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ROADWAY NETWORK ANALYSIS

SYCAMORE STREET AT MAIN STREET AND 1ST STREET

ZIONSVILLE, INDIANA

PREPARED FOR
MAYOR STEHR

ZIONSVILLE

SEPTEMBER 2025

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TABLE OF CONTENTS

TABLE OF CONTENTS II
LIST OF FIGURES II
CERTIFICATION III
INTRODUCTION 1
PURPOSE 1
SCOPE OF WORK 1
STUDY AREA 2
YEAR 2025 AND YEAR 2035 TRAFFIC VOLUMES 4
BALANCED TRAFFIC VOLUMES 4
REDISTRIBUTED TRAFFIC VOLUMES 4
CAPACITY ANALYSIS 12
CAPACITY ANALYSIS SCENARIOS 12
TABLE 1 – LEVEL OF SERVICE SUMMARY: SYCAMORE ST & 1ST STREET 14
TABLE 2 – LEVEL OF SERVICE SUMMARY: SYCAMORE ST & MAIN STREET 15
QUEUE LENGTH ANALYSIS 16
TABLE 3 – 95TH PERCENTILE QUEUE LENGTH SUMMARY (FEET): SYCAMORE ST & 1ST STREET 16
TABLE 4 – 95TH PERCENTILE QUEUE LENGTH SUMMARY (FEET): SYCAMORE ST & MAIN STREET 17
TABLE 5 – 95TH PERCENTILE QUEUE LENGTH SUMMARY (VEHICLES): SYCAMORE ST & 1ST STREET 17
TABLE 6 – 95TH PERCENTILE QUEUE LENGTH SUMMARY (VEHICLES): SYCAMORE ST & MAIN STREET 18
CONCLUSIONS 26

LIST OF FIGURES

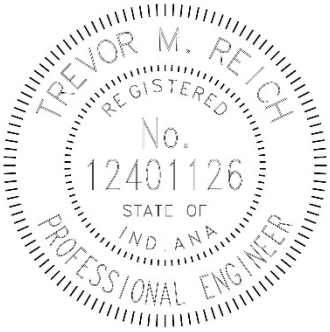
FIGURE 1: AREA MAP 3
FIGURE 2: SCENARIO 1 TRAFFIC VOLUMES 5
FIGURE 3: SCENARIO 2 TRAFFIC VOLUMES 6
FIGURE 4: SCENARIO 3 TRAFFIC VOLUMES 7
FIGURE 5: SCENARIO 4 TRAFFIC VOLUMES 8
FIGURE 6: SCENARIO 5 TRAFFIC VOLUMES 9
FIGURE 7: SCENARIO 6 TRAFFIC VOLUMES 10
FIGURE 8: SCENARIO 7 TRAFFIC VOLUMES 11
FIGURE 9: SCENARIO 1 NO BUILD YEAR 2025 TRAFFIC VOLUMES 19
FIGURE 10: SCENARIO 2 NO BUILD YEAR 2035 TRAFFIC VOLUMES 20
FIGURE 11: SCENARIO 3 COORDINATED SIGNAL SYSTEM YEAR 2035 TRAFFIC VOLUMES 21
FIGURE 12: SCENARIO 4 MOVED SIGNAL/REALIGNMENT YEAR 2035 TRAFFIC VOLUMES 22
FIGURE 13: SCENARIO 5 "PEANUT" RAB TWO-WAY WEST YEAR 2035 TRAFFIC VOLUMES 23
FIGURE 14: SCENARIO 6 "PEANUT" RAB TWO-WAY EAST YEAR 2035 TRAFFIC VOLUMES 24
FIGURE 15: SCENARIO 7 "PEANUT" RAB ONE-WAY YEAR 2035 TRAFFIC VOLUMES 25

CERTIFICATION

I certify that this **TRAFFIC IMPACT STUDY** has been prepared by me and under my immediate supervision and that I have experience and training in the field of traffic and transportation engineering.

A&F ENGINEERING CO., LLC

September 25, 2025
Steven J. Fehribach, P.E.
Indiana Registration #60890237



Trevor Reich, P.E.
Senior Traffic Engineer

INTRODUCTION

This **ROADWAY NETWORK ANALYSIS**, prepared on behalf of the Town of Zionsville, is to address the traffic operations of the potential intersection configurations for the intersections of Sycamore Street & 1st Street and Sycamore Street & Main Street in Zionsville, Indiana.

PURPOSE

The purpose of this analysis is to determine what impact the proposed geometric and intersection changes to the downtown Zionsville roadway network will have on traffic operations in the study area. This analysis will consider different proposed intersection configuration scenarios at the intersections of Sycamore Street with 1st Street & Main Street. Based on the results of this analysis, recommendations will be formulated to adequately serve vehicles traveling to and through the downtown area alike.

SCOPE OF WORK

The scope of work for this analysis is as follows:

First, estimate the year 2025 traffic volumes at the following intersections using previously conducted traffic counts from the Town of Zionsville Road Impact Fee and utilizing a non-compounded growth rate of 1.5% per year:

- Sycamore Street & 1st Street
- Sycamore Street & Main Street

Second, balance the traffic volumes such that the traffic volumes that enter one intersection equal the traffic volumes that exit the adjacent intersection.

Third, redistribute the 2025 traffic volumes to account for the following scenarios, each corresponding to changes in the roadway network:

Scenario 4: Moved Signal/Realignment – Based on realigning Main Street south of Sycamore Street to align with 1st Street and creating a right-in/right-out only access at Sycamore Street & Main Street. In this scenario, the traffic signal control is moved from Main Street to 1st Street.

Scenario 5: "Peanut" Roundabout Two-Way Operation East – Based on realigning Main Street south of Sycamore Street to align with 1st Street. The intersections would be reconstructed as a "peanut" roundabout with the south leg at 1st Street.

Scenario 6: "Peanut" Roundabout Two-Way Operation West – Based on reconstructing the intersections as a "peanut" roundabout with the south leg remaining at Main Street.

Scenario 7: "Peanut" Roundabout One-Way Operation – Based on reconstructing the intersections as a "peanut" roundabout with the one-way northbound leg remaining at Main Street and the one-way southbound leg at 1st Street.

Fourth, prepare a capacity analysis, level of service analysis, and queue length analysis at the study intersections for each of the following scenarios:

Scenario 1: Year 2025 No Build – Based on year 2025 traffic volumes and existing intersection conditions.

Scenario 2: Year 2035 No Build – Based on year 2035 traffic volumes and existing intersection conditions.

Scenario 3: Coordinated Signal System – Based on year 2035 traffic volumes and adding a traffic signal to the intersection of Sycamore St & 1st Street with an added westbound right-turn lane.

Scenario 4: Moved Signal/Realignment – Based on year 2035 traffic volumes and realigning Main Street south of Sycamore Street to align with 1st Street, creating a right-in/right-out only access at Sycamore Street & Main Street, and moving the traffic signal control from Main Street to 1st Street.

Scenario 5: "Peanut" Roundabout Two-Way Operation West – Based on year 2035 traffic volumes and realigning Main Street south of Sycamore Street to align with 1st Street. The intersections would be reconstructed as a "peanut" roundabout with the south leg at 1st Street.

Scenario 6: "Peanut" Roundabout Two-Way Operation East – Based on year 2035 traffic volumes and reconstructing the intersections as a "peanut" roundabout with the south leg remaining at Main Street.

Scenario 7: "Peanut" Roundabout One-Way Operation – Based on year 2035 traffic volumes and reconstructing the intersections as a "peanut" roundabout with the one-way northbound leg remaining at Main Street and the one-way southbound leg at 1st Street.

Fifth, prepare conclusions and recommendations for the roadway network that will be needed to accommodate the proposed changes in the intersection geometrics and intersection control types within the study area.

Finally, prepare a **ROADWAY NETWORK ANALYSIS** report documenting all data, analyses, conclusions, and recommendations to provide for the safe and efficient movement of traffic through the study area.

STUDY AREA

The study area for this analysis has been defined to include the following intersections:

- Sycamore Street & 1st Street
- Sycamore Street & Main Street

Figure 1 is a map of the study area.

FIGURE 1

AREA MAP

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

YEAR 2025 AND YEAR 2035 TRAFFIC VOLUMES

Turning movement traffic volume counts at the study intersections were taken from the Town of Zionsville Road Impact Fee Update. Because these traffic volume counts were conducted before 2025, they were grown to 2025 levels using a non-compounded growth rate of 1.5% per year. According to the turning movement traffic volume counts, the AM and PM peak hours vary slightly at each study intersection. Hence, the actual peak hours are used at each study intersection to create a "worse-case" traffic volume scenario. The intersection count output summary sheets are included in the **Appendix**. The year 2025 traffic volumes were grown to year 2035 levels using a non-compounded growth rate of 1.5% per year.

BALANCED TRAFFIC VOLUMES

Because the study intersections have different peak hours, the traffic volumes were balanced to ease the traffic redistribution process. In order to create a "worse-case" traffic volume scenario, the higher of the intersection volumes were used to balance the lower intersection volumes. For example, the volumes exiting an intersection in the eastbound direction will equal the total number of vehicles on the eastbound approach of the intersection directly to the east of the first intersection.

REDISTRIBUTED TRAFFIC VOLUMES

The following changes are proposed to the roadway network intersection geometrics and control types. The traffic volumes at each study intersection were redistributed to reflect these changes in the roadway network.

Scenario 3: Added Traffic Signal – Based on adding a traffic signal to the intersection of Sycamore St & 1st Street with an added westbound right-turn lane.

Scenario 4: Moved Signal/Realignment – Based on realigning Main Street south of Sycamore Street to align with 1st Street and creating a right-in/right-out only access at Sycamore Street & Main Street. In this scenario, the traffic signal control is moved from Main Street to 1st Street.

Scenario 5: "Peanut" Roundabout Two-Way Operation East – Based on realigning Main Street south of Sycamore Street to align with 1st Street. The intersections would be reconstructed as a "peanut" roundabout with the south leg at 1st Street.

Scenario 6: "Peanut" Roundabout Two-Way Operation West – Based on reconstructing the intersections as a "peanut" roundabout with the south leg remaining at Main Street.

Scenario 7: "Peanut" Roundabout One-Way Operation – Based on reconstructing the intersections as a "peanut" roundabout with the one-way northbound leg remaining at Main Street and the one-way southbound leg at 1st Street.

Figures 2, **3**, **4**, **5**, **6**, **7**, & **8** represent the year 2025 and year 2035 traffic volumes for each of the scenarios above.

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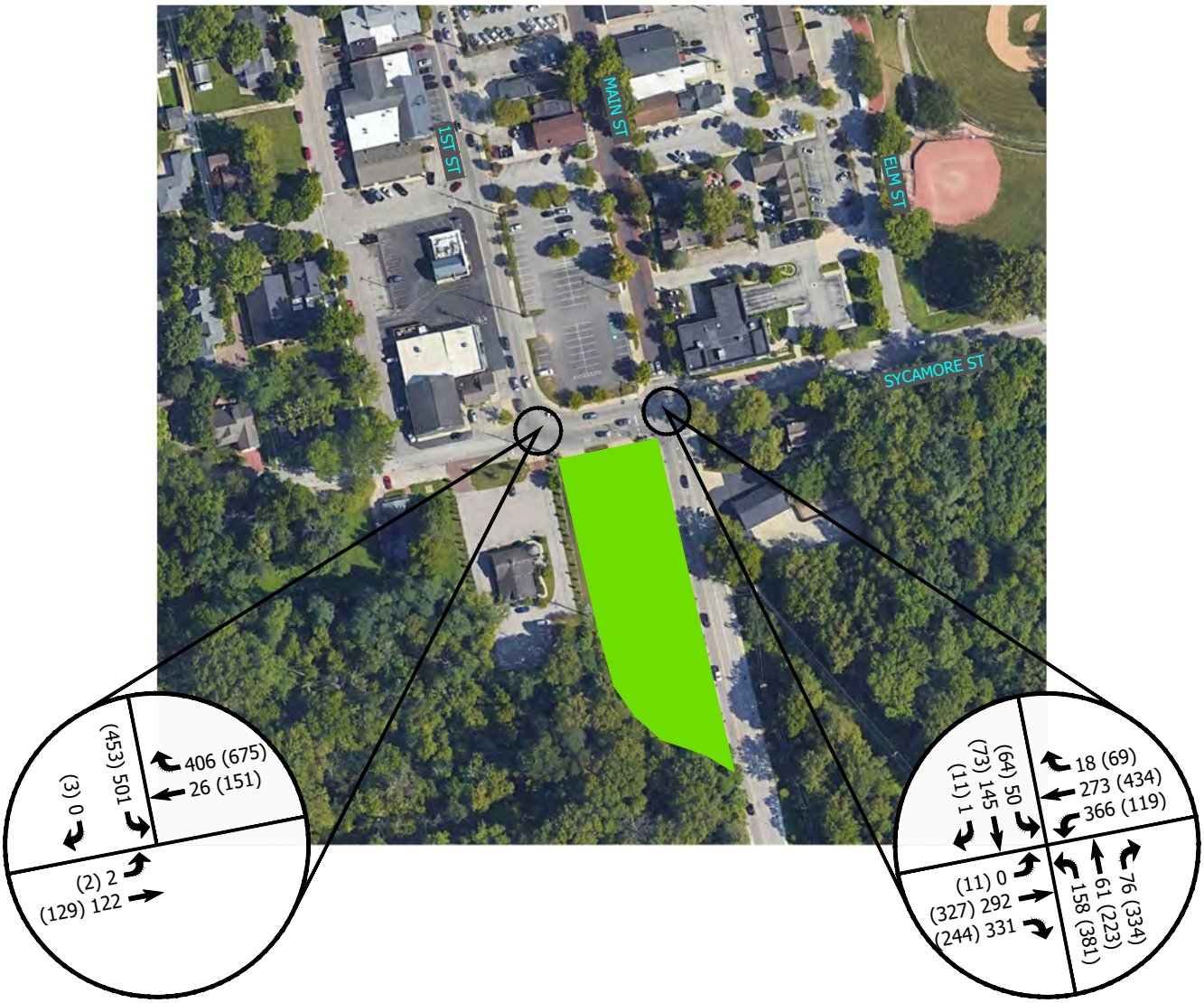

LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

FIGURE 2

SCENARIO 1
NO BUILD - 2025
TRAFFIC VOLUMES

Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\Exhibit_Template_8x11.dwg 1=1 2025-08-26 XX

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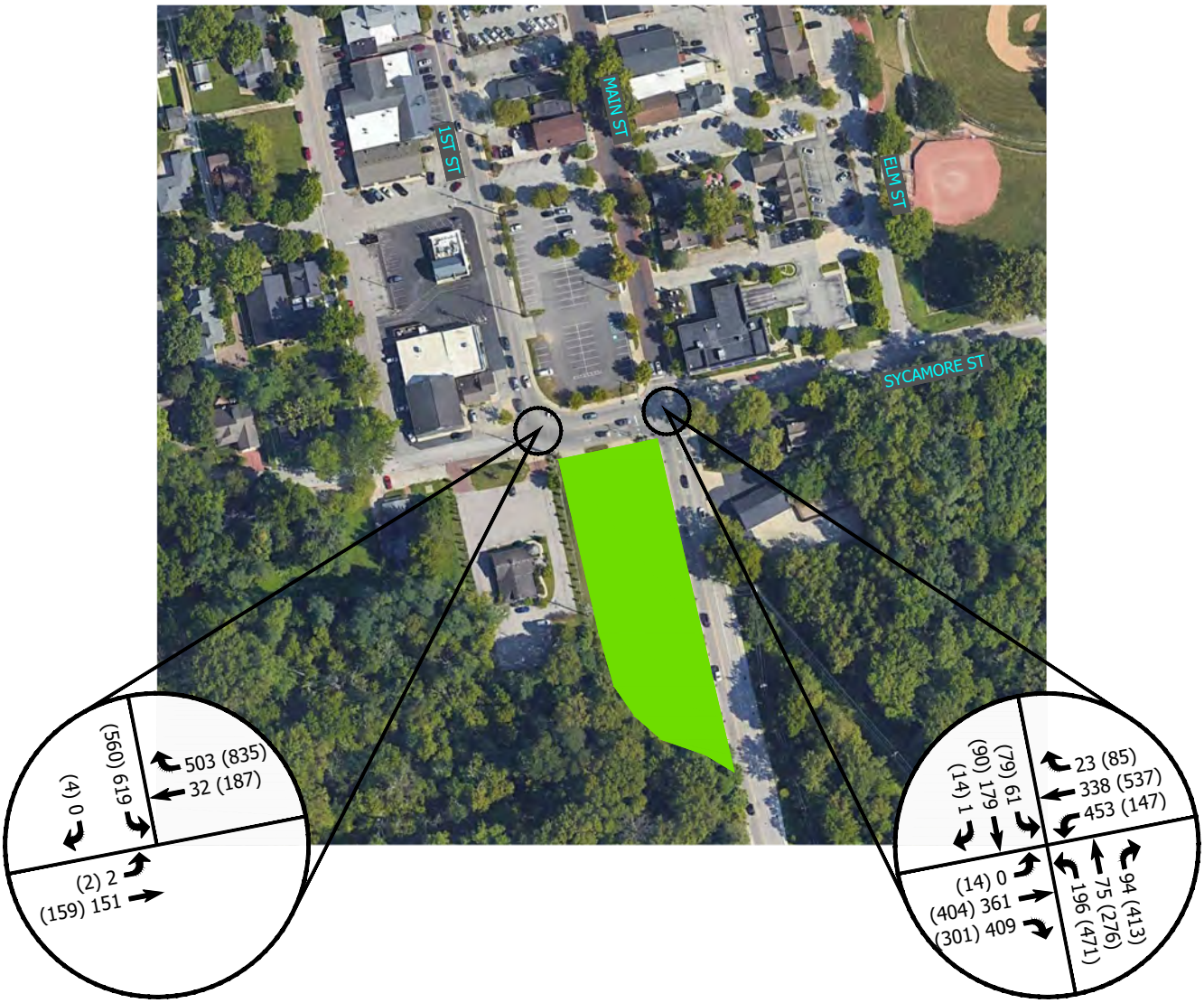


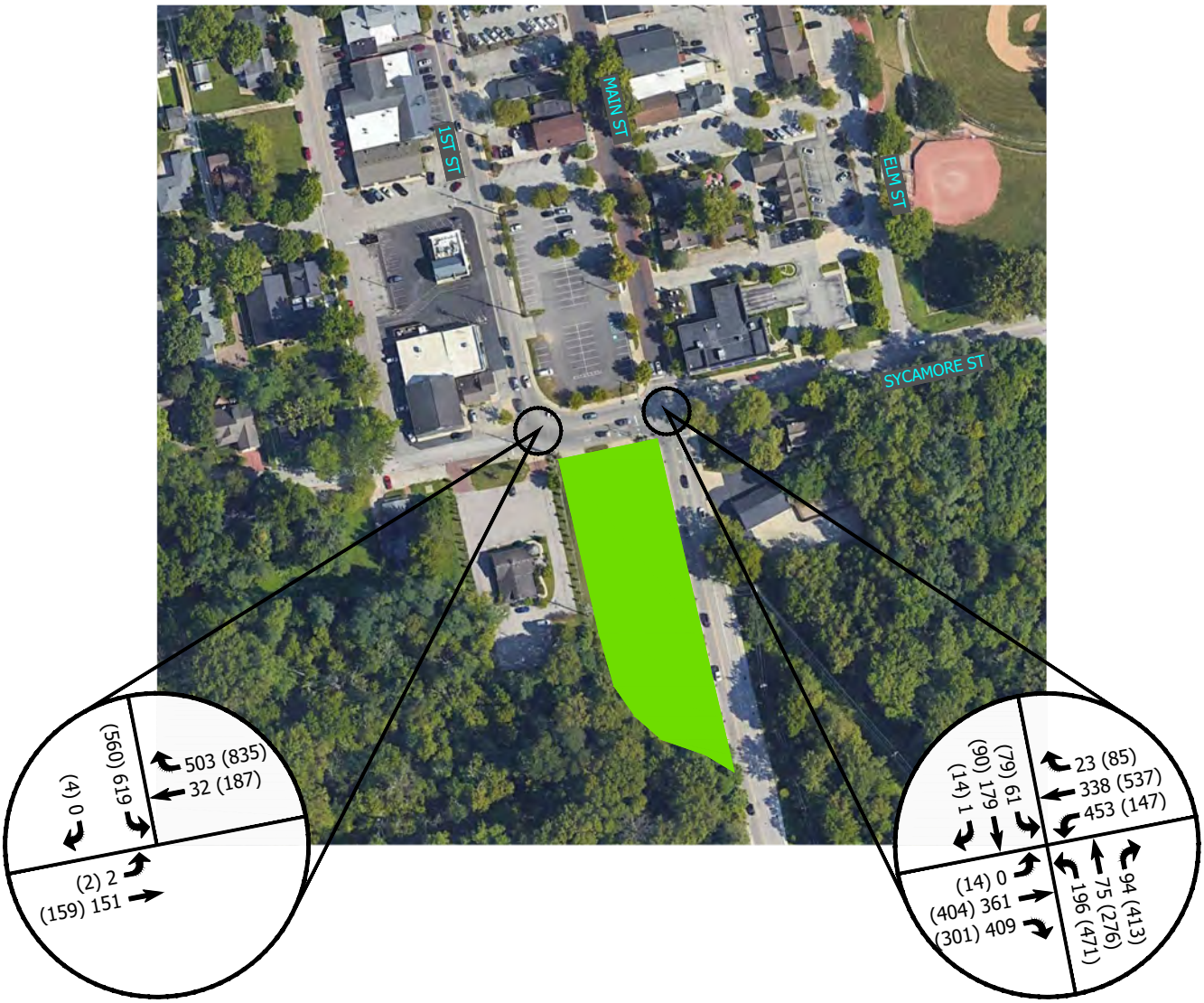
LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

FIGURE 3

SCENARIO 2
NO BUILD - 2035
TRAFFIC VOLUMES

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\Exhibit_Template_8x11.dwg 1=1 2025-08-26 XX

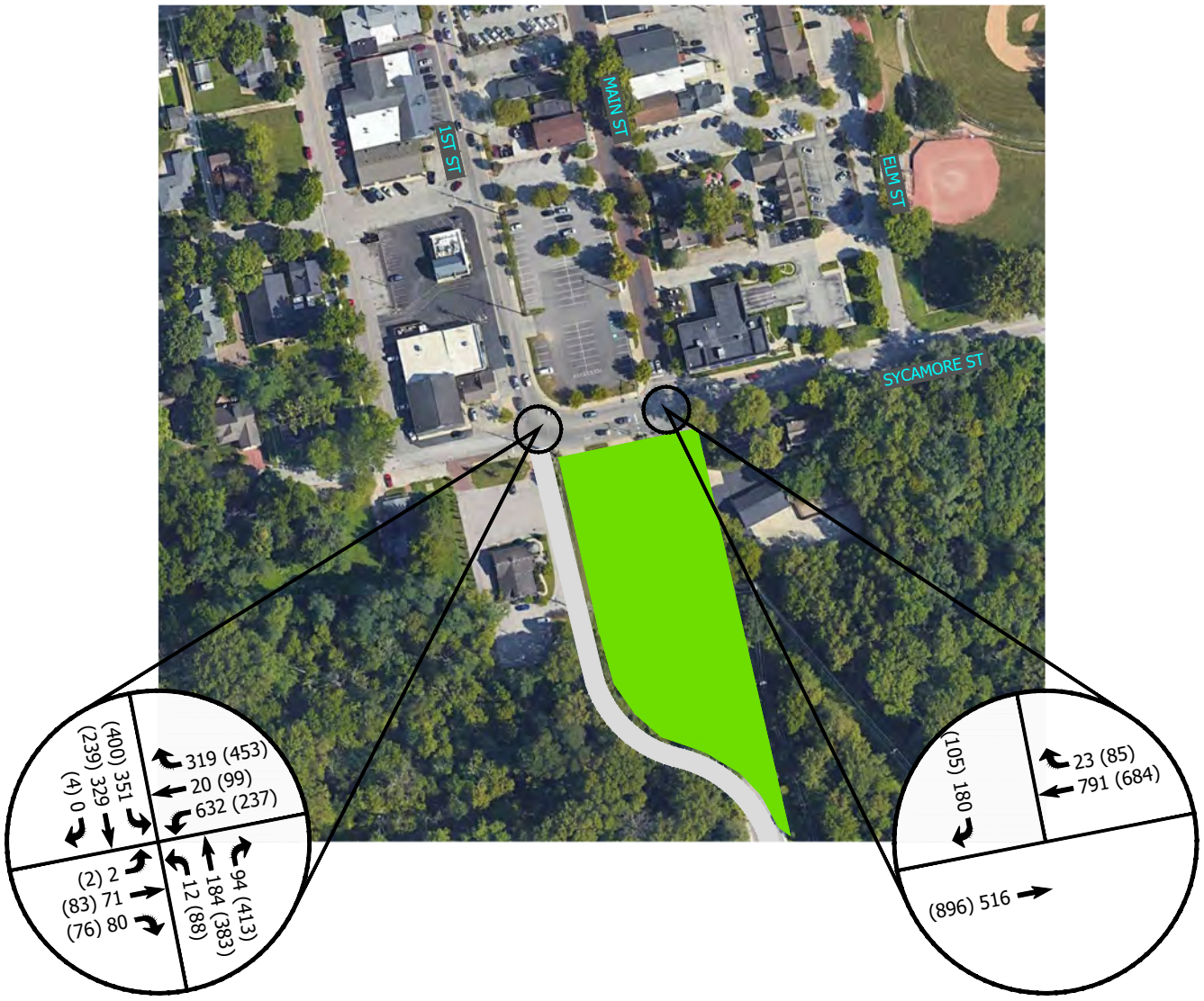


LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

FIGURE 4

SCENARIO 3
COORDINATED SIGNAL SYSTEM
2035 TRAFFIC VOLUMES

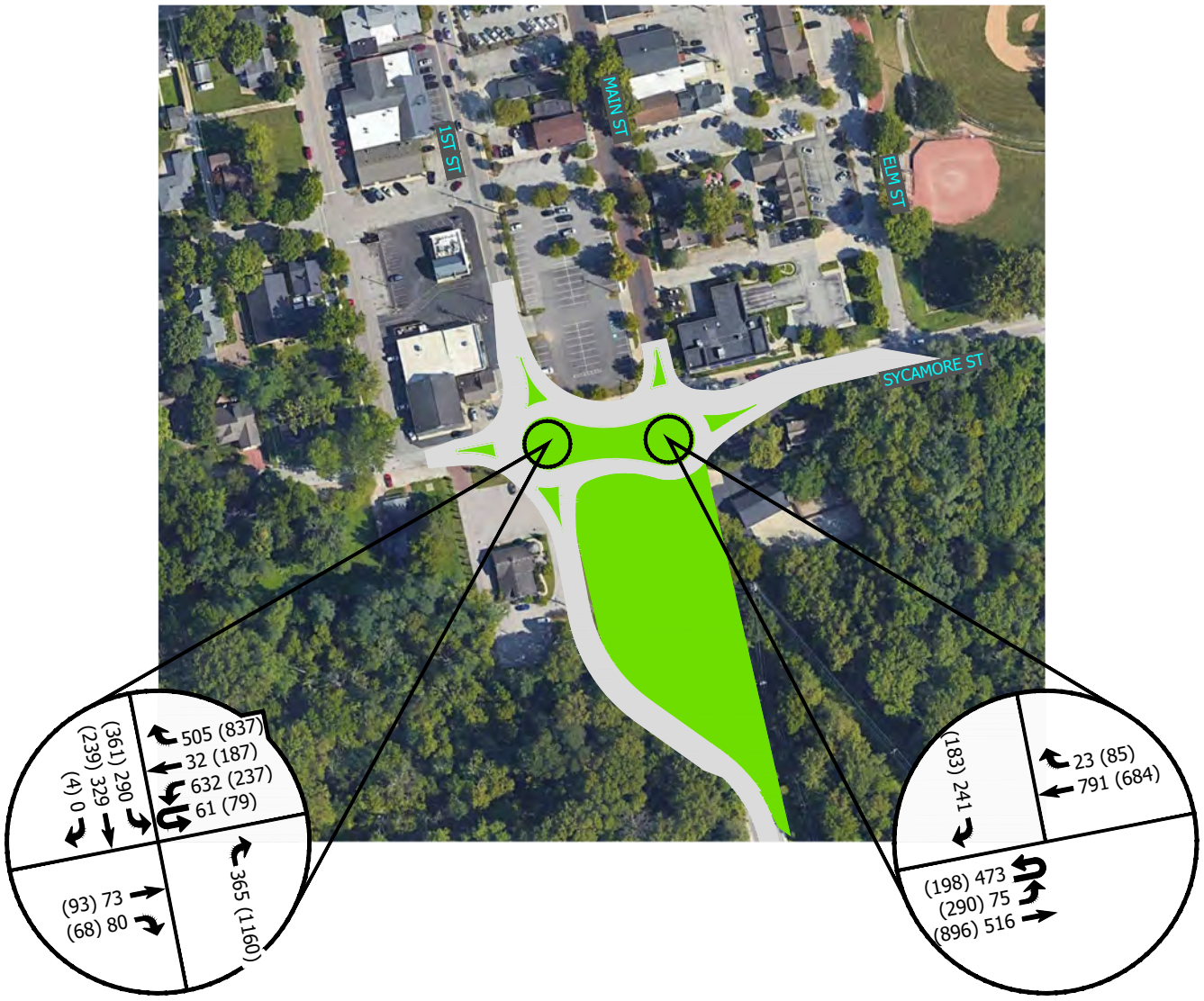


LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

FIGURE 5

SCENARIO 4
MOVED SIGNAL/REALIGNMENT
2035 TRAFFIC VOLUMES

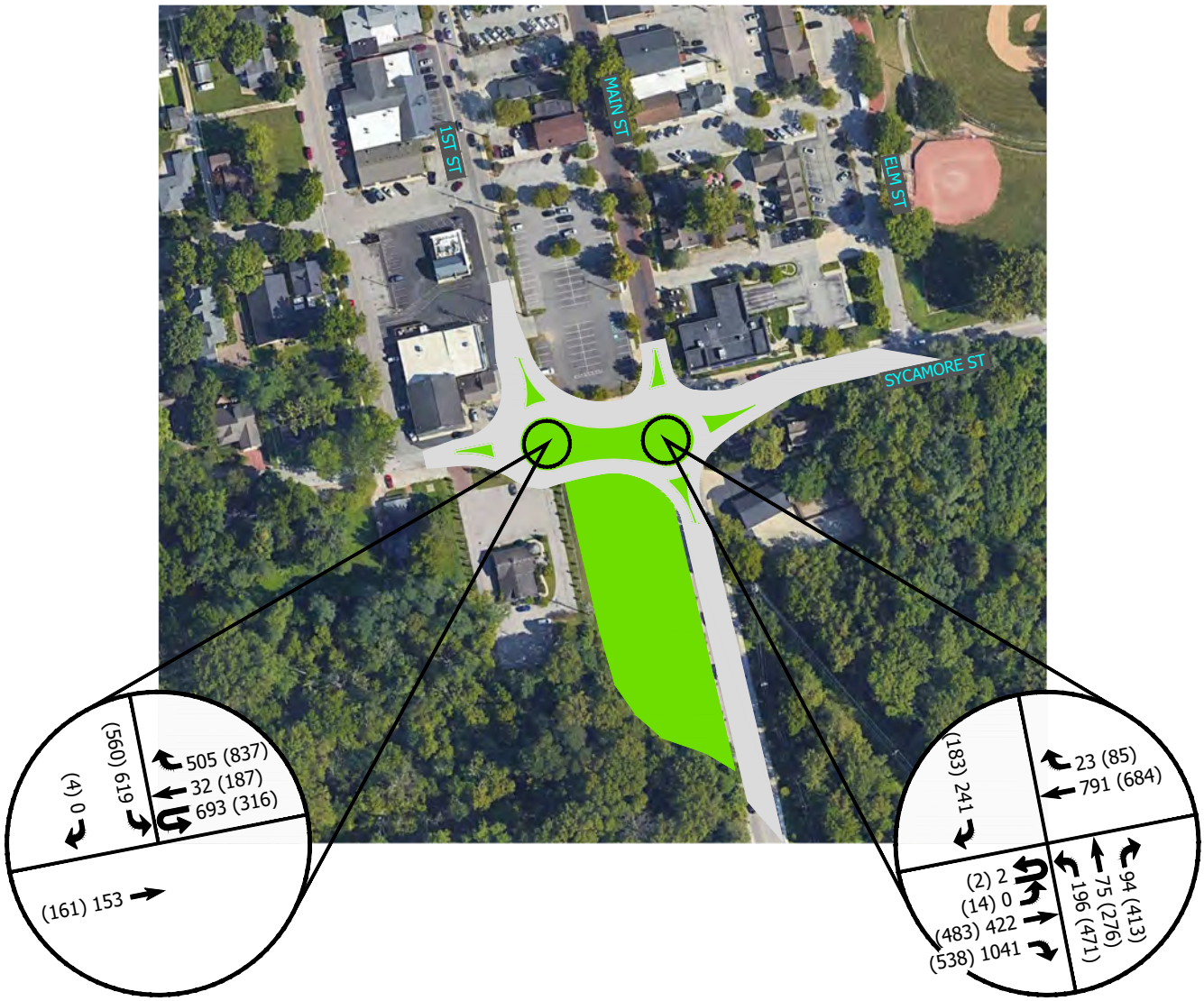


LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

FIGURE 6

SCENARIO 5
"PEANUT" RAB TWO-WAY WEST
2035 TRAFFIC VOLUMES

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

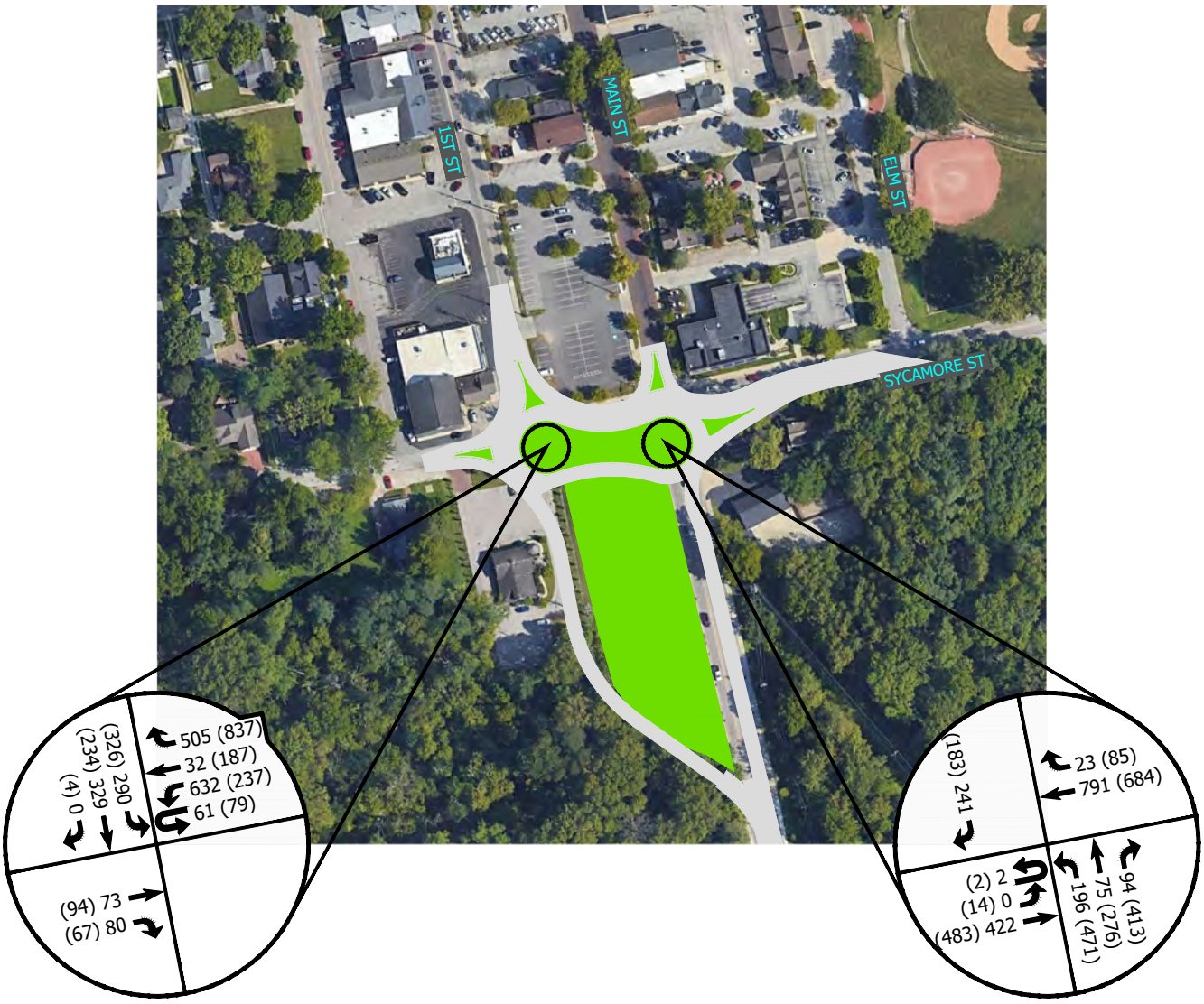


LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

FIGURE 7

SCENARIO 6
"PEANUT" RAB TWO-WAY EAST
2035 TRAFFIC VOLUMES

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET



LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

FIGURE 8

SCENARIO 7
"PEANUT" RAB ONE-WAY
2035 TRAFFIC VOLUMES

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

CAPACITY ANALYSIS

The "efficiency" of an intersection is based on its ability to accommodate the traffic volumes that approach the intersection. It is defined by the Level-of-Service (LOS) of the intersection. The LOS is determined by a series of calculations commonly called a "capacity analysis". Input data into a capacity analysis include traffic volumes, intersection geometry, and number and use of lanes. To determine the LOS at each of the study intersections, a capacity analysis has been made using the recognized computer program *Synchro/SimTraffic*[1]. This program allows intersections to be analyzed and optimized using the capacity calculation methods outlined within the *Highway Capacity Manual (HCM 7th Edition)*[2]. Roundabout capacity analyses were conducted using the recognized computer program SIDRA[3] with the INDOT methodology. The following list shows the delays related to the levels of service for signalized/roundabout intersections:

Level of Service	Control Delay (seconds/vehicle) SIGNALIZED/ROUNDABOUT
A	Less than or equal to 10
B	Between 10.1 and 20
C	Between 20.1 and 35
D	Between 35.1 and 55
E	Between 55.1 and 80
F	greater than 80

CAPACITY ANALYSIS SCENARIOS

To evaluate the effect that the proposed changes to the roadway network will have, a series of traffic volume scenarios were analyzed to determine the adequacy of the existing roadway network and the proposed changes to the roadway network. An analysis has been made for the peak hours at each of the study intersections for the following traffic volume scenarios:

Scenario 1: Year 2025 No Build – Based on year 2025 traffic volumes and existing intersection conditions. **Figure 2** is a summary of these traffic volumes.

Scenario 2: Year 2035 No Build – Based on year 2035 traffic volumes and existing intersection conditions. **Figure 3** is a summary of these traffic volumes.

Scenario 3: Added Traffic Signal – Based on year 2035 traffic volumes and adding a traffic signal to the intersection of Sycamore St & 1st Street with an added westbound right-turn lane. **Figure 4** is a summary of these traffic volumes.

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[1] *Synchro/SimTraffic 12*, Cubic Transportation Systems, 2023.

[2] *Highway Capacity Manual (HCM), 7th Edition* Transportation Research Board, The National Academies of Sciences, Washington, DC, 2022.

[3] *SIDRA INTERSECTION 9.1*, Akcelik and Associates Pty Ltd, 2023

Scenario 4: Moved Signal/Realignment – Based on year 2035 traffic volumes and realigning Main Street south of Sycamore Street to align with 1st Street, creating a right-in/right-out only access at Sycamore Street & Main Street, and moving the traffic signal control from Main Street to 1st Street. **Figure 5** is a summary of these traffic volumes.

Scenario 5: "Peanut" Roundabout Two-Way Operation West – Based on year 2035 traffic volumes and realigning Main Street south of Sycamore Street to align with 1st Street. The intersections would be reconstructed as a "peanut" roundabout with the south leg at 1st Street. **Figure 6** is a summary of these traffic volumes.

Scenario 6: "Peanut" Roundabout Two-Way Operation East – Based on year 2035 traffic volumes and reconstructing the intersections as a "peanut" roundabout with the south leg remaining at Main Street. **Figure 7** is a summary of these traffic volumes.

Scenario 7: "Peanut" Roundabout One-Way Operation – Based on year 2035 traffic volumes and reconstructing the intersections as a "peanut" roundabout with the one-way northbound leg remaining at Main Street and the one-way southbound leg at 1st Street. **Figure 8** is a summary of these traffic volumes.

The following tables summarize the level of service results at each study intersection. The *Synchro/SimTraffic* and *SIDRA* intersection reports illustrating the capacity analysis results are included in the **Appendix**. Figures illustrating the level of service results are included below.

TABLE 1 – LEVEL OF SERVICE SUMMARY: SYCAMORE ST & 1ST STREET

Approach	AM Peak Scenarios						
	1	2	3	4	5	6	7
Northbound Approach	---	---	---	C	A	---	---
Southbound Approach	B	F	F	C	C	C	A
Eastbound Approach	A	A	C	D	D	D	B
Westbound Approach	A	A	A	B	A	A	A
Intersection	**A**	**F**	**E**	**C**	---	---	---
Approach	PM Peak Scenarios						
	1	2	3	4	5	6	7
Northbound Approach	---	---	---	D	B	---	---
Southbound Approach	F	F	F	D	B	B	A
Eastbound Approach	A	B	F	E	B	B	A
Westbound Approach	A	A	A	C	A	A	A
Intersection	**C**	**F**	**F**	**D**	---	---	---

Intersection Geometrics

- Scenario 1: No Build – 2025
  - Southbound: Shared Left & Right-Turn Lane
  - Eastbound: Shared Through & Left-Turn Lane
  - Westbound: Shared Through & Right-Turn Lane
- Scenario 2: No Build – 2035
  - Southbound: Shared Left & Right-Turn Lane
  - Eastbound: Shared Through & Left-Turn Lane
  - Westbound: Shared Through & Right-Turn Lane
- Scenario 3: Coordinated Signal System
  - Southbound: Shared Left & Right-Turn Lane
  - Eastbound: Shared Through & Left-Turn Lane
  - Westbound: Through Lane / Right-Turn Lane
- Scenario 4: Moved Signal/Realignment
  - Northbound: Shared Through & Left-Turn Lane / Right-Turn Lane
  - Southbound: Left-Turn Lane / Shared Through & Right-Turn Lane
  - Eastbound: Shared Left, Through, & Right-Turn Lane
  - Westbound: Left-Turn Lane / Shared Through & Right-Turn Lane
- Scenario 5: "Peanut" RAB Two-Way West
  - Northbound: Right-Turn Lane / Right-Turn Lane
  - Southbound: Shared Left, Through, & Right-Turn Lane
  - Eastbound: Shared Through & Right-Turn Lane
  - Westbound: Shared Left, Through, & U-Turn Lane / Right-Turn Lane
- Scenario 6: "Peanut" RAB Two-Way East
  - Southbound: Shared Left & Right-Turn Lane
  - Eastbound: Through Lane
  - Westbound: Shared Through & U-Turn Lane / Right-Turn Lane
- Scenario 7: "Peanut" RAB One-Way
  - Southbound: Left-Turn Lane / Shared Through & Right-Turn Lane
  - Eastbound: Shared Through & Right-Turn Lane
  - Westbound: Shared Left, Through, & U-Turn Lane / Right-Turn Lane

TABLE 2 – LEVEL OF SERVICE SUMMARY: SYCAMORE ST & MAIN STREET

Approach	AM Peak Scenarios						
	1	2	3	4	5	6	7
Northbound Approach	B	C	C	---	---	A	A
Southbound Approach	C	C	C	F	D	B	B
Eastbound Approach	B	B	B	A	A	A	A
Westbound Approach	C	C	D	D	B	A	A
Intersection	**B**	**C**	**C**	**F**	**---**	**---**	**---**
Approach	PM Peak Scenarios						
	1	2	3	4	5	6	7
Northbound Approach	C	F	F	---	---	B	A
Southbound Approach	C	D	D	F	E	C	C
Eastbound Approach	B	C	C	A	A	A	A
Westbound Approach	C	E	E	D	B	B	B
Intersection	**C**	**E**	**E**	**D**	**---**	**---**	**---**

Intersection Geometrics

- Scenario 1: No Build – 2025
  - Northbound: Left-Turn Lane / Shared Through & Right-Turn Lane
  - Southbound: Left-Turn Lane / Shared Through & Right-Turn Lane
  - Eastbound: Shared Through & Left-Turn Lane / Right-Turn Lane
  - Westbound: Left-Turn Lane / Shared Through & Right-Turn Lane
- Scenario 2: No Build – 2035
  - Northbound: Left-Turn Lane / Shared Through & Right-Turn Lane
  - Southbound: Left-Turn Lane / Shared Through & Right-Turn Lane
  - Eastbound: Shared Through & Left-Turn Lane / Right-Turn Lane
  - Westbound: Left-Turn Lane / Shared Through & Right-Turn Lane
- Scenario 3: Coordinated Signal System
  - Northbound: Left-Turn Lane / Shared Through & Right-Turn Lane
  - Southbound: Left-Turn Lane / Shared Through & Right-Turn Lane
  - Eastbound: Shared Through & Left-Turn Lane / Right-Turn Lane
  - Westbound: Left-Turn Lane / Shared Through & Right-Turn Lane
- Scenario 4: Moved Signal/Realignment
  - Southbound: Right-Turn Lane
  - Eastbound: Through Lane
  - Westbound: Shared Through & Right-Turn Lane
- Scenario 5: “Peanut” RAB Two-Way West
  - Southbound: Right-Turn Lane
  - Eastbound: Shared Left & U-Turn Lane / Through Lane
  - Westbound: Through Lane / Right-Turn Lane
- Scenario 6: “Peanut” RAB Two-Way East
  - Northbound: Shared Through & Left-Turn Lane / Right-Turn Lane
  - Southbound: Right-Turn Lane
  - Eastbound: Shared Through, Left, & U-Turn Lane / Right-Turn Lane
  - Westbound: Through Lane / Shared Through & Right-Turn Lane
- Scenario 7: “Peanut” RAB One-Way
  - Northbound: Shared Through & Left-Turn Lane / Right-Turn Lane
  - Southbound: Right-Turn Lane
  - Eastbound: Shared Through, Left, & U-Turn Lane
  - Westbound: Through Lane / Shared Through & Right-Turn Lane

QUEUE LENGTH ANALYSIS

A 95th percentile queue length analysis was conducted for each of the scenarios studied. The queue length analyses for the conventional intersection scenarios (Scenarios 1, 2, 3, & 4) were conducted using *Synchro/SimTraffic* and the 95th percentile queue length analyses for the roundabout scenarios (Scenarios 5, 6, & 7) were conducted using *SIDRA*. The following tables are a summary of the AM and PM peak hour 95th percentile queues lengths for each scenario shown in feet and vehicles. The 95th percentile queue length represents the queue length that 95 percent of the AM or PM peak hour queue lengths will fall below. For the purposes of this analysis, the effective length of a vehicle is 20 feet. **Figures 9**, **10**, **11**, **12**, **13**, **14**, & **15** illustrate these 95th percentile queue lengths in feet as well as the capacity analysis level of service results. It should be noted that these figures show some of the queue lengths reaching back to an adjacent intersection and then being split between the approaches of said intersection. This split was calculated based on the proportion of traffic volumes from each approach of the intersection that would contribute to these queues.

TABLE 3 – 95TH PERCENTILE QUEUE LENGTH SUMMARY (FEET): SYCAMORE ST & 1ST STREET

Approach	AM Peak Scenarios						
	1	2	3	4	5	6	7
Northbound Approach	---	---	---	200	30	---	---
Southbound Approach	280	1960	1500	290	350	350	60
Eastbound Approach	30	50	120	180	160	160	40
Westbound Approach	0	0	70	140	0	0	0
Approach	PM Peak Scenarios						
	1	2	3	4	5	6	7
Northbound Approach	---	---	---	460	250	---	---
Southbound Approach	1040	2310	2300	450	170	170	40
Eastbound Approach	50	190	460	300	50	50	20
Westbound Approach	10	10	120	160	0	0	0

TABLE 4 – 95TH PERCENTILE QUEUE LENGTH SUMMARY (FEET): SYCAMORE ST & MAIN STREET

Approach	AM Peak Scenarios						
	1	2	3	4	5	6	7
Northbound Approach	130	200	180	---	---	30	30
Southbound Approach	120	150	170	2180	190	80	80
Eastbound Approach	160	150	170	0	0	0	0
Westbound Approach	250	410	860	800	320	60	60
Approach	PM Peak Scenarios						
	1	2	3	4	5	6	7
Northbound Approach	360	1700	1820	---	---	190	180
Southbound Approach	100	140	140	580	230	80	70
Eastbound Approach	160	160	160	0	0	0	0
Westbound Approach	380	1000	710	1190	290	180	160

TABLE 5 – 95TH PERCENTILE QUEUE LENGTH SUMMARY (VEHICLES): SYCAMORE ST & 1ST STREET

Approach	AM Peak Scenarios						
	1	2	3	4	5	6	7
Northbound Approach	---	---	---	10	2	---	---
Southbound Approach	14	98	75	15	18	18	3
Eastbound Approach	2	3	6	9	8	8	2
Westbound Approach	0	0	4	7	0	0	0
Approach	PM Peak Scenarios						
	1	2	3	4	5	6	7
Northbound Approach	---	---	---	23	13	---	---
Southbound Approach	52	116	115	23	9	9	2
Eastbound Approach	3	10	23	15	3	3	1
Westbound Approach	1	1	6	8	0	0	0

TABLE 6 – 95TH PERCENTILE QUEUE LENGTH SUMMARY (VEHICLES): SYCAMORE ST & MAIN STREET

Approach	AM Peak Scenarios						
	1	2	3	4	5	6	7
Northbound Approach	7	10	9	---	---	2	2
Southbound Approach	6	8	9	109	10	4	4
Eastbound Approach	8	8	9	0	0	0	0
Westbound Approach	13	21	43	40	16	3	3
Approach	PM Peak Scenarios						
	1	2	3	4	5	6	7
Northbound Approach	18	85	91	---	---	10	9
Southbound Approach	5	7	7	29	12	4	4
Eastbound Approach	8	8	8	0	0	0	0
Westbound Approach	19	50	36	60	15	9	8

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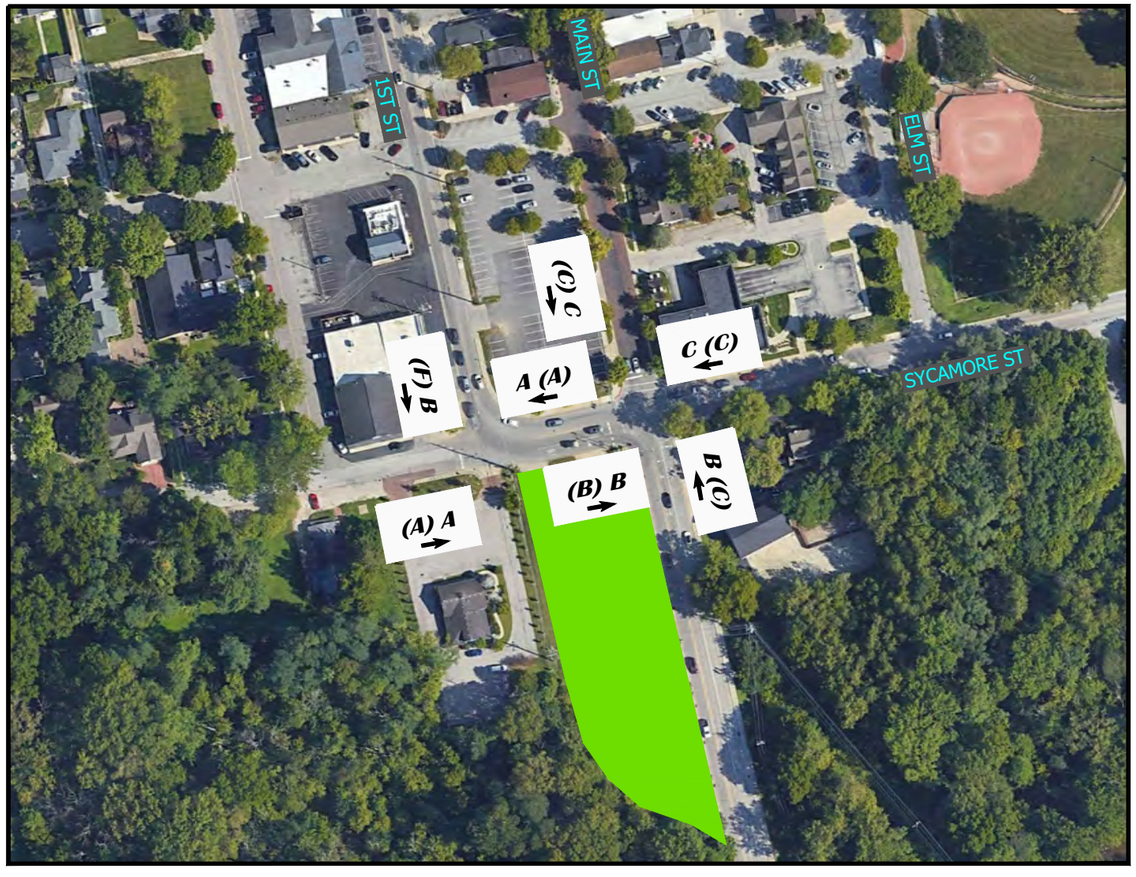
NOTE: ALL DIMENSIONS ARE APPROXIMATE



LEVEL OF SERVICE SUMMARY

95TH PERCENTILE QUEUE LENGTH SUMMARY

LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

FIGURE 9

SCENARIO 1
NO BUILD
YEAR 2025 TRAFFIC VOLUMES

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

LEGEND
= A.M. PEAK HOUR
= P.M. PEAK HOUR
* = NEGLIGIBLE

Z:\2018\18XXXS-XXXXXXX\18XXXS-EXH.DWG 1=1 XX-XX-18 XXX

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Transportation & Site Engineering
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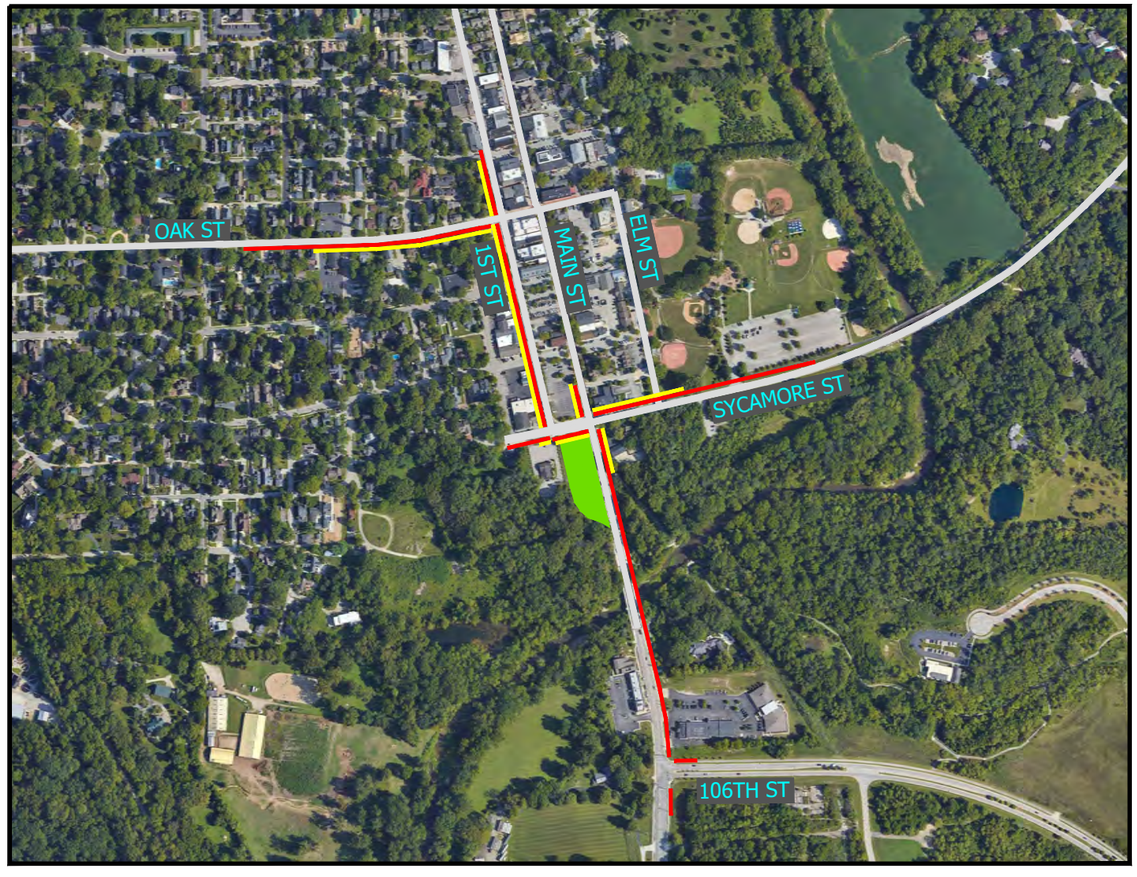
NOTE: ALL DIMENSIONS ARE APPROXIMATE

LEVEL OF SERVICE SUMMARY



95TH PERCENTILE QUEUE LENGTH SUMMARY

LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

FIGURE 10

SCENARIO 2
NO BUILD
YEAR 2035 TRAFFIC VOLUMES

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

LEGEND
= A.M. PEAK HOUR
= P.M. PEAK HOUR
* = NEGLIGIBLE

Z:\2018\18XXXS-XXXXXXX\18XXXS-EXH.DWG 1=1 XX-XX-18 XXX

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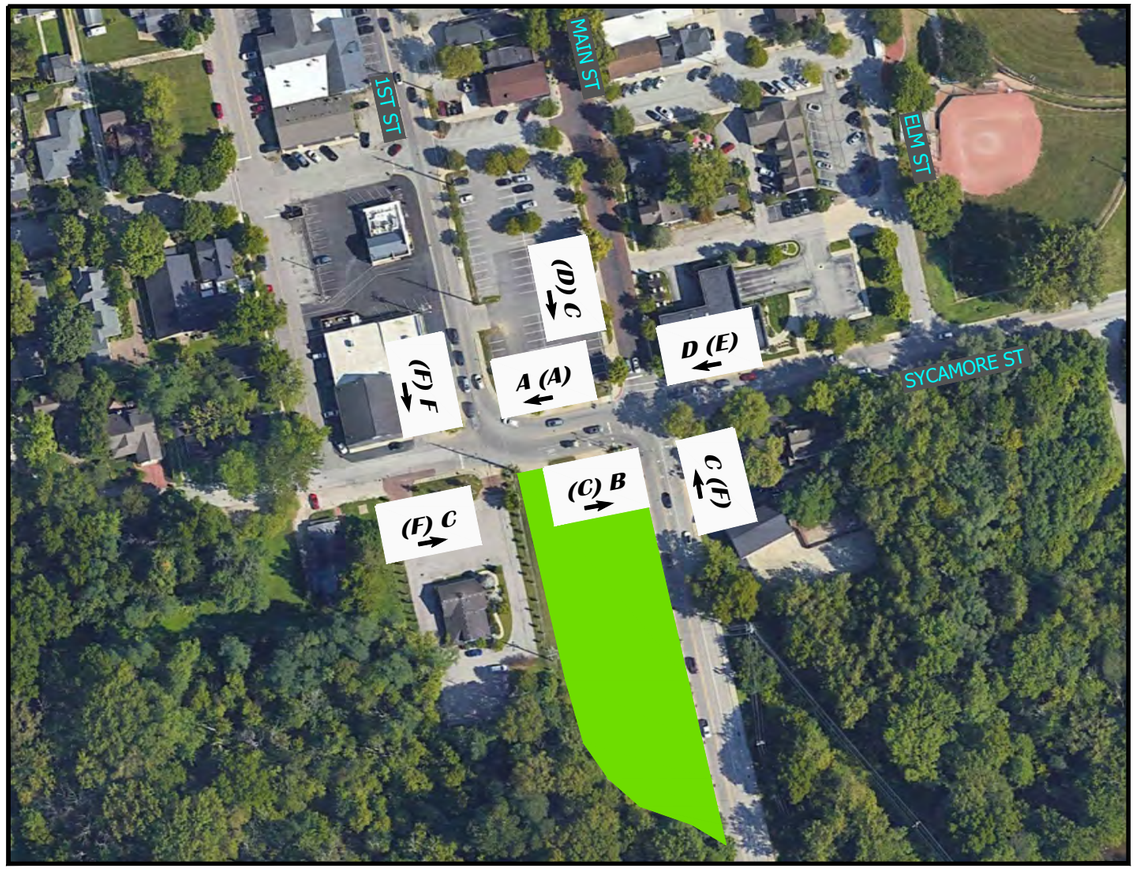
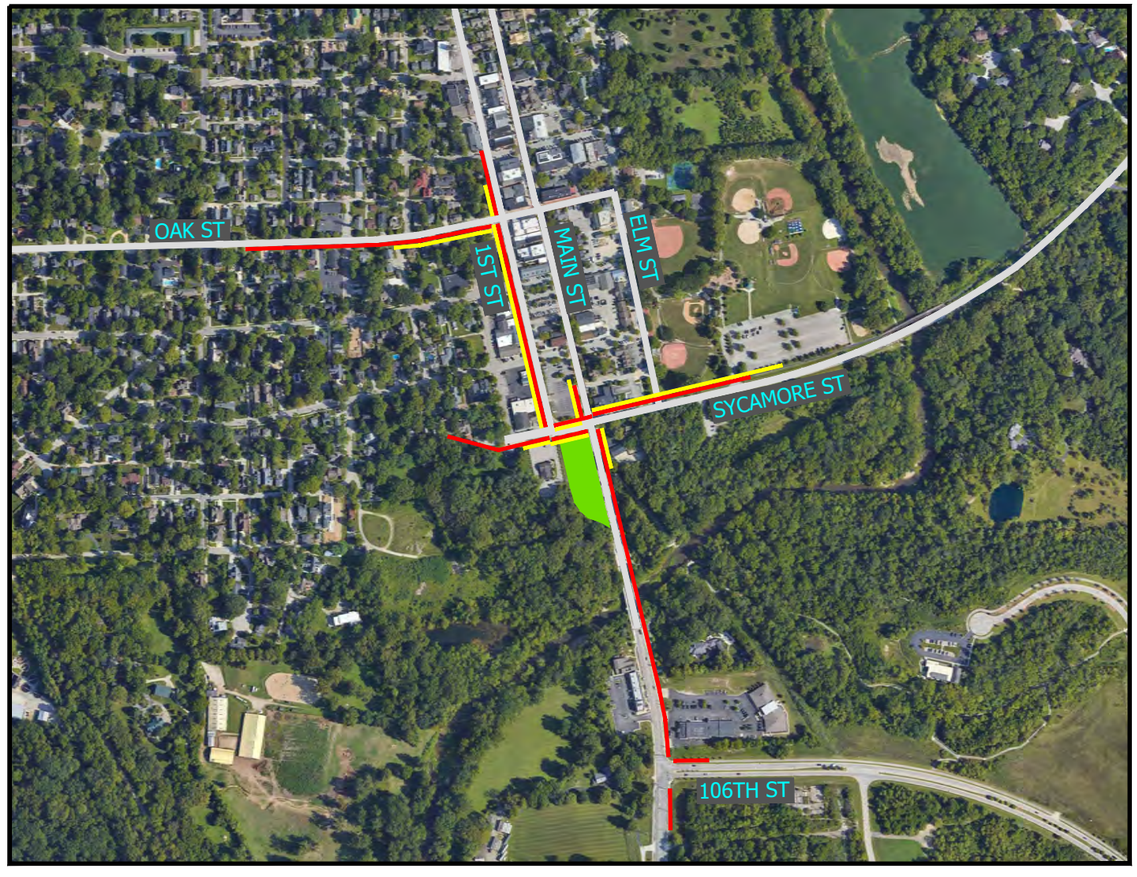
NOTE: ALL DIMENSIONS ARE APPROXIMATE



LEVEL OF SERVICE SUMMARY



95TH PERCENTILE QUEUE LENGTH SUMMARY

LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

FIGURE 11

SCENARIO 3
COORDINATED SIGNAL SYSTEM
YEAR 2035 TRAFFIC VOLUMES

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

LEGEND
= A.M. PEAK HOUR
= P.M. PEAK HOUR
* = NEGLIGIBLE

Z:\2018\18XXXS-XXXXXXX\18XXXS-EXH.DWG 1=1 XX-XX-18 XXX

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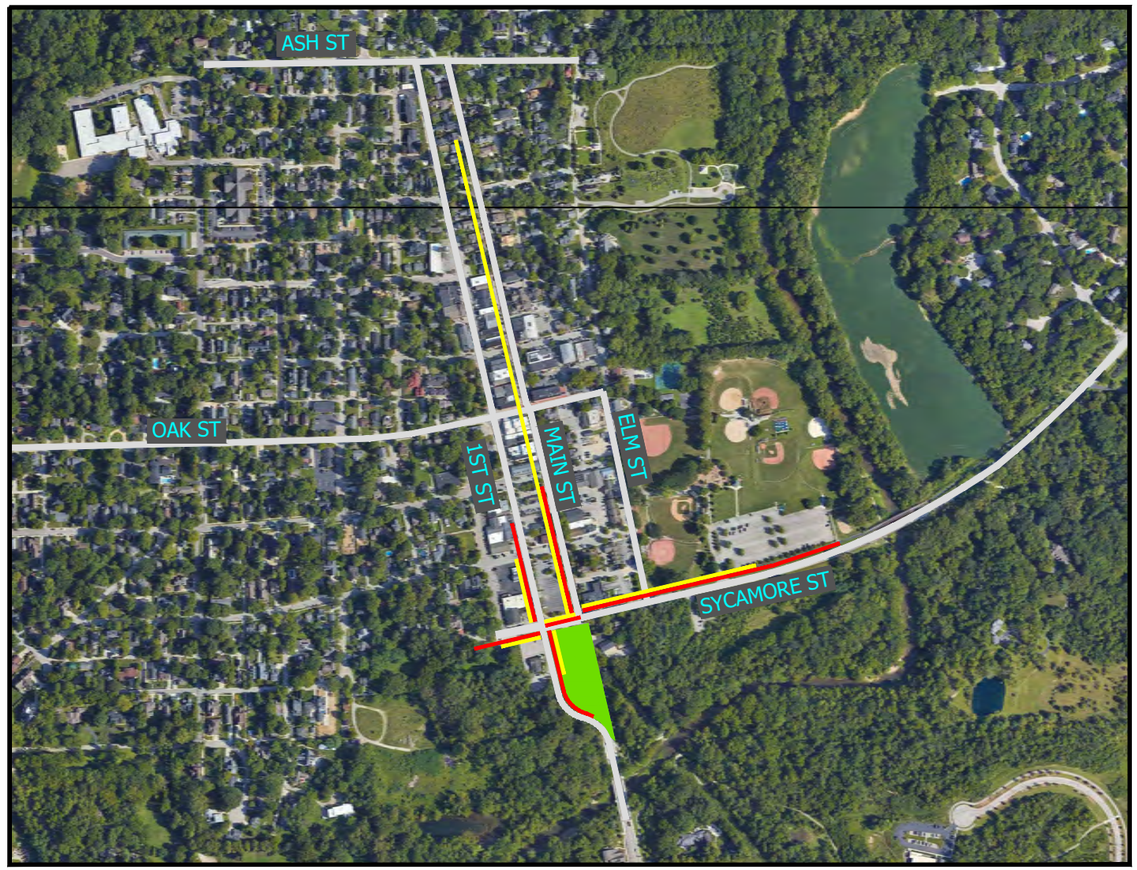
NOTE: ALL DIMENSIONS ARE APPROXIMATE

LEVEL OF SERVICE SUMMARY



95TH PERCENTILE QUEUE LENGTH SUMMARY

LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

FIGURE 12

SCENARIO 4
MOVED SIGNAL/REALIGNMENT
YEAR 2035 TRAFFIC VOLUMES

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

LEGEND
= A.M. PEAK HOUR
= P.M. PEAK HOUR
* = NEGLIGIBLE

Z:\2018\18XXXS-XXXXXX\18XXXS-EXH.DWG 1=1 XX-XX-18 XXX

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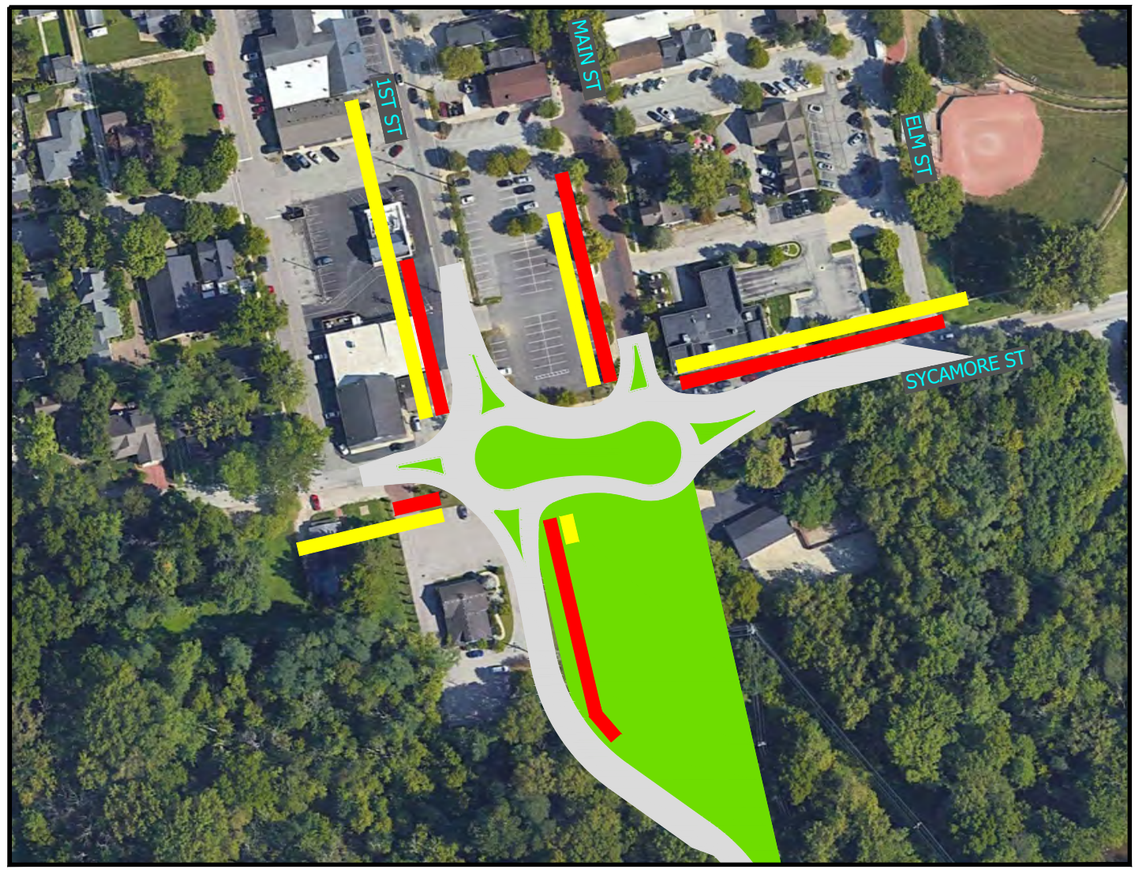
NOTE: ALL DIMENSIONS ARE APPROXIMATE

LEVEL OF SERVICE SUMMARY



95TH PERCENTILE QUEUE LENGTH SUMMARY

LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

FIGURE 13

SCENARIO 5
"PEANUT" RAB TWO-WAY WEST
YEAR 2035 TRAFFIC VOLUMES

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

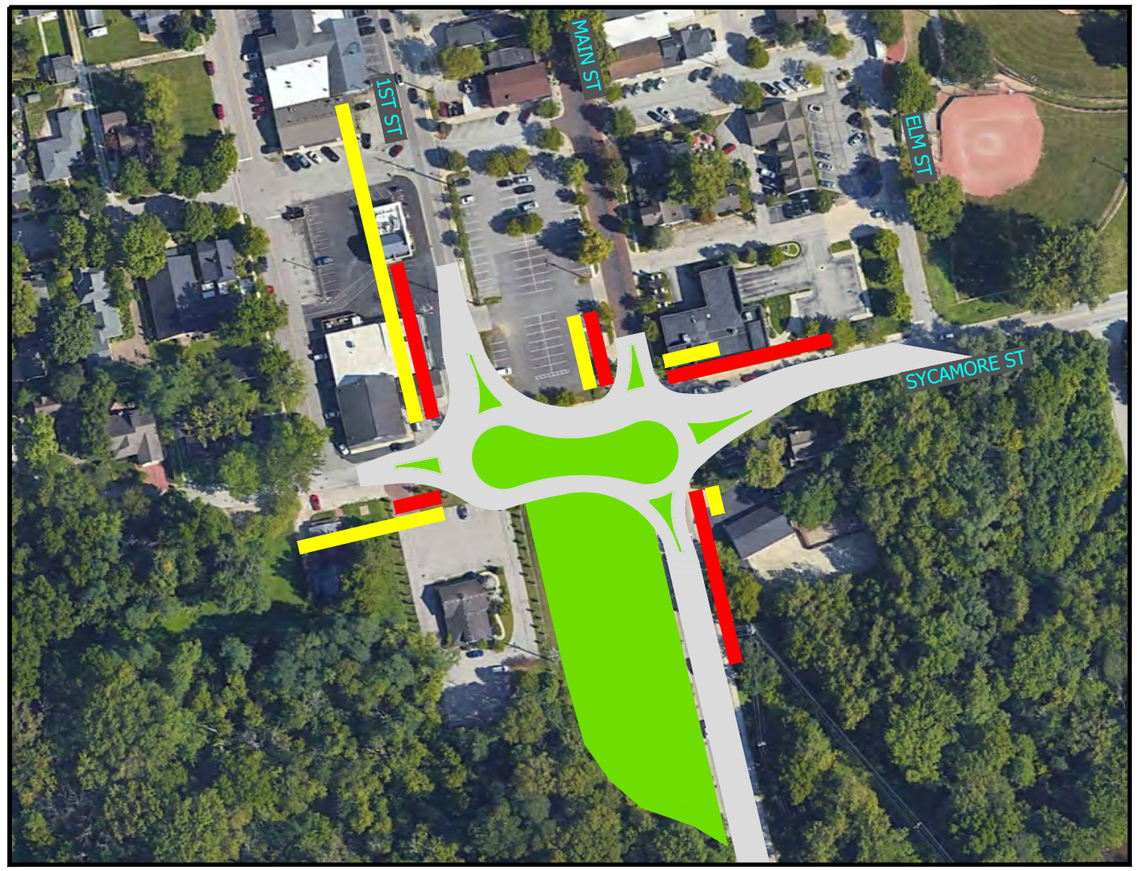
LEGEND
= A.M. PEAK HOUR
= P.M. PEAK HOUR
* = NEGLIGIBLE

Z:\2018\18XXXS-XXXXXXX\18XXXS-EXH.DWG 1=1 XX-XX-18 XXX

A&F ENGINEERING
Transportation & Site Engineering
Creating Order Since 1966

NOTE: ALL DIMENSIONS ARE APPROXIMATE

LEVEL OF SERVICE SUMMARY



95TH PERCENTILE QUEUE LENGTH SUMMARY

LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

FIGURE 14

SCENARIO 6
"PEANUT" RAB TWO-WAY EAST
YEAR 2035 TRAFFIC VOLUMES

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

LEGEND
= A.M. PEAK HOUR
= P.M. PEAK HOUR
* = NEGLIGIBLE

Z:\2018\18XXXS-XXXXXXX\18XXXS-EXH.DWG 1=1 XX-XX-18 XXX

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NOTE: ALL DIMENSIONS ARE APPROXIMATE

LEVEL OF SERVICE SUMMARY

95TH PERCENTILE QUEUE LENGTH SUMMARY

LEGEND
XX = A.M. PEAK HOUR
(XX) = P.M. PEAK HOUR
* = NEGLIGIBLE

FIGURE 15

SCENARIO 7
"PEANUT" RAB ONE-WAY
YEAR 2035 TRAFFIC VOLUMES

TRAFFIC STUDY
TOWN OF ZIONSVILLE
SYCAMORE STREET

LEGEND
= A.M. PEAK HOUR
= P.M. PEAK HOUR
* = NEGLIGIBLE

Z:\2018\18XXXS-XXXXXXX\18XXXS-EXH.DWG 1=1 XX-XX-18 XXX

CONCLUSIONS

The conclusions that follow are based on the data and analyses presented in this study and a field review conducted at the site.

While the following conclusions address vehicular traffic operations in the study area, each scenario allows for the design of pedestrian facilities that offer minimal impact to pedestrian operations in the study area. Such facilities may include but are not limited to raised crosswalks, crosswalks with rapid flashing beacons, pedestrian refuge islands, or midblock crossings.

SCENARIO 1: NO BUILD - 2025

The purpose of this analysis is to replicate the existing congestion issues that are present on the study area roadway network today as well as create a baseline for comparison with the proposed configurations. While the AM and PM peak hours experience acceptable levels of service (apart from the southbound approach at Sycamore Street & Main Street during the PM peak hour), the 95th percentile queue lengths show congestion along 1st Street and Sycamore Street. The southbound queue along 1st Street reaches the intersection of 1st Street & Oak Street during the PM peak hour and the westbound queue along Sycamore Street reaches the intersection of Sycamore Street & Elm Street during the PM peak hour.

SCENARIO 2: NO BUILD - 2035

Capacity analysis has shown that as traffic volumes at the study intersections continue to grow due to development outside of the study area, the study area roadway network will begin to experience increased delay during the PM peak hour. Additionally, the southbound 95th percentile queueing along 1st Street will begin to have a greater impact on Oak Street during the AM and PM peak hours. The westbound queueing along Sycamore Street will reach Elm Street during the AM and PM peak hours with the PM peak hour queue extending past the entrance to Lions Park. The northbound queueing along Main Street reaches the intersection of 106th Street & Zionsville Road during the PM Peak hour.

SCENARIO 3: COORDINATED SIGNAL SYSTEM

Capacity analysis has shown that some approaches to the study intersections will continue to operate below acceptable levels of service during the AM and PM peak hours under this scenario. This is due to congestion within the study area. The southbound queueing along 1st Street will begin to impact operations on Oak Street during the AM and PM peak hours. The westbound queueing along Sycamore Street will reach the intersection of Sycamore Street & Elm Street and will extend past the entrance to Lions Park during the AM and PM peak hours. The northbound queueing along Main Street reaches the intersection of 106th Street & Zionsville Road during the PM Peak hour.

Under this scenario, the following intersection geometrics are recommended:

- Sycamore Street & 1st Street
  - Southbound: Shared Left & Right-Turn Lane
  - Eastbound: Shared Through & Left-Turn Lane
  - Westbound: Through Lane / Right-Turn Lane
- Sycamore Street & Main Street
  - Northbound: Left-Turn Lane / Shared Through & Right-Turn Lane
  - Southbound: Left-Turn Lane / Shared Through & Right-Turn Lane
  - Eastbound: Shared Through & Left-Turn Lane / Right-Turn Lane
  - Westbound: Left-Turn Lane / Shared Through & Right-Turn Lane

SCENARIO 4: MOVED SIGNAL/REALIGNMENT

Capacity analysis has shown that two approaches operate below acceptable levels of service during the PM peak hour. The realignment of Main Street to 1st Street allows for southbound traffic to easily continue southbound along Main Street towards 106th Street. This corresponds to a much shorter southbound queue along 1st Street. However, the westbound queues along Sycamore Street continue to impact Elm Street and the Lions Park entrance during the AM and PM peak hours. Additionally, the change in access at Sycamore Street & Main Street to right-in/right-out only, means that southbound vehicles are unable to freely turn onto Sycamore Street during times of increased congestion. This leads to a southbound queue along Main Street during the AM peak hour that extends past Oak Street. It should be noted that it is likely that vehicles will redistribute from Main Street to 1st Street or Elm Street to avoid the long queues. With this redistribution, queueing along 1st Street and Elm Street in the southbound direction would increase.

Under this scenario, the following intersection geometrics are recommended:

- Sycamore Street & 1st Street
  - Northbound: Shared Through & Left-Turn Lane / Right-Turn Lane
  - Southbound: Left-Turn Lane / Shared Through & Right-Turn Lane
  - Eastbound: Shared Left, Through, & Right-Turn Lane
  - Westbound: Left-Turn Lane / Shared Through & Right-Turn Lane
- Sycamore Street & Main Street
  - Southbound: Right-Turn Lane
  - Eastbound: Through Lane
  - Westbound: Shared Through & Right-Turn Lane

SCENARIO 5: "PEANUT" ROUNDABOUT TWO-WAY WEST

Capacity analysis has shown that all approaches to the study intersections will operate at acceptable levels of service during the AM and PM peak hours apart from the southbound approach at Sycamore Street & Main Street during the PM peak hour. The 95th percentile queue length analysis has shown that during the AM and PM peak hours, the westbound queue along Sycamore Street will impact the intersection of Sycamore Street & Elm Street.

Under this scenario, the following intersection geometrics are recommended:

- Sycamore Street & 1st Street
  - Northbound: Right-Turn Lane / Right-Turn Lane
  - Southbound: Shared Left, Through, & Right-Turn Lane
  - Eastbound: Shared Through & Right-Turn Lane
  - Westbound: Shared Left, Through, & U-Turn Lane / Right-Turn Lane
- Sycamore Street & Main Street
  - Southbound: Right-Turn Lane
  - Eastbound: Shared Left & U-Turn Lane / Through Lane
  - Westbound: Through Lane / Right-Turn Lane

SCENARIO 6: "PEANUT" ROUNDABOUT TWO-WAY EAST

Capacity analysis has shown that all approaches to the study intersections will operate at acceptable levels of service during the AM and PM peak hours. The queue length analysis has shown that the southbound 95th percentile queues along 1st Street will impact the intersection 1st Street & Hawthorne Street during the AM peak hour. Additionally, these southbound queues will restrict access to the businesses west of 1st Street and south of Hawthorne Street during these times of congestion.

Under this scenario, the following intersection geometrics are recommended:

- Sycamore Street & 1st Street
  - Southbound: Shared Left & Right-Turn Lane
  - Eastbound: Through Lane
  - Westbound: Shared Left, Through, & U-Turn Lane / Right-Turn Lane
- Sycamore Street & Main Street
  - Northbound: Shared Through & Left-Turn Lane / Right-Turn Lane
  - Southbound: Right-Turn Lane
  - Eastbound: Shared Through, Left, & U-Turn Lane / Right-Turn Lane
  - Westbound: Through Lane / Shared Through & Right-Turn Lane

SCENARIO 7: "PEANUT" ROUNDABOUT ONE-WAY (RECOMMENDED)

Capacity analyses have shown that all approaches to the study intersections operate at acceptable levels of service during the AM and PM peak hours. The 95th percentile queue length analysis has shown that this scenario offers minimal queueing with no significant impact on the adjacent intersections.

Under this scenario, the following intersection geometrics are recommended:

- Sycamore Street & 1st Street
  - Southbound: Left-Turn Lane / Shared Through & Right-Turn Lane
  - Eastbound: Shared Through & Right-Turn Lane
  - Westbound: Left-Turn Lane / Shared Through & Right-Turn Lane
- Sycamore Street & Main Street
  - Northbound: Shared Through & Left-Turn Lane / Right-Turn Lane
  - Southbound: Right-Turn Lane
  - Eastbound: Shared Through, Left, & U-Turn Lane
  - Westbound: Through Lane / Shared Through & Right-Turn Lane

TRAFFIC IMPACT STUDY

APPENDIX

A&F ENGINEERING
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8365 Keystone Crossing Boulevard, Suite 201
Indianapolis, IN 46240
Phone: (317) 202-0864 Fax: (317) 202-0908

SYCAMORE STREET & 1ST STREET

TRAFFIC VOLUME COUNTS

SYCAMORE ST & FIRST ST - TMC

Tue Mar 26, 2019
Full Length (6:30 AM-8:30 AM, 3 PM-7 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 636974, Location: 39.948141, -86.261567, Site Code: 2-87

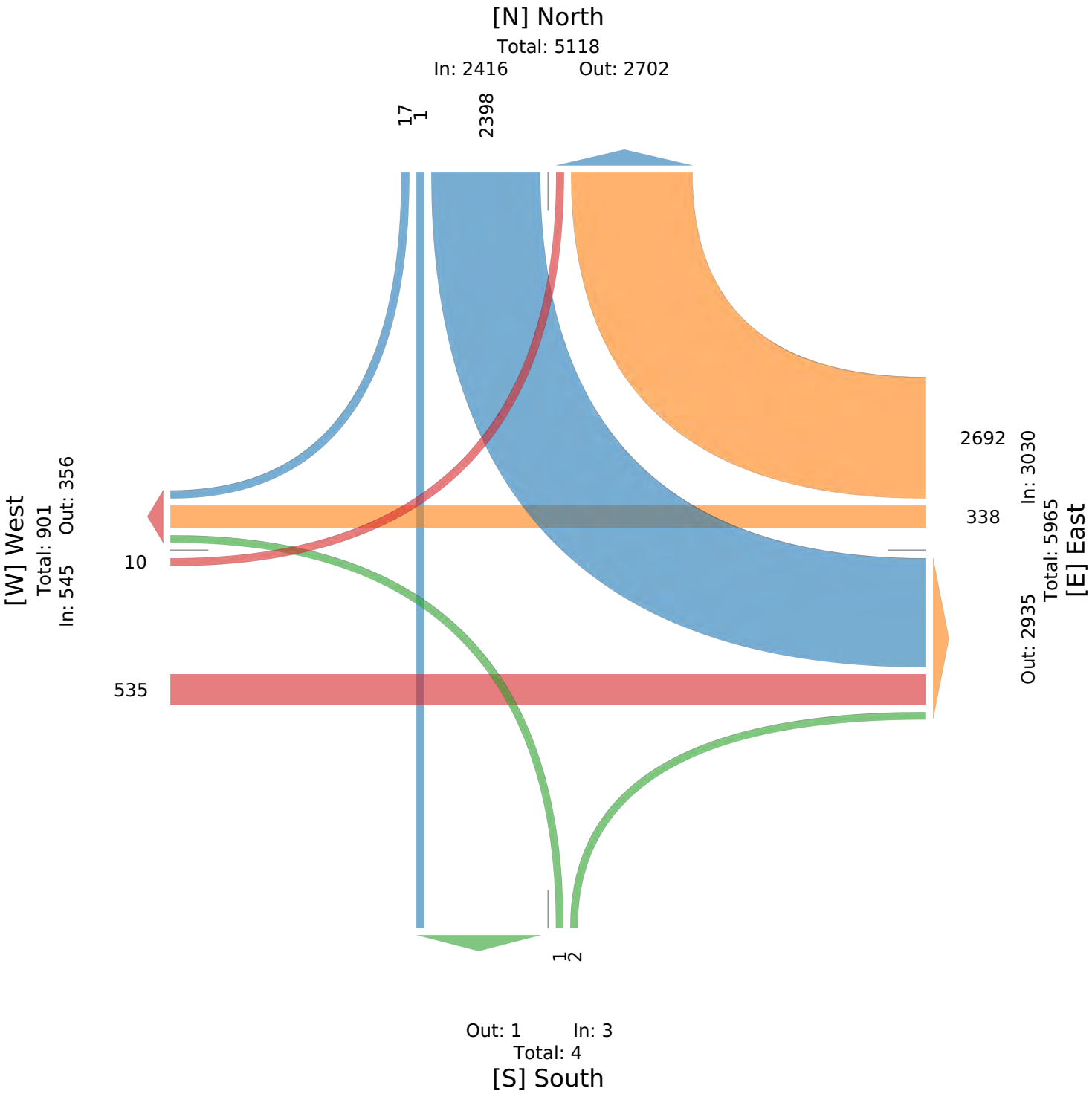
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

Leg	South					North					West					East					
Direction	Northbound					Southbound					Eastbound					Westbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2019-03-26 6:30AM	0	0	0	0	**0**	51	0	0	0	**51**	0	5	0	0	**5**	0	0	29	0	**29**	**85**
6:45AM	0	0	0	0	**0**	78	0	0	0	**78**	0	11	0	0	**11**	0	0	28	0	**28**	**117**
Hourly Total	0	0	0	0	**0**	129	0	0	0	**129**	0	16	0	0	**16**	0	0	57	0	**57**	**202**
7:00AM	0	0	0	0	**0**	74	0	0	0	**74**	0	16	0	0	**16**	0	2	58	0	**60**	**150**
7:15AM	0	0	0	0	**0**	113	0	0	0	**113**	0	19	0	0	**19**	0	5	56	0	**61**	**193**
7:30AM	0	0	0	0	**0**	116	0	0	0	**116**	0	24	0	0	**24**	0	1	66	0	**67**	**207**
7:45AM	0	0	0	0	**0**	123	0	0	0	**123**	0	29	0	0	**29**	0	6	81	0	**87**	**239**
Hourly Total	0	0	0	0	**0**	426	0	0	0	**426**	0	88	0	0	**88**	0	14	261	0	**275**	**789**
8:00AM	0	0	0	0	**0**	132	0	0	0	**132**	1	36	0	0	**37**	0	10	97	0	**107**	**276**
8:15AM	0	0	0	0	**0**	123	0	0	0	**123**	1	23	0	0	**24**	0	4	86	0	**90**	**237**
8:30AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
Hourly Total	0	0	0	0	**0**	255	0	0	0	**255**	2	59	0	0	**61**	0	14	183	0	**197**	**513**
3:00PM	0	0	0	0	**0**	96	0	0	0	**96**	0	5	0	0	**5**	0	15	131	0	**146**	**247**
3:15PM	0	0	0	0	**0**	104	1	2	0	**107**	1	11	0	0	**12**	0	8	130	0	**138**	**257**
3:30PM	0	0	0	0	**0**	99	0	1	0	**100**	0	14	0	0	**14**	0	7	131	0	**138**	**252**
3:45PM	0	0	0	0	**0**	112	0	1	0	**113**	0	14	0	0	**14**	0	11	123	0	**134**	**261**
Hourly Total	0	0	0	0	**0**	411	1	4	0	**416**	1	44	0	0	**45**	0	41	515	0	**556**	**1017**
4:00PM	0	0	0	0	**0**	132	0	0	0	**132**	2	18	0	0	**20**	0	8	130	0	**138**	**290**
4:15PM	0	0	1	0	**1**	133	0	2	0	**135**	0	23	0	0	**23**	0	10	149	0	**159**	**318**
4:30PM	1	0	0	0	**1**	113	0	2	0	**115**	1	27	0	0	**28**	0	17	144	0	**161**	**305**
4:45PM	0	0	0	0	**0**	98	0	0	0	**98**	0	17	0	0	**17**	0	37	145	0	**182**	**297**
Hourly Total	1	0	1	0	**2**	476	0	4	0	**480**	3	85	0	0	**88**	0	72	568	0	**640**	**1210**
5:00PM	0	0	0	0	**0**	101	0	1	0	**102**	0	35	0	0	**35**	0	33	141	0	**174**	**311**
5:15PM	0	0	0	0	**0**	103	0	1	0	**104**	2	28	0	0	**30**	0	24	177	0	**201**	**335**
5:30PM	0	0	0	0	**0**	107	0	1	0	**108**	0	37	0	0	**37**	0	42	141	0	**183**	**328**
5:45PM	0	0	1	0	**1**	77	0	1	0	**78**	0	20	0	0	**20**	0	40	134	0	**174**	**273**
Hourly Total	0	0	1	0	**1**	388	0	4	0	**392**	2	120	0	0	**122**	0	139	593	0	**732**	**1247**
6:00PM	0	0	0	0	**0**	19	0	2	0	**21**	0	65	0	0	**65**	0	17	135	0	**152**	**238**
6:15PM	0	0	0	0	**0**	72	0	0	0	**72**	0	23	0	0	**23**	0	20	145	0	**165**	**260**
6:30PM	0	0	0	0	**0**	105	0	0	0	**105**	0	16	0	0	**16**	0	11	115	0	**126**	**247**
6:45PM	0	0	0	0	**0**	117	0	3	0	**120**	2	19	0	0	**21**	0	10	120	0	**130**	**271**
Hourly Total	0	0	0	0	**0**	313	0	5	0	**318**	2	123	0	0	**125**	0	58	515	0	**573**	**1016**
7:00PM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
Hourly Total	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	**0**
Total	1	0	2	0	**3**	2398	1	17	0	**2416**	10	535	0	0	**545**	0	338	2692	0	**3030**	**5994**
% Approach	33.3%	0%	66.7%	0%	**-**	99.3%	0%	0.7%	0%	**-**	1.8%	98.2%	0%	0%	**-**	0%	11.2%	88.8%	0%	**-**	-
% Total	0%	0%	0%	0%	**0.1%**	40.0%	0%	0.3%	0%	**40.3%**	0.2%	8.9%	0%	0%	**9.1%**	0%	5.6%	44.9%	0%	**50.6%**	-
Lights and Motorcycles	1	0	2	0	**3**	2339	1	17	0	**2357**	10	521	0	0	**531**	0	334	2637	0	**2971**	5862
% Lights and Motorcycles	100%	0%	100%	0%	**100%**	97.5%	100%	100%	0%	**97.6%**	100%	97.4%	0%	0%	**97.4%**	0%	98.8%	98.0%	0%	**98.1%**	97.8%
Heavy	0	0	0	0	**0**	59	0	0	0	**59**	0	14	0	0	**14**	0	4	55	0	**59**	132
% Heavy	0%	0%	0%	0%	**0%**	2.5%	0%	0%	0%	**2.4%**	0%	2.6%	0%	0%	**2.6%**	0%	1.2%	2.0%	0%	**1.9%**	2.2%

*L: Left, R: Right, T: Thru, U: U-Turn

SYCAMORE ST & FIRST ST - TMC
Tue Mar 26, 2019
Full Length (6:30 AM-8:30 AM, 3 PM-7 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 636974, Location: 39.948141, -86.261567, Site Code: 2-87

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



SYCAMORE ST & FIRST ST - TMC

Tue Mar 26, 2019
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 636974, Location: 39.948141, -86.261567, Site Code: 2-87

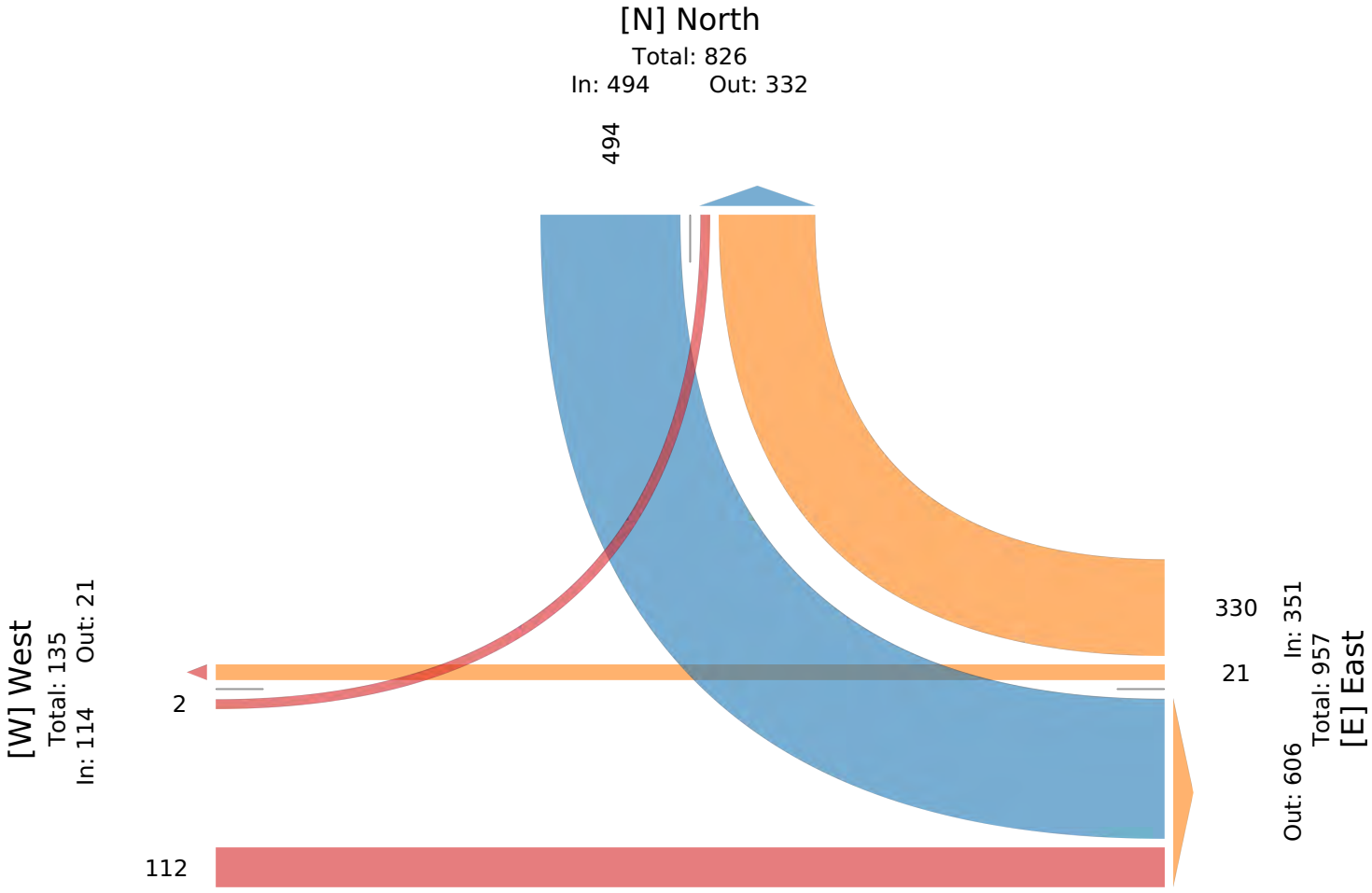
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

Leg	South					North					West					East					
Direction	Northbound					Southbound					Eastbound					Westbound					
Time	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	**Int**
2019-03-26 7:30AM	0	0	0	0	**0**	116	0	0	0	**116**	0	24	0	0	**24**	0	1	66	0	**67**	**207**
7:45AM	0	0	0	0	**0**	123	0	0	0	**123**	0	29	0	0	**29**	0	6	81	0	**87**	**239**
8:00AM	0	0	0	0	**0**	132	0	0	0	**132**	1	36	0	0	**37**	0	10	97	0	**107**	**276**
8:15AM	0	0	0	0	**0**	123	0	0	0	**123**	1	23	0	0	**24**	0	4	86	0	**90**	**237**
Total	0	0	0	0	**0**	494	0	0	0	**494**	2	112	0	0	**114**	0	21	330	0	**351**	**959**
% Approach	0%	0%	0%	0%	**-**	100%	0%	0%	0%	**-**	1.8%	98.2%	0%	0%	**-**	0%	6.0%	94.0%	0%	**-**	-
% Total	0%	0%	0%	0%	**0%**	51.5%	0%	0%	0%	**51.5%**	0.2%	11.7%	0%	0%	**11.9%**	0%	2.2%	34.4%	0%	**36.6%**	-
PHF	-	-	-	-	**-**	0.936	-	-	-	**0.936**	0.500	0.778	-	-	**0.770**	-	0.525	0.851	-	**0.820**	0.869
Lights and Motorcycles	0	0	0	0	**0**	474	0	0	0	**474**	2	111	0	0	**113**	0	21	316	0	**337**	924
% Lights and Motorcycles	0%	0%	0%	0%	**-**	96.0%	0%	0%	0%	**96.0%**	100%	99.1%	0%	0%	**99.1%**	0%	100%	95.8%	0%	**96.0%**	96.4%
Heavy	0	0	0	0	**0**	20	0	0	0	**20**	0	1	0	0	**1**	0	0	14	0	**14**	35
% Heavy	0%	0%	0%	0%	**-**	4.0%	0%	0%	0%	**4.0%**	0%	0.9%	0%	0%	**0.9%**	0%	0%	4.2%	0%	**4.0%**	3.6%

*L: Left, R: Right, T: Thru, U: U-Turn

SYCAMORE ST & FIRST ST - TMC
Tue Mar 26, 2019
AM Peak (7:30 AM - 8:30 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 636974, Location: 39.948141, -86.261567, Site Code: 2-87

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



SYCAMORE ST & FIRST ST - TMC

Tue Mar 26, 2019
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 636974, Location: 39.948141, -86.261567, Site Code: 2-87

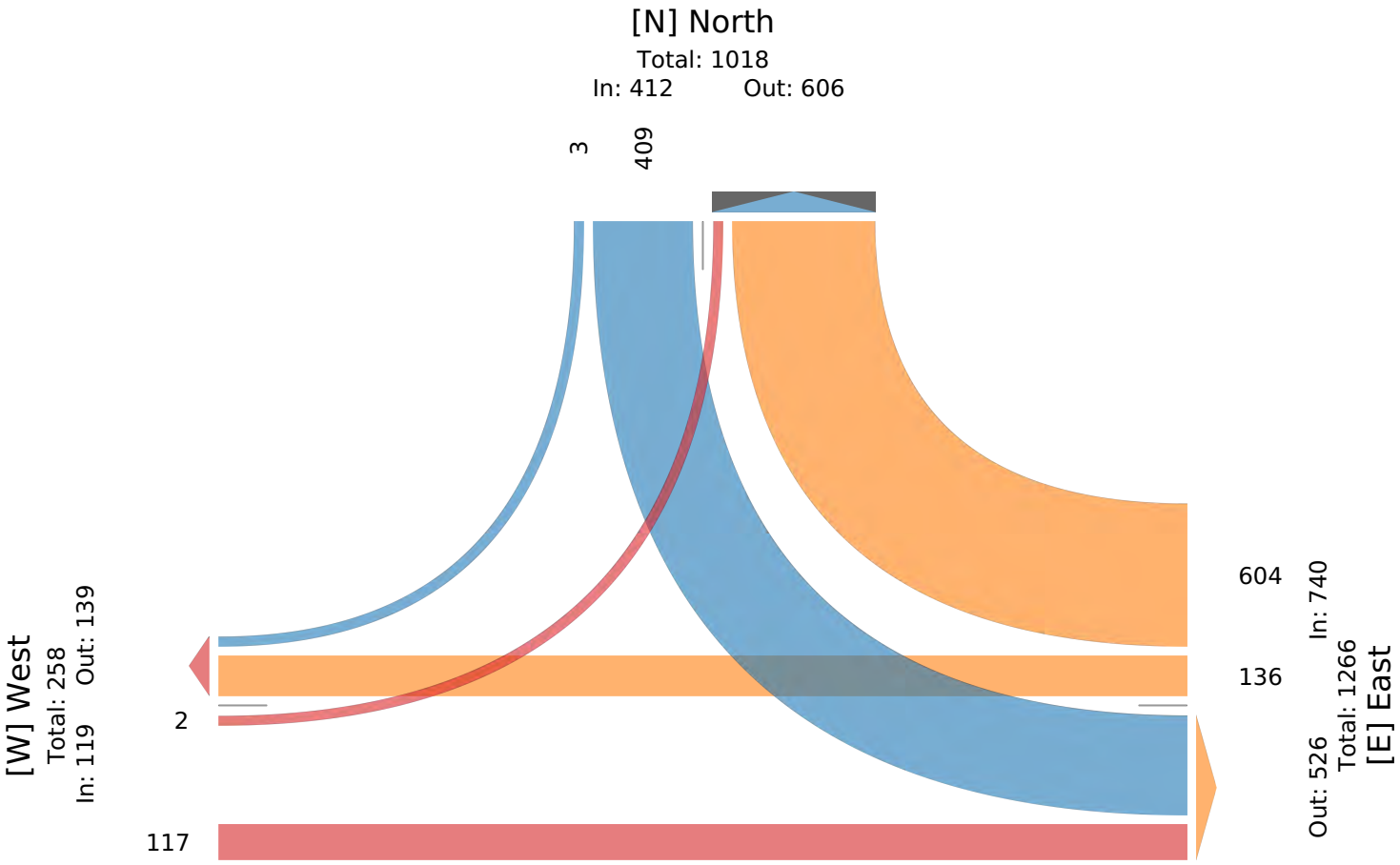
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

Leg / Direction	South Northbound					North Southbound					West Eastbound					East Westbound					
Time	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	**Int**
2019-03-26 4:45PM	0	0	0	0	**0**	98	0	0	0	**98**	0	17	0	0	**17**	0	37	145	0	**182**	**297**
5:00PM	0	0	0	0	**0**	101	0	1	0	**102**	0	35	0	0	**35**	0	33	141	0	**174**	**311**
5:15PM	0	0	0	0	**0**	103	0	1	0	**104**	2	28	0	0	**30**	0	24	177	0	**201**	**335**
5:30PM	0	0	0	0	**0**	107	0	1	0	**108**	0	37	0	0	**37**	0	42	141	0	**183**	**328**
Total	0	0	0	0	**0**	409	0	3	0	**412**	2	117	0	0	**119**	0	136	604	0	**740**	**1271**
% Approach	0%	0%	0%	0%	**-**	99.3%	0%	0.7%	0%	**-**	1.7%	98.3%	0%	0%	**-**	0%	18.4%	81.6%	0%	**-**	-
% Total	0%	0%	0%	0%	**0%**	32.2%	0%	0.2%	0%	**32.4%**	0.2%	9.2%	0%	0%	**9.4%**	0%	10.7%	47.5%	0%	**58.2%**	-
PHF	-	-	-	-	**-**	0.956	-	0.750	-	**0.954**	0.250	0.791	-	-	**0.804**	-	0.810	0.853	-	**0.920**	0.949
Lights and Motorcycles	0	0	0	0	**0**	399	0	3	0	**402**	2	114	0	0	**116**	0	135	595	0	**730**	1248
% Lights and Motorcycles	0%	0%	0%	0%	**-**	97.6%	0%	100%	0%	**97.6%**	100%	97.4%	0%	0%	**97.5%**	0%	99.3%	98.5%	0%	**98.6%**	98.2%
Heavy	0	0	0	0	**0**	10	0	0	0	**10**	0	3	0	0	**3**	0	1	9	0	**10**	23
% Heavy	0%	0%	0%	0%	**-**	2.4%	0%	0%	0%	**2.4%**	0%	2.6%	0%	0%	**2.5%**	0%	0.7%	1.5%	0%	**1.4%**	1.8%

*L: Left, R: Right, T: Thru, U: U-Turn

SYCAMORE ST & FIRST ST - TMC
Tue Mar 26, 2019
PM Peak (4:45 PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 636974, Location: 39.948141, -86.261567, Site Code: 2-87

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



SYCAMORE STREET & MAIN STREET

TRAFFIC VOLUME COUNTS

MAIN ST & SYCAMORE ST - TMC

Wed Oct 24, 2018
Full Length (3 PM-7 PM, 6:30 AM-8:30 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 583038, Location: 39.948235, -86.260938

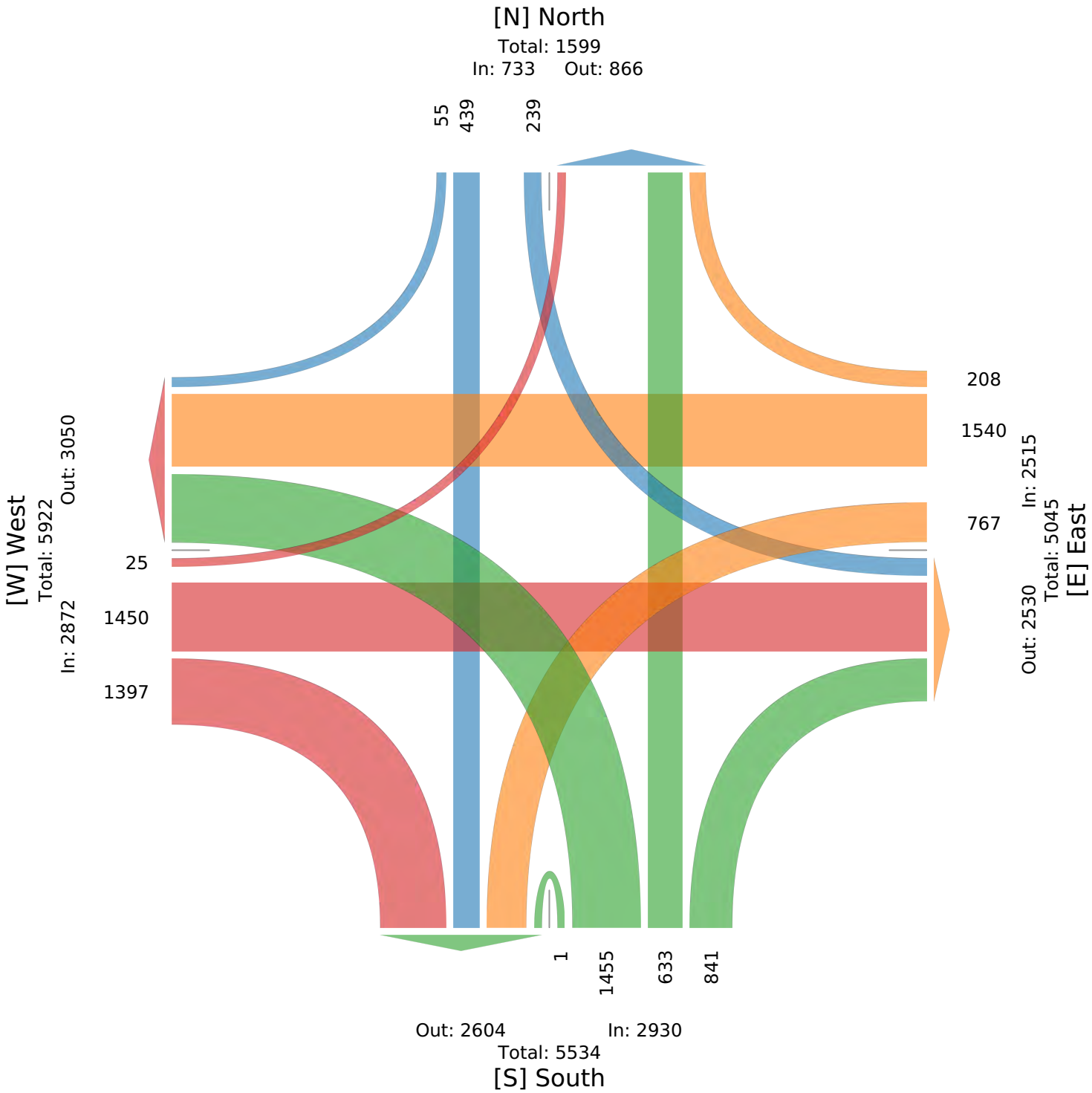
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

Leg	South					North					West					East					
Direction	Northbound					Southbound					Eastbound					Westbound					
Time	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	L	T	R	U	App	Int
2018-10-24 3:00PM	62	30	15	0	**107**	14	13	3	0	**30**	1	42	62	0	**105**	8	71	9	0	**88**	**330**
3:15PM	47	25	9	0	**81**	3	15	2	0	**20**	2	58	50	0	**110**	13	59	10	0	**82**	**293**
3:30PM	76	19	32	0	**127**	15	16	0	0	**31**	1	52	47	0	**100**	16	52	7	0	**75**	**333**
3:45PM	72	28	28	0	**128**	12	20	5	0	**37**	0	68	59	0	**127**	11	70	8	0	**89**	**381**
Hourly Total	257	102	84	0	**443**	44	64	10	0	**118**	4	220	218	0	**442**	48	252	34	0	**334**	**1337**
4:00PM	85	25	39	0	**149**	17	21	6	0	**44**	0	72	59	0	**131**	11	73	6	0	**90**	**414**
4:15PM	72	27	51	0	**150**	7	20	3	0	**30**	1	55	75	0	**131**	20	65	5	0	**90**	**401**
4:30PM	91	39	66	1	**197**	6	10	5	0	**21**	1	53	58	0	**112**	32	80	15	0	**127**	**457**
4:45PM	77	43	59	0	**179**	14	15	1	0	**30**	3	75	69	0	**147**	23	102	10	0	**135**	**491**
Hourly Total	325	134	215	1	**675**	44	66	15	0	**125**	5	255	261	0	**521**	86	320	36	0	**442**	**1763**
5:00PM	86	58	79	0	**223**	14	20	4	0	**38**	3	78	38	0	**119**	28	85	20	0	**133**	**513**
5:15PM	94	50	97	0	**241**	17	15	4	0	**36**	4	79	61	0	**144**	28	106	16	0	**150**	**571**
5:30PM	87	51	67	0	**205**	13	16	1	0	**30**	0	63	52	0	**115**	28	100	16	0	**144**	**494**
5:45PM	100	45	66	0	**211**	4	17	3	0	**24**	2	66	55	0	**123**	17	76	11	0	**104**	**462**
Hourly Total	367	204	309	0	**880**	48	68	12	0	**128**	9	286	206	0	**501**	101	367	63	0	**531**	**2040**
6:00PM	65	33	62	0	**160**	7	13	4	0	**24**	3	83	69	0	**155**	17	91	14	0	**122**	**461**
6:15PM	68	43	37	0	**148**	14	13	5	0	**32**	1	59	50	0	**110**	13	60	17	0	**90**	**380**
6:30PM	78	31	18	0	**127**	12	15	4	0	**31**	1	62	63	0	**126**	14	66	11	0	**91**	**375**
6:45PM	65	26	24	0	**115**	11	14	4	0	**29**	2	52	49	0	**103**	16	62	13	0	**91**	**338**
Hourly Total	276	133	141	0	**550**	44	55	17	0	**116**	7	256	231	0	**494**	60	279	55	0	**394**	**1554**
7:00PM	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**1**
Hourly Total	0	0	0	0	**0**	0	0	0	0	**0**	0	1	0	0	**1**	0	0	0	0	**0**	**1**
2018-10-25 6:30AM	17	4	2	0	**23**	2	10	0	0	**12**	0	28	31	0	**59**	25	11	0	0	**36**	**130**
6:45AM	16	4	4	0	**24**	2	7	0	0	**9**	0	39	45	0	**84**	42	13	2	0	**57**	**174**
Hourly Total	33	8	6	0	**47**	4	17	0	0	**21**	0	67	76	0	**143**	67	24	2	0	**93**	**304**
7:00AM	22	8	7	0	**37**	2	15	0	0	**17**	0	58	52	0	**110**	30	15	4	0	**49**	**213**
7:15AM	32	5	10	0	**47**	8	23	0	0	**31**	0	54	58	0	**112**	43	35	2	0	**80**	**270**
7:30AM	32	11	14	0	**57**	8	33	1	0	**42**	0	57	65	0	**122**	81	56	3	0	**140**	**361**
7:45AM	36	11	12	0	**59**	15	39	0	0	**54**	0	58	82	0	**140**	101	69	2	0	**172**	**425**
Hourly Total	122	35	43	0	**200**	33	110	1	0	**144**	0	227	257	0	**484**	255	175	11	0	**441**	**1269**
8:00AM	33	9	16	0	**58**	15	34	0	0	**49**	0	75	84	0	**159**	90	46	4	0	**140**	**406**
8:15AM	42	8	27	0	**77**	7	25	0	0	**32**	0	63	64	0	**127**	59	76	3	0	**138**	**374**
8:30AM	0	0	0	0	**0**	0	0	0	0	**0**	0	0	0	0	**0**	1	1	0	0	**2**	**2**
Hourly Total	75	17	43	0	**135**	22	59	0	0	**81**	0	138	148	0	**286**	150	123	7	0	**280**	**782**
Total	1455	633	841	1	**2930**	239	439	55	0	**733**	25	1450	1397	0	**2872**	767	1540	208	0	**2515**	**9050**
% Approach	49.7%	21.6%	28.7%	0%	**-**	32.6%	59.9%	7.5%	0%	**-**	0.9%	50.5%	48.6%	0%	**-**	30.5%	61.2%	8.3%	0%	**-**	**-**
% Total	16.1%	7.0%	9.3%	0%	**32.4%**	2.6%	4.9%	0.6%	0%	**8.1%**	0.3%	16.0%	15.4%	0%	**31.7%**	8.5%	17.0%	2.3%	0%	**27.8%**	**-**
Lights and Motorcycles	1426	631	836	1	**2894**	239	434	55	0	**728**	25	1424	1362	0	**2811**	744	1512	208	0	**2464**	8897
% Lights and Motorcycles	98.0%	99.7%	99.4%	100%	**98.8%**	100%	98.9%	100%	0%	**99.3%**	100%	98.2%	97.5%	0%	**97.9%**	97.0%	98.2%	100%	0%	**98.0%**	98.3%
Heavy	29	2	5	0	**36**	0	5	0	0	**5**	0	26	35	0	**61**	23	28	0	0	**51**	153
% Heavy	2.0%	0.3%	0.6%	0%	**1.2%**	0%	1.1%	0%	0%	**0.7%**	0%	1.8%	2.5%	0%	**2.1%**	3.0%	1.8%	0%	0%	**2.0%**	1.7%

*L: Left, R: Right, T: Thru, U: U-Turn

MAIN ST & SYCAMORE ST - TMC
Wed Oct 24, 2018
Full Length (3 PM-7 PM, 6:30 AM-8:30 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 583038, Location: 39.948235, -86.260938

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



MAIN ST & SYCAMORE ST - TMC

Wed Oct 24, 2018
PM Peak (Oct 24 2018 4:45PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 583038, Location: 39.948235, -86.260938

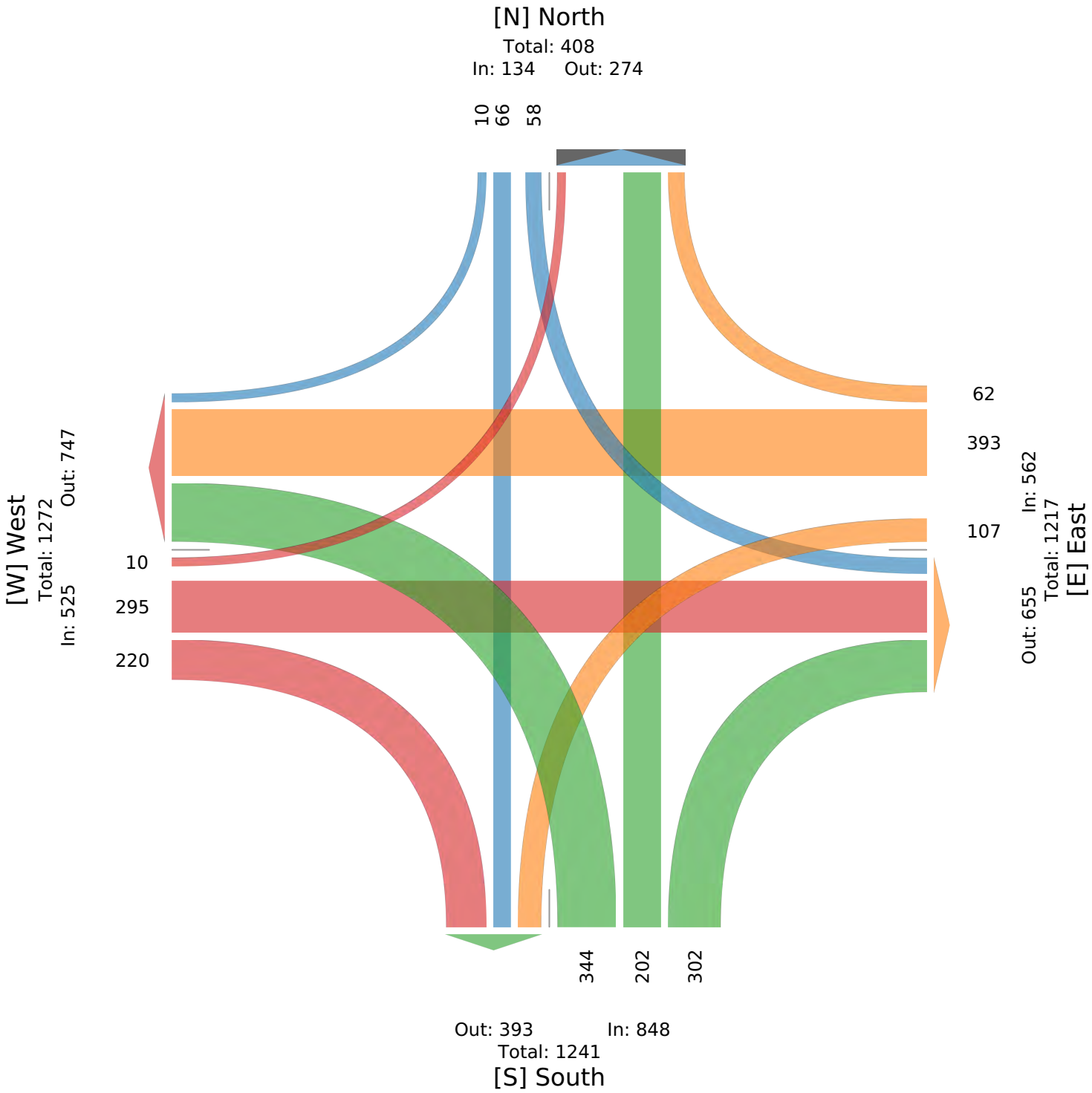
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

Leg	South					North					West					East					
Direction	Northbound					Southbound					Eastbound					Westbound					
Time	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	**Int**
2018-10-24 4:45PM	77	43	59	0	**179**	14	15	1	0	**30**	3	75	69	0	**147**	23	102	10	0	**135**	**491**
5:00PM	86	58	79	0	**223**	14	20	4	0	**38**	3	78	38	0	**119**	28	85	20	0	**133**	**513**
5:15PM	94	50	97	0	**241**	17	15	4	0	**36**	4	79	61	0	**144**	28	106	16	0	**150**	**571**
5:30PM	87	51	67	0	**205**	13	16	1	0	**30**	0	63	52	0	**115**	28	100	16	0	**144**	**494**
Total	344	202	302	0	**848**	58	66	10	0	**134**	10	295	220	0	**525**	107	393	62	0	**562**	**2069**
% Approach	40.6%	23.8%	35.6%	0%	**-**	43.3%	49.3%	7.5%	0%	**-**	1.9%	56.2%	41.9%	0%	**-**	19.0%	69.9%	11.0%	0%	**-**	-
% Total	16.6%	9.8%	14.6%	0%	**41.0%**	2.8%	3.2%	0.5%	0%	**6.5%**	0.5%	14.3%	10.6%	0%	**25.4%**	5.2%	19.0%	3.0%	0%	**27.2%**	-
PHF	0.915	0.871	0.778	-	**0.880**	0.853	0.825	0.625	-	**0.882**	0.625	0.934	0.797	-	**0.893**	0.955	0.927	0.775	-	**0.937**	0.906
Lights and Motorcycles	343	202	302	0	**847**	58	64	10	0	**132**	10	291	214	0	**515**	101	389	62	0	**552**	2046
% Lights and Motorcycles	99.7%	100%	100%	0%	**99.9%**	100%	97.0%	100%	0%	**98.5%**	100%	98.6%	97.3%	0%	**98.1%**	94.4%	99.0%	100%	0%	**98.2%**	98.9%
Heavy	1	0	0	0	**1**	0	2	0	0	**2**	0	4	6	0	**10**	6	4	0	0	**10**	23
% Heavy	0.3%	0%	0%	0%	**0.1%**	0%	3.0%	0%	0%	**1.5%**	0%	1.4%	2.7%	0%	**1.9%**	5.6%	1.0%	0%	0%	**1.8%**	1.1%

*L: Left, R: Right, T: Thru, U: U-Turn

MAIN ST & SYCAMORE ST - TMC
Wed Oct 24, 2018
PM Peak (Oct 24 2018 4:45PM - 5:45 PM) - Overall Peak Hour
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 583038, Location: 39.948235, -86.260938

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



MAIN ST & SYCAMORE ST - TMC

Thu Oct 25, 2018
AM Peak (Oct 25 2018 7:30AM - 8:30 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 583038, Location: 39.948235, -86.260938

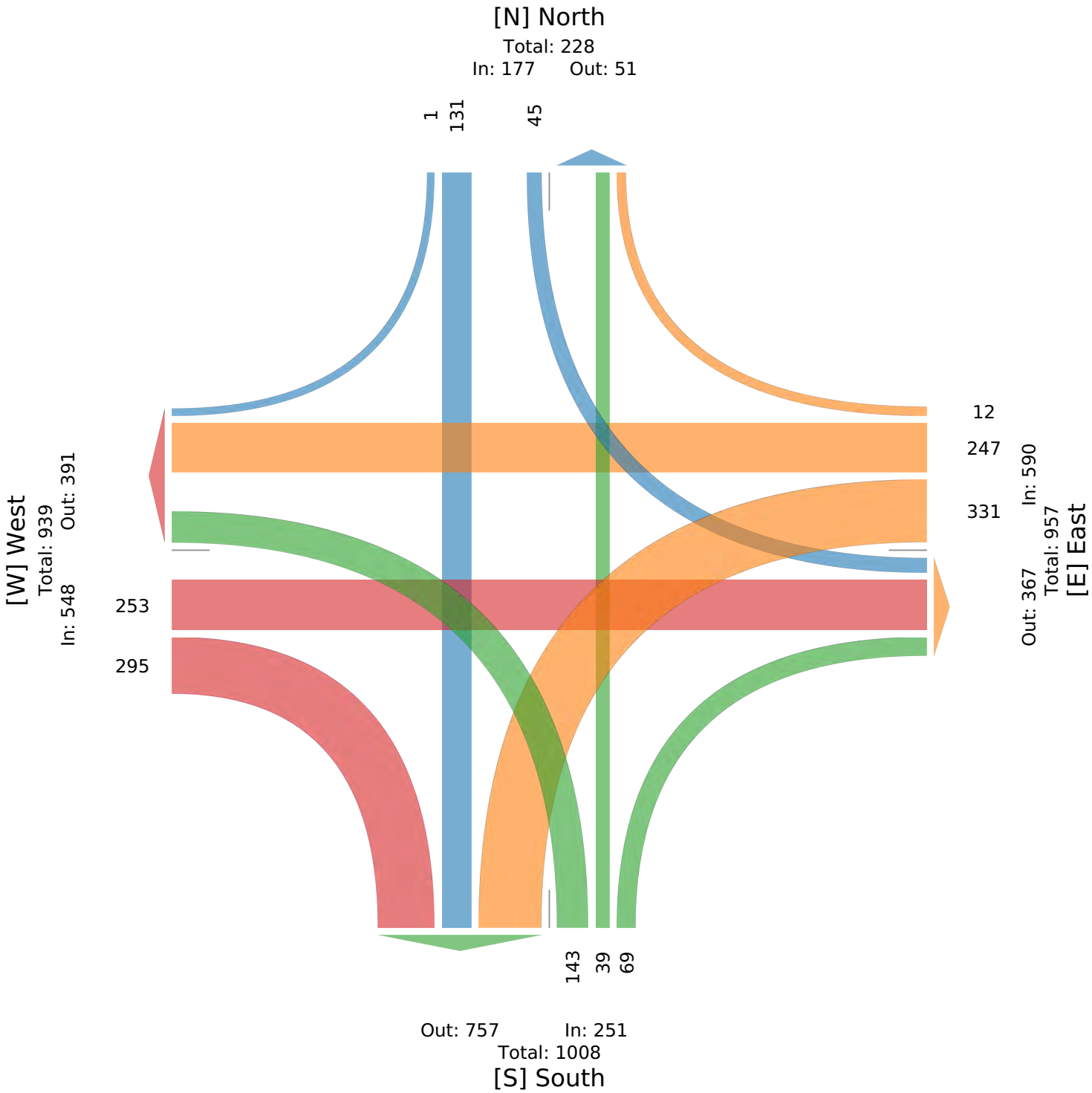
Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US

Leg	South					North					West					East					
Direction	Northbound					Southbound					Eastbound					Westbound					
Time	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	L	T	R	U	**App**	**Int**
2018-10-25 7:30AM	32	11	14	0	**57**	8	33	1	0	**42**	0	57	65	0	**122**	81	56	3	0	**140**	**361**
7:45AM	36	11	12	0	**59**	15	39	0	0	**54**	0	58	82	0	**140**	101	69	2	0	**172**	**425**
8:00AM	33	9	16	0	**58**	15	34	0	0	**49**	0	75	84	0	**159**	90	46	4	0	**140**	**406**
8:15AM	42	8	27	0	**77**	7	25	0	0	**32**	0	63	64	0	**127**	59	76	3	0	**138**	**374**
Total	143	39	69	0	**251**	45	131	1	0	**177**	0	253	295	0	**548**	331	247	12	0	**590**	**1566**
% Approach	57.0%	15.5%	27.5%	0%	**-**	25.4%	74.0%	0.6%	0%	**-**	0%	46.2%	53.8%	0%	**-**	56.1%	41.9%	2.0%	0%	**-**	-
% Total	9.1%	2.5%	4.4%	0%	**16.0%**	2.9%	8.4%	0.1%	0%	**11.3%**	0%	16.2%	18.8%	0%	**35.0%**	21.1%	15.8%	0.8%	0%	**37.7%**	-
PHF	0.851	0.886	0.639	-	**0.815**	0.750	0.840	0.250	-	**0.819**	-	0.843	0.878	-	**0.862**	0.819	0.813	0.750	-	**0.858**	0.921
Lights and Motorcycles	133	39	65	0	**237**	45	131	1	0	**177**	0	246	288	0	**534**	329	239	12	0	**580**	1528
% Lights and Motorcycles	93.0%	100%	94.2%	0%	**94.4%**	100%	100%	100%	0%	**100%**	0%	97.2%	97.6%	0%	**97.4%**	99.4%	96.8%	100%	0%	**98.3%**	97.6%
Heavy	10	0	4	0	**14**	0	0	0	0	**0**	0	7	7	0	**14**	2	8	0	0	**10**	38
% Heavy	7.0%	0%	5.8%	0%	**5.6%**	0%	0%	0%	0%	**0%**	0%	2.8%	2.4%	0%	**2.6%**	0.6%	3.2%	0%	0%	**1.7%**	2.4%

*L: Left, R: Right, T: Thru, U: U-Turn

MAIN ST & SYCAMORE ST - TMC
Thu Oct 25, 2018
AM Peak (Oct 25 2018 7:30AM - 8:30 AM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 583038, Location: 39.948235, -86.260938

Provided by: A&F Engineering
8365 Keystone Crossing, Suite 201, Indianapolis, IN, 46240, US



SCENARIO 1

CAPACITY ANALYSIS
95TH PERCENTILE QUEUE LENGTH ANALYSIS

1: Sycamore St & 1st St Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.4	0.2
Total Del/Veh (s)	1.3	1.8	18.3	9.5

2: Main St & Sycamore St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.3	0.2
Total Del/Veh (s)	14.9	20.2	16.3	22.0	17.9

Total Network Performance

Denied Del/Veh (s)	0.5
Total Del/Veh (s)	30.7

Intersection: 1: Sycamore St & 1st St

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	53	341
Average Queue (ft)	4	137
95th Queue (ft)	26	279
Link Distance (ft)	772	1916
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Main St & Sycamore St

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	L	TR
Maximum Queue (ft)	140	136	170	314	152	118	60	138
Average Queue (ft)	115	78	129	116	70	47	27	74
95th Queue (ft)	155	127	190	248	126	94	56	123
Link Distance (ft)	125	125		685		1422	1904	
Upstream Blk Time (%)	8	1						
Queuing Penalty (veh)	26	2						
Storage Bay Dist (ft)			70		480			100
Storage Blk Time (%)			37	9				4
Queuing Penalty (veh)			109	34				2

Network Summary

Network wide Queuing Penalty: 174

1: Sycamore St & 1st St Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.2	0.1	0.4	0.2
Total Del/Veh (s)	3.0	2.8	98.7	33.8

2: Main St & Sycamore St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.0	1.1	0.1
Total Del/Veh (s)	16.8	26.1	24.7	28.3	23.4

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	49.8

Intersection: 1: Sycamore St & 1st St

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	74	25	982
Average Queue (ft)	13	1	407
95th Queue (ft)	52	11	1041
Link Distance (ft)	772	125	1917
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Main St & Sycamore St

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	L	TR
Maximum Queue (ft)	140	104	170	450	230	418	84	117
Average Queue (ft)	127	48	96	222	117	205	38	53
95th Queue (ft)	160	87	196	375	191	359	72	100
Link Distance (ft)	125	125		685		1432	1909	
Upstream Blk Time (%)	18	0						
Queuing Penalty (veh)	53	0						
Storage Bay Dist (ft)			70		480			100
Storage Blk Time (%)			8	38		0	0	1
Queuing Penalty (veh)			41	46		2	0	1

Network Summary

Network wide Queuing Penalty: 142

SCENARIO 2

CAPACITY ANALYSIS
95TH PERCENTILE QUEUE LENGTH ANALYSIS

1: Sycamore St & 1st St Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.2	0.0	8.6	4.2
Total Del/Veh (s)	2.6	1.9	173.9	85.1

2: Main St & Sycamore St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.0	1.3	0.2
Total Del/Veh (s)	18.4	24.5	28.9	29.8	23.8

Total Network Performance

Denied Del/Veh (s)	3.0
Total Del/Veh (s)	80.0

Intersection: 1: Sycamore St & 1st St

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	66	4	1546
Average Queue (ft)	15	0	909
95th Queue (ft)	50	3	1964
Link Distance (ft)	772	125	1916
Upstream Blk Time (%)			9
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Main St & Sycamore St

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	LT	R	L	TR	L	TR	L	TR
Maximum Queue (ft)	141	140	170	504	242	165	79	168
Average Queue (ft)	132	107	153	193	106	66	35	92
95th Queue (ft)	153	153	196	408	200	130	71	151
Link Distance (ft)	125	125		685		1422	1904	
Upstream Blk Time (%)	21	4						
Queuing Penalty (veh)	80	17						
Storage Bay Dist (ft)			70		480			100
Storage Blk Time (%)			50	11			0	10
Queuing Penalty (veh)			179	50			0	6

Network Summary

Network wide Queuing Penalty: 333

1: Sycamore St & 1st St Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.2	0.3	423.1	137.8
Total Del/Veh (s)	19.3	3.3	676.8	175.7

2: Main St & Sycamore St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.1	0.0	0.0	1.3	0.1
Total Del/Veh (s)	24.7	62.7	97.0	40.2	69.6

Total Network Performance

Denied Del/Veh (s)	84.8
Total Del/Veh (s)	174.7

Intersection: 1: Sycamore St & 1st St

Movement	EB	WB	SB
Directions Served	LT	TR	LR
Maximum Queue (ft)	290	12	1962
Average Queue (ft)	52	1	1839
95th Queue (ft)	187	8	2308
Link Distance (ft)	772	125	1917
Upstream Blk Time (%)			79
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 2: Main St & Sycamore St

Movement	EB	EB	WB	WB	B342	NB	NB	B288	SB	SB
Directions Served	LT	R	L	TR	T	L	TR	T	L	TR
Maximum Queue (ft)	140	112	170	710	269	580	1506	522	178	178
Average Queue (ft)	133	40	121	497	63	472	955	42	60	73
95th Queue (ft)	155	88	214	804	318	765	1663	267	128	138
Link Distance (ft)	125	125		685	2016		1432	2114	1909	
Upstream Blk Time (%)	35	0		12			6			
Queuing Penalty (veh)	126	1		0			0			
Storage Bay Dist (ft)			70			480				100
Storage Blk Time (%)			14	53		0	42		4	7
Queuing Penalty (veh)			90	77		2	198		4	5

Network Summary

Network wide Queuing Penalty: 504

SCENARIO 3

CAPACITY ANALYSIS
95TH PERCENTILE QUEUE LENGTH ANALYSIS

1: Sycamore St & 1st St Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.6	0.3
Total Del/Veh (s)	25.0	3.2	125.0	64.5

2: Main St & Sycamore St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.3	0.0	0.0	1.4	0.3
Total Del/Veh (s)	19.4	46.7	27.1	31.7	32.4

Total Network Performance

Denied Del/Veh (s)	0.7
Total Del/Veh (s)	76.2

Intersection: 1: Sycamore St & 1st St

Movement	EB	WB	WB	SB
Directions Served	LT	T	R	LR
Maximum Queue (ft)	123	64	83	1273
Average Queue (ft)	70	20	40	682
95th Queue (ft)	121	54	74	1495
Link Distance (ft)	772	125	125	1899
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Main St & Sycamore St

Movement	EB	EB	WB	WB	B342	NB	NB	SB	SB
Directions Served	LT	R	L	TR	T	L	TR	L	TR
Maximum Queue (ft)	153	164	170	764	263	219	182	96	186
Average Queue (ft)	137	123	162	375	31	101	70	34	103
95th Queue (ft)	155	169	194	765	174	181	134	77	167
Link Distance (ft)	125	125		685	1753		1437	1880	
Upstream Blk Time (%)	25	9		9					
Queuing Penalty (veh)	94	34		0					
Storage Bay Dist (ft)			70			480			100
Storage Blk Time (%)			62	14				0	12
Queuing Penalty (veh)			224	65				0	7

Network Summary

Network wide Queuing Penalty: 424

1: Sycamore St & 1st St Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.2	0.2	251.2	80.6
Total Del/Veh (s)	102.4	4.3	518.1	159.9

2: Main St & Sycamore St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	1.2	0.0	0.0	1.3	0.3
Total Del/Veh (s)	24.1	58.5	86.8	39.7	62.4

Total Network Performance

Denied Del/Veh (s)	50.0
Total Del/Veh (s)	159.3

Intersection: 1: Sycamore St & 1st St

Movement	EB	WB	WB	SB
Directions Served	LT	T	R	LR
Maximum Queue (ft)	502	140	82	1947
Average Queue (ft)	171	69	40	1752
95th Queue (ft)	462	124	76	2301
Link Distance (ft)	772	124	124	1895
Upstream Blk Time (%)	0	1		63
Queuing Penalty (veh)	0	4		0
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Main St & Sycamore St

Movement	EB	EB	WB	WB	B342	NB	NB	B288	SB	SB
Directions Served	LT	R	L	TR	T	L	TR	T	L	TR
Maximum Queue (ft)	145	98	170	736	25	580	1397	524	150	168
Average Queue (ft)	129	31	127	472	2	452	855	55	51	74
95th Queue (ft)	160	77	211	751	23	765	1527	369	111	138
Link Distance (ft)	124	124		685	1942		1446	2010	1883	
Upstream Blk Time (%)	43	0		3			6			
Queuing Penalty (veh)	154	0		0			0			
Storage Bay Dist (ft)			70			480				100
Storage Blk Time (%)			27	54		0	39		2	6
Queuing Penalty (veh)			170	79		0	183		2	4

Network Summary

Network wide Queuing Penalty: 598

SCENARIO 4

CAPACITY ANALYSIS
95TH PERCENTILE QUEUE LENGTH ANALYSIS

1: 1st St & Sycamore St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.0	0.0	1.3	0.5
Total Del/Veh (s)	39.8	15.4	29.7	30.7	24.5

2: Sycamore St & Main St Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	116.3	13.5
Total Del/Veh (s)	0.9	36.7	1151.6	145.9

Total Network Performance

Denied Del/Veh (s)	10.4
Total Del/Veh (s)	131.5

Intersection: 1: 1st St & Sycamore St

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	LT	R	L	TR
Maximum Queue (ft)	213	140	128	243	87	299	420
Average Queue (ft)	92	134	62	118	35	181	150
95th Queue (ft)	181	139	117	203	71	288	282
Link Distance (ft)	760	120	120		1466		1908
Upstream Blk Time (%)		40	1				
Queuing Penalty (veh)		193	4				
Storage Bay Dist (ft)				450		200	
Storage Blk Time (%)						9	2
Queuing Penalty (veh)						30	6

Intersection: 2: Sycamore St & Main St

Movement	WB	B342	SB
Directions Served	TR	T	R
Maximum Queue (ft)	629	115	1794
Average Queue (ft)	378	17	1201
95th Queue (ft)	755	105	2179
Link Distance (ft)	691	1641	1884
Upstream Blk Time (%)	6		26
Queuing Penalty (veh)	0		0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 233

1: Sycamore St & 1st St Performance by approach

Approach	EB	WB	NB	SB	All
Denied Del/Veh (s)	0.2	0.7	0.0	1.3	0.6
Total Del/Veh (s)	61.0	25.0	35.9	37.6	34.5

2: Sycamore St & Main St Performance by approach

Approach	EB	WB	SB	All
Denied Del/Veh (s)	0.0	0.0	0.2	0.0
Total Del/Veh (s)	0.8	48.4	325.1	41.5

Total Network Performance

Denied Del/Veh (s)	1.1
Total Del/Veh (s)	71.4

Intersection: 1: Sycamore St & 1st St

Movement	EB	WB	WB	NB	NB	SB	SB
Directions Served	LTR	L	TR	LT	R	L	TR
Maximum Queue (ft)	310	138	136	500	616	300	541
Average Queue (ft)	126	106	127	282	170	219	140
95th Queue (ft)	300	157	144	461	443	330	447
Link Distance (ft)	760	120	120		1451		1902
Upstream Blk Time (%)		15	34				
Queuing Penalty (veh)		61	134				
Storage Bay Dist (ft)				450		200	
Storage Blk Time (%)				3	2	22	
Queuing Penalty (veh)				11	9	54	

Intersection: 2: Sycamore St & Main St

Movement	WB	B342	SB
Directions Served	TR	T	R
Maximum Queue (ft)	696	330	546
Average Queue (ft)	416	103	256
95th Queue (ft)	813	497	582
Link Distance (ft)	691	1617	1889
Upstream Blk Time (%)	14		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 269

SCENARIO 5

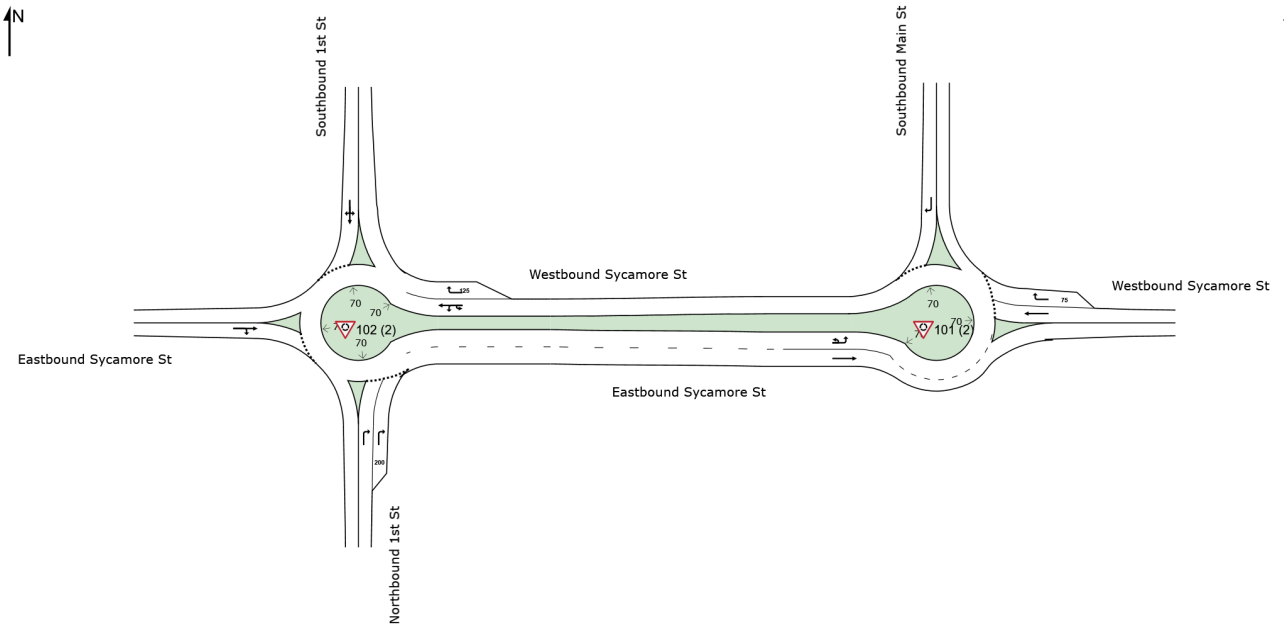
CAPACITY ANALYSIS
95TH PERCENTILE QUEUE LENGTH ANALYSIS

NETWORK LAYOUT

Network: [1] AM Peak (AM Peak)

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101 (2)	NA	Sycamore St & Main
102 (2)	NA	Sycamore St & 1st

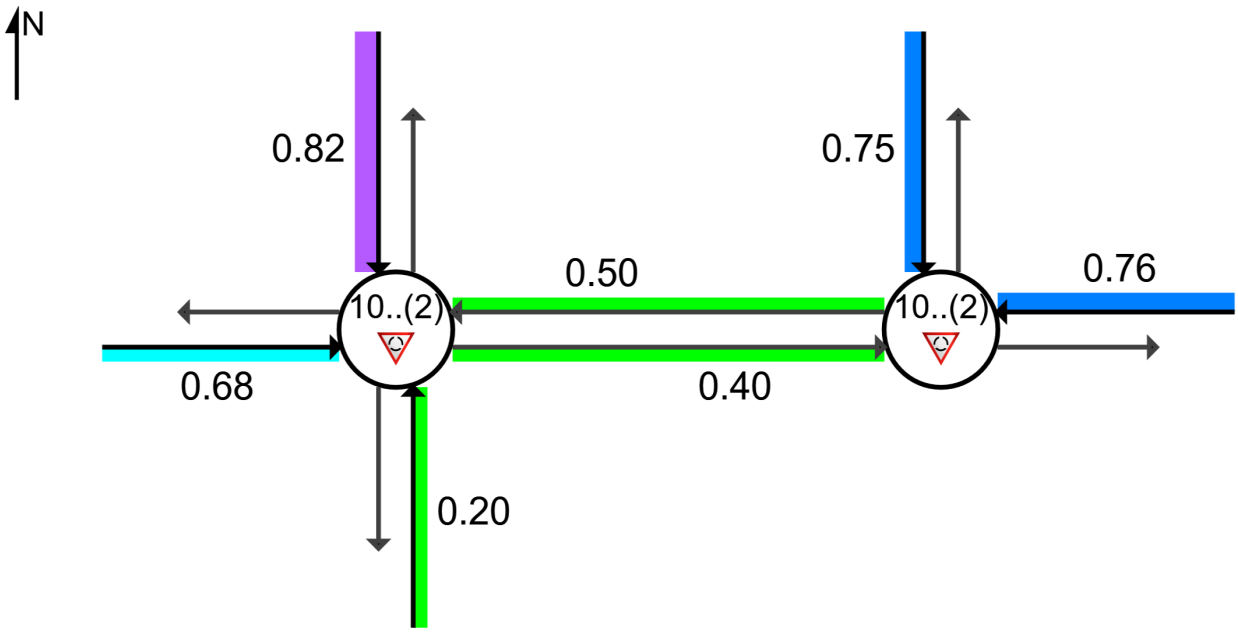
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio (worst lane for the approach)

Network: [1] AM Peak (AM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Degree of Saturation

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Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Tuesday, August 19, 2025 7:44:01 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 4 - Dog-Bone with Two-Way West\Proposed Roundabout - Scenario 4 - EF = 1.0.sipx

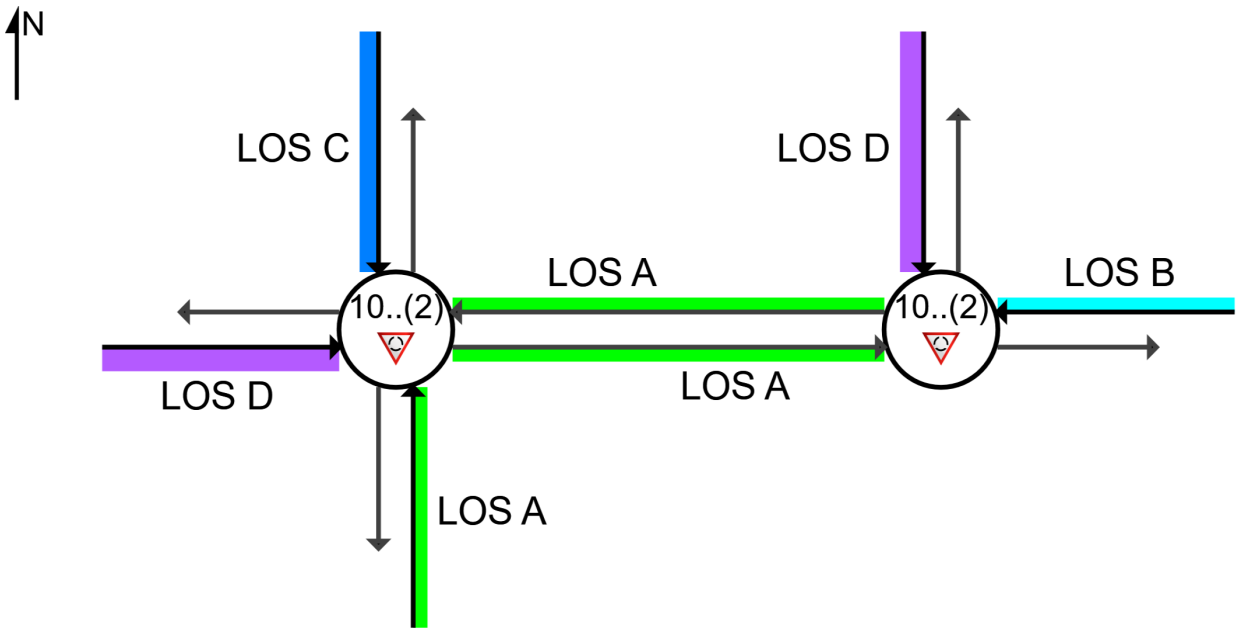
APPROACH LEVEL OF SERVICE

Approach Level of Service

Network: [1] AM Peak (AM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Level of Service

LOS A	LOS B	LOS C	LOS D	LOS E	LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Tuesday, August 19, 2025 7:44:01 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 4 - Dog-Bone with Two-Way West\Proposed Roundabout - Scenario 4 - EF = 1.0.sipx

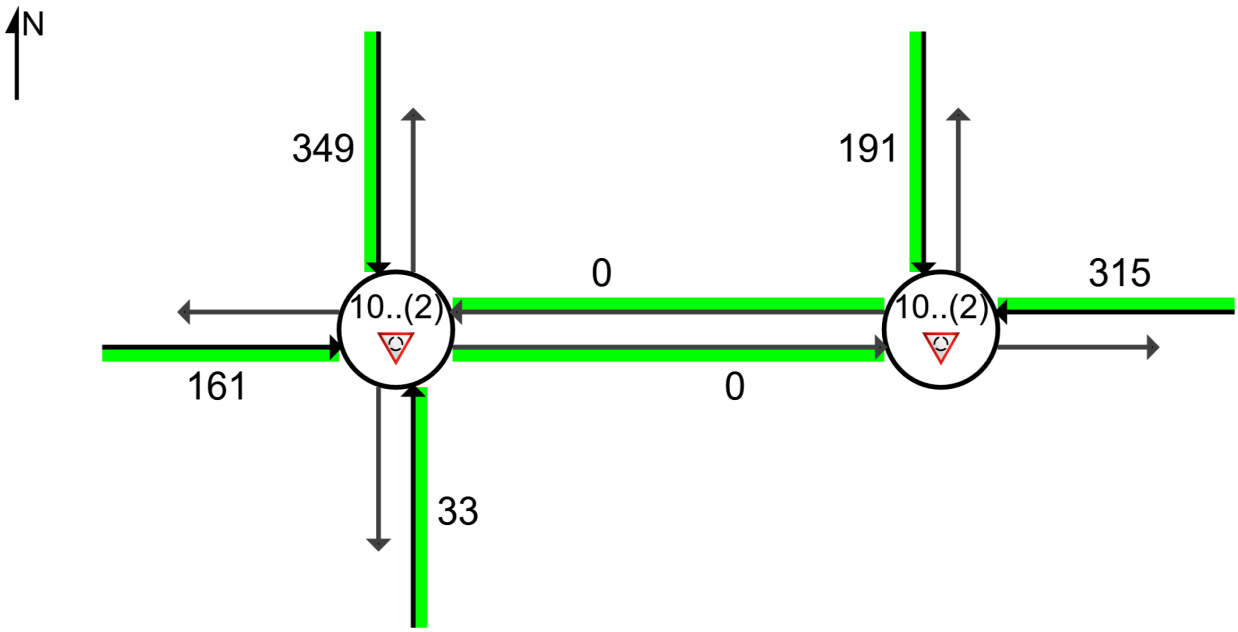
QUEUE DISTANCE (PERCENTILE)

Largest 95% Back of Queue Distance for any lane on the approach (feet)

Network: [1] AM Peak (AM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Queue Storage Ratio

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Queue Model: HCM Queue Formula.

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Tuesday, August 19, 2025 7:44:01 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 4 - Dog-Bone with Two-Way West\Proposed Roundabout - Scenario 4 - EF = 1.0.sipx

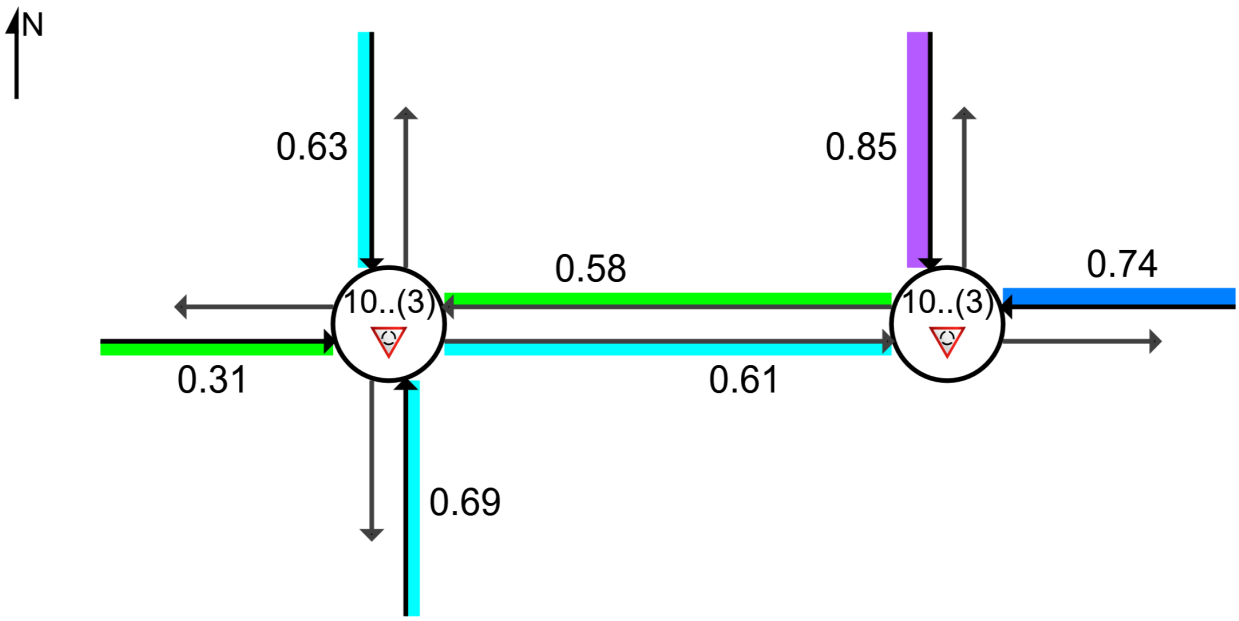
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio (worst lane for the approach)

Network: [2] PM Peak (PM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Degree of Saturation

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Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Tuesday, August 19, 2025 7:44:03 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 4 - Dog-Bone with Two-Way West\Proposed Roundabout - Scenario 4 - EF = 1.0.sipx

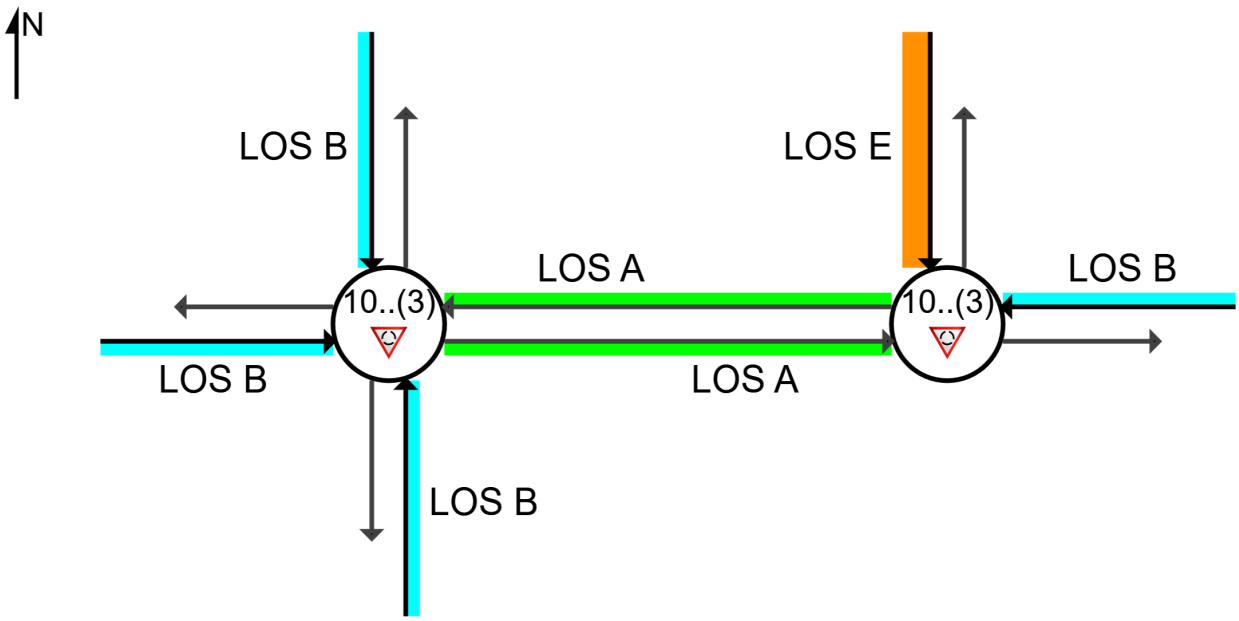
APPROACH LEVEL OF SERVICE

Approach Level of Service

Network: [2] PM Peak (PM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Tuesday, August 19, 2025 7:44:03 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 4 - Dog-Bone with Two-Way West\Proposed Roundabout - Scenario 4 - EF = 1.0.sipx

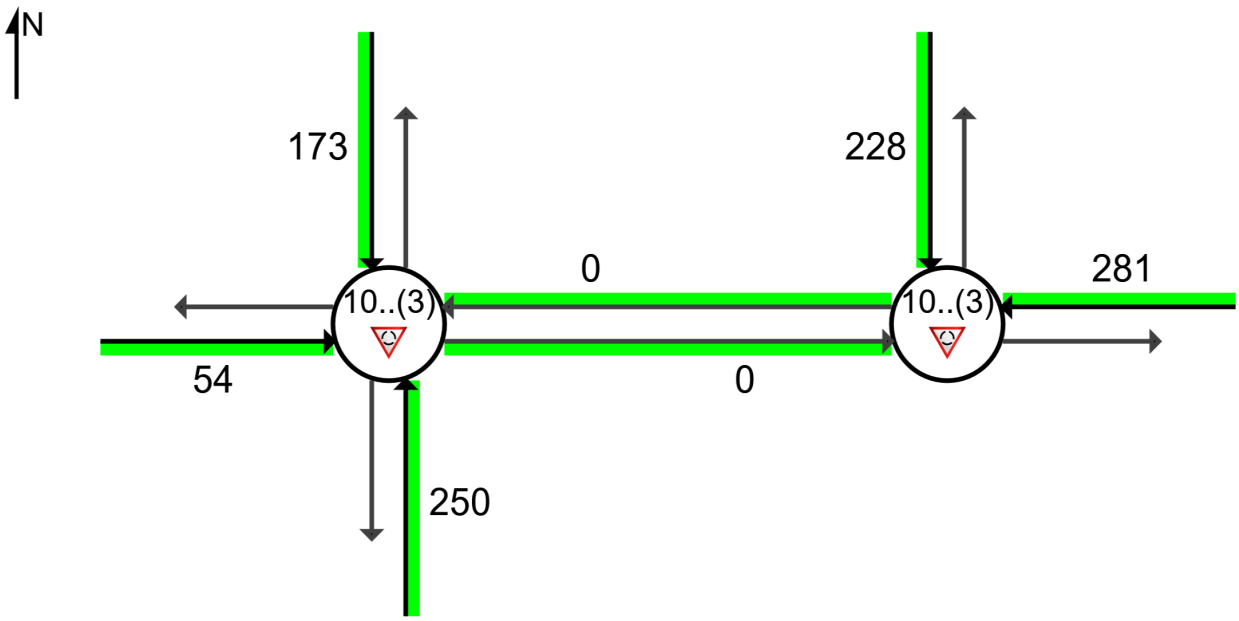
QUEUE DISTANCE (PERCENTILE)

Largest 95% Back of Queue Distance for any lane on the approach (feet)

Network: [2] PM Peak (PM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Queue Storage Ratio

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Queue Model: HCM Queue Formula.

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Tuesday, August 19, 2025 7:44:03 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 4 - Dog-Bone with Two-Way West\Proposed Roundabout - Scenario 4 - EF = 1.0.sipx

SCENARIO 6

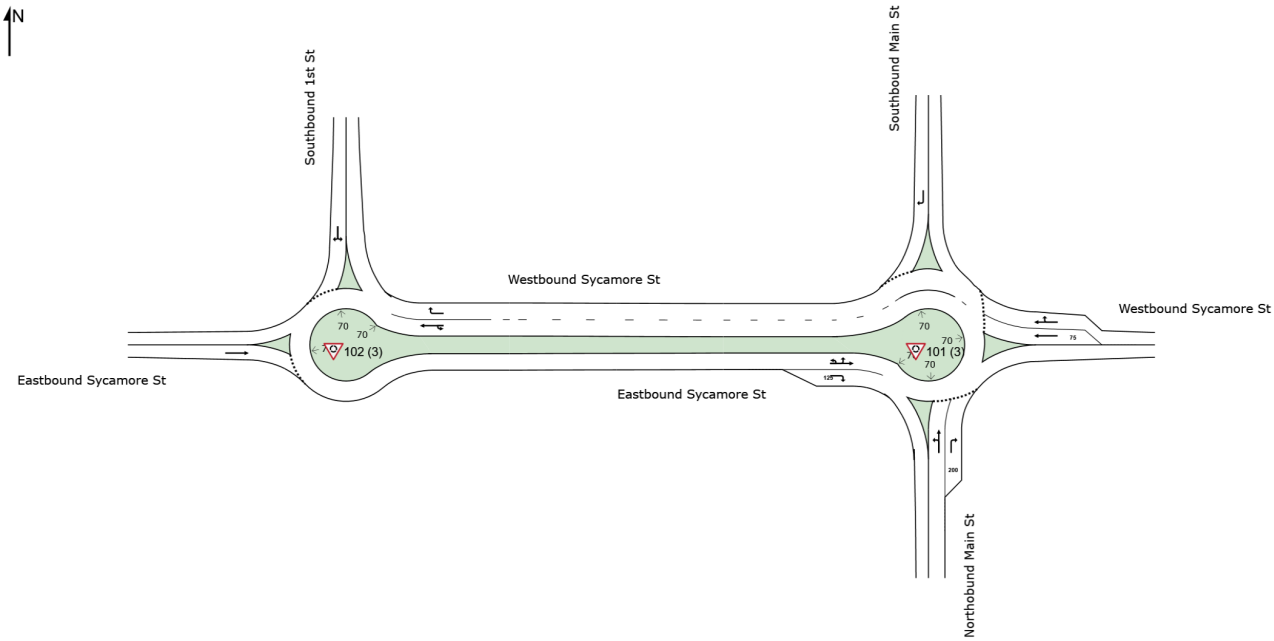
CAPACITY ANALYSIS
95TH PERCENTILE QUEUE LENGTH ANALYSIS

NETWORK LAYOUT

Network: [1] AM Peak (AM Peak)

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101 (3)	NA	Sycamore St & Main
102 (3)	NA	Sycamore St & 1st

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Created: Tuesday, August 19, 2025 10:42:41 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 5 - Dog-Bone with Two-Way East\Proposed Roundabout - Scenario 5 - EF = 1.0.sipx

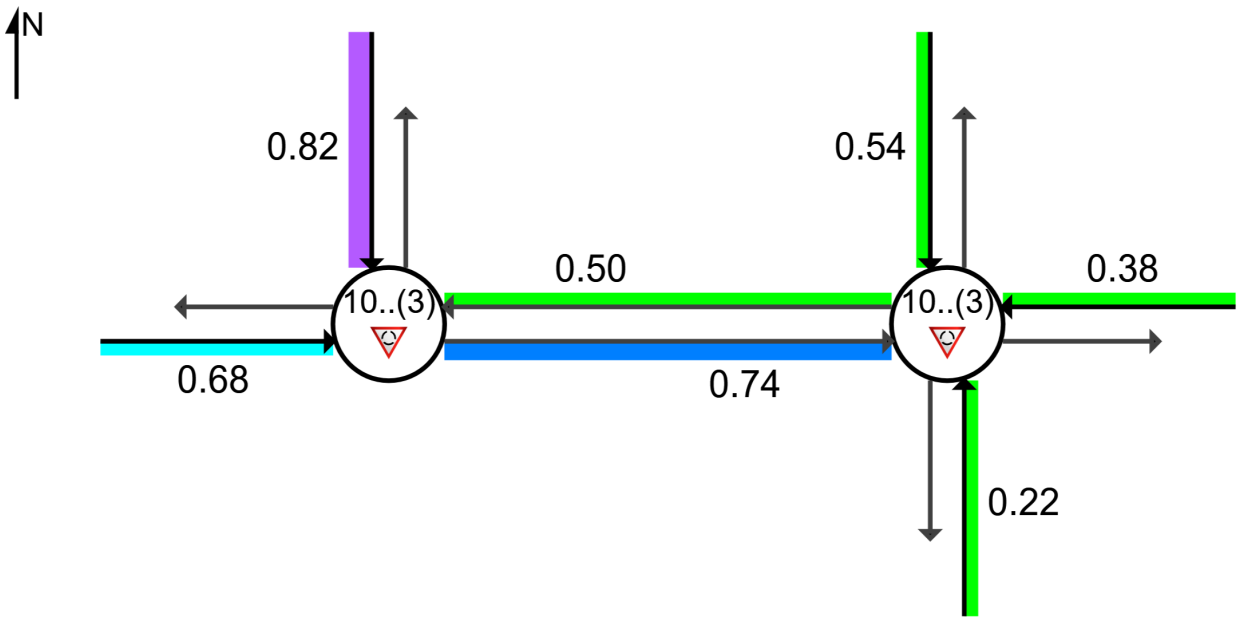
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio (worst lane for the approach)

Network: [1] AM Peak (AM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Degree of Saturation

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Tuesday, August 19, 2025 10:42:36 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 5 - Dog-Bone with Two-Way East\Proposed Roundabout - Scenario 5 - EF = 1.0.sipx

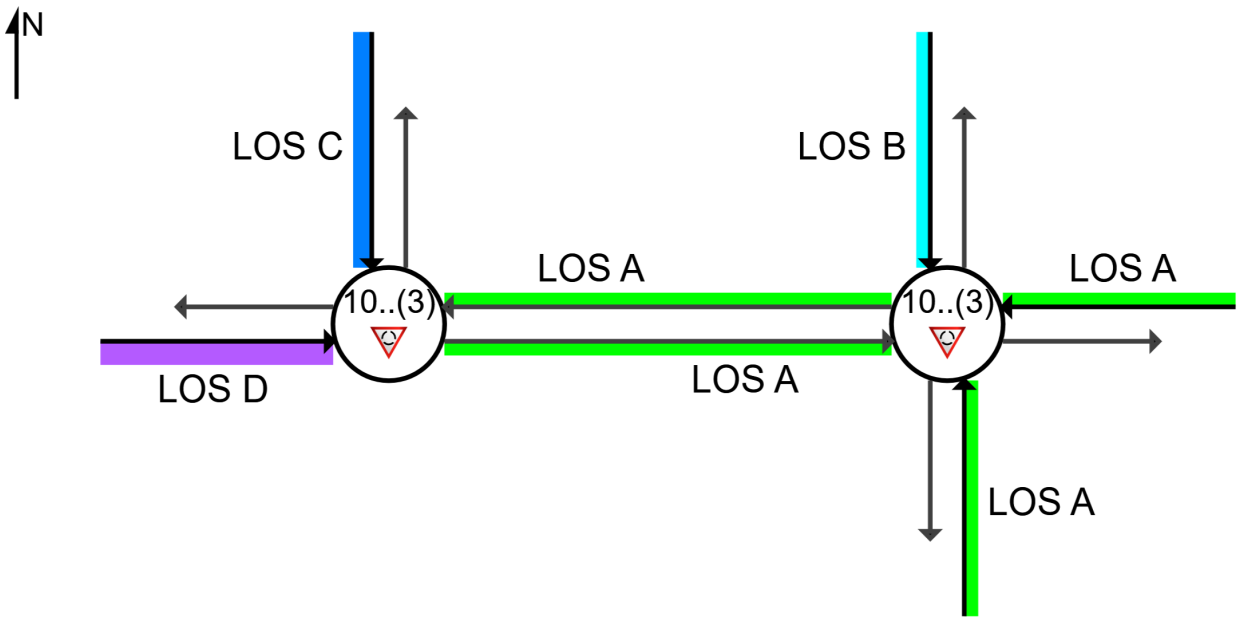
APPROACH LEVEL OF SERVICE

Approach Level of Service

Network: [1] AM Peak (AM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Tuesday, August 19, 2025 10:42:36 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 5 - Dog-Bone with Two-Way East\Proposed Roundabout - Scenario 5 - EF = 1.0.sipx

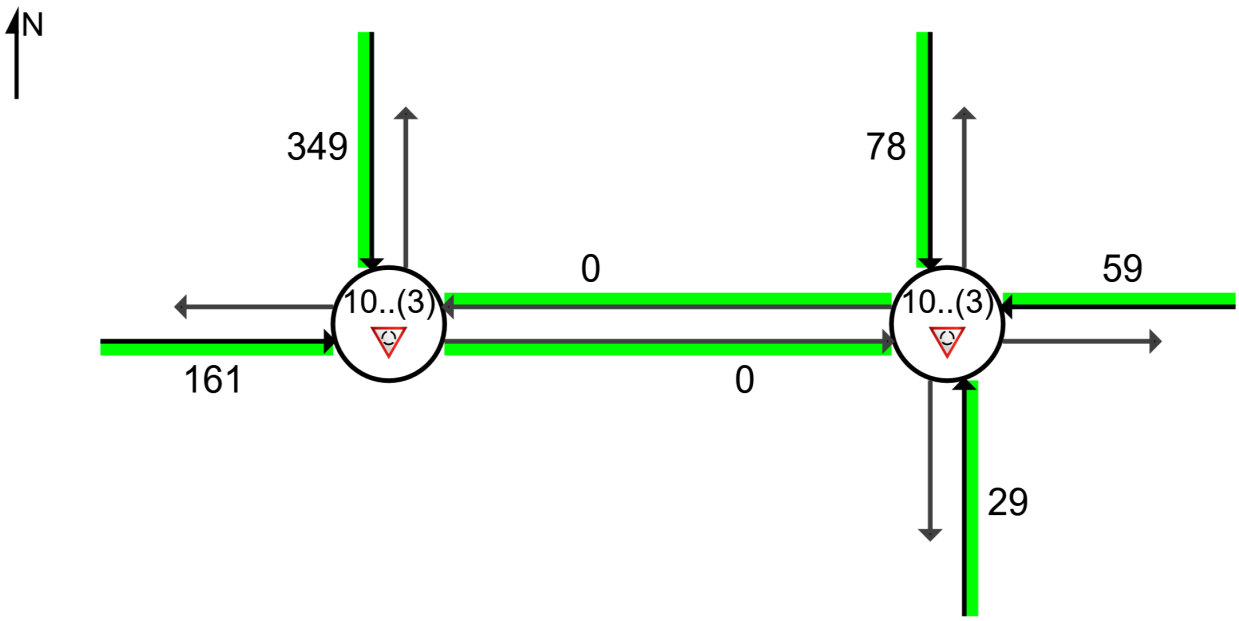
QUEUE DISTANCE (PERCENTILE)

Largest 95% Back of Queue Distance for any lane on the approach (feet)

Network: [1] AM Peak (AM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [>= 1.0]

Queue Model: HCM Queue Formula.

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Tuesday, August 19, 2025 10:42:36 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 5 - Dog-Bone with Two-Way East\Proposed Roundabout - Scenario 5 - EF = 1.0.sipx

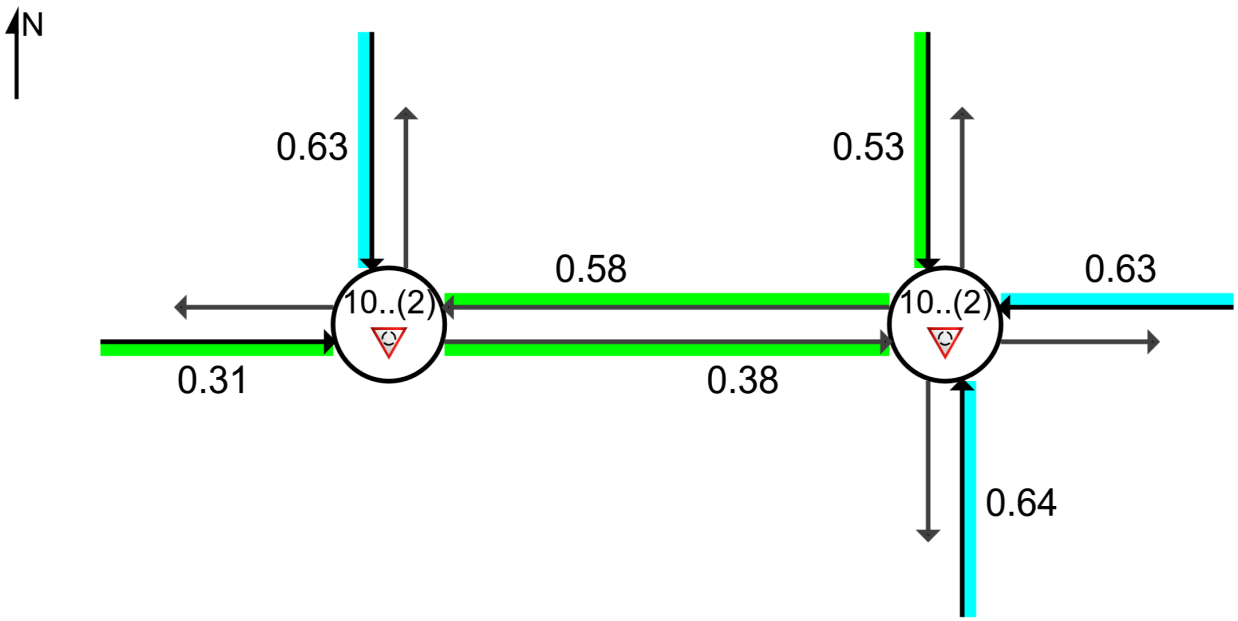
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio (worst lane for the approach)

Network: [2] PM Peak (PM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Degree of Saturation

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Tuesday, August 19, 2025 10:42:38 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 5 - Dog-Bone with Two-Way East\Proposed Roundabout - Scenario 5 - EF = 1.0.sipx

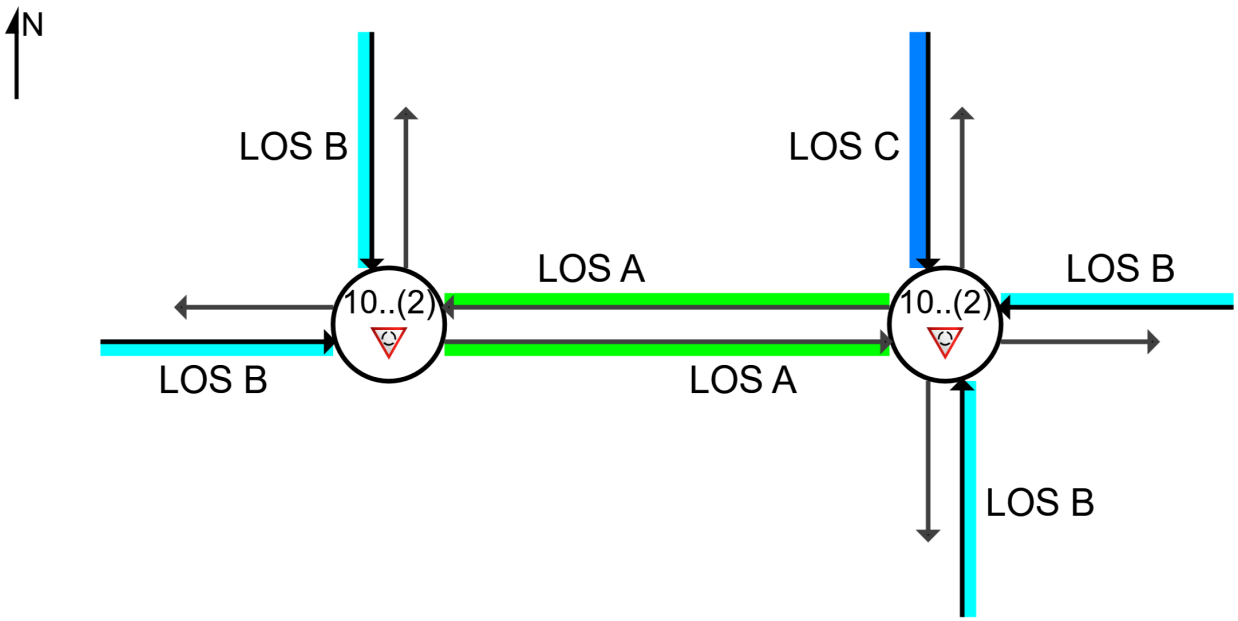
APPROACH LEVEL OF SERVICE

Approach Level of Service

Network: [2] PM Peak (PM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Tuesday, August 19, 2025 10:42:38 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 5 - Dog-Bone with Two-Way East\Proposed Roundabout - Scenario 5 - EF = 1.0.sipx

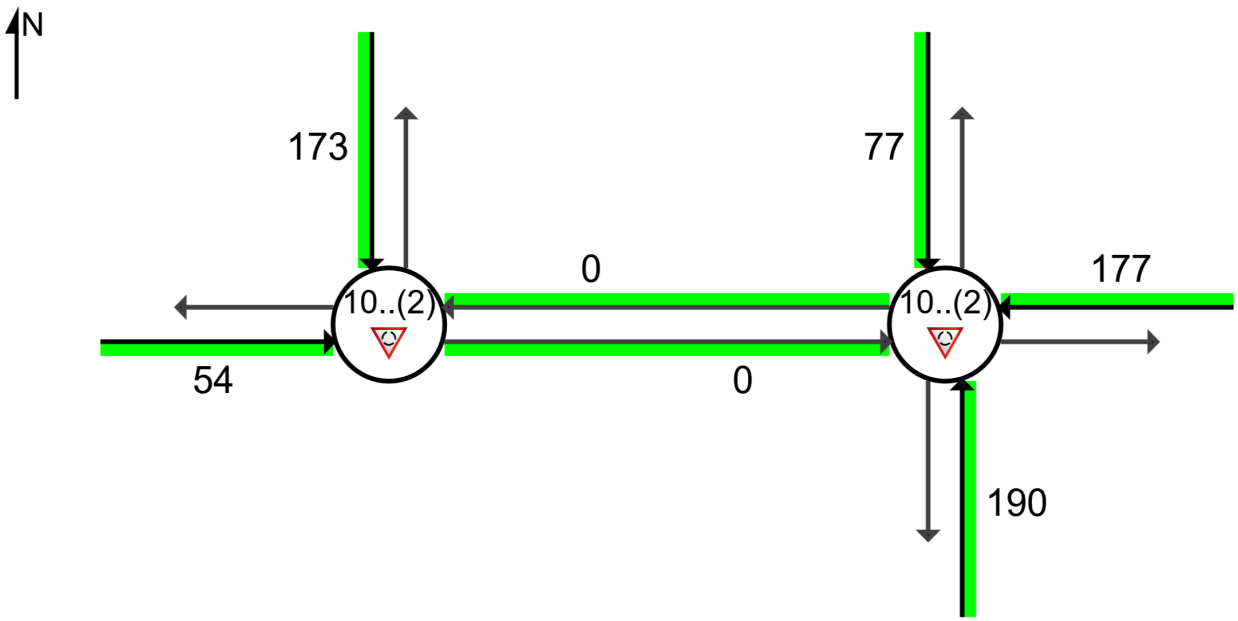
QUEUE DISTANCE (PERCENTILE)

Largest 95% Back of Queue Distance for any lane on the approach (feet)

Network: [2] PM Peak (PM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [>= 1.0]

Queue Model: HCM Queue Formula.

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Tuesday, August 19, 2025 10:42:38 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Scenario 5 - Dog-Bone with Two-Way East\Proposed Roundabout - Scenario 5 - EF = 1.0.sipx

SCENARIO 7

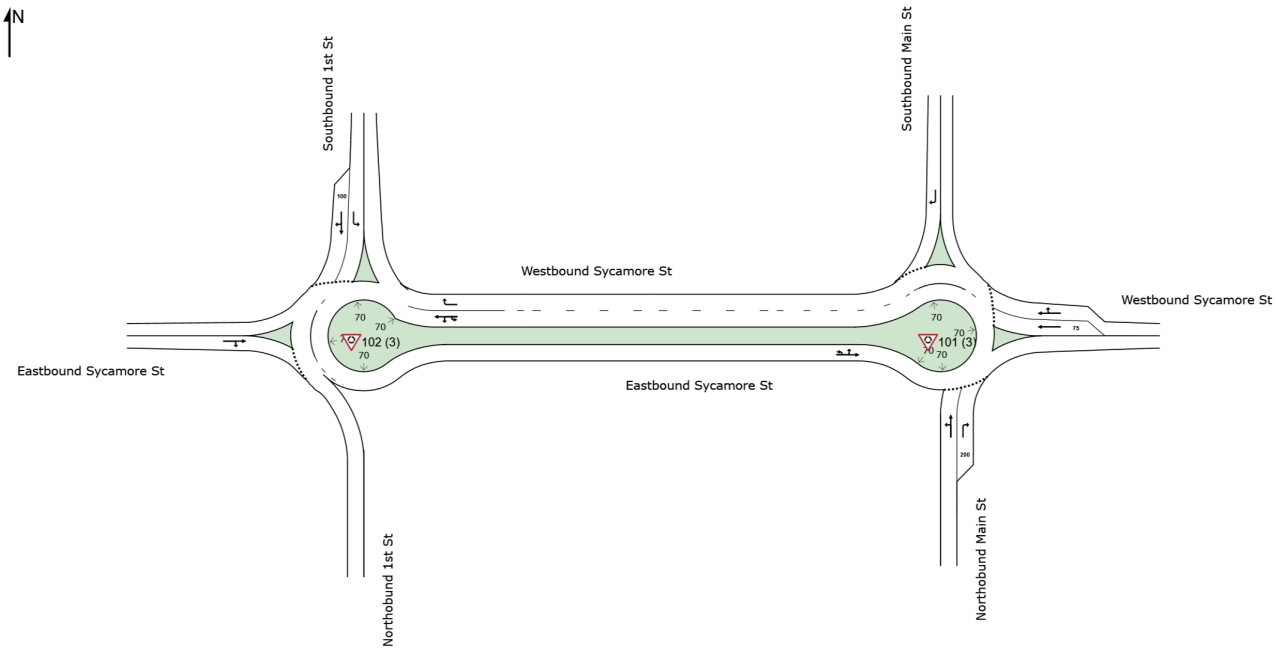
CAPACITY ANALYSIS
95TH PERCENTILE QUEUE LENGTH ANALYSIS

NETWORK LAYOUT

Network: [5] AM Peak - with WB T & NB R (AM Peak)

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101 (3)	NA	Sycamore St & Main
102 (3)	NA	Sycamore St & 1st

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Created: Wednesday, July 30, 2025 9:23:23 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Proposed Roundabout - 1.0 EF.sipx

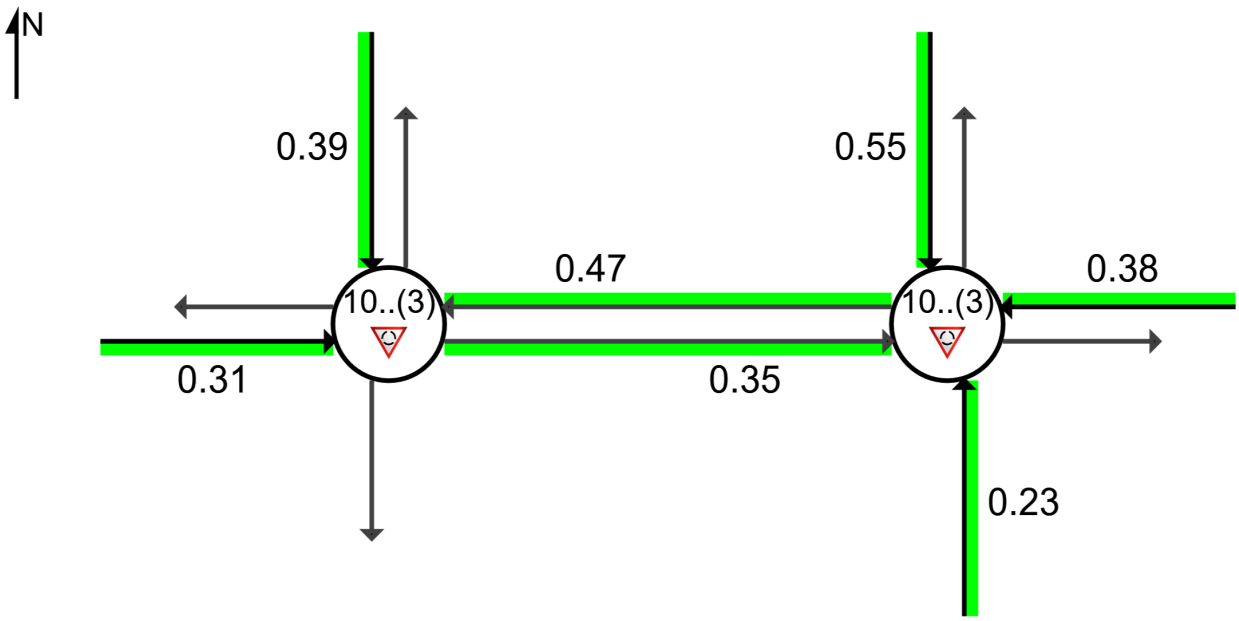
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio (worst lane for the approach)

Network: [5] AM Peak - with WB T & NB R (AM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Degree of Saturation

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Wednesday, July 30, 2025 9:21:07 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Proposed Roundabout - 1.0 EF.sipx

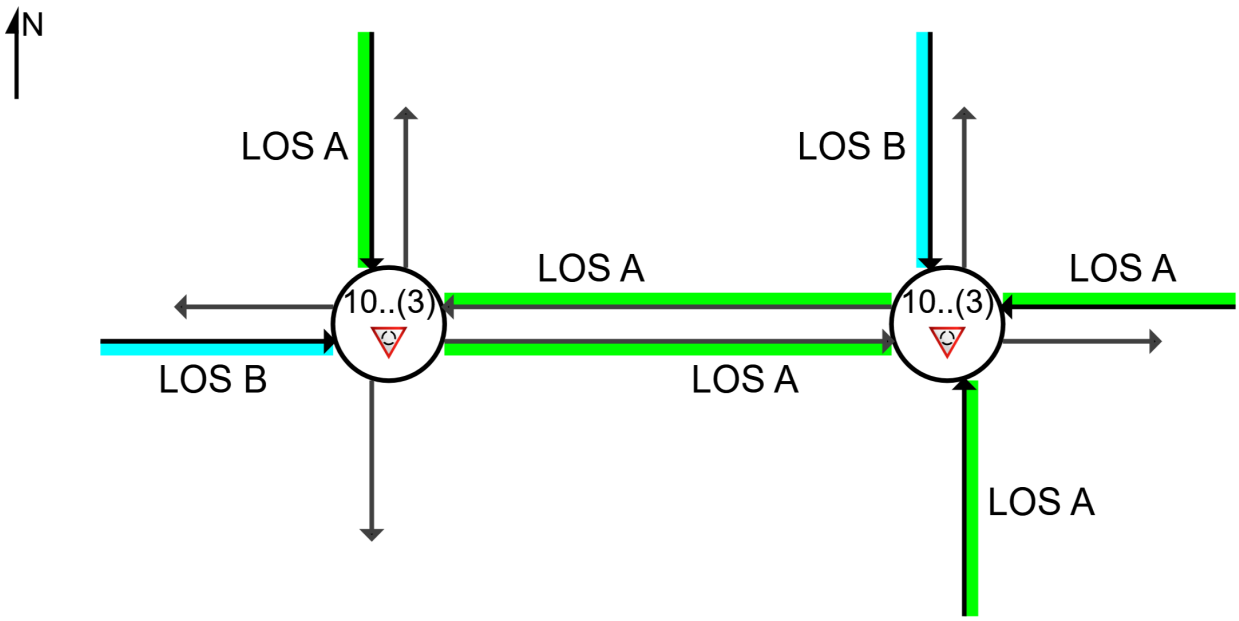
APPROACH LEVEL OF SERVICE

Approach Level of Service

Network: [5] AM Peak - with WB T & NB R (AM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Wednesday, July 30, 2025 9:21:07 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Proposed Roundabout - 1.0 EF.sipx

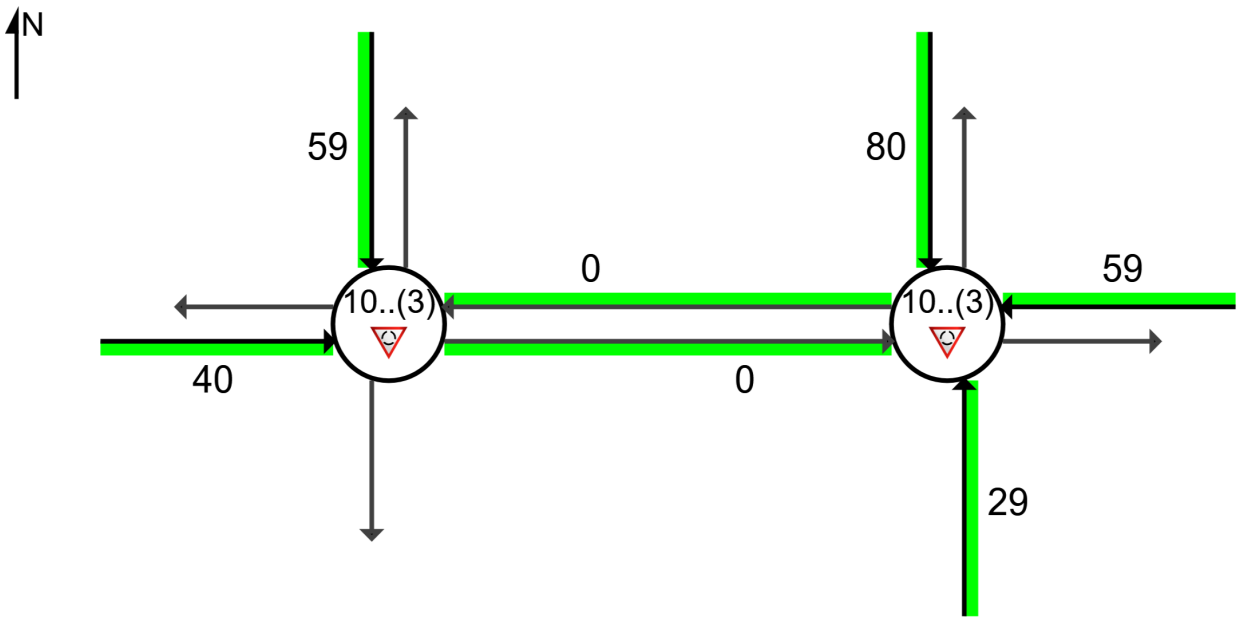
QUEUE DISTANCE (PERCENTILE)

Largest 95% Back of Queue Distance for any lane on the approach (feet)

Network: [5] AM Peak - with WB T & NB R (AM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [>= 1.0]

Queue Model: HCM Queue Formula.

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Wednesday, July 30, 2025 9:21:07 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Proposed Roundabout - 1.0 EF.sipx

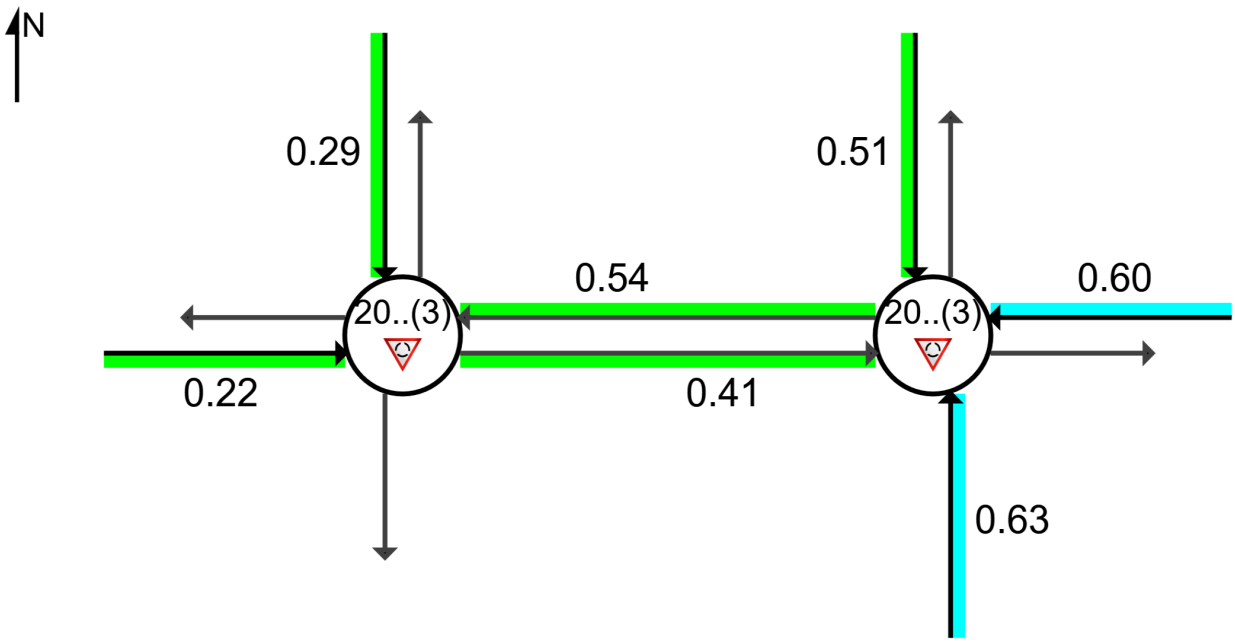
DEGREE OF SATURATION

Ratio of Arrival Flow to Capacity, v/c ratio (worst lane for the approach)

Network: [6] PM Peak - with WB T & NB R (PM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Degree of Saturation

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [> 1.0]

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Wednesday, July 30, 2025 9:21:32 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Proposed Roundabout - 1.0 EF.sipx

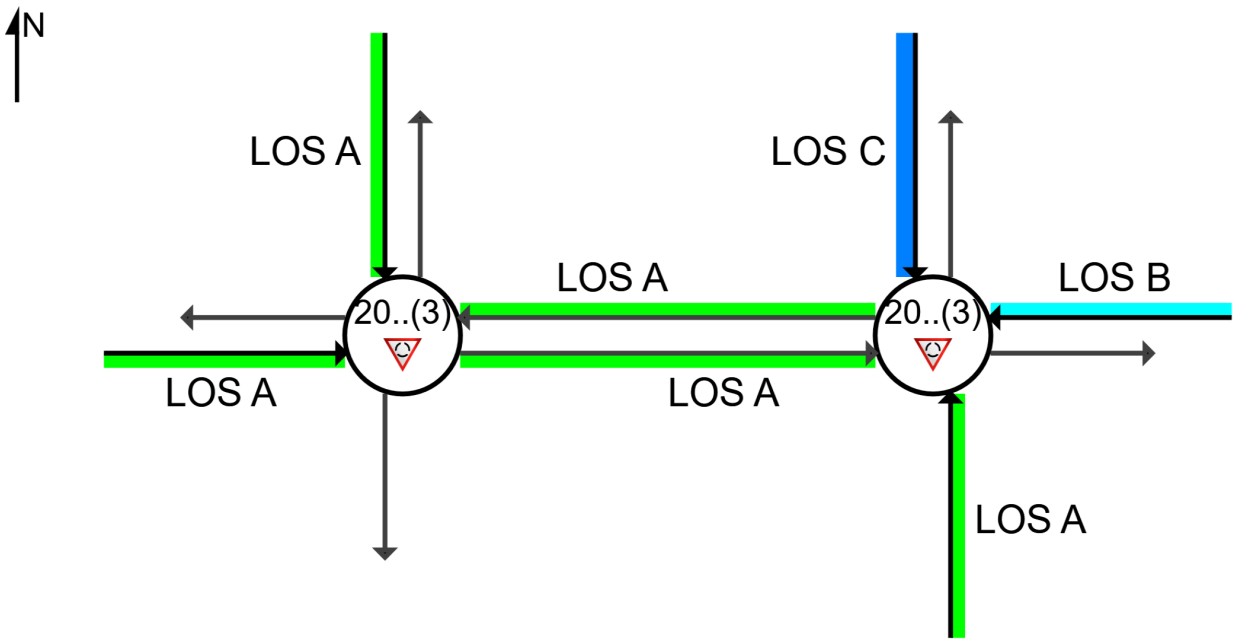
APPROACH LEVEL OF SERVICE

Approach Level of Service

Network: [6] PM Peak - with WB T & NB R (PM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Level of Service

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
LOS F will result if v/c >1 irrespective of movement delay value (does not apply for approaches and intersection).
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Wednesday, July 30, 2025 9:21:32 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Proposed Roundabout - 1.0 EF.sipx

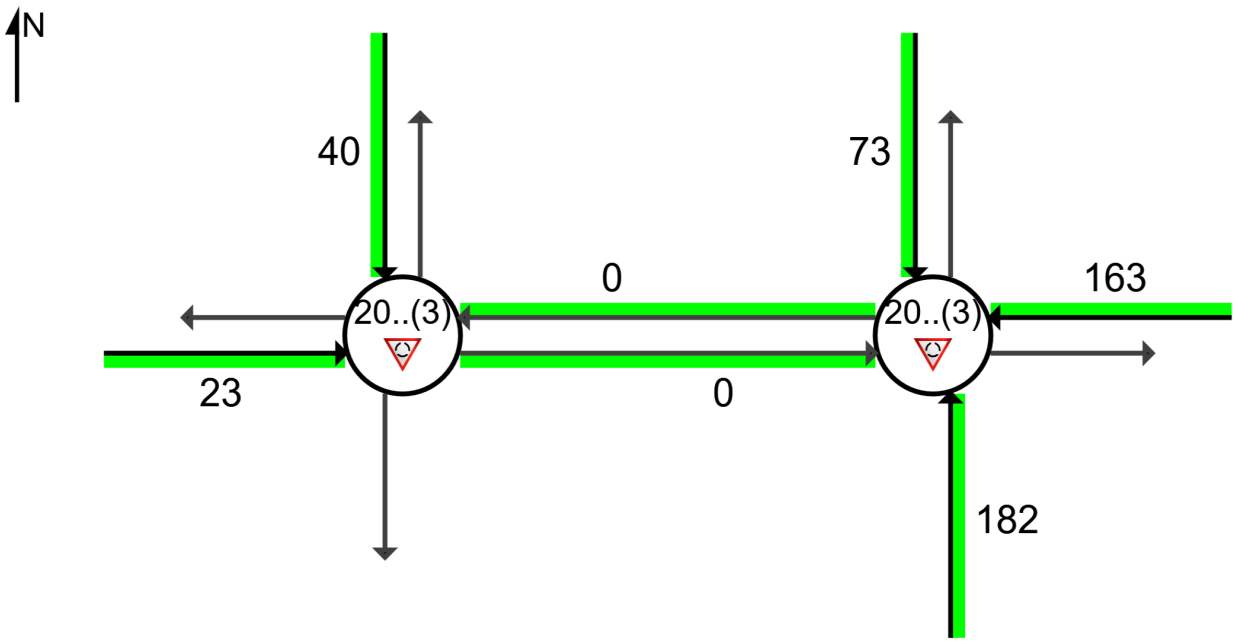
QUEUE DISTANCE (PERCENTILE)

Largest 95% Back of Queue Distance for any lane on the approach (feet)

Network: [6] PM Peak - with WB T & NB R (PM Peak)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Network
Network Category: (None)
Network Scenario: 1 | Local Volumes



Colour code based on Queue Storage Ratio

[< 0.6] [0.6 – 0.7] [0.7 – 0.8] [0.8 – 0.9] [0.9 – 1.0] [>= 1.0]

Queue Model: HCM Queue Formula.

Organisation: A&F ENGINEERING CO., LLC | Licence: NETWORK / 1PC | Processed: Wednesday, July 30, 2025 9:21:32 AM
Project: Z:\2024\24021P-Town of Zionsville, Intersection Improvement, Gateway Area, 1st & Sycamore\Traffic\July 2025\SIDRA\Proposed Roundabout - 1.0 EF.sipx