Traffic Impact Study

VILLAGE ON MAIN

JUSTER
CIVIL ENGINEERING LLC

Prepared by:
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August 30th, 2025

VILLAGE ON MAIN
TRAFFIC IMPACT STUDY

Prepared for:
Sudbeck Homes
City of Springfield
Sarpy County
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JCE Project No.: 250701
August 2025

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1. INTRODUCTION

1.1 Juster Civil Engineering (JCE) was hired to conduct a Traffic Impact Study (TIS) for the proposed Village on Main Development. This report summarizes the findings and recommendations of the traffic study. The study area includes the following intersections:

- S 132nd Street and Main Street
- Four proposed access points, 1-3 and 5, to the proposed development.

The purpose of the study is to determine the traffic impacts of the new Village on Main Development on the surrounding intersections and roadway network. Additionally, this study will propose public street improvements that will positively affect the roadway network, in the vicinity of the proposed development, by operating at acceptable level of service and improving overall safety concerns. The Village on Main development is a proposed residential housing subdivision made up of 98 single-family dwelling units, 43 bungalow units, 31 cottage units, 132 townhomes units and approximately 360 multi-family units. The new development will be on the southeast corner of S 132nd Street and Main Street intersection in Springfield, Sarpy County, Nebraska

.

No other studies were referenced in this analysis.

A study area and vicinity map of the proposed development is shown in Figure 1, in the appendix.

1.2 Executive Summary

- A proposed site plan of the proposed development and the access points is attached as Figure 2, in the Appendix.

- Traffic operations were analyzed during the morning and evening peak hours of a typical weekday at the study intersections.

  Two scenarios were analyzed:
  1. Existing 2025 AM and PM peak hours.
  2. Full build-out year (2035) of background traffic for AM and PM peak hour and
  3. 2035 build-out conditions for the AM and PM peak hours

- Following is a description of the MOE's (Measures of Effectiveness) that were analyzed as part of this study:

  - LOS (Level of Service) before and after the proposed construction.
  - Queues.
  - Auxiliary left-turn and right-turn lanes warrants.
  - Traffic signal warrants.
  - IDV – Overall Intersection Delay per Vehicle in second per vehicle.
  - Safety impacts of possible lane geometry changes.

- The impact of this development on the studied intersections is minor in terms of the MOE's described above. This can be mainly attributed to the relatively low existing background traffic volumes and the current capacity of the system to absorb added volumes. As an example, the 2025 Intersection Delay per Vehicle IDV hereunder) of S 132nd Street and Main Street is 7.6 sec /veh during PM peak hour, with LOS A. The 2035 Intersection Delay per Vehicle of S 132nd Street and Main Street, for buildout condition, is 10 sec/ veh during PM peak with LOS A.

  It is particularly important to note that the area is developing fast and new developments will eventually come online. It is essential, in that case, to monitor the area and continuously update this study accordingly in terms of the impacts these future developments will have.

Traffic volumes on Main Street East of 132nd Street is currently very low. Future pavement of Main Street from S 132nd Street to 120th Street will allow for a more balanced traffic volumes in this vicinity.

As this project develops, it will be beneficial to pave Main Street section east of 132nd Street. Paving these adjacent streets will shift some of the traffic that currently uses S 132nd Street thus creating a more balanced roadway network.

The main conclusion at the end of this TIS is that the current roadway system, after the proposed improvements, will operate at acceptable LOS for the foreseeable future.

- Following is a list of conclusions and recommended improvements:

  - Paving Main Street east of S 132nd Street to the east end of the project.

  - Right-turn Lane is warranted at 132nd Street and Main Street south-bound right movement during PM Peak Hour for both background and buildout condition. This is due to background traffic movement.
  - Due to low background volumes, even during the buildout year, with the exception noted above, no warrants are met for:
    - Left-turn lanes.
    - Right-turn lanes and
    - traffic signalization.

  - Dedicated Left-turn Lanes at Intersection 1, 2, 3 and 5 out of Development. Despite not currently meeting warrants**,** we recommend incorporating enough right-of-way for left-turn lanes out of the development at intersections 1, 23 and 5. This will avoid future dedication when warrants are met and dealing with Right-of-way acquisition will be difficult.

  - Dedicate enough right-of-way on both S 132nd Street and Main Street frontage to accommodate future three-lanes wide paved section.

1.3 Data Gathering

- AM, PM and Mid-day peak hour traffic counts were performed on July 17, 2025, at the intersection of :

  - 132nd Street and Main Street

  The result of the volume counting is shown in the Appendix.

- Site generated trips – *ITE Trip Generation Manual, 11th Edition, September 2025.*

2. EXISTING ROADWAY AND TRAFFIC CONDITIONS

2.1 Surrounding Land Uses

Surrounding land uses are mainly agricultural, except for City of Springfield Located west of 132nd Street.

2.2 Existing Roadway Network

The existing roadway system (See Figure 3, in the Appendix for existing lanes configuration) in the study area includes the following primary facilities:

- **Main Street** is a gravel surfaced road east of S 132nd Street.

- Both S 132nd Street and Main Street are two-lane roads with no left or right-turn lanes approaching the intersection.

- Intersection of S 132nd Street and Main Street is an unsignalized intersection operating under four-way traffic control.

2.3 Existing Traffic Conditions

Summaries of the peak period turning movement counts are provided in the Appendix. Traffic operations were analyzed for the study intersections using procedures documented in the HCM 6th Edition Highway Capacity Manual, Transportation Research Board, December 2016. From the analysis, a key measure or "level of service" rating of the traffic operational condition was obtained. In general, level of service (LOS) is a qualitative assessment of traffic operational conditions within a traffic stream in terms of the average stopped delay per vehicle at a controlled intersection. Levels of service are described by a letter designation of either A, B, C, D, E or F, with LOS A representing essentially uninterrupted flow, and LOS F representing a breakdown of traffic flow with noticeable congestion and delay. Unsignalized, or stop sign controlled, intersection capacity analyses produce Analysis of intersection capacity, respective delays and queues for peak hour volumes were performed using Synchro 12 and Symtraffic 12. Level-of-service (LOS) is a measure of effectiveness for intersection operating conditions, and is based on delay experienced by vehicles passing through an intersection. It can range from LOS "A" to LOS "F", with LOS "A" representing little or no delay. A LOS "C" or better is considered desirable. LOS D is considered acceptable under certain congestion and practical criteria. This is an acknowledgement of the local conditions at the project impact area. This is not a policy universally applied. Table 1 shows the intersection LOS criteria for both signalized and unsignalized intersections.

TABLE 1 – Intersection LOS Criteria

Level of Service	Signalized Control Delay Range	Unsignalized Control Delay Range
A	≤10 seconds	≤10 seconds
B	>10 and ≤20 seconds	>10 and ≤15 seconds
C	>20 and ≤35 seconds	>15 and ≤25 seconds
D	>35 and ≤55 seconds	>25 and ≤35 seconds
E	>55 and ≤80 seconds	>35 and ≤50 seconds
F	>80 seconds	>50 seconds

Traffic counts were recorded, July 17th, 2025, at the intersection of S 132nd Street and Main Street, at consecutive 15-minute intervals. Weekday traffic was recorded during three peak periods: 6:30-9:30 AM, 11:30-1:30 MID-DAY and 3:30-6:30 PM. After reviewing the traffic counts, it was determined that the highest one-hour AM traffic

volumes occurred during the 7:00 – 8:00 AM hour. The highest PM traffic volumes occurred during the 4:30 – 5:30 PM hour. The highest Mid-day traffic volumes occurred during the 11:30 AM to 12:30 PM. Peak hour volume is defined as the highest four, consecutive 15-minutes intervals of traffic volumes that were measured.

Based on growth information provided by MAPA, for previous projects in Sarpy County and engineering judgment, it was determined, conservatively, that a linear growth factor of 4% will be universally applied to the project background traffic volume growth for future milestone years. Raw, directional background traffic volumes, obtained in the field as described above, were projected, based on the growth factors calculated as shown in Figures 4 and 5 and Tables 2 and 3. Following is description of the milestone years used in this analysis:

- 2025 is the baseline year for background traffic analysis,
- 2035 is the expected full buildout of the proposed new project.

Results of the background condition projected as described above, for the milestone years can be seen in Figures 6 and 7 the Sychro reports in the Appendix.

Results of the background traffic, existing and projected, capacity analysis, show some of the following:

- Existing unsignalized intersection at S 132nd Street and Main Street operates at LOS A for both AM and PM conditions, both existing (2025) and projected (2035).

3. FUTURE ROADWAY CONDITIONS

3.1 Changes in Study Area Land Use

The Village on Main development is a proposed residential housing subdivision comprised of 98 single-family dwelling units, 43 bungalow units, 31 cottage units, 132 townhomes units and approximately 360 multi-family units. The new development will be in the southeast corner of S 132nd Street and Main Street intersection.

3.2 Traffic Growth

A linear growth factor of **four percent per year** was applied to the 2025 AM and PM peak hour traffic counts to determine the 2035, (assumed development build-out year) forecasted background traffic volumes. Both AM and PM peak hour volumes were analyzed in this study. See Table 2 and 3, in the Appendix for AM and PM counted and forecasted background volumes.

3.3 Trip Generation, Distribution and Assignment

The ITE Trip Generation Manual, 11th Edition, was used to estimate the trips that will be generated when the Village on Main development is build-out (assumed 2035). These trips are the volume of traffic that will be added to the background traffic for the total volumes in the full build-out. The total daily trips, AM and PM peak hour trips generated by the development can be seen in Table 4, in the Appendix.

Due to the land uses of this proposed development, Internal trips and pass-by trips were not considered.

The trips generated by the proposed development were assigned to the site entrances based on distribution percentages. These percentages were determined by general proximity of the lots to a certain entrance and respective construction phases. The next stage in the distribution and assignment of the site generated trips, onto the studied intersections, was based upon existing background trips patterns supplemented with engineering judgment. The results of the distribution percentages and site generated trip assignment can be seen in Figure 8 and Tables 5, 6 and 7 in the Appendix.

The site generated volumes were then added to the background volumes for the buildout year (2035). The total build-out volumes for 2035 can be seen in Figures 9 and Tables 8 and 9, in the Appendix.

3.4 Buildout Condition Traffic Analysis

An MOE's summary, for buildout conditions can be found in Figures 10 and 11 for AM and PM Peak, in the Appendix, respectively:

- Overall intersection LOS, for AM and PM for all intersections.
- 95% Queues length.

Following conclusions could be drawn from the MOE's analysis of the buildout conditions:

- All intersections in this study will operate at LOS A for the study period.

  The impact of this development on the studied intersections is minor in terms of the MOE's described above. This can be mainly attributed to the relatively low existing background traffic volumes and the current capacity of the system to absorb additional volumes. As an example, the 2025 Intersection Delay per Vehicle IDV hereunder) of S 132nd Street and Main Street is 7.6 sec /veh during PM peak hour, with LOS A. The 2035 Intersection Delay per Vehicle of S 132nd Street and Main Street, for buildout condition, is 10 sec/ veh during PM peak with LOS A.

3.5 Queueing Analysis

Queueing analysis was performed using the SimTraffic simulation program. Results are shown in Figures 10 and 11, and the full Queueing Reports in the Appendix, for the buildout conditions. Queues, overall, are relatively short.

3.6 Warrant Analysis

Proposed system performs at LOA A with a two-lane configuration with stop control. Proposed lane configuration is shown in Figure 12. Following are left and right-turn lanes and signal warrants analysis:

3.6.1 Right-Turn Lane Warrants.

As shown in the **Appendix**, NCHRP Report 279: Intersection Channelization Design Guide was used to analyze traffic volumes at the unsignalized intersections in this study to determine if auxiliary right-turn lanes would be warranted for the 2035 Build-out traffic conditions. NCHRP Report 279 guidelines are based upon three measures:

- Number of through lanes
- Total peak hour approach traffic volumes
- Right-turn traffic volumes

See Tables 8 and 9 for right-turn warrant calculation. Highlighted in green you will see the right-turn movements meeting warrants. Following is a list of those locations:

- S 132nd Street and Main Street south-bound right movement during PM Peak Hour for both background and buildout condition.

3.6.2 Signal Warrants

A review of the unsignalized study intersections was performed to determine if MUTCD traffic signalization Peak Hour warrants would be satisfied with 2035 Build-out traffic volumes. Analysis was performed at the intersection of S 132nd and Main Street. The other intersections will not meet signal warrants under projected traffic volume conditions. The results for intersection of S 132nd and Main Street are shown in the Appendix. Highest minor approach (Main Street) is 109 vph and both Major approaches (S 1232ns Street) are 303 vph. Thus, signal warrant is not met, under proposed buildout volumes.

3.6.3 **Auxiliary Left-Turn Lane Warants**

Left-turn warrants were checked using the AASHTO Green Book left-turn guidelines, which are attached to the Appendix. This warrant is based on four criteria:

- Advancing volumes,
- % of left-turn volumes of the advancing volumes and
- Opposing volumes
- Operating speed

To meet this, warrant all three criteria need to be above the threshold shown on the warrant table.
This criterion was calculated, and the results can be seen in Tables 8 and 9.
None of the advancing volumes meet the criteria. Some of the left-turn movements' percentage of the advancing movements are high and this needs to be observed in future studies.

4. CONCLUSIONS AND RECOMMENDATIONS

The recommendations that follow assume that the Village on Main development will be buildout by 2035, with similar lot configuration and access points as shown in Figure 2. If there are any changes to these assumptions, portions of this report may need to be reevaluated.

The impact of the proposed development on the studied roadway network is minor in terms of the MOE's described above. This can be mainly attributed to the relatively low existing background traffic volumes and the current capacity of the system to absorb additional volumes.

Following is a list of conclusions and recommended improvements:

- Paving Main Street east (two lanes) of S 132nd Street to the east end of the project.

- Right-turn Lane is warranted at 132nd Street and Main Street south-bound right movement during PM Peak Hour for both background and buildout condition. This is due to background traffic movement. This improvement can be implemented at the later stage when additional intersection improvements will be warranted.
- Due to low background volumes, even during the buildout year, with the exception noted above, no warrants are met for:
    - Left-turn lanes
    - Right-turn lanes and
    - traffic signalization.

- Dedicated Left-turn Lanes at Intersection 1, 2, 3 and 5 out of Development. Despite not currently meeting warrants**,** we recommend incorporating enough right-of-way for left-turn lanes out of the development at intersections 1, 2, 3 and 5. This will avoid future dedication when warrants are met and dealing with Right-of-way acquisition will be difficult.

- Dedicate enough right-of-way on both S 132nd Street and Main Street frontage to accommodate future three-lanes wide paved section.

The overall conclusion of this study is that the existing roadway network, with some minor improvements, will operate at desirable LOS well into the future, even considering the addition of the proposed Village on Main land development.

It is very important to note that the area is developing fast and new developments will eventually come online. It is essential, in that case, to monitor the area and update this study accordingly, in terms of the impacts these future developments will have.


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8/30/2025
STATE OF NEBRASKA

APPENDIX

FIGURES 1-12

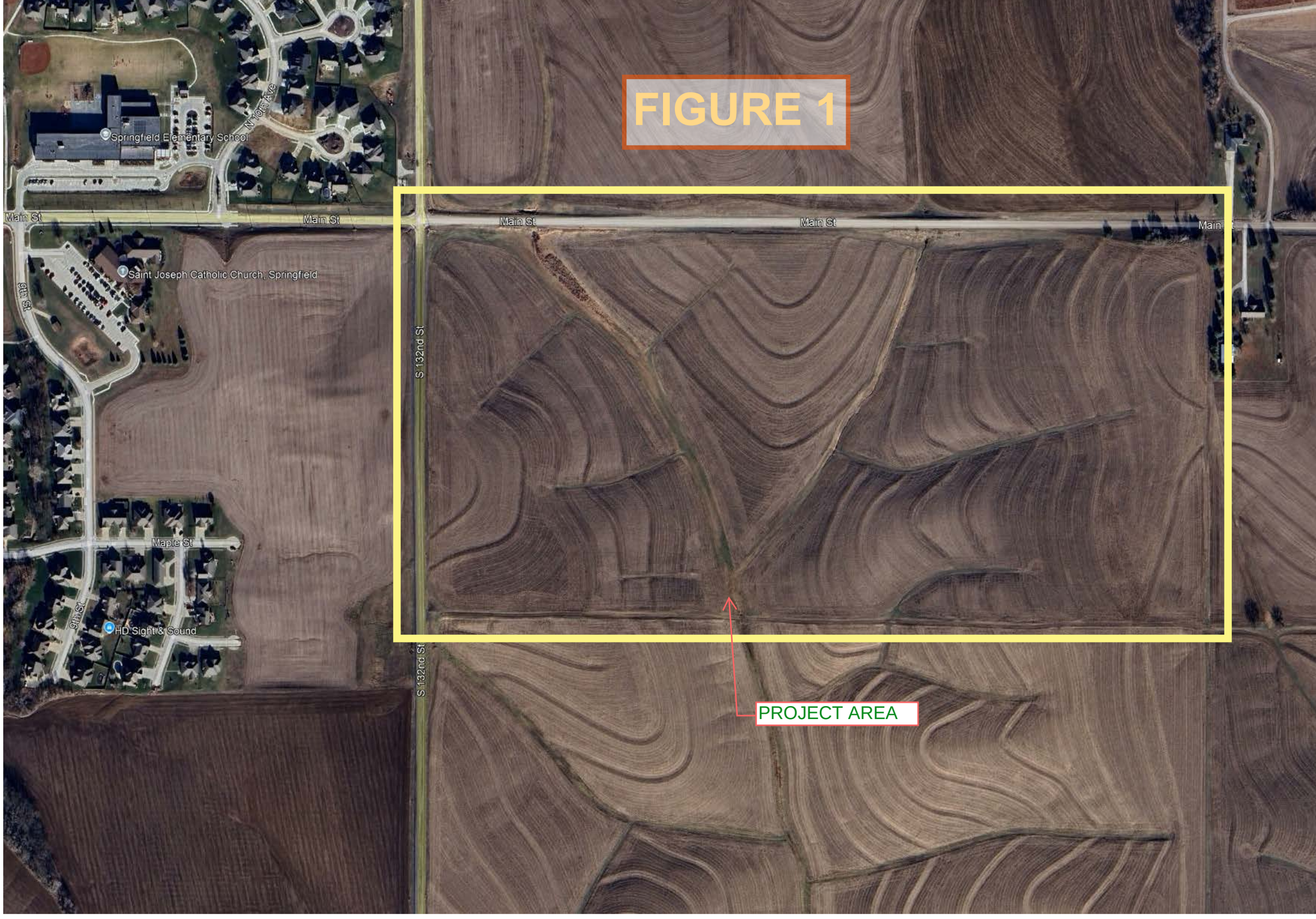


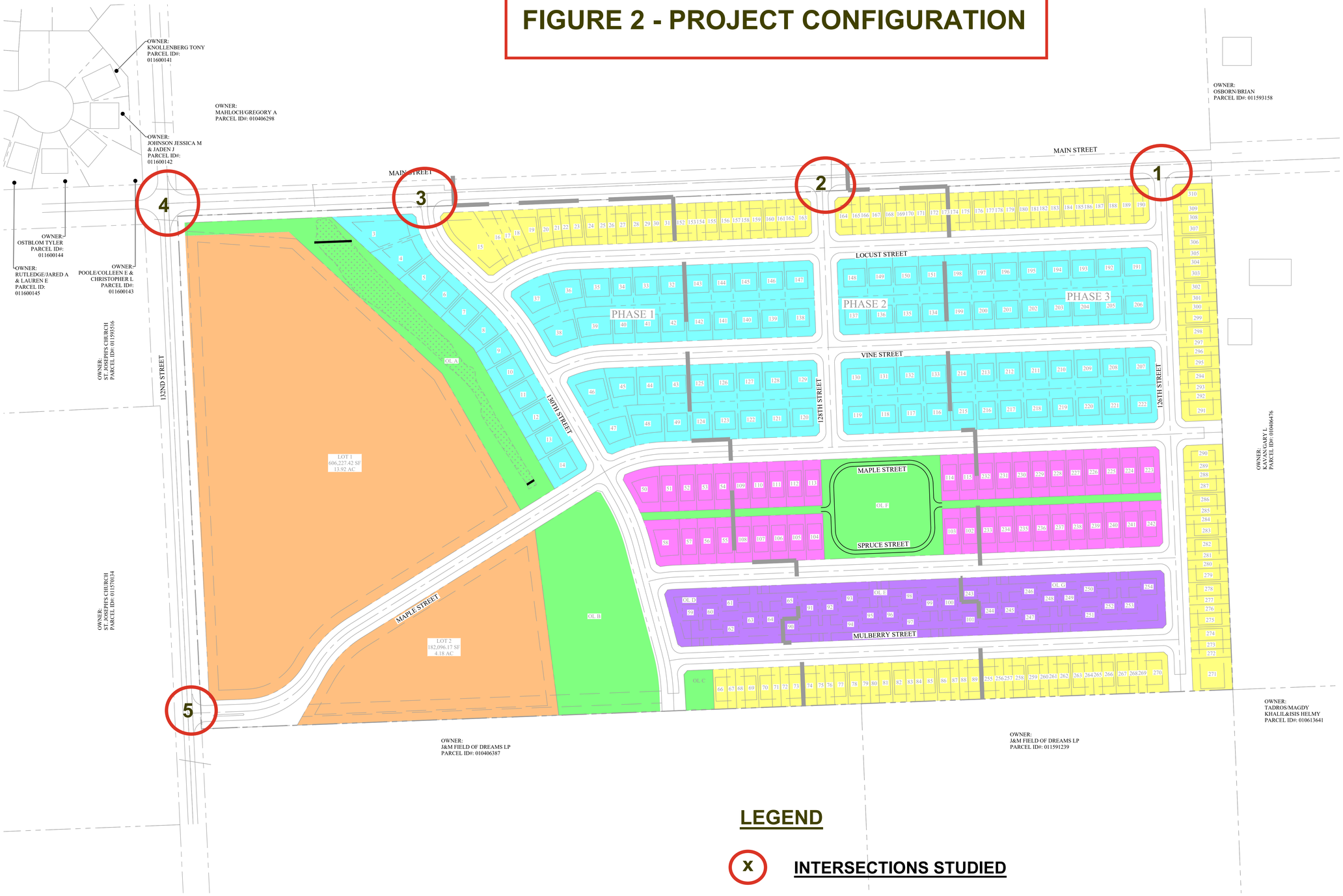
FIGURE 1
Springfield Elementary School
N 10th Ave
Main St
Main St
Main St
Main St
Saint Joseph Catholic Church, Springfield
9th St
Maple St
9th St
HD Sight & Sound
S 132nd St
S 132nd St
PROJECT AREA

VILLAGE ON MAIN

PRELIMINARY PLAT

LOTS 1-310 AND OUTLOTS A-G

FIGURE 2 - PROJECT CONFIGURATION



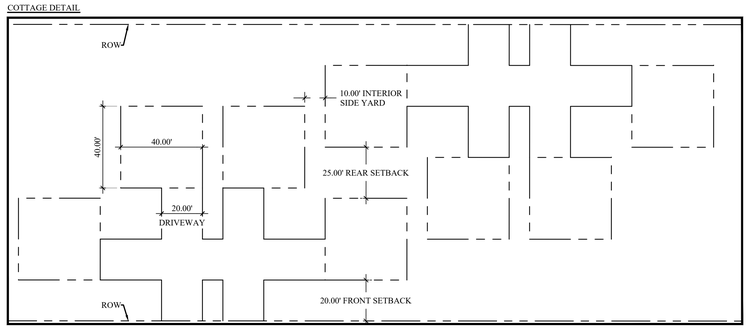
LEGEND

(X) **INTERSECTIONS STUDIED**

LOT TYPE LEGEND

- PUD (SINGLE FAMILY)
- PUD TOWN HOMES
- PUD COTTAGES
- PUD BUNGALOW
- R-30 (MULTI-FAMILY)
- OUTLOT

COTTAGE DETAIL



PROPERTY SETBACK TABLE

	SINGLE FAMILY	MULTI-FAMILY	TOWN HOMES	COTTAGES	COTTAGES OUT LOT	BUNGALOW
FRONT YARD	25'	25'	20'	00.00'	20'	25'
STREET SIDE YARD	15'	25'	15'	00.00'	20'	15'
REAR YARD	25'	25'	20'	00.00'	20'	25'
INTERIOR SIDE YARD	5'	25'	5'	00.00'	10'	5'

N W E S

100 0 100 200
scale 50 feet

FoleyShald ENGINEERING
14503 GROVER STREET, SUITE 102 | OMAHA, NE 68144

SUDBECK COMPANIES

REVISIONS

NUMBER	DATE	DESCRIPTION

Village on Main

Springfield, NE

FSE: CA-4197
FSE #: 102.001

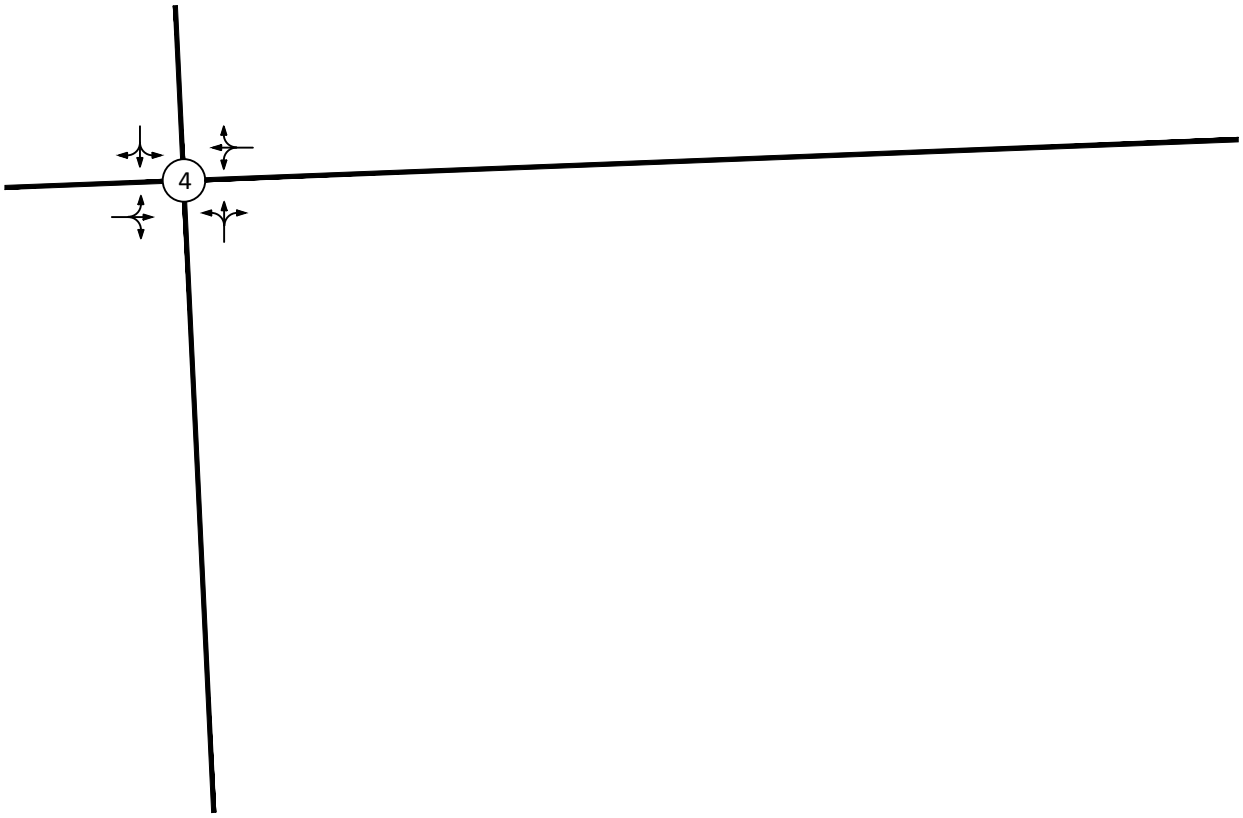
July 10, 2025

Preliminary
NOT FOR CONSTRUCTION

PUD

Exhibit A

FIGURE 3 - EXISTING INTERSECTION LANE CONFIGURATION



LEGEND

(X) UNSIGNALIZED INTERSECTION

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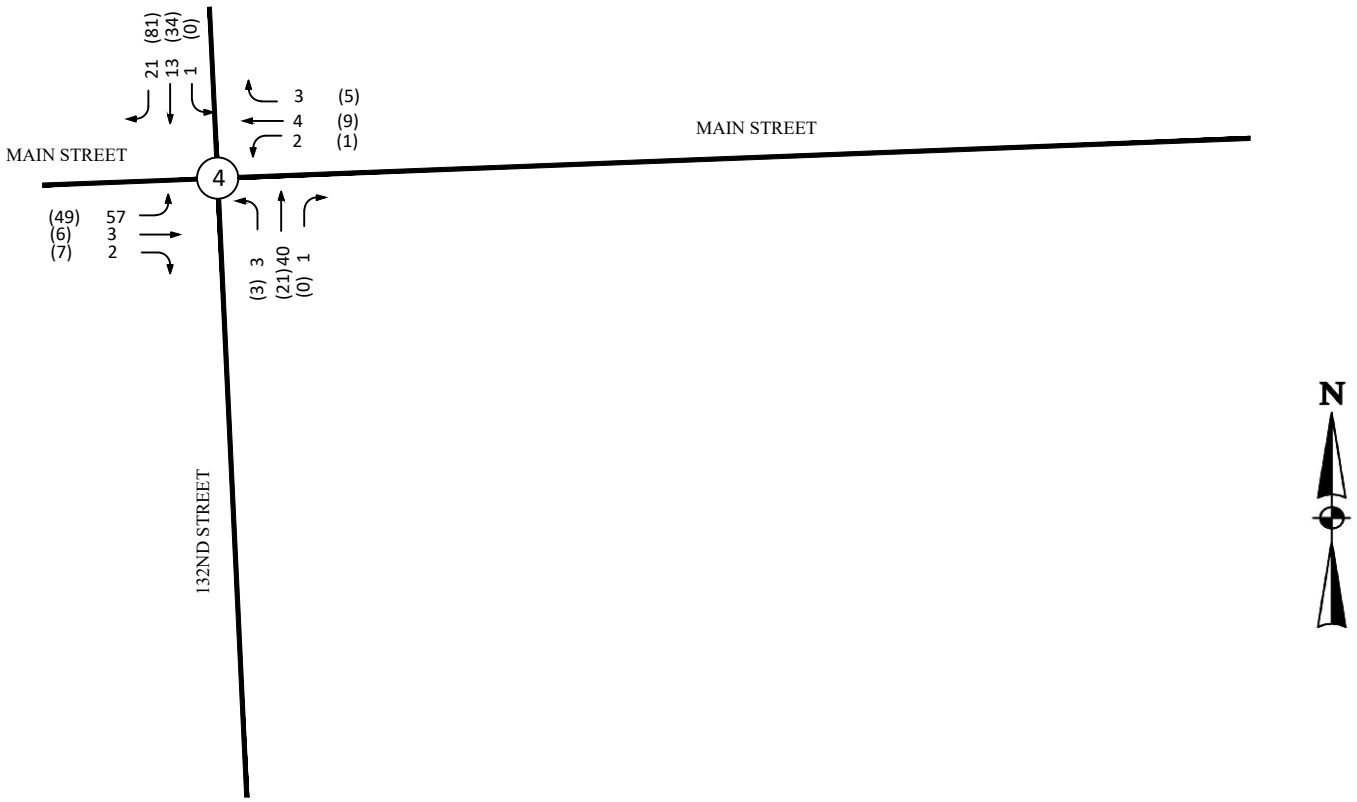
FIGURE 4 - 2025 AM /PM P.H. BACKGROUND VOLUMES



LEGEND

UNSIGNALIZED INTERSECTION

XXX AM PEAK HOURLY DIRECTIONAL TRAFFIC VOLUME

(XXX) PM PEAK HOURLY DIRECTIONAL TRAFFIC VOLUME

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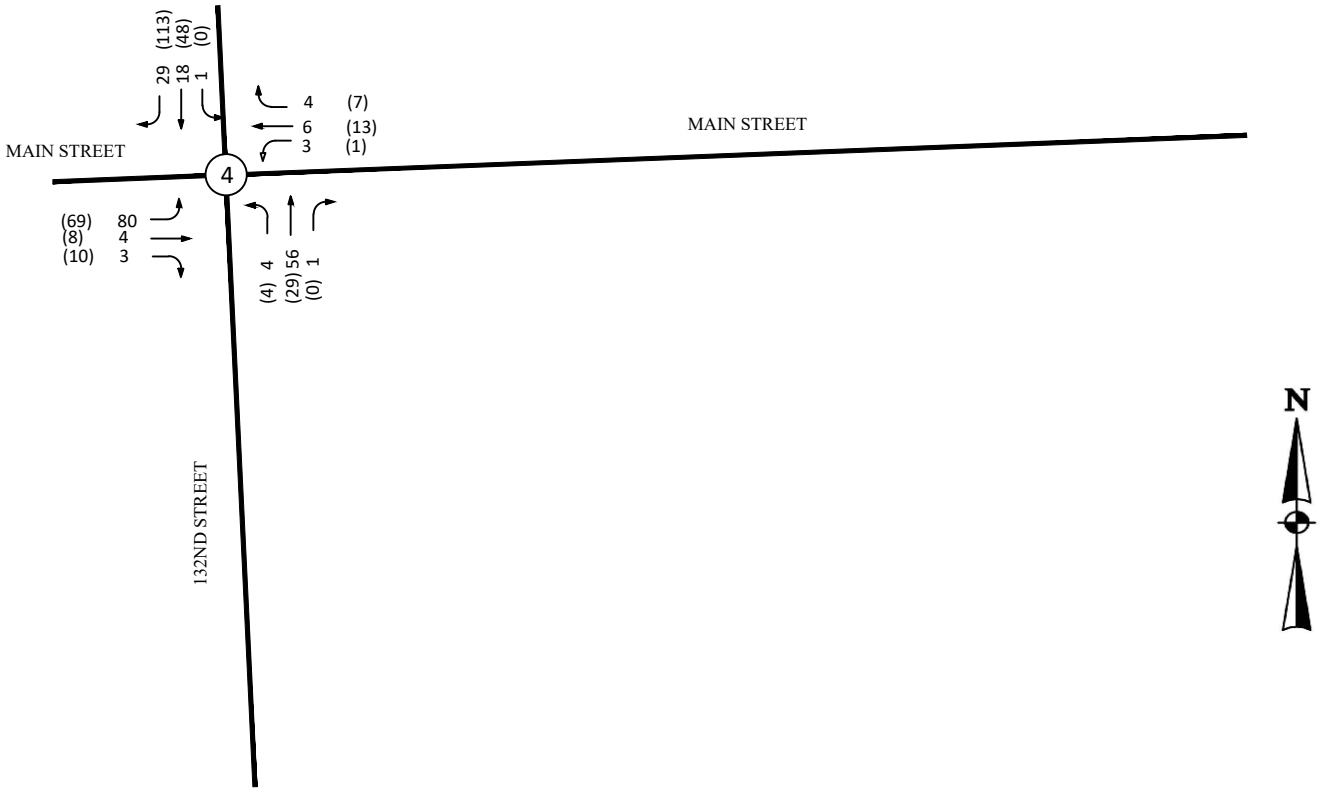
FIGURE 5 - 2035 BACKGROUND (PROJECTED) P.H. VOLUMES



LEGEND

UNSIGNALIZED INTERSECTION

XXX AM PEAK HOURLY DIRECTIONAL TRAFFIC VOLUME

(XXX) PM PEAK HOURLY DIRECTIONAL TRAFFIC VOLUME

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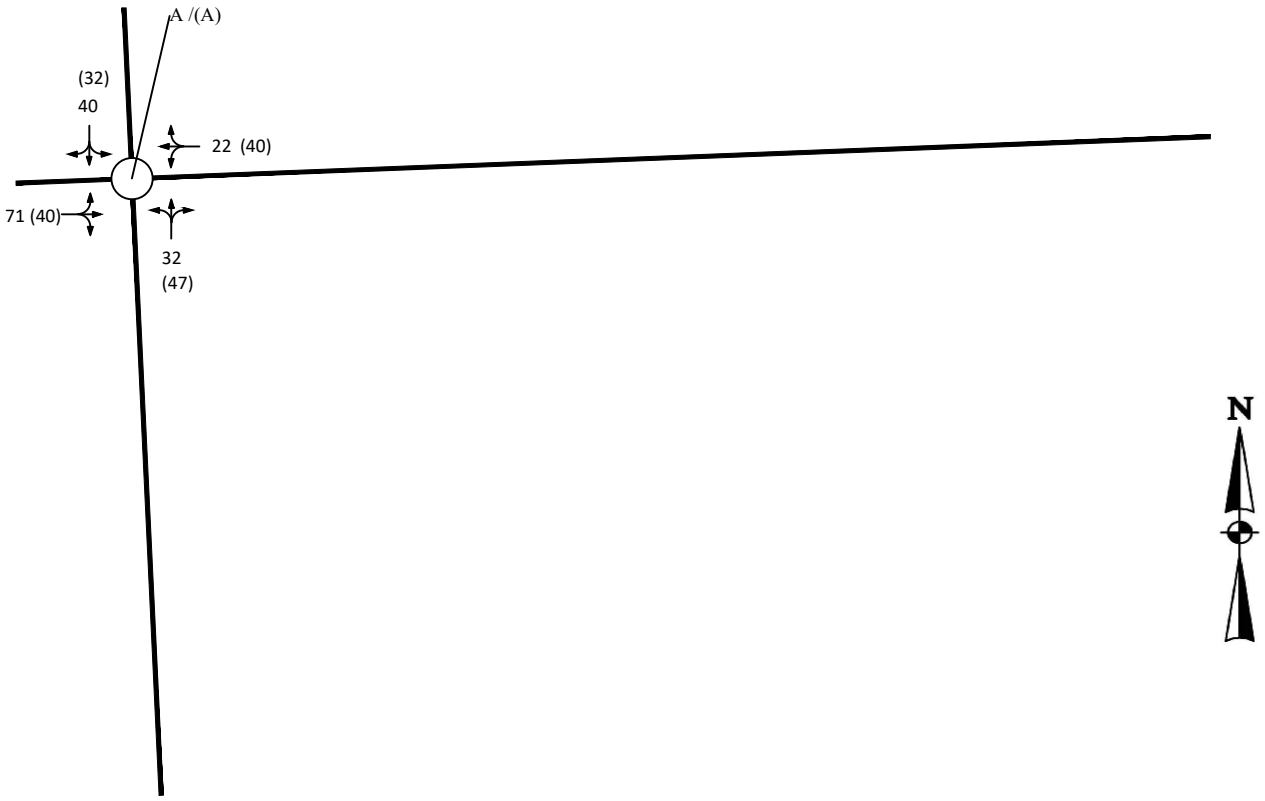
FIGURE 6 - 2025/ 2035 AM P.H. BACKGROUND LOS & QUEUES



LEGEND

◯ UNSIGNALIZED INTERSECTION

XXX 95TH QUEUE LENGTH

(XXX) 95TH QUEUE LENGTH

◯ 2025 (2035) UNSIGNALIZED INTERSECTION LOS

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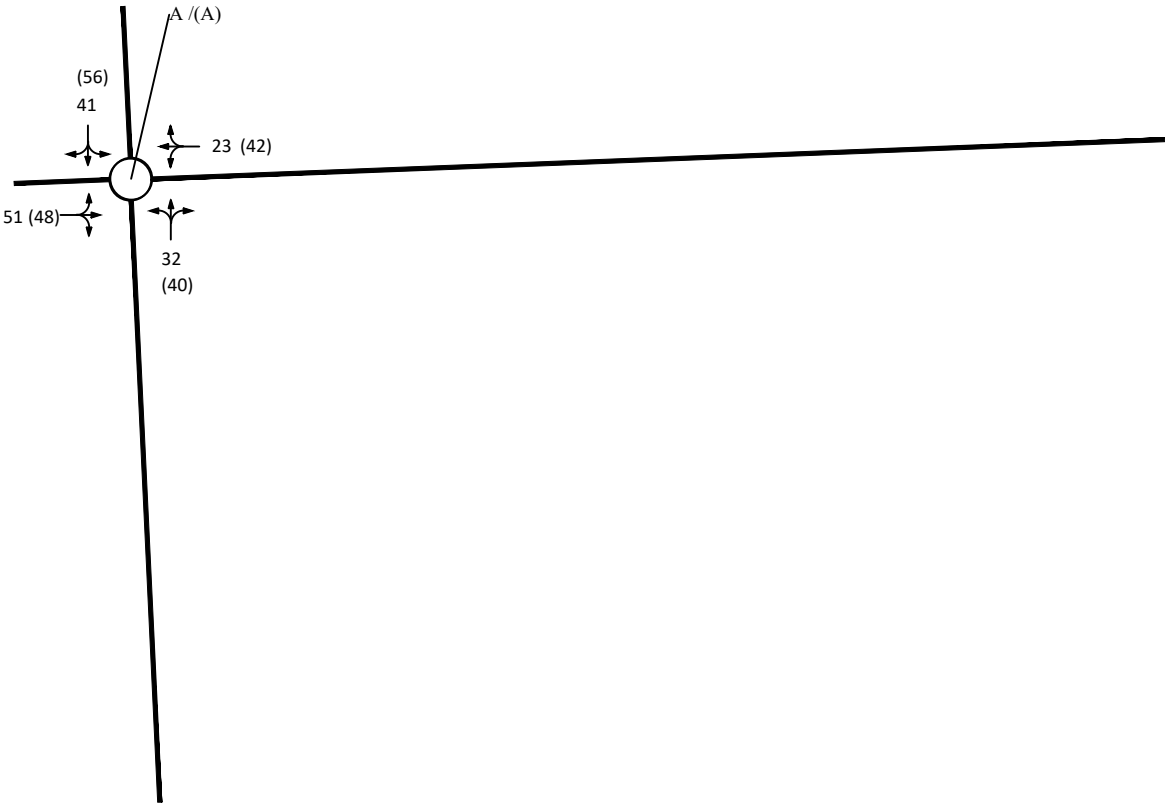
FIGURE 7 - 2025/ 2035 PM P.H. BACKGROUND LOS & QUEUES



LEGEND

◯ UNSIGNALIZED INTERSECTION

XXX 95TH QUEUE LENGTH

(XXX) 95TH QUEUE LENGTH

◯ 2025 (2035) UNSIGNALIZED INTERSECTION LOS

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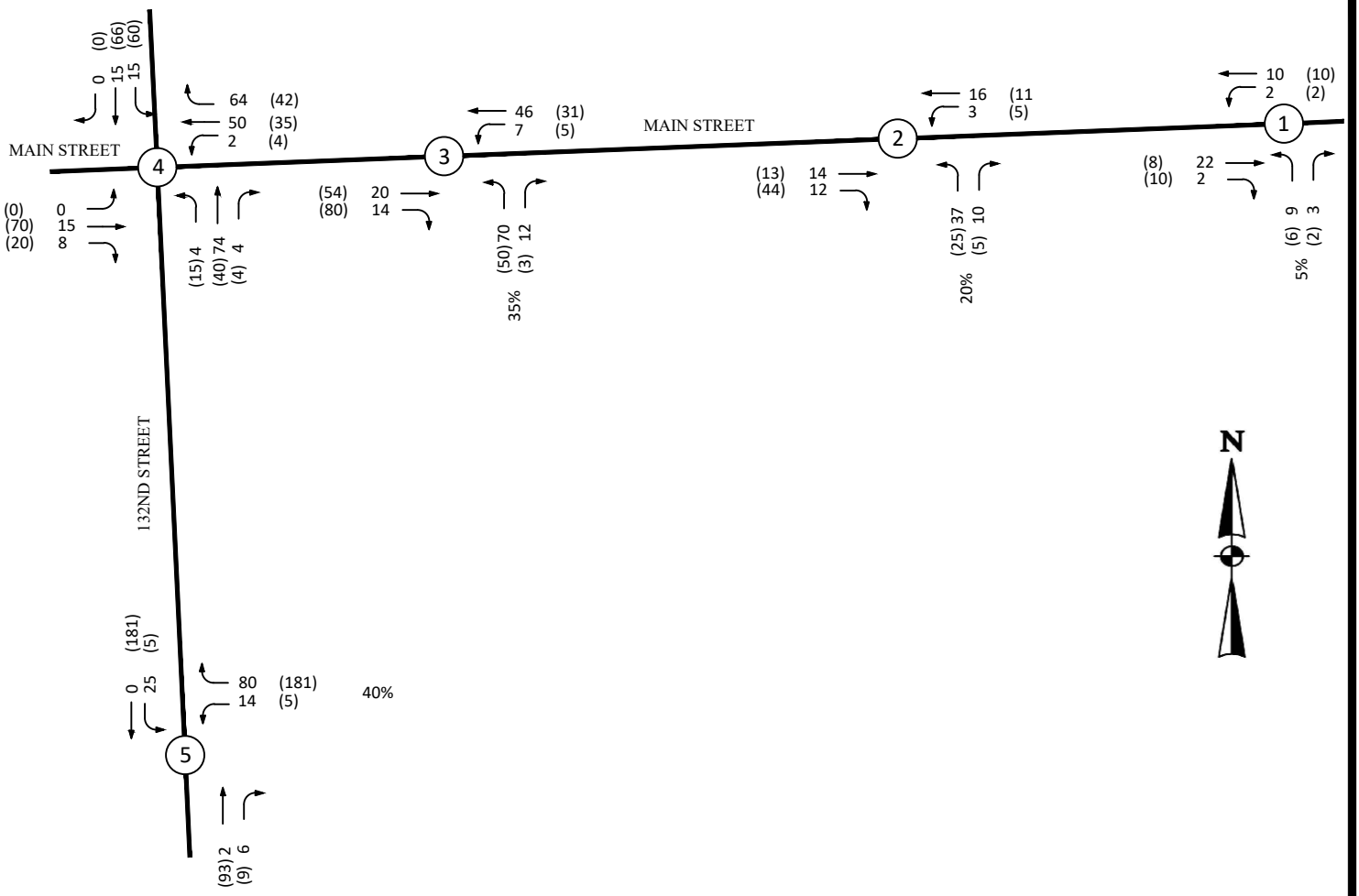
FIGURE 8 - SITE GENERATED ASSIGNMENT AND DISTRIBUTION



LEGEND

(X) UNSIGNALIZED INTERSECTION

XXX AM PEAK HOURLY DIRECTIONAL TRAFFIC VOLUME

(XXX) PM PEAK HOURLY DIRECTIONAL TRAFFIC VOLUME

XX% % SITE GENERATED TRIP ASSIGNMENT

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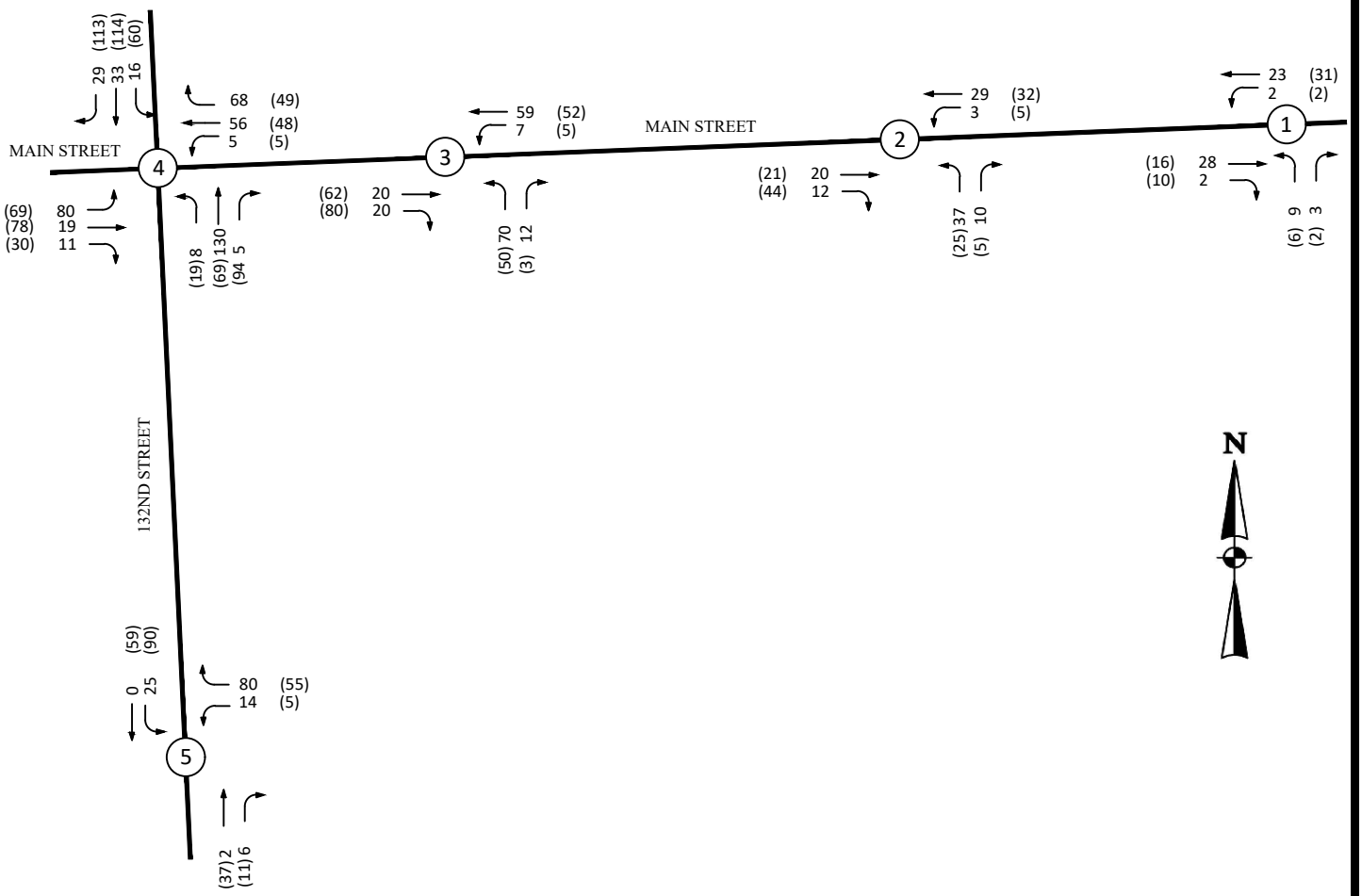
FIGURE 9 - 2035 AM/ PM P.H. BUILDOUT TRAFFIC VOLUMES



LEGEND

(X) UNSIGNALIZED INTERSECTION

XXX AM PEAK HOURLY DIRECTIONAL TRAFFIC VOLUME

(XXX) PM PEAK HOURLY DIRECTIONAL TRAFFIC VOLUME

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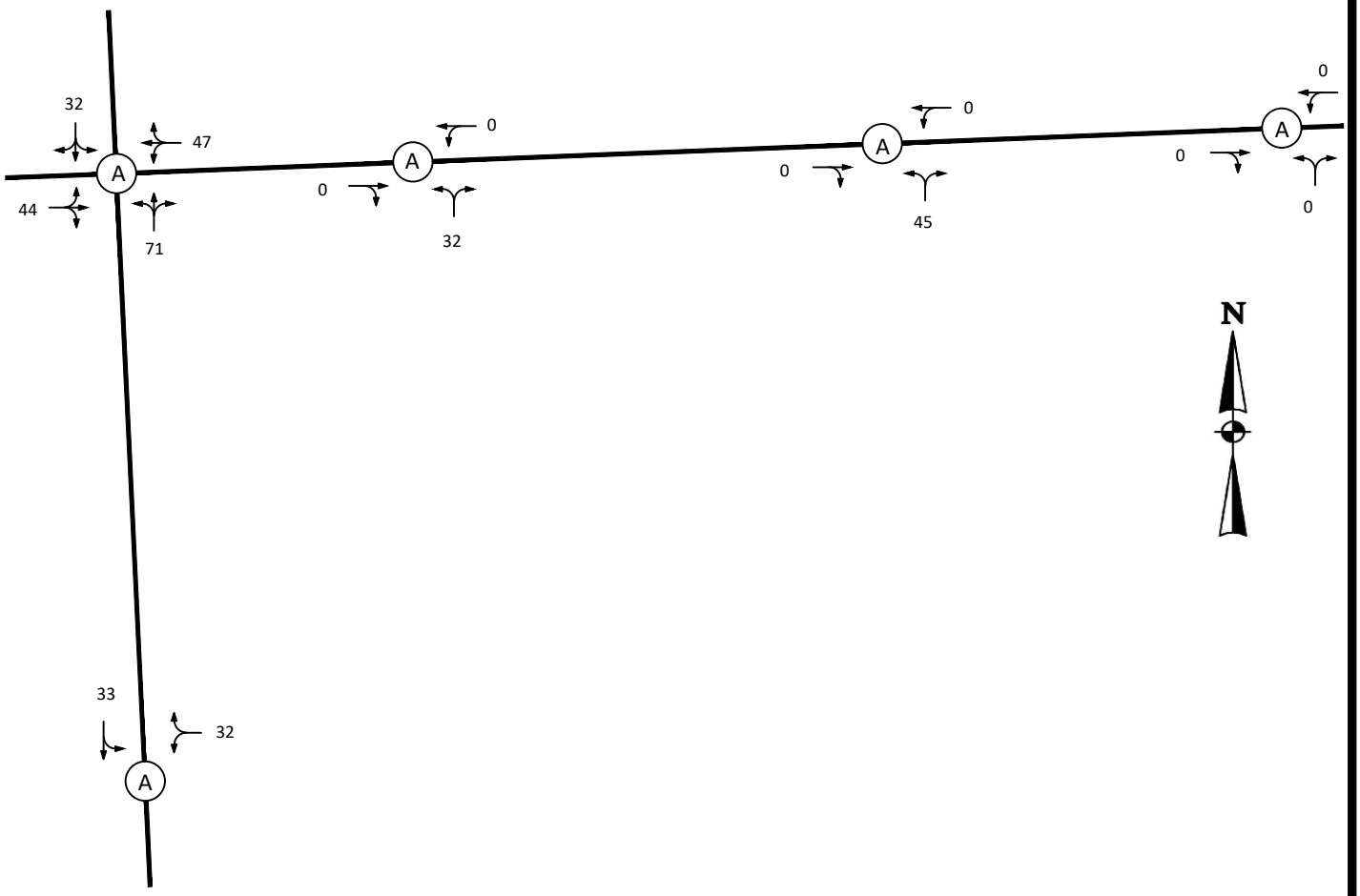
FIGURE 10 - 2035 AM PEAK BUILDOUT LOS AND QUEUES



LEGEND

- ◯ UNSIGNALIZED INTERSECTION
- XXX QUEUE LENGTH
- (C) UNSIGNALIZED INTERSECTION LOS

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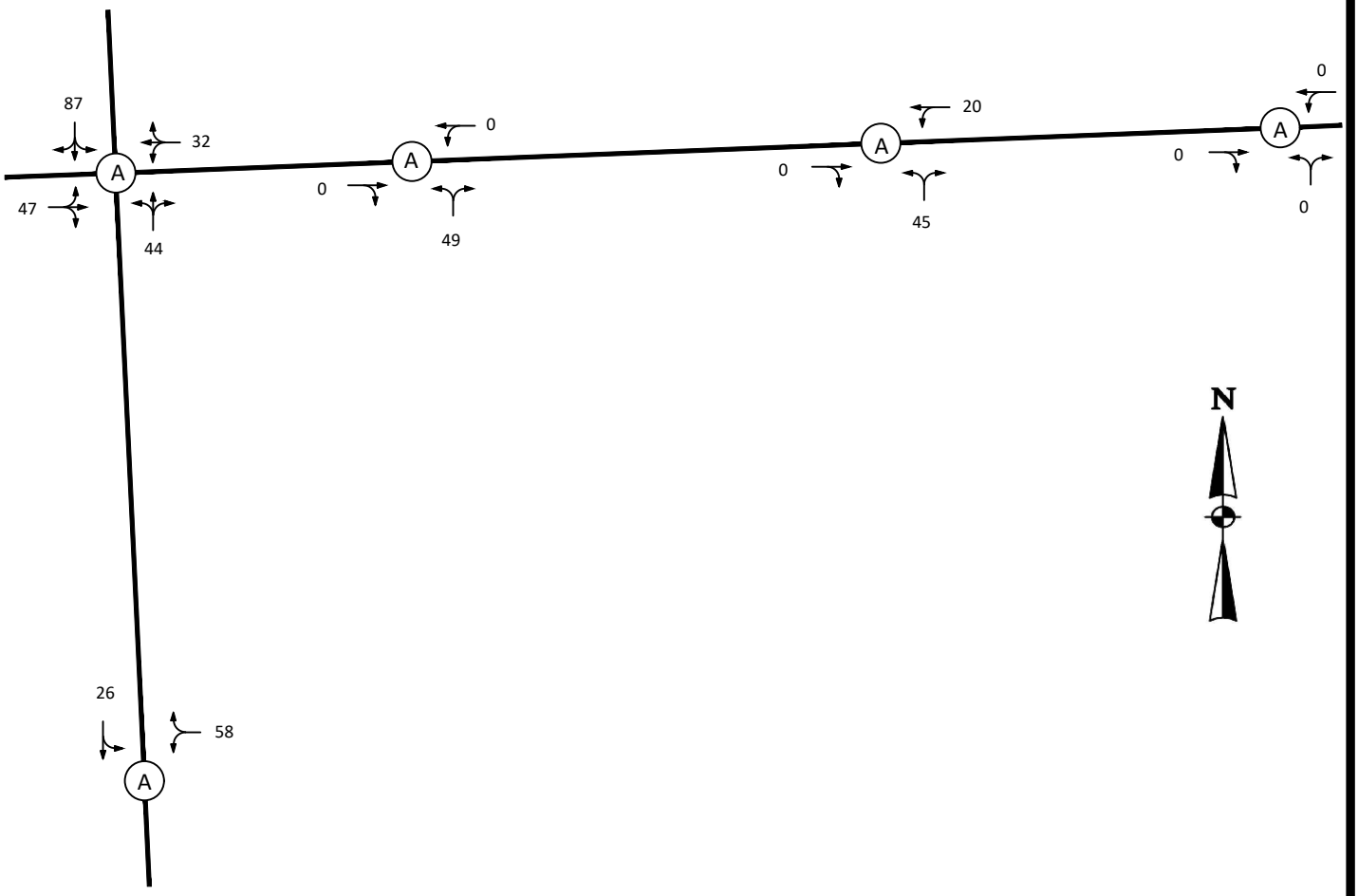
FIGURE 11 - 2035 PM PEAK BUILDOUT LOS AND QUEUES



LEGEND

- ◯ UNSIGNALIZED INTERSECTION
- XXX QUEUE LENGTH
- (C) UNSIGNALIZED INTERSECTION LOS

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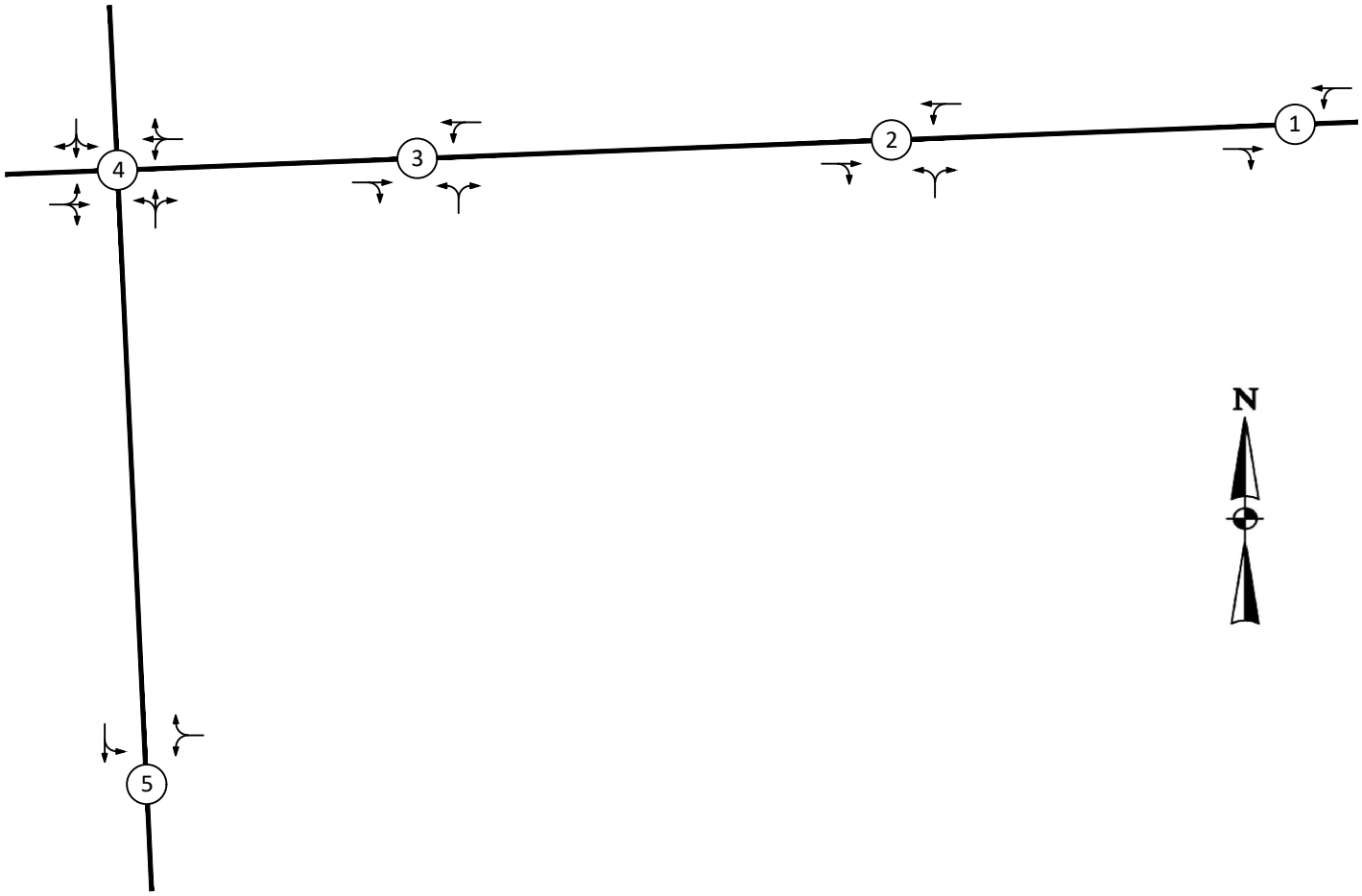
FIGURE 12 - PROPOSED INTERSECTIONS LANE CONFIGURATION



LEGEND

X UNSIGNALIZED INTERSECTION

DIRECTIONAL LANE CONFIGURATION

1 SITE ACCESS INTERSECTION

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TABLES 2-10

Table 2	AM Peak Background Traffic Volume Forecasts

132nd Street & Main Street

AM Peak Hour Forecasts

	Eastbound			Westbound			Northbound			Southbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2025	57	3	2	2	4	3	3	40	1	1	13	21	150
2035	80	4	3	3	6	4	4	56	1	1	18	29	209
Oposing Volumes		13			87			48			61		
Advancing Volumes		87			13			61			48		
Lt. %	92%			23%			7%			2%			

4.0%	Annual Growth Rate

Table 3	PM Peak Background Traffic Volume Forecast

132nd Street & Main Street

PM Peak Hour Forecasts

	Eastbound			Westbound			Northbound			Southbound			Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
2025	49	6	7	1	9	5	3	21	0	0	34	81	216
2035	69	8	10	1	13	7	4	29	0	0	48	113	302
Oposing Volumes		21			87			161			33		
Advancing Volumes		87			21			33			161		
Lt. %	79%			5%			12%			0%			

4.0%	Annual Growth Rate

Table 4		AM/ PM Trips Generated from Development												
Building or Lot ID	Land Use	ITE Code	Development Units	Quantity	Daily Rate	Daily Volume	AM Peak Rate	AM Peak Volume	AM Peak In	AM Peak Out	PM Peak Rate	PM Peak Volume	PM Peak In	PM Peak Out
									24%	76%			63%	37%
Lots 1 and 2	Multifamily Housing (Low-Rise) (Between Two and Three Floors)	220	Dwelling Units	360	6.74	2,426	0.40	144	35	109	0.51	184	116	68
									26%	74%			63%	37%
Figure 2	Single-Family Detached Housing	210	Dwelling Units	98	9.43	924	0.70	69	18	51	0.94	92	58	34
									25%	75%			59%	41%
Figure 2	Single-Family Attached Housing	215	Dwelling Units	206	7.2	1,483	0.48	99	25	74	0.57	117	69	48
	Total Deveopment Buil-out			**664**		**4,834**		**311**	**77**	**234**		**393**	**243**	**150**

Notes

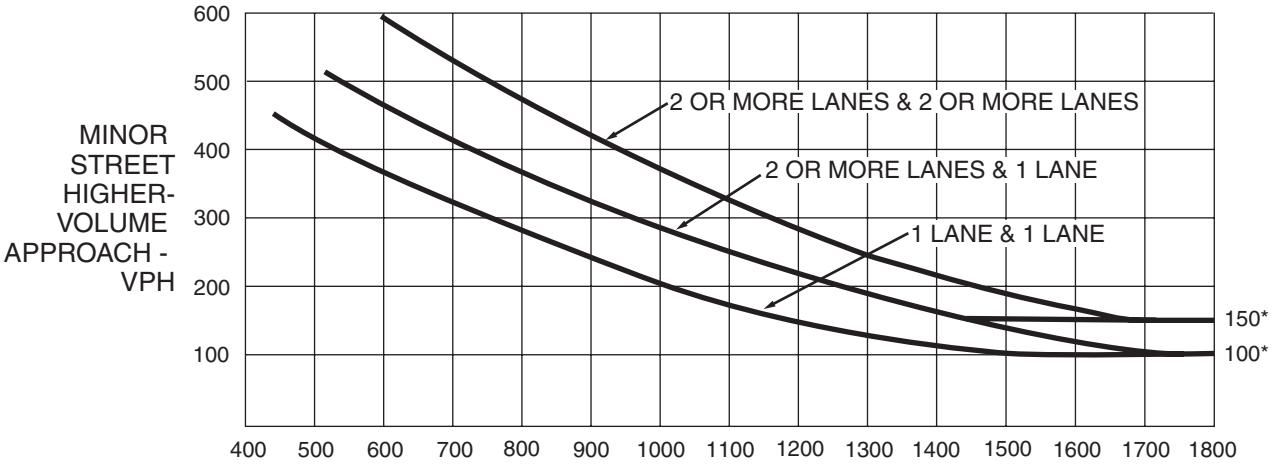
1 Peak Hour of Adjacent Street Traffic was used

2 Bungalows and Cottages don't have a specific trip generation table, in practice the trip generation was assumed as table 215 (Single-Family Attached Housing)

Table 5			Internal Trips Assignment		
Entrance	Percentage of Residential	AM Peak	AM Peak	PM Peak	PM Peak
Number	(Based on Phase and Proximity)	In	Out	In	Out
1	5%	4	12	12	8
2	20%	15	47	49	30
3	35%	27	82	85	53
5	40%	31	94	97	60
Total	**100%**	**77**	**234**	**243**	**150**

TRAFFIC SIGNAL WARRANTS

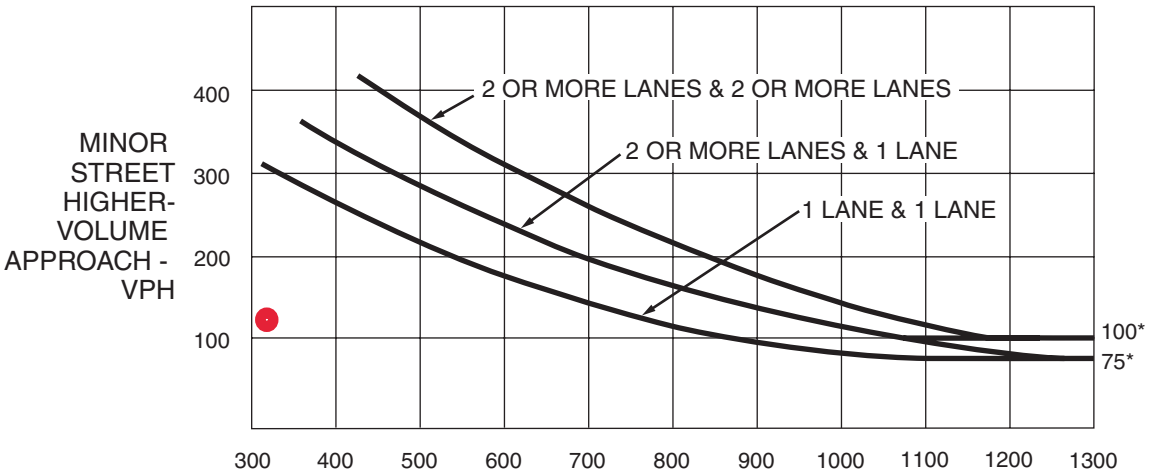
Figure 4C-3. Warrant 3, Peak Hour



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-4. Warrant 3, Peak Hour (70% Factor)

(COMMUNITY LESS THAN 10,000 POPULATION OR ABOVE 40 MPH ON MAJOR STREET)



*Note: 100 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 75 vph applies as the lower threshold volume for a minor-street approach with one lane.

S 132nd Street & Main Street

LEFT AND RIGHT TURN LANES WARRANTS

AASHTO GREEN BOOK LEFT-TURN GUIDELINES

Table 9-23. Guide for Left-Turn Lanes on Two-Lane Highways *(10)*

Metric					U.S. Customary				
Opposing Volume (veh/h)	Advancing Volume (veh/h)				Opposing Volume (veh/h)	Advancing Volume (veh/h)			
	5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns		5% Left Turns	10% Left Turns	20% Left Turns	30% Left Turns
60-km/h Operating Speed					**40-mph Operating Speed**				
800	330	240	180	160	800	330	240	180	160
600	410	305	225	200	600	410	305	225	200
400	510	380	275	245	400	510	380	275	245
200	640	470	350	305	200	640	470	350	305
100	720	515	390	340	100	720	515	390	340
80-km/h Operating Speed					**50-mph Operating Speed**				
800	280	210	165	135	800	280	210	165	135
600	350	260	195	170	600	350	260	195	170
400	430	320	240	210	400	430	320	240	210
200	550	400	300	270	200	550	400	300	270
100	615	445	335	295	100	615	445	335	295
100-km/h Operating Speed					**60-mph Operating Speed**				
800	230	170	125	115	800	230	170	125	115
600	290	210	160	140	600	290	210	160	140
400	365	270	200	175	400	365	270	200	175
200	450	330	250	215	200	450	330	250	215
100	505	370	275	240	100	505	370	275	240

NCHRP REPORT 279 RIGHT-TURN GUIDELINES

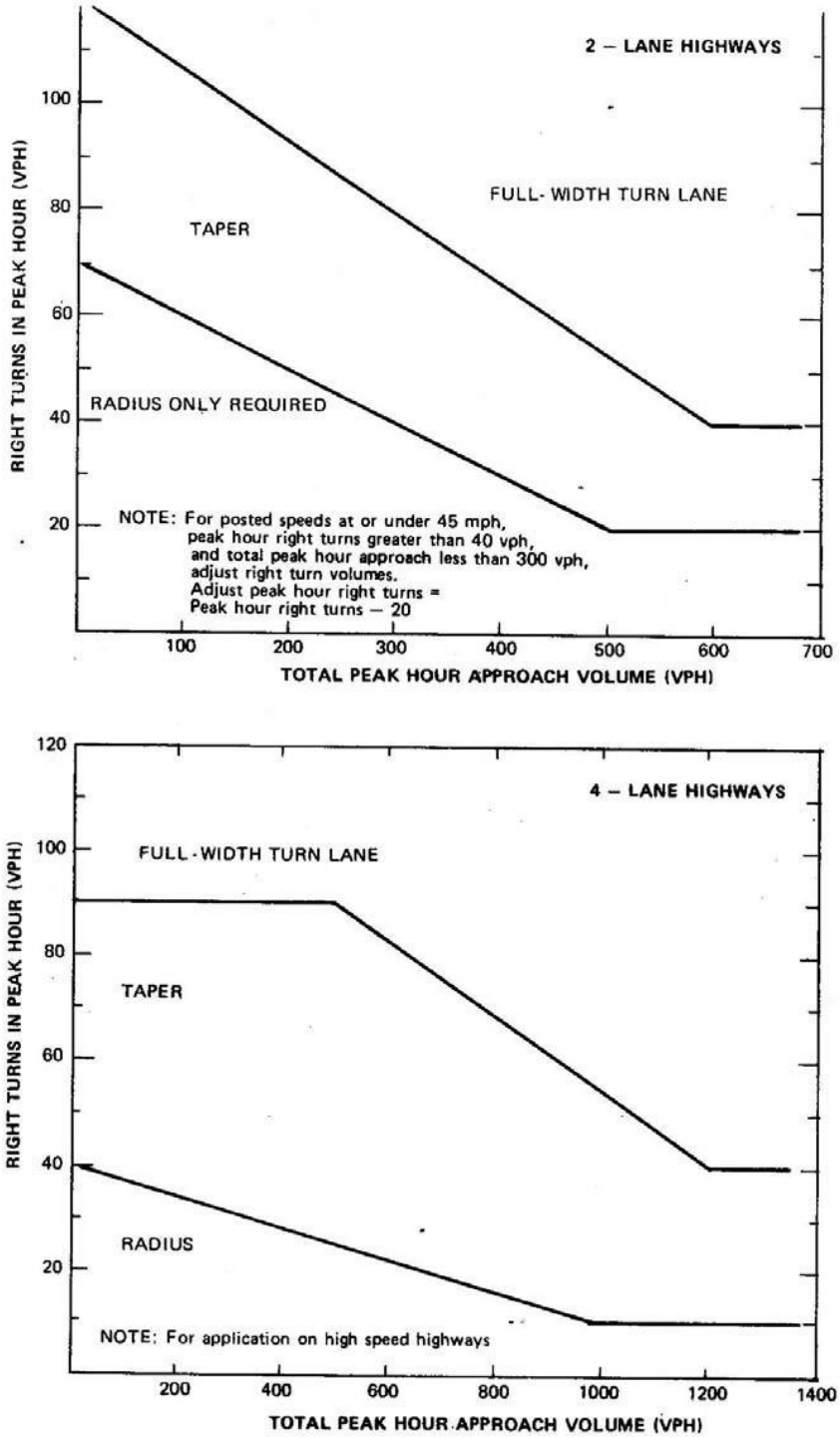


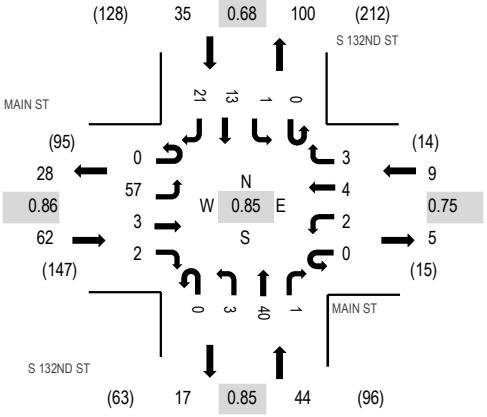
Figure 4-23. Traffic volume guidelines for design of right-turn lanes. (Source: Ref. *4-11*)

RAW TRAFFIC VOLUMES COUNTING TABLES

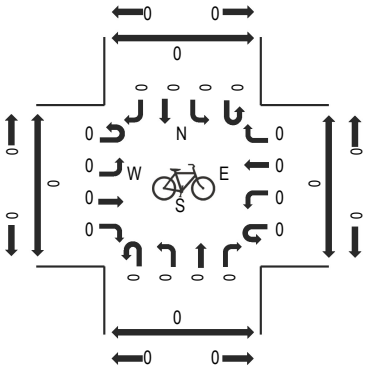
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 S 132ND ST & MAIN ST AM
Date: Thursday, July 17, 2025
Peak Hour: 07:00 AM - 08:00 AM
Peak 15-Minutes: 07:45 AM - 08:00 AM

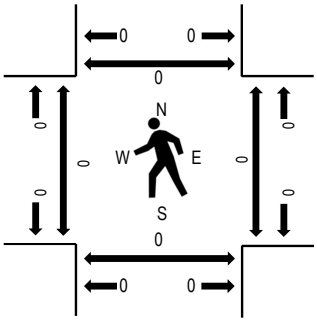
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

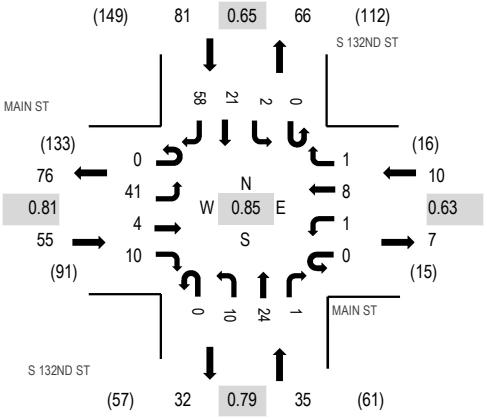
Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				S 132ND ST Northbound				S 132ND ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
6:30 AM	0	6	0	0	0	0	0	0	0	2	6	0	0	1	3	8	26	138	0	0	0	0
6:45 AM	0	15	1	3	0	0	0	0	0	0	5	0	0	0	6	12	42	148	0	0	0	0
7:00 AM	0	15	0	1	0	0	0	1	0	1	8	0	0	0	3	6	35	150	0	0	0	0
7:15 AM	0	11	0	0	0	0	2	0	0	0	12	0	0	0	5	5	35	149	0	0	0	0
7:30 AM	0	15	3	1	0	0	1	1	0	1	9	0	0	1	1	3	36	140	0	0	0	0
7:45 AM	0	16	0	0	0	2	1	1	0	1	11	1	0	0	4	7	44	124	0	0	0	0
8:00 AM	0	11	0	1	0	0	1	3	0	3	6	0	0	1	4	4	34	109	0	0	0	0
8:15 AM	0	10	1	1	0	0	0	1	0	0	4	0	0	0	3	6	26	107	0	0	0	0
8:30 AM	0	4	1	2	0	0	0	0	0	1	3	0	0	0	3	6	20	107	0	0	0	0
8:45 AM	0	11	0	1	0	0	0	0	0	3	5	1	0	1	4	3	29		0	0	0	0
9:00 AM	0	6	0	3	0	0	0	0	0	2	4	0	0	1	8	8	32		0	0	0	0
9:15 AM	0	6	1	1	0	0	0	0	0	1	6	0	0	1	3	7	26		0	0	0	0
Count Total	0	126	7	14	0	2	5	7	0	15	79	2	0	6	47	75	385		0	0	0	0
Peak Hour	0	57	3	2	0	2	4	3	0	3	40	1	0	1	13	21	150		0	0	0	0

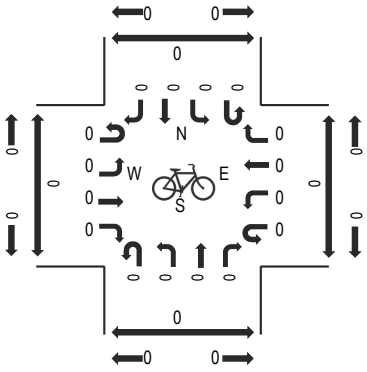
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 S 132ND ST & MAIN ST Noon
Date: Thursday, July 17, 2025
Peak Hour: 11:30 AM - 12:30 PM
Peak 15-Minutes: 12:00 PM - 12:15 PM

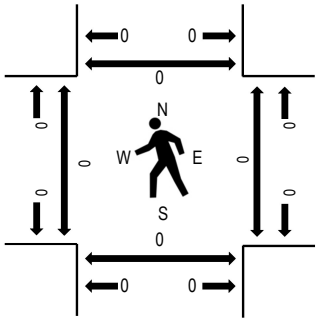
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

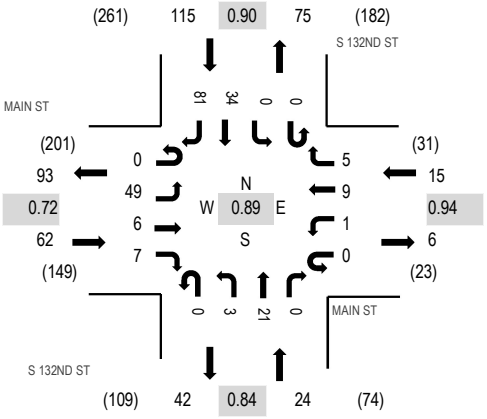
Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				S 132ND ST Northbound				S 132ND ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
11:30 AM	0	6	0	2	0	0	1	1	0	3	5	0	0	0	8	10	36	181	0	0	0	0
11:45 AM	0	10	2	1	0	0	2	0	0	0	5	0	0	1	9	21	51	180	0	0	0	0
12:00 PM	0	13	1	4	0	0	2	0	0	3	9	1	0	1	3	16	53	165	0	0	0	0
12:15 PM	0	12	1	3	0	1	3	0	0	4	5	0	0	0	1	11	41	139	0	0	0	0
12:30 PM	0	6	5	0	0	1	1	0	0	0	7	0	0	0	9	6	35	136	0	0	0	0
12:45 PM	0	7	0	1	0	0	1	0	0	4	7	1	0	0	3	12	36		0	0	0	0
1:00 PM	0	6	0	0	0	0	2	0	0	1	2	0	0	0	4	12	27		0	0	0	0
1:15 PM	0	8	2	1	0	1	0	0	0	1	3	0	0	0	5	17	38		0	0	0	0
Count Total	0	68	11	12	0	3	12	1	0	16	43	2	0	2	42	105	317		0	0	0	0
Peak Hour	0	41	4	10	0	1	8	1	0	10	24	1	0	2	21	58	181		0	0	0	0

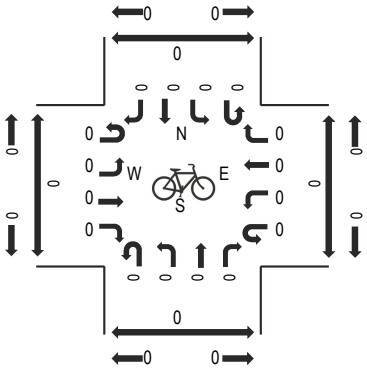
ALL TRAFFIC DATA SERVICES
(303) 216-2439
www.alltrafficdata.net

Location: 1 S 132ND ST & MAIN ST PM
Date: Thursday, July 17, 2025
Peak Hour: 04:30 PM - 05:30 PM
Peak 15-Minutes: 05:15 PM - 05:30 PM

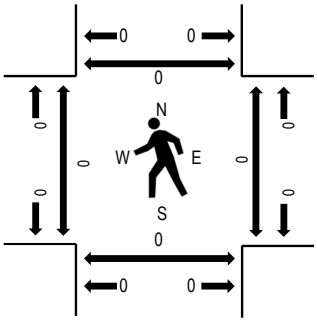
Peak Hour - Motorized Vehicles



Peak Hour - Bicycles



Peak Hour - Pedestrians



Note: Total study counts contained in parentheses.

Traffic Counts - Motorized Vehicles

Interval Start Time	MAIN ST Eastbound				MAIN ST Westbound				S 132ND ST Northbound				S 132ND ST Southbound					Rolling Hour	Pedestrian Crossings			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	Total		West	East	South	North
3:30 PM	0	4	2	3	0	1	1	0	0	1	8	0	0	0	5	4	29	148	0	0	0	0
3:45 PM	0	4	2	2	0	0	0	0	0	1	4	0	0	0	5	12	30	175	0	0	0	0
4:00 PM	0	11	0	1	0	1	3	0	0	1	3	0	0	1	8	11	40	202	0	0	0	0
4:15 PM	0	7	0	3	0	0	1	1	0	3	5	0	0	1	13	15	49	204	0	0	0	0
4:30 PM	0	8	2	3	0	1	2	1	0	1	6	0	0	0	9	23	56	216	0	0	0	0
4:45 PM	0	11	3	0	0	0	3	1	0	2	5	0	0	0	11	21	57	207	0	0	0	0
5:00 PM	0	10	1	1	0	0	1	3	0	0	5	0	0	0	3	18	42	189	0	0	0	0
5:15 PM	0	20	0	3	0	0	3	0	0	0	5	0	0	0	11	19	61	186	0	0	0	0
5:30 PM	0	13	3	1	0	0	2	0	0	2	4	0	0	2	5	15	47	151	0	0	0	0
5:45 PM	0	9	0	1	0	1	1	3	0	0	4	1	0	1	4	14	39		0	0	0	0
6:00 PM	0	12	2	1	0	0	1	0	0	0	6	1	0	0	6	10	39		0	0	0	0
6:15 PM	0	4	1	1	0	0	0	0	0	1	5	0	0	0	5	9	26		0	0	0	0
Count Total	0	113	16	20	0	4	18	9	0	12	60	2	0	5	85	171	515		0	0	0	0
Peak Hour	0	49	6	7	0	1	9	5	0	3	21	0	0	0	34	81	216		0	0	0	0

SYNCHRO RESULTS

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	3	2	2	4	3	3	40	1	1	13	21
Future Vol, veh/h	57	3	2	2	4	3	3	40	1	1	13	21
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.85	0.85	0.85	0.68	0.68	0.68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	66	3	2	3	5	4	4	47	1	1	19	31
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.7	7.1	7.4	7
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	92%	22%	3%
Vol Thru, %	91%	5%	44%	37%
Vol Right, %	2%	3%	33%	60%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	44	62	9	35
LT Vol	3	57	2	1
Through Vol	40	3	4	13
RT Vol	1	2	3	21
Lane Flow Rate	52	72	12	51
Geometry Grp	1	1	1	1
Degree of Util (X)	0.059	0.086	0.013	0.054
Departure Headway (Hd)	4.12	4.287	4.013	3.765
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	863	833	884	942
Service Time	2.175	2.33	2.073	1.824
HCM Lane V/C Ratio	0.06	0.086	0.014	0.054
HCM Control Delay, s/veh	7.4	7.7	7.1	7
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.3	0	0.2

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	49	6	7	1	9	5	3	21	0	0	34	81
Future Vol, veh/h	49	6	7	1	9	5	3	21	0	0	34	81
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.85	0.85	0.85	0.68	0.68	0.68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	57	7	8	1	12	7	4	25	0	0	50	119
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.9	7.3	7.5	7.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	13%	79%	7%	0%
Vol Thru, %	88%	10%	60%	30%
Vol Right, %	0%	11%	33%	70%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	24	62	15	115
LT Vol	3	49	1	0
Through Vol	21	6	9	34
RT Vol	0	7	5	81
Lane Flow Rate	28	72	20	169
Geometry Grp	1	1	1	1
Degree of Util (X)	0.033	0.088	0.023	0.173
Departure Headway (Hd)	4.249	4.382	4.146	3.692
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	832	811	852	961
Service Time	2.328	2.446	2.228	1.756
HCM Lane V/C Ratio	0.034	0.089	0.023	0.176
HCM Control Delay, s/veh	7.5	7.9	7.3	7.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	0.3	0.1	0.6

Intersection	
Intersection Delay, s/veh	7.7
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	4	3	3	6	4	4	56	1	1	18	29
Future Vol, veh/h	80	4	3	3	6	4	4	56	1	1	18	29
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.85	0.85	0.85	0.68	0.68	0.68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	5	3	4	8	5	5	66	1	1	26	43
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8	7.3	7.7	7.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	7%	92%	23%	2%
Vol Thru, %	92%	5%	46%	38%
Vol Right, %	2%	3%	31%	60%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	61	87	13	48
LT Vol	4	80	3	1
Through Vol	56	4	6	18
RT Vol	1	3	4	29
Lane Flow Rate	72	101	17	71
Geometry Grp	1	1	1	1
Degree of Util (X)	0.084	0.122	0.02	0.075
Departure Headway (Hd)	4.198	4.357	4.122	3.836
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	842	815	855	918
Service Time	2.281	2.423	2.213	1.927
HCM Lane V/C Ratio	0.086	0.124	0.02	0.077
HCM Control Delay, s/veh	7.7	8	7.3	7.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.3	0.4	0.1	0.2

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	69	8	10	1	13	7	4	29	0	0	48	113
Future Vol, veh/h	69	8	10	1	13	7	4	29	0	0	48	113
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.85	0.85	0.85	0.68	0.68	0.68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	80	9	12	1	17	9	5	34	0	0	71	166
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.3	7.6	7.7	8.2
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	12%	79%	5%	0%
Vol Thru, %	88%	9%	62%	30%
Vol Right, %	0%	11%	33%	70%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	33	87	21	161
LT Vol	4	69	1	0
Through Vol	29	8	13	48
RT Vol	0	10	7	113
Lane Flow Rate	39	101	28	237
Geometry Grp	1	1	1	1
Degree of Util (X)	0.048	0.13	0.035	0.255
Departure Headway (Hd)	4.494	4.627	4.436	3.875
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	799	777	809	933
Service Time	2.511	2.644	2.455	1.875
HCM Lane V/C Ratio	0.049	0.13	0.035	0.254
HCM Control Delay, s/veh	7.7	8.3	7.6	8.2
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.2	0.4	0.1	1

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	19	11	5	56	68	8	130	5	16	33	29
Future Vol, veh/h	80	19	11	5	56	68	8	130	5	16	33	29
Peak Hour Factor	0.86	0.86	0.86	0.75	0.75	0.75	0.85	0.85	0.85	0.68	0.68	0.68
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	93	22	13	7	75	91	9	153	6	24	49	43
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	9	8.7	9.2	8.5
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	6%	73%	4%	21%
Vol Thru, %	91%	17%	43%	42%
Vol Right, %	3%	10%	53%	37%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	143	110	129	78
LT Vol	8	80	5	16
Through Vol	130	19	56	33
RT Vol	5	11	68	29
Lane Flow Rate	168	128	172	115
Geometry Grp	1	1	1	1
Degree of Util (X)	0.223	0.174	0.213	0.149
Departure Headway (Hd)	4.762	4.894	4.46	4.662
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	750	730	802	765
Service Time	2.812	2.945	2.508	2.715
HCM Lane V/C Ratio	0.224	0.175	0.214	0.15
HCM Control Delay, s/veh	9.2	9	8.7	8.5
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.9	0.6	0.8	0.5

Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	28	2	2	23	9	3
Future Vol, veh/h	28	2	2	23	9	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	2	2	25	10	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	32	0	60	31
Stage 1	-	-	-	-	31	-
Stage 2	-	-	-	-	29	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1580	-	947	1043
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	994	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1580	-	946	1043
Mov Cap-2 Maneuver	-	-	-	-	946	-
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	993	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.6	8.8
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	969	-	-	1580	-
HCM Lane V/C Ratio	0.013	-	-	0.001	-
HCM Ctrl Dly (s/v)	8.8	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q (veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	12	3	29	37	10
Future Vol, veh/h	20	12	3	29	37	10
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	13	3	32	40	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	35	0	67	29
Stage 1	-	-	-	-	29	-
Stage 2	-	-	-	-	38	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1576	-	938	1046
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1576	-	936	1046
Mov Cap-2 Maneuver	-	-	-	-	936	-
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	982	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.7	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	957	-	-	1576	-
HCM Lane V/C Ratio	0.053	-	-	0.002	-
HCM Ctrl Dly (s/v)	9	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q (veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	20	20	7	59	70	12
Future Vol, veh/h	20	20	7	59	70	12
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	22	22	8	64	76	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	44	0	113	33
Stage 1	-	-	-	-	33	-
Stage 2	-	-	-	-	80	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1564	-	884	1041
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	943	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1564	-	880	1041
Mov Cap-2 Maneuver	-	-	-	-	880	-
Stage 1	-	-	-	-	989	-
Stage 2	-	-	-	-	938	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.8	9.4
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	900	-	-	1564	-
HCM Lane V/C Ratio	0.099	-	-	0.005	-
HCM Ctrl Dly (s/v)	9.4	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q (veh)	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	14	80	63	6	25	24
Future Vol, veh/h	14	80	63	6	25	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	87	68	7	27	26

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	152	72	0	0	75	0
Stage 1	72	-	-	-	-	-
Stage 2	80	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	840	990	-	-	1524	-
Stage 1	951	-	-	-	-	-
Stage 2	943	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	825	990	-	-	1524	-
Mov Cap-2 Maneuver	825	-	-	-	-	-
Stage 1	951	-	-	-	-	-
Stage 2	926	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	9.2	0	3.8
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	961	1524	-
HCM Lane V/C Ratio	-	-	0.106	0.018	-
HCM Ctrl Dly (s/v)	-	-	9.2	7.4	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q (veh)	-	-	0.4	0.1	-

Intersection	
Int Delay, s/veh	2.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	62	80	5	52	50	3
Future Vol, veh/h	62	80	5	52	50	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	87	5	57	54	3

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	154	0	178	111
Stage 1	-	-	-	-	111	-
Stage 2	-	-	-	-	67	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1426	-	812	942
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	956	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1426	-	809	942
Mov Cap-2 Maneuver	-	-	-	-	809	-
Stage 1	-	-	-	-	914	-
Stage 2	-	-	-	-	952	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.7	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	816	-	-	1426	-
HCM Lane V/C Ratio	0.071	-	-	0.004	-
HCM Ctrl Dly (s/v)	9.7	-	-	7.5	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q (veh)	0.2	-	-	0	-

Intersection	
Intersection Delay, s/veh	10
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	69	78	30	5	48	49	19	69	4	60	114	113
Future Vol, veh/h	69	78	30	5	48	49	19	69	4	60	114	113
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	75	85	33	5	52	53	21	75	4	65	124	123
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	10	8.9	9	10.8
HCM LOS	A	A	A	B

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	21%	39%	5%	21%
Vol Thru, %	75%	44%	47%	40%
Vol Right, %	4%	17%	48%	39%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	92	177	102	287
LT Vol	19	69	5	60
Through Vol	69	78	48	114
RT Vol	4	30	49	113
Lane Flow Rate	100	192	111	312
Geometry Grp	1	1	1	1
Degree of Util (X)	0.141	0.269	0.151	0.4
Departure Headway (Hd)	5.082	5.025	4.892	4.617
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	698	708	725	774
Service Time	3.167	3.101	2.976	2.682
HCM Lane V/C Ratio	0.143	0.271	0.153	0.403
HCM Control Delay, s/veh	9	10	8.9	10.8
HCM Lane LOS	A	A	A	B
HCM 95th-tile Q	0.5	1.1	0.5	1.9

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	16	10	2	31	6	2
Future Vol, veh/h	16	10	2	31	6	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	17	11	2	34	7	2

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	28	0	61	23
Stage 1	-	-	-	-	23	-
Stage 2	-	-	-	-	38	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1585	-	945	1054
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	984	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1585	-	944	1054
Mov Cap-2 Maneuver	-	-	-	-	944	-
Stage 1	-	-	-	-	1000	-
Stage 2	-	-	-	-	983	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	0.4	8.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	969	-	-	1585	-
HCM Lane V/C Ratio	0.009	-	-	0.001	-
HCM Ctrl Dly (s/v)	8.7	-	-	7.3	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q (veh)	0	-	-	0	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	21	44	5	32	25	5
Future Vol, veh/h	21	44	5	32	25	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	23	48	5	35	27	5

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	71	0	92	47
Stage 1	-	-	-	-	47	-
Stage 2	-	-	-	-	45	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1529	-	908	1022
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	977	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1529	-	905	1022
Mov Cap-2 Maneuver	-	-	-	-	905	-
Stage 1	-	-	-	-	975	-
Stage 2	-	-	-	-	974	-

Approach	EB	WB	NB
HCM Ctrl Dly, s/v	0	1	9
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	923	-	-	1529	-
HCM Lane V/C Ratio	0.035	-	-	0.004	-
HCM Ctrl Dly (s/v)	9	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q (veh)	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	4.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	5	55	37	11	90	59
Future Vol, veh/h	5	55	37	11	90	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	60	40	12	98	64

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	306	46	0	0	52	0
Stage 1	46	-	-	-	-	-
Stage 2	260	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	686	1023	-	-	1554	-
Stage 1	976	-	-	-	-	-
Stage 2	783	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	641	1023	-	-	1554	-
Mov Cap-2 Maneuver	641	-	-	-	-	-
Stage 1	976	-	-	-	-	-
Stage 2	732	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	9	0	4.5
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	975	1554	-
HCM Lane V/C Ratio	-	-	0.067	0.063	-
HCM Ctrl Dly (s/v)	-	-	9	7.5	0
HCM Lane LOS	-	-	A	A	A
HCM 95th %tile Q (veh)	-	-	0.2	0.2	-

QUEUE ANALYSIS REPORTS

Intersection: 3: 132nd Street & Main Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	75	26	31	30
Average Queue (ft)	31	5	30	17
95th Queue (ft)	71	22	32	40
Link Distance (ft)	447	642	1228	566
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Intersection: 3: 132nd Street & Main Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	46	26	31	31
Average Queue (ft)	26	5	30	22
95th Queue (ft)	51	23	32	41
Link Distance (ft)	447	642	1228	566
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Intersection: 3: 132nd Street & Main Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	30	31	50	31
Average Queue (ft)	22	17	33	28
95th Queue (ft)	40	40	47	32
Link Distance (ft)	447	642	1228	566
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Intersection: 3: 132nd Street & Main Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	51	31	31	54
Average Queue (ft)	32	18	17	39
95th Queue (ft)	48	42	40	56
Link Distance (ft)	447	642	1228	566
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 0

Intersection: 3: 132nd Street & Main Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	46	50	78	31
Average Queue (ft)	34	34	40	30
95th Queue (ft)	44	47	71	32
Link Distance (ft)	2077	649	1089	2141
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Entrance 3 & Main Street

Movement	NB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	30
95th Queue (ft)	32
Link Distance (ft)	670
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 132nd Street & Entrance 5

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	31	26
Average Queue (ft)	31	5
95th Queue (ft)	32	23
Link Distance (ft)	931	1089
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Entrance 2 & Main Street

Movement	NB
Directions Served	LR
Maximum Queue (ft)	31
Average Queue (ft)	25
95th Queue (ft)	45
Link Distance (ft)	688
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 12: Entrance 1 & Main Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 0

Intersection: 3: 132nd Street & Main Street

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	50	31	31	76
Average Queue (ft)	34	29	24	60
95th Queue (ft)	47	32	44	87
Link Distance (ft)	2077	649	1089	2141
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Entrance 3 & Main Street

Movement	NB
Directions Served	LR
Maximum Queue (ft)	52
Average Queue (ft)	34
95th Queue (ft)	49
Link Distance (ft)	670
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: 132nd Street & Entrance 5

Movement	WB	SB
Directions Served	LR	LT
Maximum Queue (ft)	55	31
Average Queue (ft)	30	6
95th Queue (ft)	58	26
Link Distance (ft)	931	1089
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: Entrance 2 & Main Street

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	23	31
Average Queue (ft)	5	24
95th Queue (ft)	20	45
Link Distance (ft)	939	688
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Entrance 1 & Main Street

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Network Summary

Network wide Queuing Penalty: 0