Appendix A: Traffic Study

Available online at www.southveteransparkway.com

Technical Memo

Date:	Monday, July 18, 2022
Project:	South Veterans Parkway
To:	SDDOT and City of Sioux Falls
From:	HDR
Subject:	Traffic Design *(Revised)*

Introduction

The purpose of this memo is to document the traffic forecasting and analysis process towards the identification of intersection and corridor design along Veterans Parkway (previously referred to as SD100). This memo presents traffic elements to be used in the South Veterans Parkway (I-29 to 57th Street) design:

- 2026 and 2050 Build condition daily and peak hour traffic volumes
- Traffic design analysis at locations being modified as part of the Veterans Parkway
  - Number of lanes along Veterans Parkway
  - Intersection lane configurations
  - Intersection queue lengths
  - Intersection level of service (LOS)

Findings from this memo are meant to guide design, not dictate design. There may be locations where it is infeasible to incorporate this memo's findings to the full extent. Further, with the Veterans Parkway corridor traversing through a developing area with tiered growth planned over the next 25 plus years, there may be locations where these findings might be used to guide future improvements as part of development if it comes to fruition.

Background

A series of studies and supplemental analyses was conducted between 2011 and 2014 that established the framework for the planned Veterans Parkway corridor. All intersection locations and access breaks have been pre-determined through the previous *SD100 Corridor Preservation* project. Since that time, Veterans Parkway has been constructed between I-90 and 57th Street along the east side of Sioux Falls. This project completes Veterans Parkway by connecting I-29 to 57th Street along the south side of Sioux Falls.

Study Area

The South Veterans Parkway corridor study area extends from the I-29 Exit 73 interchange to the Veterans Parkway/SD11/57th Street intersection in eastern Sioux Falls, SD. It is anticipated this corridor will be constructed in four phases.

Veterans Parkway crossroads are incorporated into the design analysis to analyze City of Sioux Falls Capital Improvement Program (CIP) segment/intersection improvements and provide boundary intersections that feed traffic volumes into analysis intersections in the traffic analysis models.

A summary of phasing and City of Sioux Falls CIP projects is shown **Figure 1**.

Figure 1: South Veterans Parkway Phasing and City of Sioux Falls CIP Projects

Traffic Forecasts

The traffic forecast process following methodology presented in the Methods and Assumptions document.

Existing volumes were based on traffic counts collected by City of Sioux Falls, SDDOT, Lincoln County, and HDR. All existing volumes were factored to a September design season during the forecasting process.

Traffic forecasts help assess future-year capacity and operational needs throughout the study area due to growth in traffic demand and/or changes in traffic patterns. For this study, forecast years include:

- 2026: First Segment Year of Construction
- 2050: Planning Horizon

The traffic forecast development process followed methodologies outlined in *NCHRP 765: Analytical Travel Forecasting Approaches for Project-Level Planning and Design*. The Sioux Falls Metropolitan Planning Organization travel demand model (TDM) was the source of growth rates, based on the following model scenarios:

- 2018: TDM base year
- 2045: TDM planning horizon

Where there were gaps in the model's estimation of future development, development-generated traffic was assigned to the network based on an estimation of future development occurring within the planning horizon.

Year 2050 traffic volumes were derived by extrapolating straight-line growth between the TDM 2018 base year and 2045 horizon year. For the new Veterans Parkway segments, growth was estimated at approximately four percent annually (straight-line) between 2045 and 2050 (equivalent growth factor of approximately 1.2). Veterans Parkway and crossroad volumes within the City of Sioux Falls Tier 3 growth area were further post-processed to account for the area's growth not beginning until the latter stages of the planning horizon.

Year 2026 volumes were developed interpolating straight-line growth between the 2045 Planning Horizon scenario and a 2018 base year scenario with Veterans Parkway to account for the immediate change in traffic patterns upon opening of Veterans Parkway.

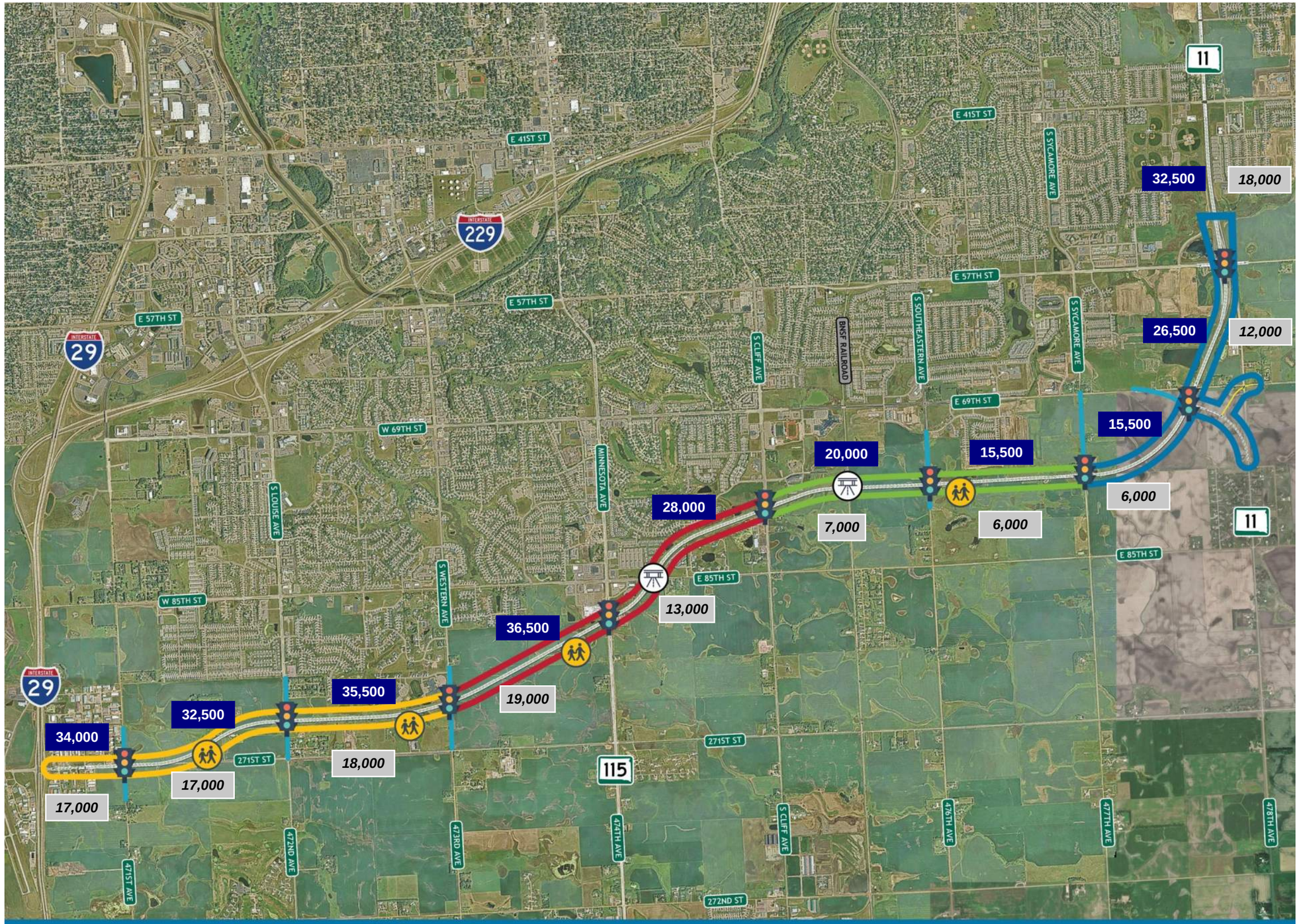
Peak hour intersection turning movement volumes were smoothed and balanced throughout the study corridor for all volume sets. Heavy vehicle percentages in future-year volume sets are based on collected vehicle classification counts or TDM output.

A summary of 2026 and 2050 Veterans Parkway corridor daily volumes are shown in **Figure 2**.

2050 Planning Horizon daily and peak hour traffic volumes are provided in the following figures:

- **Figure 3:** 2050 Planning Horizon Build Condition Volumes (Veterans Parkway)
- **Figure 4:** 2050 Planning Horizon Build Condition Volumes (PCN 01V9)
- **Figure 5:** 2050 Planning Horizon Build Condition Volumes (PCN 01V6)
- **Figure 6:** 2050 Planning Horizon Build Condition Volumes (PCN 01V7 and 01VA)

Year 2026 peak hour traffic volumes are provided in the traffic operations analysis results in **Appendix C**.



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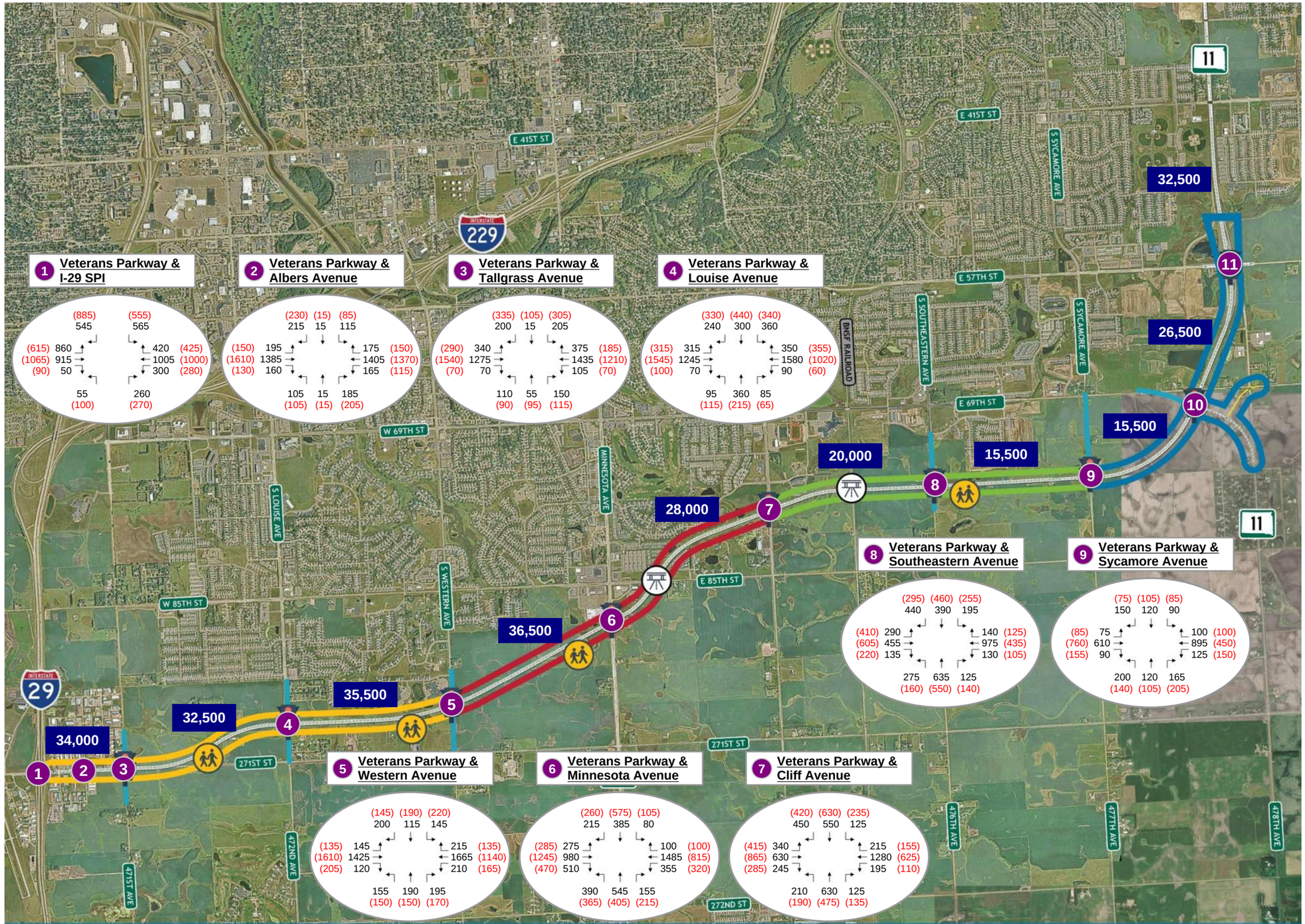
TRAFFIC LEGEND

20,000	Year 2050 Daily Volumes
20,000	Year 2026 Daily Volumes

YEAR 2026 AND 2050 VETERANS PARKWAY DAILY TRAFFIC VOLUME SUMMARY

FIGURE 2

SOUTH VETERANS PARKWAY TRAFFIC DESIGN ANALYSIS



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TRAFFIC LEGEND

1 Study Intersection

Traffic Volumes and LOS Measures

AM (PM) Peak Hour 20,000 Daily

2050 PLANNING HORIZON BUILD CONDITION VOLUMES (VETERANS PARKWAY)

FIGURE 3

SOUTH VETERANS PARKWAY TRAFFIC DESIGN ANALYSIS

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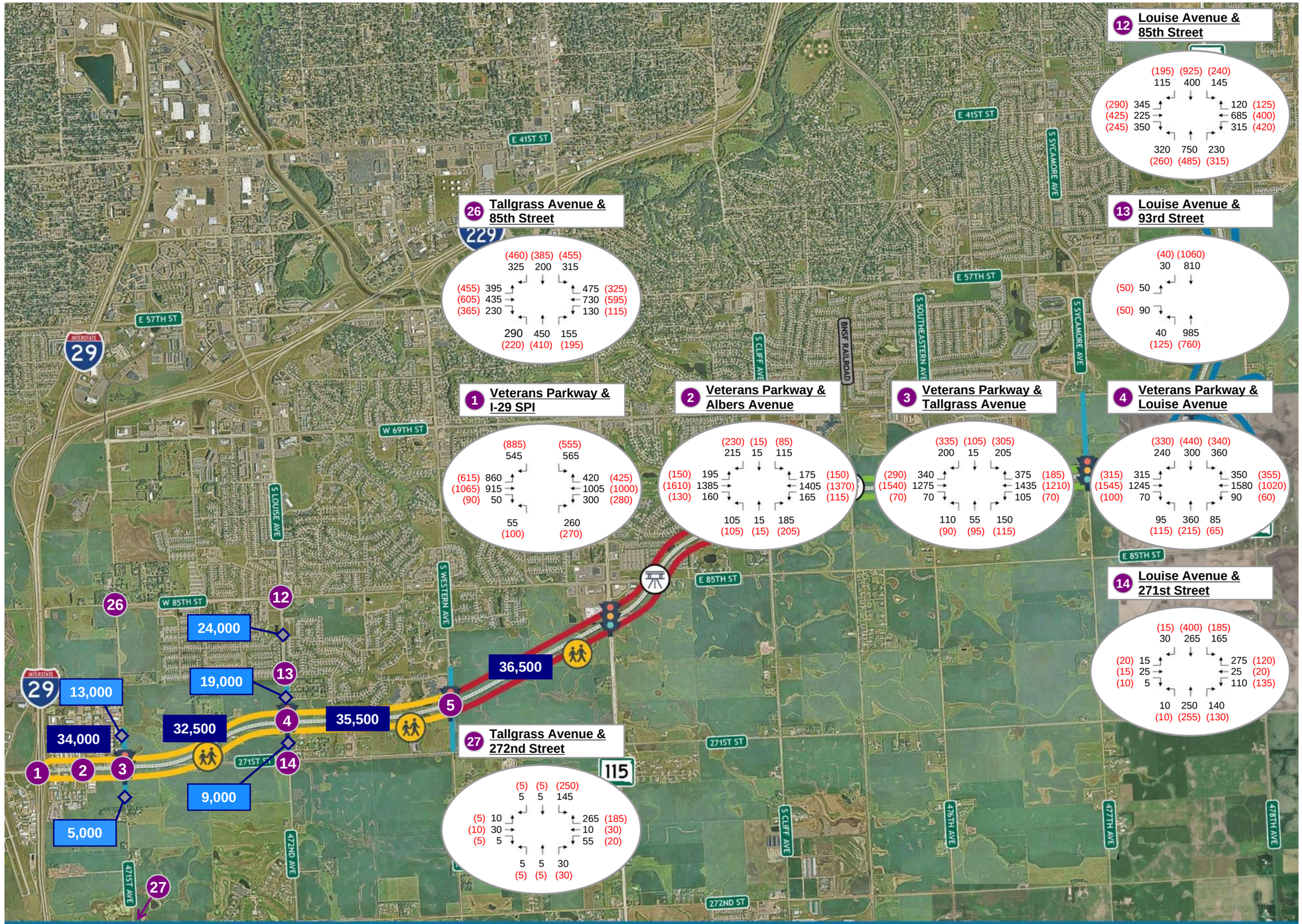


Version 4 - 7/15/2022

TRAFFIC LEGEND

1 Study Intersection

Traffic Volumes and LOS Measures

AM (PM) Peak Hour Daily

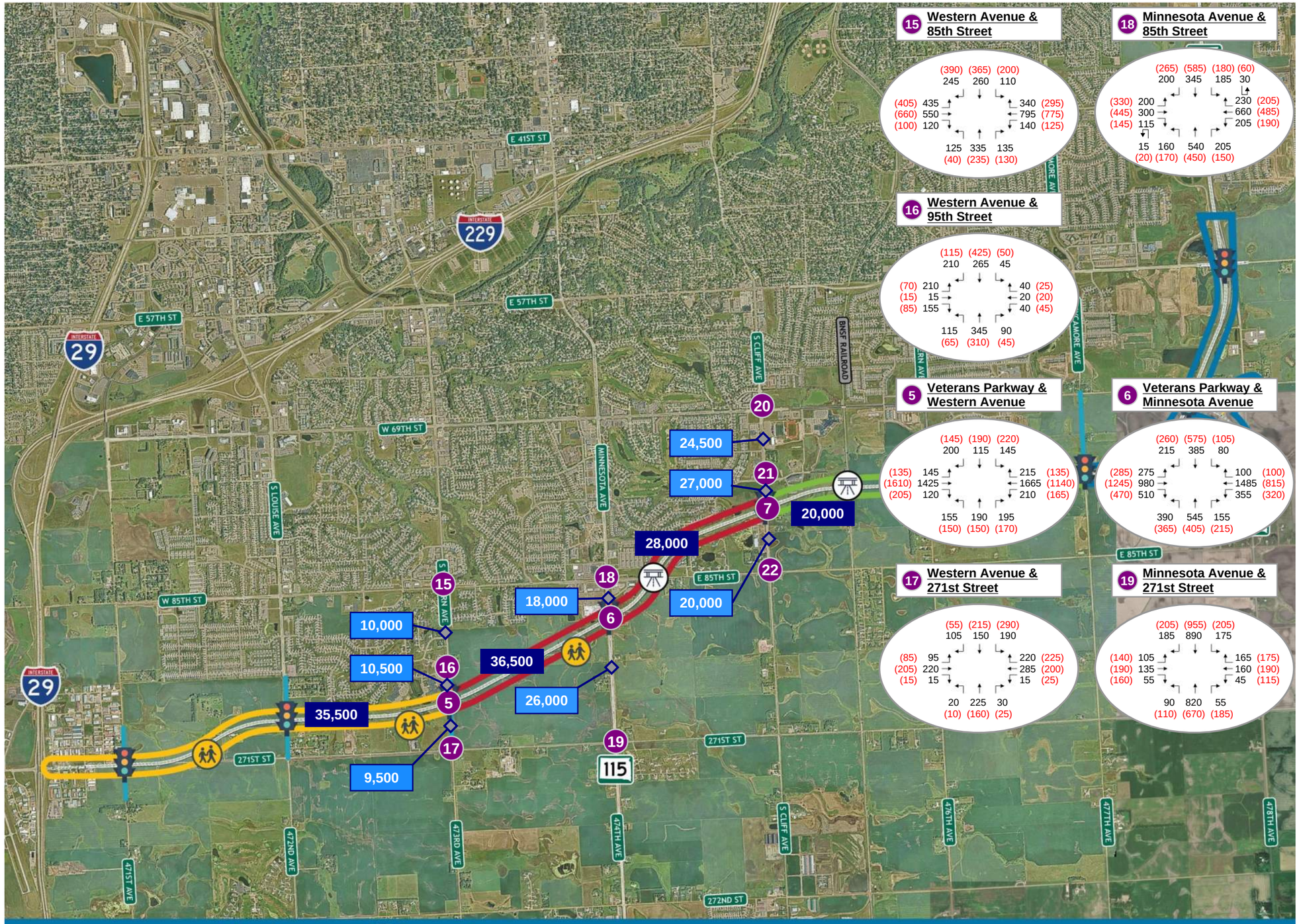
20,000 Veterans Pkwy

20,000 Local Arterial

2050 PLANNING HORIZON BUILD CONDITION VOLUMES (PCN 01V9)

FIGURE 4

SOUTH VETERANS PARKWAY TRAFFIC DESIGN ANALYSIS



15 Western Avenue & 85th Street

(390) (365) (200)
245 260 110
(405) 435 → 340 (295)
(660) 550 → 795 (775)
(100) 120 → 140 (125)
125 335 135
(40) (235) (130)

18 Minnesota Avenue & 85th Street

(265) (585) (180) (60)
200 345 185 30
(330) 200 → 230 (205)
(445) 300 → 660 (485)
(145) 115 → 205 (190)
15 160 540 205
(20) (170) (450) (150)

20 Cliff Avenue & 69th Street

(220) (780) (195)
225 460 280
(335) 185 → 230 (155)
(1025) 650 → 1105 (780)
(180) 160 → 530 (425)
180 600 430
(110) (475) (400)

16 Western Avenue & 95th Street

(115) (425) (50)
210 265 45
(70) 210 → 40 (25)
(15) 15 → 20 (20)
(85) 155 → 40 (45)
115 345 90
(65) (310) (45)

21 Cliff Avenue & 77th Street

(135) (1115) (135)
120 950 80
(75) 95 → 105 (90)
(15) 35 → 25 (15)
(115) 60 → 115 (55)
95 1010 80
(140) (820) (85)

5 Veterans Parkway & Western Avenue

(145) (190) (220)
200 115 145
(135) 145 → 215 (135)
(1610) 1425 → 1665 (1140)
(205) 120 → 210 (165)
155 190 195
(150) (150) (170)

6 Veterans Parkway & Minnesota Avenue

(260) (575) (105)
215 385 80
(285) 275 → 100 (100)
(1245) 980 → 1485 (815)
(470) 510 → 355 (320)
390 545 155
(365) (405) (215)

7 Veterans Parkway & Cliff Avenue

(420) (630) (235)
450 550 125
(415) 340 → 215 (155)
(865) 630 → 1280 (625)
(285) 245 → 195 (110)
210 630 125
(190) (475) (135)

17 Western Avenue & 271st Street

(55) (215) (290)
105 150 190
(85) 95 → 220 (225)
(205) 220 → 285 (200)
(15) 15 → 15 (25)
20 225 30
(10) (160) (25)

19 Minnesota Avenue & 271st Street

(205) (955) (205)
185 890 175
(140) 105 → 165 (175)
(190) 135 → 160 (190)
(160) 55 → 45 (115)
90 820 55
(110) (670) (185)

22 Cliff Avenue & 85th Street

(480) (520) (25)
485 480 25
(350) 330 → 35 (35)
(170) 120 → 250 (145)
(200) 130 → 105 (60)
355 600 85
(160) (415) (60)

Version 4 - 7/15/2022

TRAFFIC LEGEND

1 Study Intersection

Traffic Volumes and LOS Measures

AM (PM) Peak Hour — Daily

20,000 Veterans Pkwy

20,000 Local Arterial

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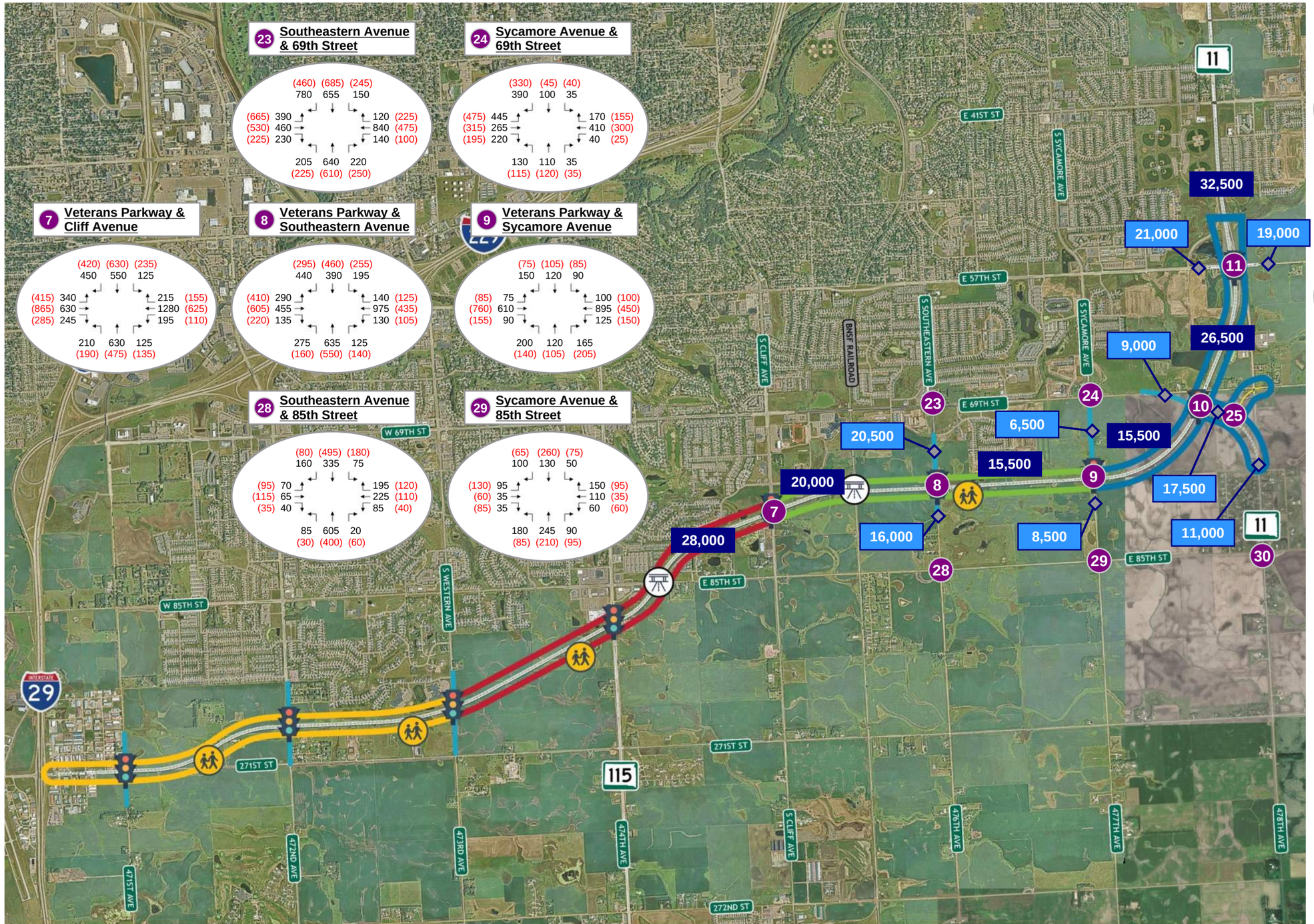
2050 PLANNING HORIZON BUILD CONDITION VOLUMES (PCN 01V6)

FIGURE 5

SOUTH VETERANS PARKWAY TRAFFIC DESIGN ANALYSIS



11 Veterans Parkway & 57th Street

SVP
(450) (1065) (280)
425 1055 280
(450) 320 355 (250)
(420) 210 275 (250)
(195) 245 380 (300)
215 785 235
(250) (965) (285)
SVP

10 Veterans Parkway & SD11

SVP
(305) (560) (695)
265 875 540
(200) 185 325 (445)
(140) 110 140 (105)
(75) 100 145 (65)
SD11
60 725 80
(65) (855) (130)
SVP

25 SD11 & 69th Street

SD11
(610) (355)
355 375
205 (200)
50 (75)
405 95
(415) (80)
SD11

30 Sycamore Avenue & 85th Street

SD11
(90) (410) (40)
110 285 10
(100) 95 35 (15)
(65) 30 65 (35)
(50) 70 25 (10)
50 370 10
(85) (315) (20)
SD11

TRAFFIC LEGEND

1 Study Intersection

Traffic Volumes and LOS Measures

AM (PM) Peak Hour — Daily

20,000 Veterans Pkwy

20,000 Local Arterial

Version 4 - 7/15/2022

2050 PLANNING HORIZON BUILD CONDITION VOLUMES (PCN 01V7 & 01VA)

FIGURE 6

SOUTH VETERANS PARKWAY TRAFFIC DESIGN ANALYSIS

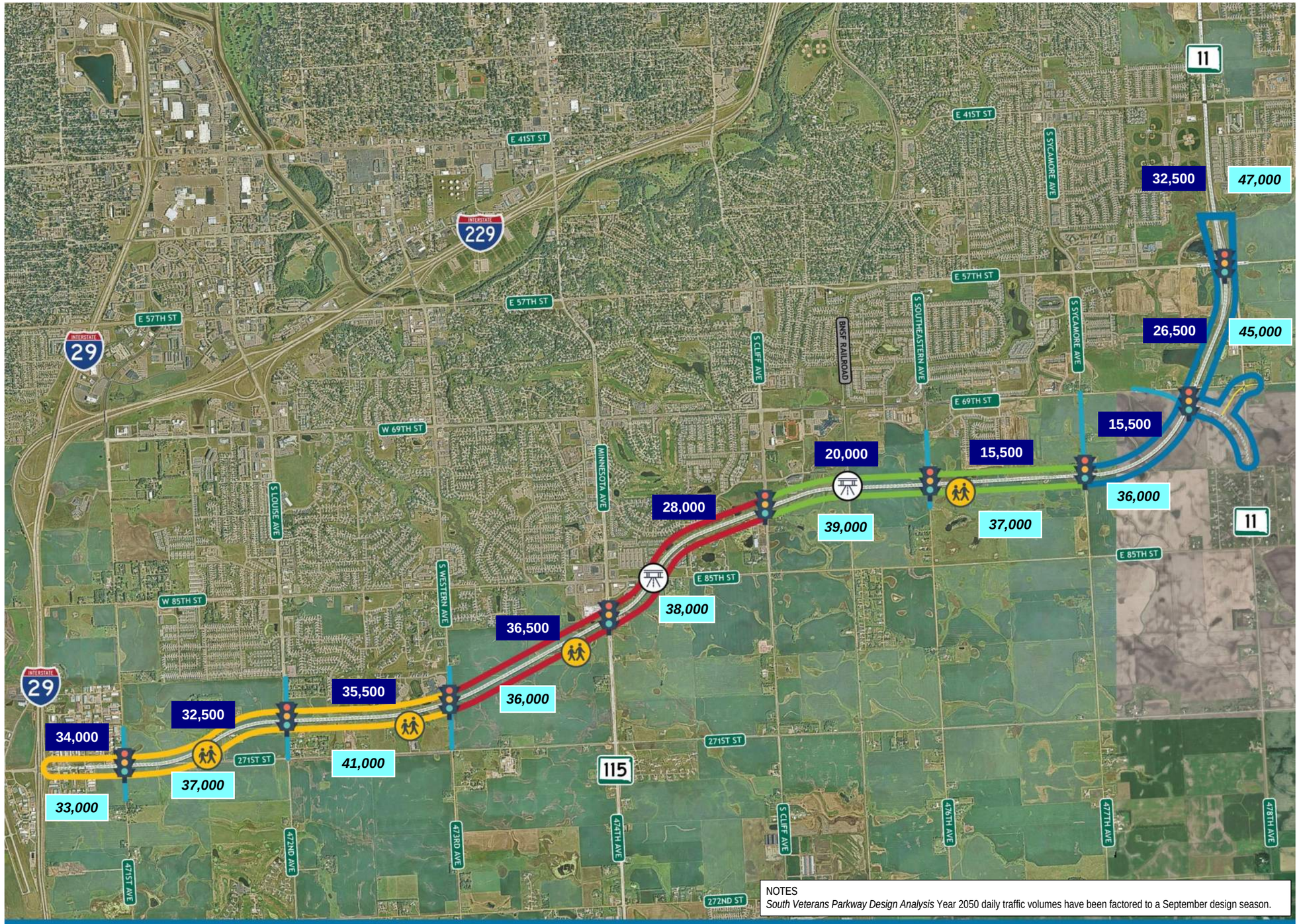
Comparison to 2013 SD100 Traffic Analysis Volumes

Figure 7 provides a comparison of future-year Veterans Parkway segment volumes between the 2013 *SD100 Traffic Analysis* and this study's forecasts. In both analyses, the planning horizon reflects Year 2050.

Overall, the 2050 Planning Horizon volumes are of similar magnitude from around Minnesota Avenue and west. This study's forecasts show a decrease in volumes, of varying magnitude, between Minnesota Avenue and 57th Street.

Considerations regarding these differences are summarized as follows:

- In the current TDM, Veterans Parkway volumes are greatest in the areas where development is built out in the TDM and trips have a local origin or destination that uses Veterans Parkway.
- In the current TDM, there are notable drops in volumes between Minnesota Avenue and 57th Street due to a combination of the following contributing factors:
    - Area surrounding these segments of Veterans Parkway reflects a considerable amount of land in the City of Sioux Falls' Tier 3 growth area
        - Tier 3 growth areas are anticipated to begin development towards the end of the TDM's 2045 planning horizon
        - There are fewer local trip origins/destinations along these segments when compared to segments west of Minnesota Avenue
        - It would be expected local traffic volumes using Veterans Parkway would see notable increases when this area develops, whether that is outside of this study's planning horizon or earlier due to accelerated development in the area
    - In the current TDM, regional through movement traffic (i.e., I-29 to I-90 movements) along Veterans Parkway is less when compared to previous versions due to improved origin-destination data and TDM methodology
- Since the 2011-2014 traffic analyses, there has been considerable update and continued improvement through multiple TDM iterations, including input data (i.e., traffic volumes, origin-destination data), definition of tiered growth areas, methodology, and constrained transportation projects included in the future-year scenarios



Version 2 - 1/28/2022

TRAFFIC LEGEND

20,000	*South Veterans Parkway Design Analysis* Year 2050 Daily Volumes
20,000	2011-2014 *SD100 Corridor Preservation Traffic Studies* Year 2050 Daily Volumes

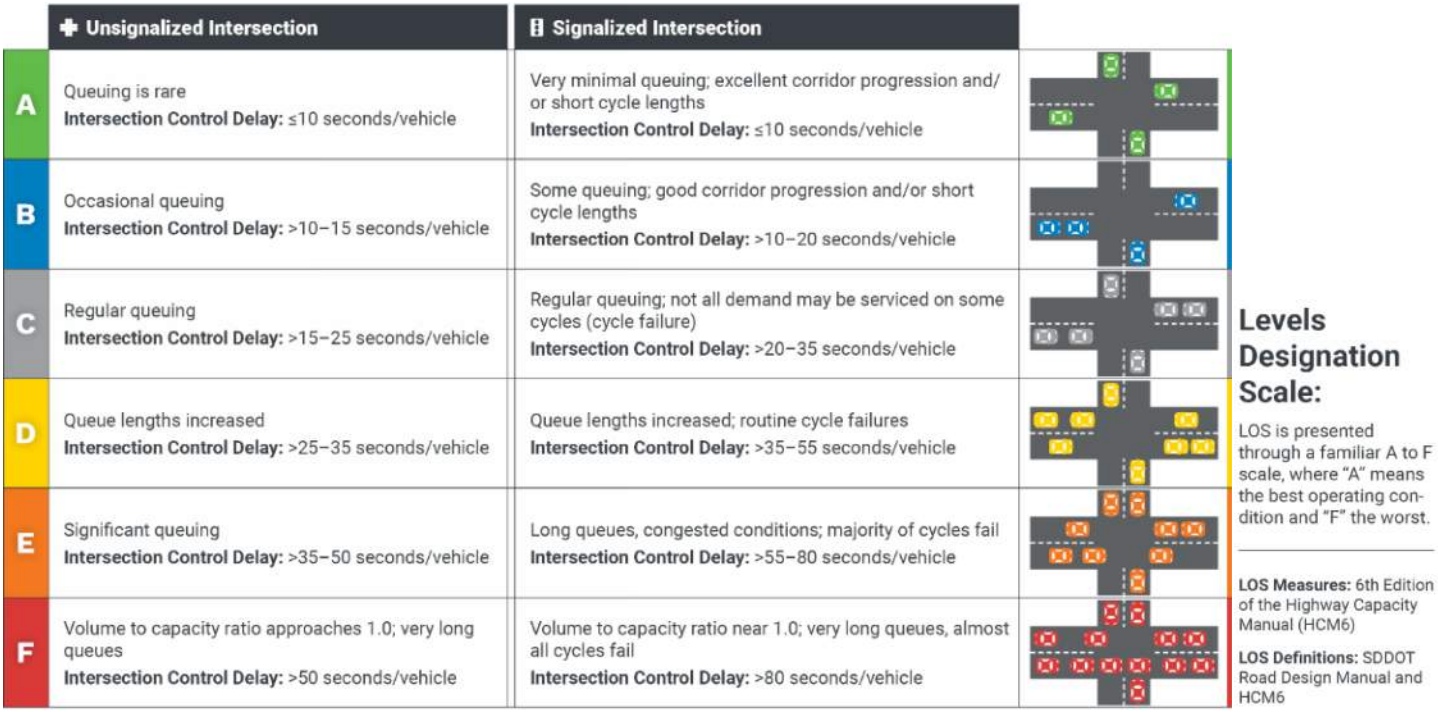
2050 PLANNING HORIZON DAILY TRAFFIC VOLUME COMPARISON

FIGURE 7

SOUTH VETERANS PARKWAY TRAFFIC DESIGN ANALYSIS

Traffic Analysis Methodology

Operational performance of highways is evaluated in terms of quality of service, which describes how well a transportation facility operates from a traveler's perspective. Quality of service is typically measured with 'Level of Service' (LOS), which is presented by a letter grade similar to those used in school. A summary of LOS measures for different roadway facilities pertinent to this study are provided in **Figure 8**.



Note: Unsignalized intersection control delay shown in figure for overall (or weighted) intersection delay. Two-way stop-control delay (TWSC) is measured from the worst-case stop-controlled approach with the same average delay (seconds/vehicle) thresholds.

Figure 8: LOS Descriptions

Peak hour LOS is calculated for study area intersections and roadway segments using Synchro version 11 and methodology described in the 6th Edition of the Highway Capacity Manual (HCM6). Traffic operations at the I-29 Exit 73 Single Point Interchange were also measured through Highway Capacity Software (HCS7). LOS measures and minimum allowable LOS used in this analysis are presented in **Table 1 and Table 2**, respectively. Overarching guidelines for methodology and assumptions used in this analysis are documented in the *Methods and Assumptions memo* attached in **Appendix A**.

Table 1: Level of Service Measures

Roadway Feature	LOS Measure	Supporting Measures
Intersections	• Total (overall) intersection delay	• 95th percentile queues • Individual movement delay • TWSC intersections: worst-case stop-control delay
Urban Street Segments	• Travel speed as a percentage of base free flow speed	• Travel time

Table 2: Minimum Allowable Level of Service by Facility

Roadway Feature	Minimum Allowable LOS	Notes
Signalized Intersections	LOS D	Individual movements allowed to operate at LOS E Individual movements will not be allowed to operate with a v/c ratio > 1.0 Queue storage ratio will not be allowed to exceed 1.0 for any movements
Unsignalized Intersections	LOS D	TWSC, AWSC, and roundabouts LOS based on weighted average intersection delay Worst-cast stop-controlled (WCSC) approach delay and LOS may be lower than the minimum allowable LOS. WCSC LOS F will be reviewed on a case-by-case basis.
I-29 Exit 73 SPI	LOS C	Individual movements allowed to operate at LOS D Individual movements will not be allowed to operate with a v/c ratio > 1.0 Queue storage ratio will not be allowed to exceed 1.0 for any movements
Urban Street Segments	LOS C	Average travel speed and travel time will be obtained from Synchro output

Traffic Analysis

Recommended intersection lane configurations and traffic control to meet analysis LOS goals for Veterans Parkway intersections and select City of Sioux Falls intersections impacted by the planned CIP projects are presented in **Figure 9 through Figure 26**, which includes:

- 2050 peak hour intersection traffic volumes
- 2026 and 2050 intersection LOS
- Recommended lane configuration and HCM6-measured queue lengths

Year 2050 and Year 2026 HCM6 output sheets are provided in **Appendix B and C**, respectively.

Investigation of alternative intersection designs, modifications to recommended intersection configurations, or traffic control or turn lane year of need estimation will be addressed through supplemental memos.

There are instances at Veterans Parkway intersections with local arterials (Louise Avenue, Western Avenue, Minnesota Avenue, etc.) where volumes may not necessitate turn lane(s) based strictly on volume and operational need. However, Veterans Parkway consistency was

important to the design team at these major intersections from driver expectancy, safety, and operational efficiency perspectives.

- **Veterans Parkway left turn lanes:** all eastbound/westbound Veterans Parkway left turn lanes analyzed as protected-only phasing due to an anticipated 55 mph speed limit. Dual left turn lanes, when compared to a single left turn lane running protected-only phasing, clears left turning traffic quicker and thus can devote more green time to the prioritized, high-volume eastbound/westbound Veterans Parkway through traffic.
- **Veterans Parkway right turn lanes:** right turn lanes were incorporated for eastbound/westbound Veterans Parkway travel at major intersections to remove tuning traffic from the high-speed, high-volume through lanes. This is a benefit to both intersections operations and safety and establishes consistency of the presence of a right turn lane from one intersection to the next along the corridor.

The Veterans Parkway corridor was also reviewed from a facility basis to better understand travel time between I-29 and 57th Street and the associated average speed. The average speed was then compared to HCM6 urban arterial street segment measures to assign a LOS. As shown in the following table, the various time periods typically reflect LOS B or better. The two LOS C measures were within 0.4 mph (AM westbound) and 0.1 mph (PM westbound) of LOS B thresholds.

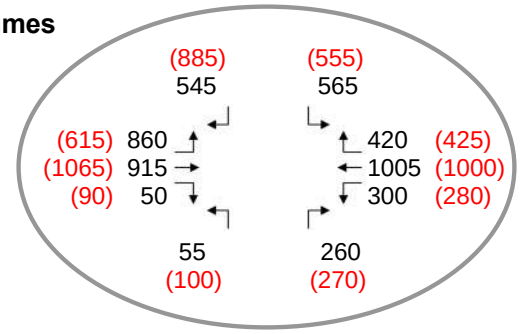
Table 3: Veterans Parkway Facility Analysis Summary (I-29 to/from 57th Street)

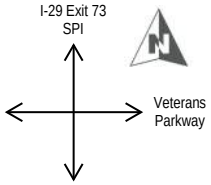
Analysis Period	Direction of Travel	Travel Time	Average Speed (mph)	HCM6 LOS
2050 – AM	Eastbound	12 min 54 sec	39.8	B
	Westbound	14 min 2 sec	36.6	C
2050 - PM	Eastbound	13 min 43 sec	37.4	B
	Westbound	13 min 55 sec	36.9	C
2026 – AM	Eastbound	11 min 54 sec	43.1	B
	Westbound	12 min 38 sec	43.2	B
2026 - PM	Eastbound	11 min 55 sec	43.1	B
	Westbound	12 min 40 sec	43.1	B

HCM6 LOS based on Exhibit 16-3 (page 16-8); LOS travel speed thresholds: A > 44 mph, B > 37 mph, C > 28 mph

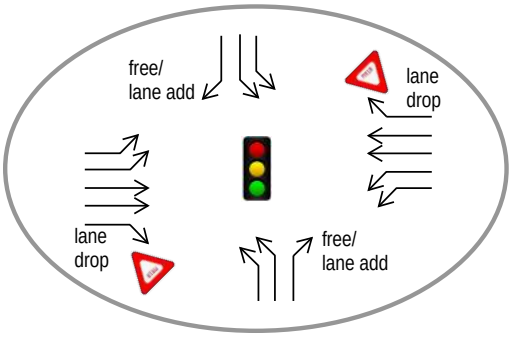
Veterans Parkway & I-29 Exit 73 SPI

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	C 24.9	C 28.6
PM	B 18.7	C 25.2

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound (VP)				
LT	2	351	261	
T	2	444	343	
RT	1	11	11	*YIELD control*
Westbound (VP)				
LT	2	169	108	
T	2	444	338	
RT	1	121	121	*YIELD control*
Northbound (Ramp)				
LT	2	58	32	
T		0	0	
RT	1	0	0	*Free/lane add*
Southbound (Ramp)				
LT	2	364	235	
T		0	0	
RT	1	0	0	*Free/lane add*

South Veterans Parkway Design Analysis

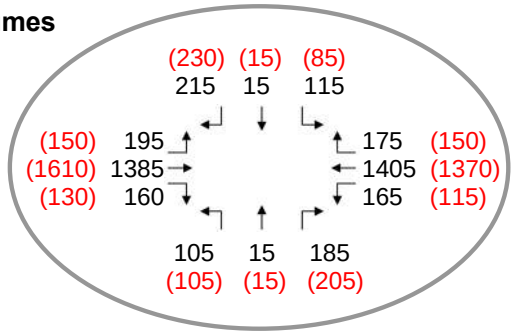
7/30/2021

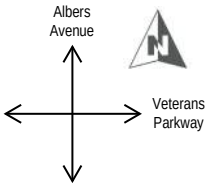
Figure

9

Veterans Parkway & Albers Avenue

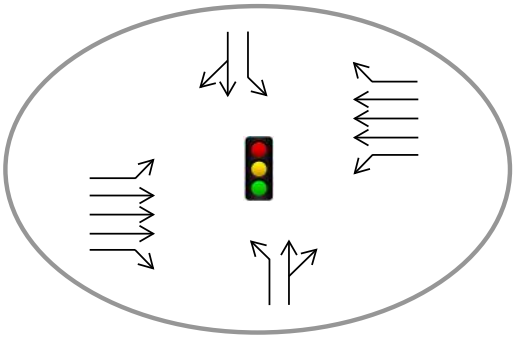
Year 2050 Traffic Volumes





Note: Volumes assume full closure of Independence Avenue, Morton Court, and truck stop/convenience store/restaurant access points west of Albers Avenue.

Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	A 9.4	B 13.5
PM	A 7.8	A 8.6

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound (VP)				
LT	1	111	61	
T	3	219	140	
RT	1	77	42	
Westbound (VP)				
LT	1	90	50	
T	3	42	24	
RT	1	16	8	
Northbound				
LT	1	156	87	
T	1	232	135	
RT	shared			
Southbound				
LT	1	164	90	
T	1	267	161	
RT	shared			

South Veterans Parkway Design Analysis

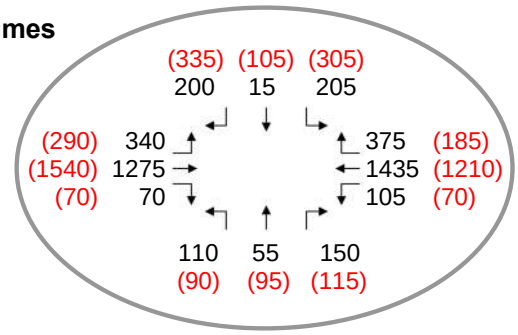
Revised: 5/18/2022

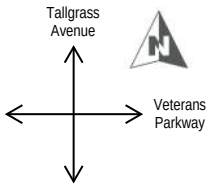
Figure

10

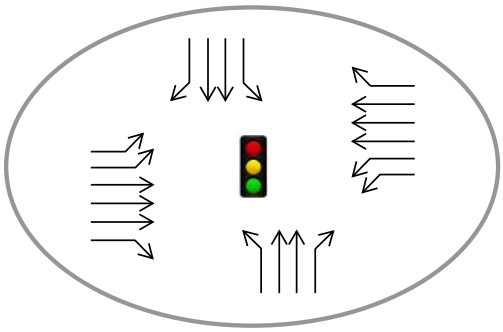
Veterans Parkway & Tallgrass Avenue

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	B 14.7	C 23.6
PM	B 13.1	C 21.6

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound (VP)				
LT	2	172	95	
T	3	108	29	
RT	1	13	3	
Westbound (VP)				
LT	2	124	79	
T	3	375	290	
RT	1	143	55	
Northbound				
LT	1	127	69	
T	2	53	21	
RT	1	235	137	
Southbound				
LT	1	314	161	
T	2	42	8	
RT	1	253	150	

South Veterans Parkway Design Analysis

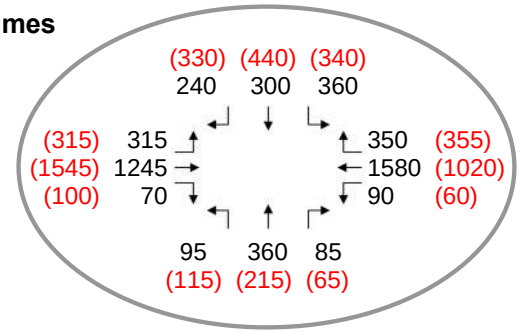
Revised: 2/9/2022

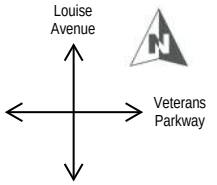
Figure

11

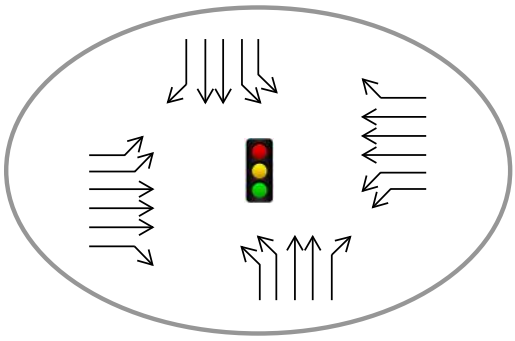
Veterans Parkway & Louise Avenue

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	C 29.1	D 45.9
PM	C 32.6	D 37.9

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound (VP)				
LT	2	267	172	
T	3	467	351	
RT	1	50	29	
Westbound (VP)				
LT	2	77	42	
T	3	623	488	
RT	1	314	209	
Northbound				
LT	2	100	55	*Single LT w/FYA (option)*
T	2	317	198	
RT	1	124	69	
Southbound				
LT	2	322	203	
T	2	319	201	
RT	1	227	132	

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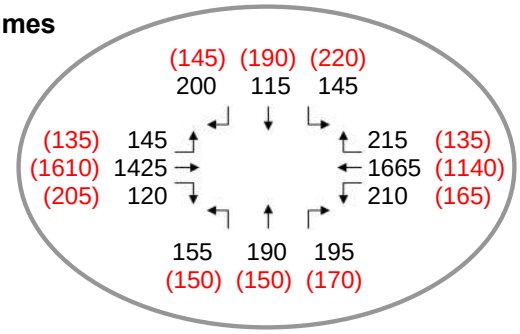
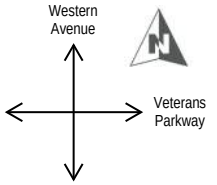
Figure

12

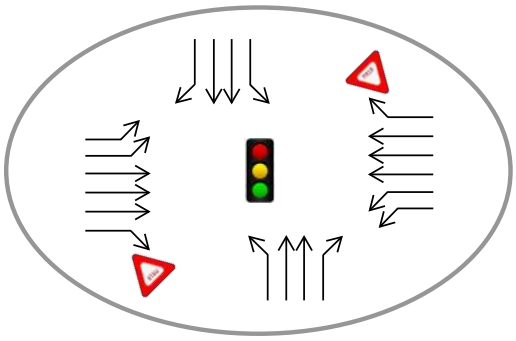
Veterans Parkway & Western Avenue

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	C 26.6	C 34.8
PM	C 25.7	C 22.1

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound (VP)				
LT	2	114	63	
T	3	465	338	
RT	1	37	37	*YIELD control*
Westbound (VP)				
LT	2	140	90	
T	3	520	414	
RT	1	40	40	*YIELD control*
Northbound				
LT	1	240	140	
T	2	177	98	
RT	1	282	172	
Southbound				
LT	1	298	185	
T	2	140	77	
RT	1	216	121	

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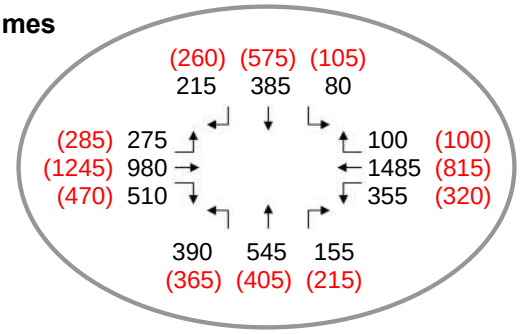
Figure

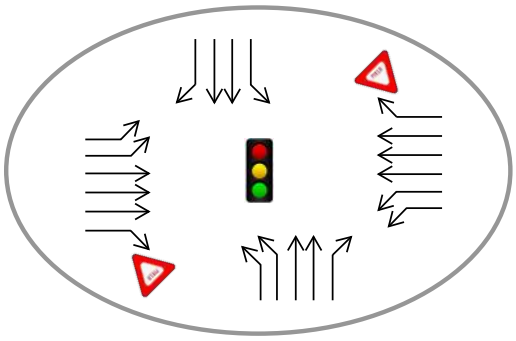
13

Veterans Parkway & Minnesota Avenue

Year 2050 Traffic Volumes



Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	C 32.2	D 49.0
PM	C 31.9	D 40.8

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound (VP)				
LT	2	230	148	
T	3	494	378	
RT	1	282	282	*YIELD control*
Westbound (VP)				
LT	2	224	166	
T	3	512	420	
RT	1	21	21	*YIELD control*
Northbound				
LT	2	319	214	
T	2	385	269	
RT	1	177	106	
Southbound				
LT	1*	132	74	
T	2	385	277	
RT	1	296	187	

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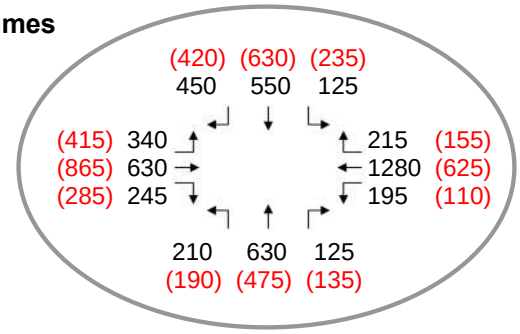
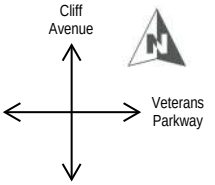
Figure

14

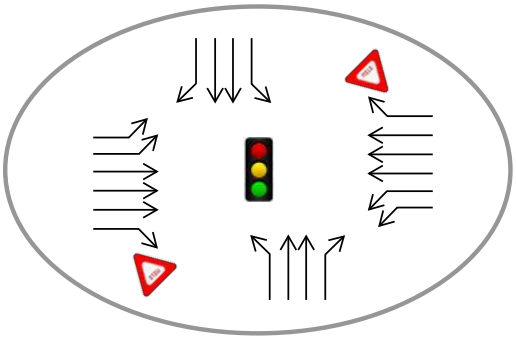
Veterans Parkway & Cliff Avenue

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	C 31.6	D 48.9
PM	C 28.5	D 40.1

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound (VP)				
LT	2	280	180	
T	3	288	211	
RT	1	100	100	*YIELD control*
Westbound (VP)				
LT	2	153	95	
T	3	504	385	
RT	1	53	53	*YIELD control*
Northbound				
LT	1	304	201	
T	2	436	306	
RT	1	153	87	
Southbound				
LT	1	285	182	
T	2	444	309	
RT	1	404	277	

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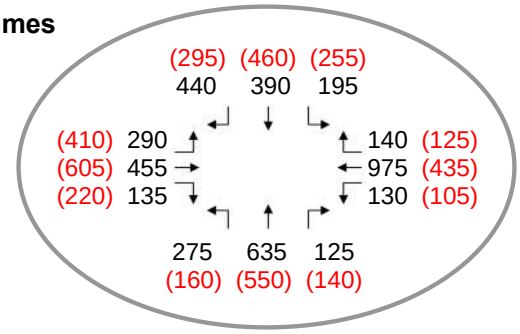
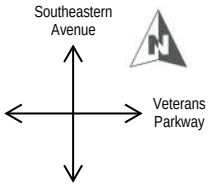
Figure

15

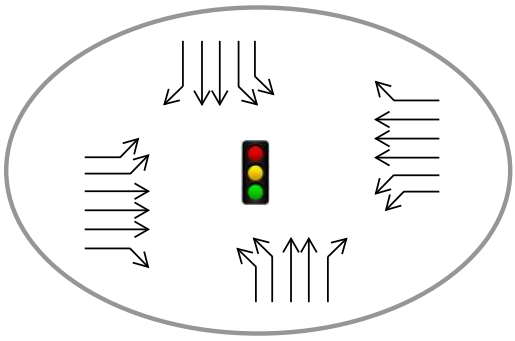
Veterans Parkway & Southeastern Avenue

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	C 21.3	D 48.0
PM	C 26.2	D 40.4

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound (VP)				
LT	2	219	135	
T	3	201	121	
RT	1	209	127	
Westbound (VP)				
LT	2	114	63	
T	3	420	301	
RT	1	177	98	
Northbound				
LT	2	253	150	
T	2	494	338	
RT	1	127	71	
Southbound				
LT	2	187	116	
T	2	269	182	
RT	1	272	182	

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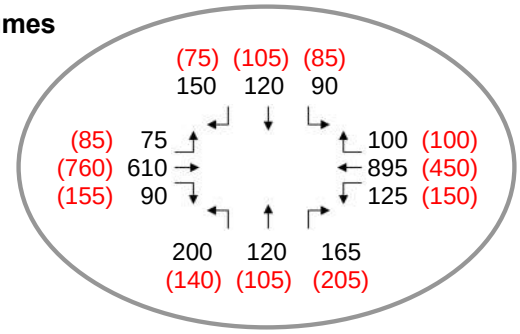
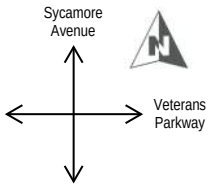
Figure

16

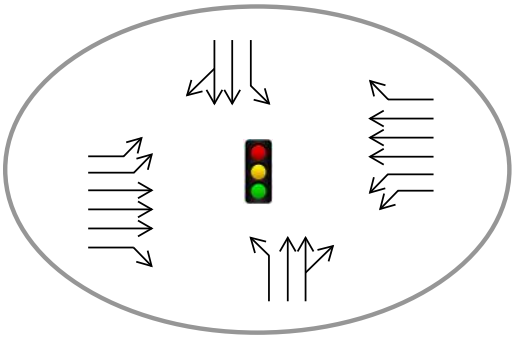
Veterans Parkway & Sycamore Avenue

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	B 18.5	C 27.2
PM	C 25.8	C 27.9

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound (VP)				
LT	2	34	18	
T	3	193	106	
RT	1	95	53	
Westbound (VP)				
LT	2	66	37	
T	3	214	121	
RT	1	37	21	
Northbound				
LT	1	145	82	
T	2	232	135	
RT	shared	0	0	
Southbound				
LT	1	106	37	
T	2	182	100	
RT	shared	0	0	

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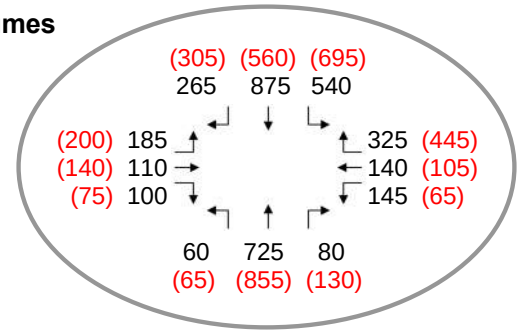
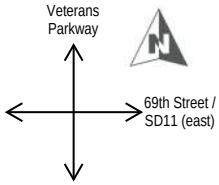
Figure

17

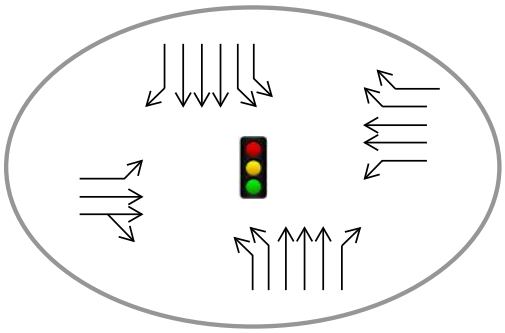
Veterans Parkway & SD11/69th Street

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	C 22.4	C 31.8
PM	C 20.3	C 32.7

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound				
LT	1	285	174	
T	2	148	87	
RT	shared	0	0	
Westbound				
LT	1	164	90	
T	2	87	48	
RT	2	161	90	
Northbound (VP)				
LT	2	37	21	
T	3	282	187	
RT	1	87	48	
Southbound (VP)				
LT	2	351	248	
T	3	209	135	
RT	1	195	121	

South Veterans Parkway Design Analysis

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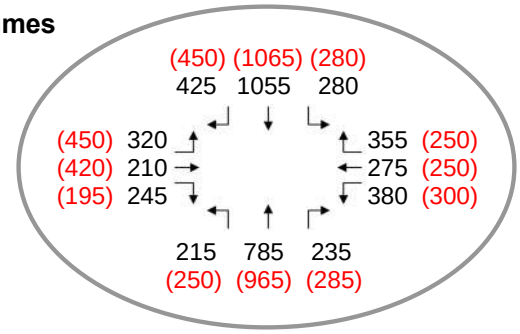
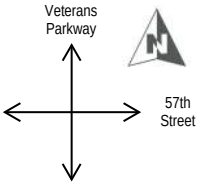
Figure

18

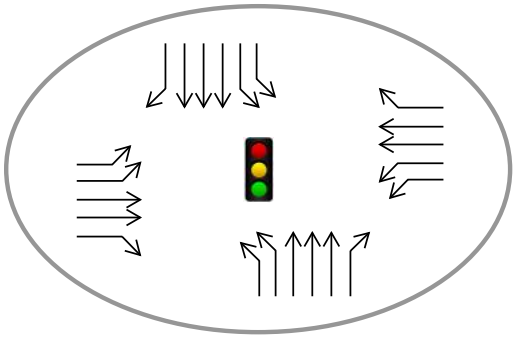
Veterans Parkway & 57th Street

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	C 24.2	D 37.4
PM	C 25.8	D 37.5

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound				
LT	2	261	169	
T	2	251	161	
RT	1	140	79	
Westbound				
LT	2	248	148	
T	2	180	100	
RT	1	290	180	
Northbound (VP)				
LT	2	158	92	
T	3	290	198	
RT	1	227	145	
Southbound (VP)				
LT	2	177	98	
T	3	354	227	
RT	1	227	132	

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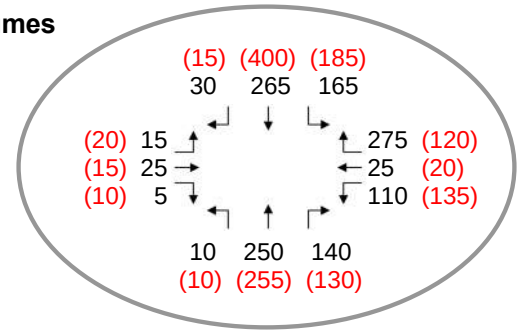
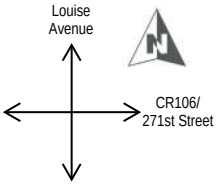
Figure

19

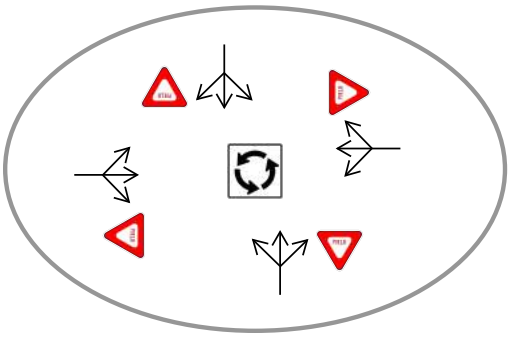
Louise Avenue & CR106/271st Street

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	A 6.7	A 8.3
PM	A 6.9	A 9.2

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound				
LT	shared	0	0	
T	1	8	0	
RT	shared	0	0	
Westbound				
LT	shared	0	0	
T	1	67	0	
RT	shared	0	0	
Northbound				
LT	shared	0	0	
T	1	54	0	
RT	shared	0	0	
Southbound				
LT	shared	0	0	
T	1	108	0	
RT	shared	0	0	

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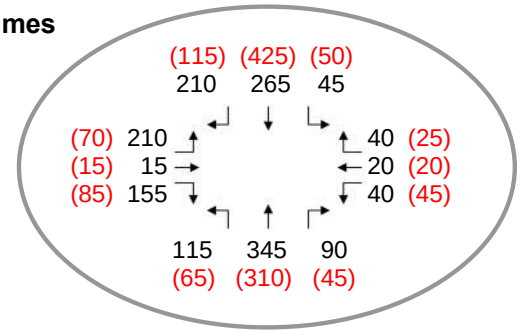
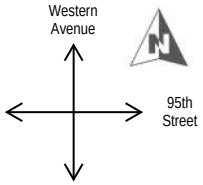
Figure

20

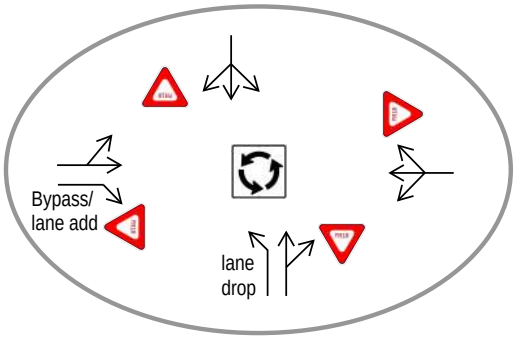
Western Avenue & 95th Street

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	A 5.0	A 8.4
PM	A 4.9	A 7.1

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound				
LT	shared	0	0	
T	1	28	0	
RT	1	0	0	*Non-Yielding bypass & lane add*
Westbound				
LT	shared	0	0	
T	1	13	0	
RT	shared	0	0	
Northbound				
LT	1	10	0	*Lane drop*
T	1	92	0	
RT	shared	0	0	
Southbound				
LT	shared	0	0	
T	1	92	0	
RT	shared	0	0	

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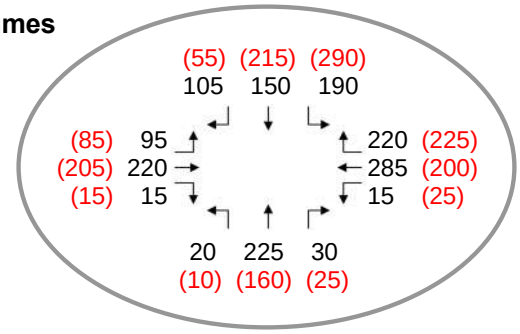
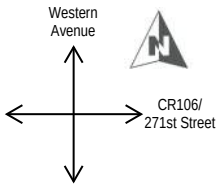
Figure 21

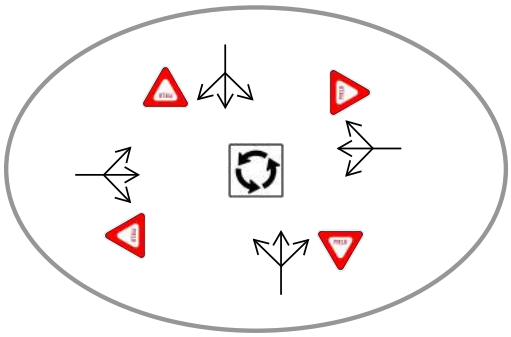
Western Avenue & CR106/271st Street

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	A 7.1	B 11.5
PM	A 6.1	B 10.9

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound				
LT	shared	0	0	
T	1	64	0	
RT	shared	0	0	
Westbound				
LT	shared	0	0	
T	1	123	0	
RT	1	0	0	
Northbound				
LT	shared	0	0	
T	1	51	0	
RT	shared	0	0	
Southbound				
LT	1	0	0	
T	1	110	0	
RT	shared	0	0	

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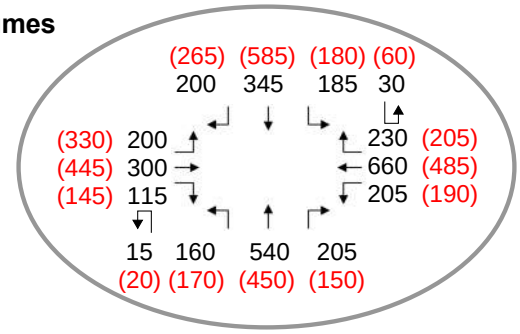
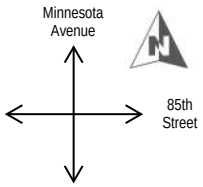
Figure

22

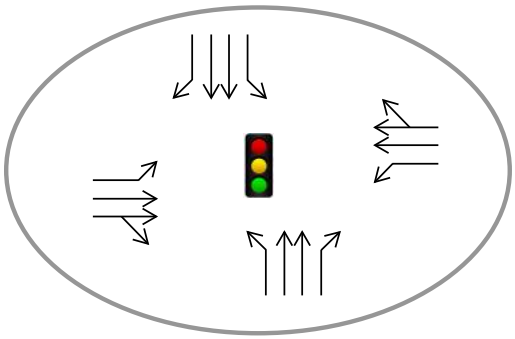
Minnesota Avenue & 85th Street

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	C 25.7	D 38.6
PM	C 22.6	D 40.5

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound				
LT	1	325	211	
T	2	261	161	
RT	shared	0	0	
Westbound				
LT	1	151	87	
T	2	527	380	
RT	shared	0	0	
Northbound				
LT	1	161	92	
T	2	284	180	
RT	1	179	103	
Southbound				
LT	1	182	103	
T	2	284	182	
RT	1	192	111	

South Veterans Parkway Design Analysis

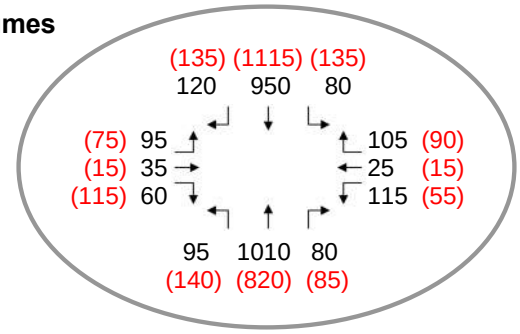
7/30/2021

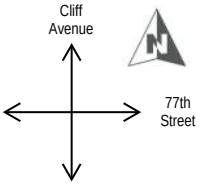
Figure

23

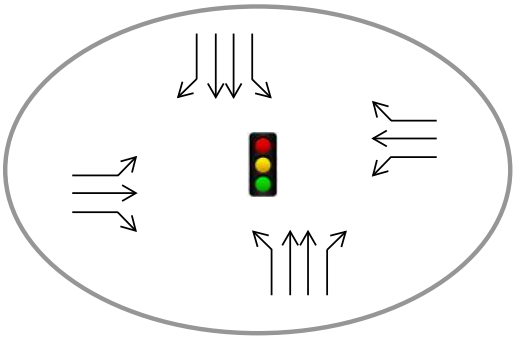
Cliff Avenue & 77th Street

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	B 10.5	B 14.3
PM	A 4.3	B 12.5

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound				
LT	1	118	69	
T	1	46	26	
RT	1	136	79	
Westbound				
LT	1	143	82	
T	1	33	18	
RT	1	118	69	
Northbound				
LT	1	102	58	
T	2	338	256	
RT	1	51	29	
Southbound				
LT	1	84	53	
T	2	10	5	
RT	1	3	3	

South Veterans Parkway Design Analysis

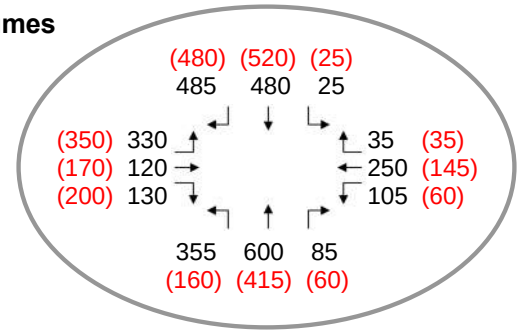
7/30/2021

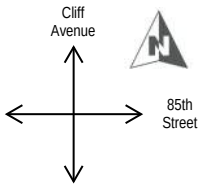
Figure

24

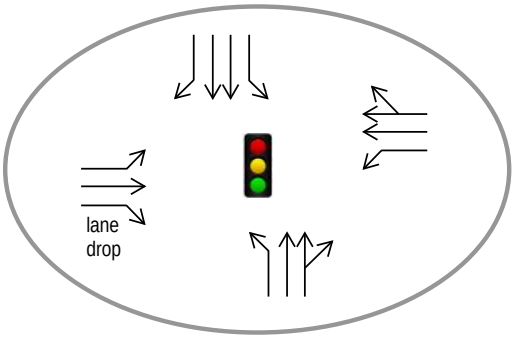
Cliff Avenue & 85th Street

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	B 17.0	C 29.9
PM	B 16.5	C 22.5

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound				
LT	1	279	177	
T	1	120	69	
RT	1	79	45	
Westbound				
LT	1	95	53	
T	2	179	103	
RT	shared	0	0	
Northbound				
LT	1	315	203	
T	2	241	148	
RT	shared	0	0	
Southbound				
LT	1	20	11	
T	2	215	127	
RT	1	364	243	

South Veterans Parkway Design Analysis

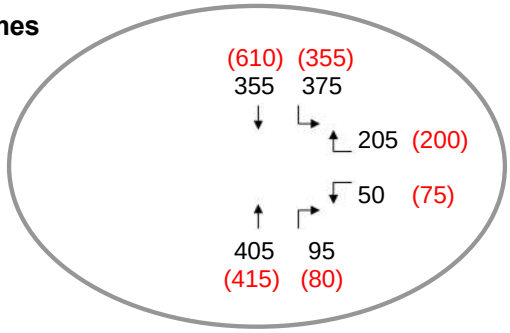
7/30/2021

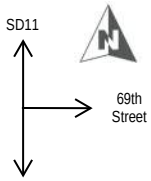
Figure

25

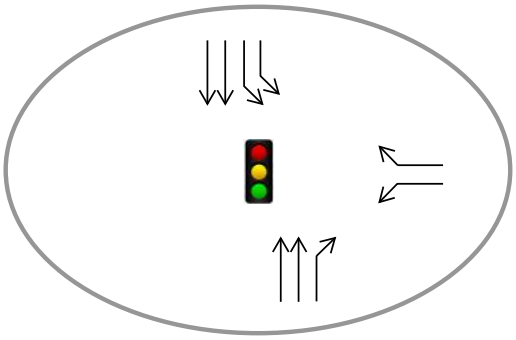
SD11 & 69th Street

Year 2050 Traffic Volumes





Recommended Lane Configuration



LEGEND

AM (PM) Peak Hour Traffic Volumes

Stop Sign

Traffic Signal

Yield Sign

Roundabout

Recommended Lane Configuration

Level of Service (LOS) and Intersection Delay (sec/veh) Summary

	2026	2050
AM	B 12.8	B 19.5
PM	B 11.8	B 17.0

Year 2050 Turn Lane Summary

	No. of Lanes	95% Queue (ft)	50% Queue (ft)	Notes
Eastbound				
LT		0	0	
T		0	0	
RT		0	0	
Westbound (69th St)				
LT	1	44	26	
T		0	0	
RT	1	187	108	
Northbound (SD11)				
LT		0	0	
T	2	113	63	
RT	1	51	29	
Southbound (SD11)				
LT	2	102	61	
T	2	67	37	
RT		0	0	

South Veterans Parkway Design Analysis

Revised: 1/26/2022

Figure

26

Local Crossroad Termini Intersections

Year 2050 AM and PM peak hour traffic forecast were developed for the next major arterial (typically section line road) intersection adjacent to Veterans Parkway to establish a terminus of potential crossroad corridor improvements. A summary of these findings is shown in **Table 4 through Table 8,** organized by what PCN each Veterans Parkway crossroad falls within.

Table legend notes:

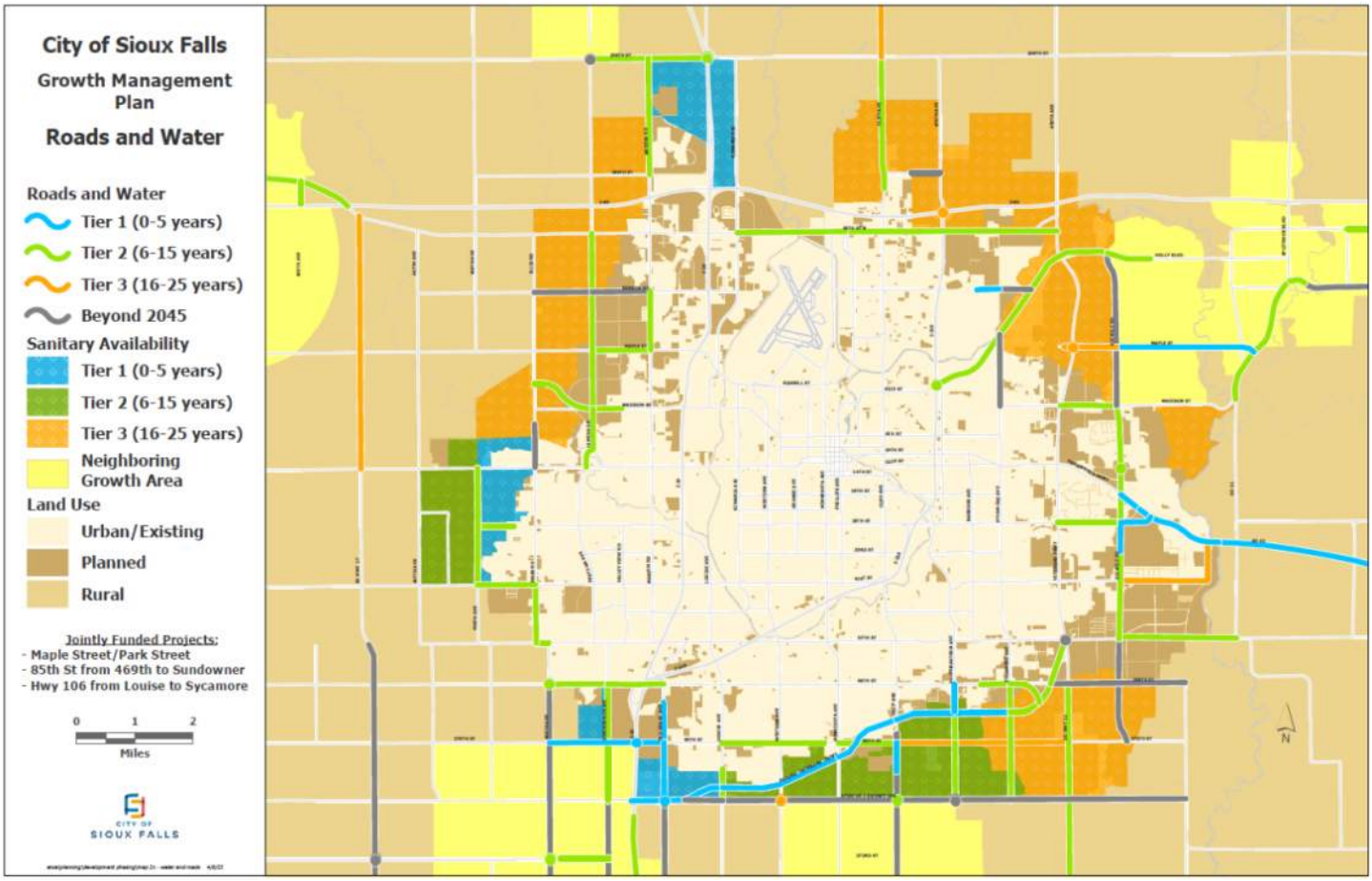
- **2050 Intersection LOS:** AM and PM peak hour intersection operations based on analyzed intersection configuration and forecasted traffic volumes
- **Intersection Part of Veterans Parkway Local Arterial Improvement?:** answers whether the intersection is part of a City of Sioux Falls Capital Improvement Plan (CIP) project extending away from a Veterans Parkway intersection
    - **Yes:** intersection is part of a City of Sioux Falls CIP project extending from the Veterans Parkway corridor
    - **No:** intersection is not part of a City of Sioux Falls CIP project extending from the Veterans Parkway corridor, but may be part of a different CIP project or study
- **Next steps, timeline, and notes for addressing identified needs:** summary of next steps, timeline, and other pertinent information to help gauge if and when improvements may be implemented
    - **Project or Study & Years:** identifies the planned project or study to address improvement needs and timeline
    - **Notes:** includes pertinent information to the intersection, such as project or study description, existing conditions, long-range planning recommendations, City of Sioux Falls growth tier for the respective area (see **Figure 27**), and the analyzed intersection configuration

Documents referenced in the tables can be found here:

City of Sioux Falls Growth Management Plan (2022 Tier Map Amendment) (see **Figure 27**):
https://www.siouxfalls.org/planning-dev/planning/comp-plan

Go Sioux Falls 2045 Long Range Transportation Plan:
https://siouxfallsmpo.org/resources/2045-long-range-transportation-plan/

2019 Lincoln County Master Transportation Plan:
https://dot.sd.gov/media/documents/SDDOT_LincolnCountyMTP_FinalReport_20191118.pdf



https://www.siouxfalls.org/planning-dev/planning/comp-plan

Figure 27: City of Sioux Falls Growth Management Plan for Roads and Water (2022 Tier Map Amendment)

Overall, long-rang needs at the analysis corridor termini intersections are being addressed through planned projects, studies, and a clearly defined tiered growth area based on serviceability of utilities. As shown in the tables, the more immediate intersection and corridor needs, generally north of Veterans Parkway, are being addressed through planned City of Sioux Falls CIP projects. Mid-range needs, generally along the 271st Street (CR106) corridor, are being addressed through the *Lincoln County Highway 106 Corridor Study* that began in 2022. Long-range needs in the rural and/or Tier 3 growth areas have been identified and are being planned for through the City of Sioux Falls Growth Management Plan and *Go Sioux Falls 2045 LRTP*.

It is important to note that the Sioux Falls MPO TDM used to develop future-year volumes reflects the fiscally constrained *Go Sioux Falls 2045 LRTP* prioritized list of projects. There are certain corridors, such as Sycamore Avenue and Southeastern Avenue, where several factors need to align before the future traffic demand shown in the TDM is realized. This includes paving several miles of gravel roads, development in the City of Sioux Falls Tier 3 growth area that requires significant investment in utilities to be able to service the area, and development. Without even one of these factors, traffic demand will be limited along these rural segments.

Table 4: PCN 01V9 Local Crossroad Corridor Intersection Termini (Tallgrass Avenue and Louise Avenue)

Local Crossroad Corridor			2050 Intersection LOS		Intersection Part of Veterans Parkway Local Arterial Improvement?	Next steps, timeline, and notes for addressing long-range intersection needs	
Corridor	**Intersecting Road**	**Corridor Terminus**	**AM**	**PM**		**Project or Study & Year(s)**	**Notes**
Tallgrass Avenue	85th Street	North	D	D	No	***Study*** *Proposed 85th Street Improvements: Sundowner to Louise Avenue Environmental Assessment* ***Project*** *85th Street and Tallgrass Avenue (CIP 11006)* *2023-2025*	CIP 11006 Project Description • Reconstruct 85th St (tie into existing multilane section east of Tallgrass Ave and reconstruct west to planned I-29 & 85th St interchange) • Reconstruct Tallgrass Ave (tie into existing multilane section at 74th St and reconstruct south to Veterans Parkway) Analyzed Intersection Configuration • Reflects the intersection configuration presented and analyzed as part of the *Proposed 85th Street Improvements: Sundowner to Louise Avenue Environmental Assessment* *Analyzed intersection: planned configuration (CIP 11006)*
	272nd Street	South	B	A	No	*No project or study identified*	Existing Conditions • Gravel road intersection • Future development will drive reconstruction need • Louise Ave provides ample north/south capacity for area traffic • Environmental (wetland/drainage) challenges for development in immediate area Analyzed Intersection Configuration • Existing intersection configuration (single-lane approaches and TWSC from east/west approaches) meets LOS goals • Paved roadway surfacing likely needed before change in intersection control and lane configuration *Analyzed intersection: existing configuration*
Louise Avenue	85th Street	North	D	D	No	***Project*** *85th Street (CIP 11006)* *2024*	CIP 11006 Project Description • Construct south ½ urban section and build-out intersections (Louise Ave to Western Ave) • No modifications planned to north, south, and west legs of intersection *Analyzed intersection: planned configuration (CIP 11006)*
	271st Street (CR106)	South	A	A	No	***Study*** *CR106 Corridor Study* *2022-2023*	Existing single-lane roundabout meets LOS goals Study Description • Sioux Falls MPO corridor study to determine long-range improvements to east/west intersection approaches and timeline *Analyzed intersection: existing configuration*

Table 5: PCN 01V6 Local Crossroad Corridor Intersection Termini (Western Avenue, Minnesota Avenue, and Cliff Avenue)

Local Crossroad Corridor			2050 Intersection LOS		Intersection Part of Veterans Parkway Local Arterial Improvement?	Next steps, timeline, and notes for addressing long-range intersection needs	
Corridor	**Intersecting Road**	**Corridor Terminus**	**AM**	**PM**		**Project or Study & Year(s)**	**Notes**
Western Avenue	85th Street	North	D	C	No	***Project*** *85th Street* *(CIP 11006)* *2023-2025*	CIP 11006 Project Description • Construct south ½ urban section and build-out intersections (Louise Ave to Audie Ave) • Signalize intersection *Analyzed intersection: planned configuration (CIP 11006)*
	271st Street (CR106)	South	B	B	No	***Study*** *CR106 Corridor Study* *2022-2023*	Corridor Study Description • Sioux Falls MPO corridor study to determine long-range intersection configuration and timeline Long-range Intersection Configuration • Single-lane roundabout recommended in Go Sioux Falls LRTP (mid-priority Lincoln County project) and Lincoln County MTP *Analyzed intersection: single-lane roundabout*
Minnesota Avenue (SD115)	85th Street	North	D	D	No	*n/a*	Existing intersection configuration meets LOS D goal *Analyzed intersection: existing configuration*
	271st Street (CR106)	South	C	C	No	***Study*** *CR106 Corridor Study* *2022-2023*	Corridor Study Description • Sioux Falls MPO corridor study to determine long-range improvements to east/west intersection approaches and timeline Previous Project • SD115 recently reconstructed, north/south legs are built-out *Analyzed intersection: existing configuration with east/west turn lane improvements*
Cliff Avenue	69th Street	North	D	D	No	*n/a*	Existing intersection configuration meets LOS D goal *Analyzed intersection: existing configuration*
	85th Street	South	C	C	No	***Project*** *85th Street* *(CIP 11006)* *2023*	CIP 11006 Project Description • Reconstruction of 85th St and Cliff Ave intersection • Extend Cliff Ave multilane section south of 85th Street *Analyzed intersection: planned configuration (CIP 11006)*

Table 6: PCN 01V7 Local Crossroad Corridor Intersection Termini (Southeastern Avenue and Sycamore Avenue)

Local Crossroad Corridor			2050 Intersection LOS		Intersection Part of Veterans Parkway Local Arterial Improvement?	Next steps, timeline, and notes for addressing long-range intersection needs	
Corridor	**Intersecting Road**	**Corridor Terminus**	**AM**	**PM**		**Project or Study & Year(s)**	**Notes**
Southeastern Avenue	69th Street	North	D	D	No	*No project or study identified*	<u>Existing Conditions</u> • Roundabout with single circulatory lane and dual YIELD approach lanes • Roundabout is ready to receive a multilane section from the south <u>Future Conditions</u> • Sioux Falls TDM shows significant volume growth on Southeastern Ave and Sycamore Ave • Intersection will be addressed if or when the need arises as there are several long-range, outside factors that need to align before an operational need is established to modify the intersection *Analyzed intersection: potential long-range build-out with signalized intersection (future study to determine configuration if/when need arises)*
	85th Street	South	C	B	No	*No project or study identified*	<u>Existing Conditions</u> • Gravel road intersection in rural area <u>City of Sioux Falls Growth Management Plan (Tier Map)</u> • Tier 2 growth area (6-15 years, based on sanitary availability) • Southeastern Ave roadway improvements: Tier 2 (6-15 years) • 85th St roadway improvements: Tier 3 (16-25 years) Single-lane roundabout reflects *2021 Harrisburg North High School TIS* recommendation Existing gravel roads, rural area, and Tier 2 growth timeline will limit traffic demand (several outside factors need to align before a need is established at this intersection) *Analyzed intersection: single-lane roundabout with westbound YIELD right turn lane (future study to determine configuration)*

Table 7: PCN 01V7 Local Crossroad Corridor Intersection Termini (Sycamore Avenue)

Local Crossroad Corridor			2050 Intersection LOS		Intersection Part of Veterans Parkway Local Arterial Improvement?	Next steps, timeline, and notes for addressing long-range intersection needs	
Corridor	**Intersecting Road**	**Corridor Terminus**	**AM**	**PM**		**Project or Study & Year(s)**	**Notes**
Sycamore Avenue	69th Street	North	C	C	No	*No project or study identified*	Existing Conditions • Intersection physical area, Sycamore Ave to north, 69th St, and 69th St to the east to west is paved (to the ¼-mile point) with a 2-lane rural section • Developing area to north and west City of Sioux Falls Tier Map • Planned growth area surrounding intersection; Tier 3 growth area immediately to south and east of intersection (16-25 years, based on sanitary availability) • Sycamore Ave and 69th St improvements: Tier 2 (6-15 years) Utility serviceable area is limited (Tier 3) to the south and east of intersection will limit traffic demand. However, roadway continuity and being along the southern edge of existing and planned development will contribute to increasing traffic volumes. Recent paving of 69th Street and Sycamore Avenue through the intersection, coupled with the planned City of Sioux Falls Veterans Parkway CIP projects, will provide paved road east/west connectivity for the area until the build-out is needed. *Analyzed intersection: potential long-range build-out with signalized intersection (future study to determine configuration)*
	85th Street	South	A	A	No	*No project or study identified*	Existing Conditions • Gravel road intersection in rural area • Sycamore Ave gravel road extends south of 69th St into Lincoln County City of Sioux Falls Growth Management Plan (Tier Map) • Tier 3 growth area (16-25 years, based on sanitary availability) • Southeastern Ave roadway improvements: Tier 2 (6-15 years) • 85th St roadway improvements: Tier 3 (16-25 years) Existing gravel roads, rural area, and Tier 3 growth timeline will limit traffic demand (several outside factors need to align before a need is established at this intersection) *Analyzed intersection: single-lane roundabout (future study to determine configuration)*

Table 8: PCN 01VA Local Crossroad Corridor Intersection Termini (69th Street and SD11)

Local Crossroad Corridor			2050 Intersection LOS		Intersection Part of Veterans Parkway Local Arterial Improvement?	Next steps, timeline, and notes for addressing long-range intersection needs	
Corridor	**Intersecting Road**	**Corridor Terminus**	**AM**	**PM**		**Project or Study & Year(s)**	**Notes**
85th Street	SD11	South	B	C	No	***Study*** *Northern Lincoln County Corridor Study 2022-2023*	Existing Conditions • Future development will drive reconstruction need • 69th St and 271st St (CR106) provide ample east-west paved road capacity for area traffic City of Sioux Falls Tier Map • Tier 3 growth area (16-25 years, based on sanitary availability) • SD11 improvements: Tier 2 (6-15 years) • 85th St roadway improvements: Tier 3 (16-25 years) Analyzed Intersection Configuration • Intersection operations meet LOS goals with separating left turn from through/right turn lanes on eastbound/westbound approaches and maintaining TWSC • Paved roadway surfacing likely needed before change in intersection control and lane configuration Existing 85th St gravel road, rural area, and Tier 3 growth timeline will limit traffic demand on 85th St *Analyzed intersection: TWSC from east/west approaches; east/west approaches split out left turn lanes (LT, T/RT) (Northern Lincoln County Corridor Study will determine future configuration)*
69th Street	Sycamore Avenue	North	C	C	No	*No project or study identified*	See Table 7 for more information on the 69th St & Sycamore Ave intersection

Appendix A: Methods and Assumptions Document

Appendix B: 2050 Planning Horizon Synchro and HCS Output

Appendix C: 2026 First Year of Construction Synchro and HCS Output