segment of roadway, and that parking demand can be accommodated either north of the intersection along Mainstreet or 11th Avenue or within the public parking facility on the east side of the roadway. The reduction in lanes will allow for expanded sidewalk areas or boulevards to be installed to improve the pedestrian facilities. The recommended roadway layout is shown in Figure 10. Additionally, a Streetmix layout is attached.



Costs

A conservative, planning level estimate for the potential item costs to complete the roadway modifications is broken down in the following estimate:

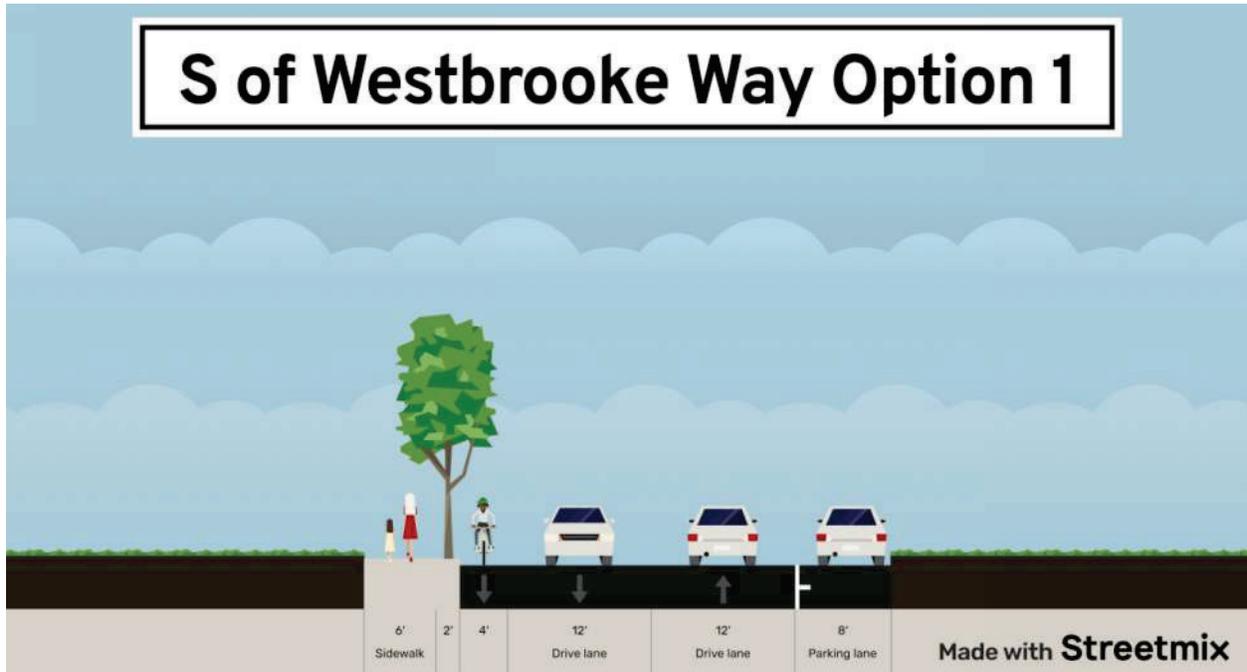
RRFB Systems - \$25,000 each, depending on power type, the cost could rise, however, power should already be available.

Curb Extension – Approximately \$25 to 50,000 each, depending on size.

Cost per foot of sidewalk – approximately \$12 to \$15/square foot.

Cost per foot of curb reconstruction: approximately \$8/linear foot to remove + \$45/linear foot to reconstruct

S of Westbrooke Way Option 1



S of Westbrooke Way Option 2



