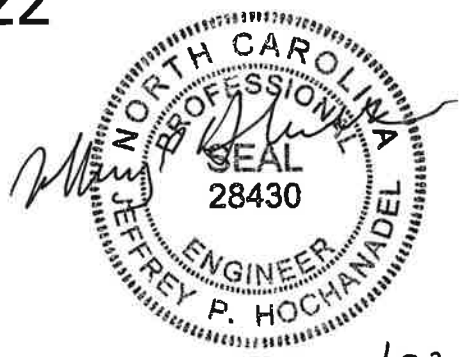
Faison Tract

Traffic Impact Analysis

Zebulon, North Carolina

June 2022



6/28/22

Prepared for:

Deacon Development Group

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

1 INTRODUCTION

This report presents the Faison Tract traffic impact analysis (TIA) findings. The proposed development will be located off NC-97 (W Gannon Ave) between Green Pace Road and Water Plant Road in Zebulon, NC (see **Figure 1-1**). The proposed development will consist of 209 single-family residential units and will be constructed by 2025.

Analyses were completed for the following scenarios:

- 2022 Existing traffic volumes;
- 2025 Background traffic volumes; and
- 2025 Build traffic volumes (Background + site trips).

The purpose of this TIA is to verify that the existing geometry provided within the study area is sufficient to accommodate the projected traffic volumes, and to determine what, if any, proposed site access connection improvements are necessary.

The following steps were taken to determine the potential traffic impacts associated with this project:

1. Data Collection – AM (7:00 – 9:00) and PM (4:00 – 6:00) peak period turning movement counts were collected in May 2022 at the following intersections:

    - NC-97 (W Gannon Ave) / SR-2329 (Lizard Lick Road / Marshburn Road) - signalized;
    - NC-97 (W Gannon Ave) / NC-2368 (Green Pace Road) – unsignalized;
    - NC-97 (W Gannon Ave) / NC-2370 (Water Plant Road) – unsignalized; and
    - NC-96 (N Arendell Ave) / NC 2368 (Green Pace Road) – unsignalized.

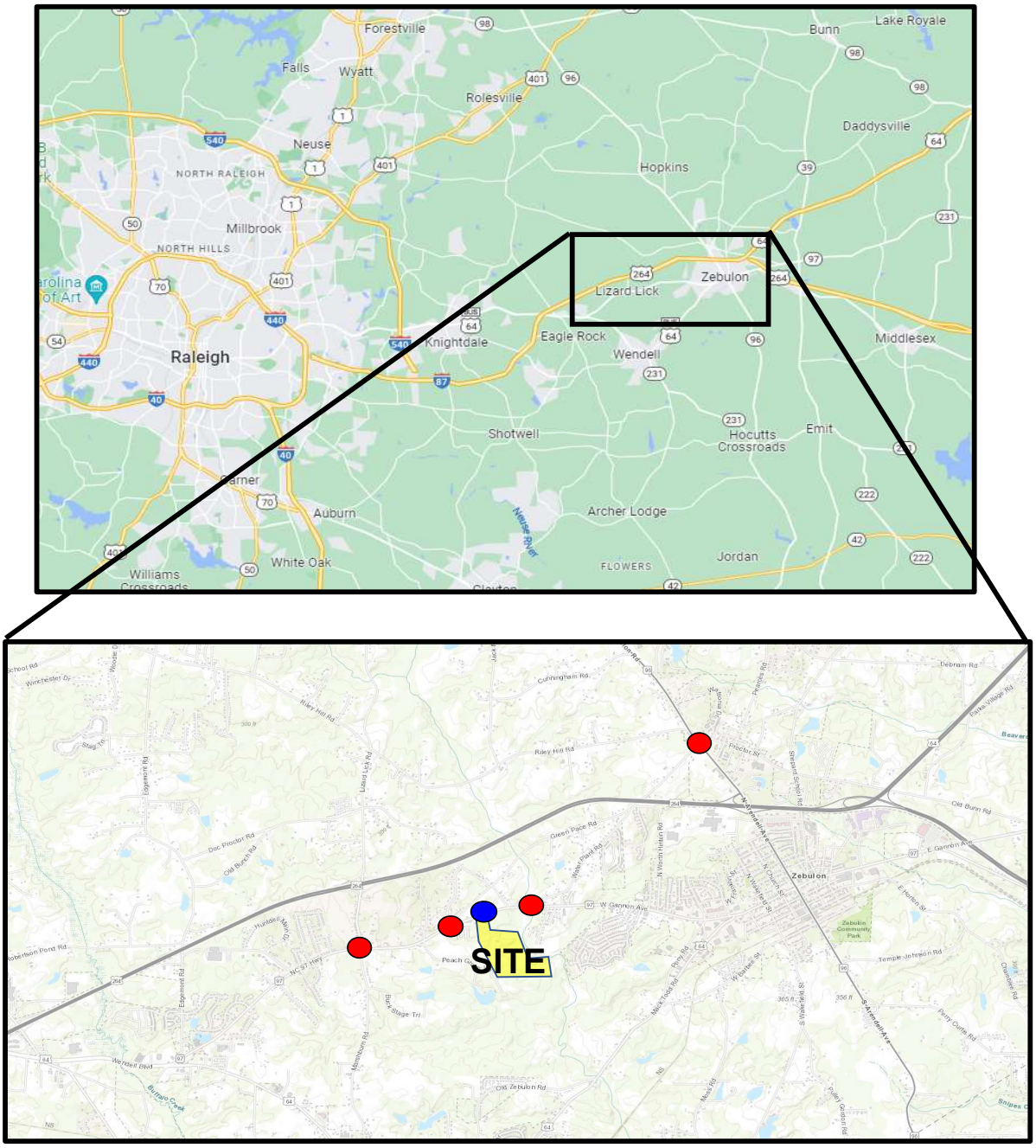
2. Trip Generation/Future Traffic – Traffic generated by the proposed development was estimated using the 10th Edition of the Institute of Transportation Engineers' *Trip Generation Manual*. Trip generation was calculated for the development following the NCDOT standards and practices for trip generation. Projected traffic volumes were calculated using a 2% ambient growth rate. Per the scoping document, there are currently three approved developments (Lot One Green Business Park, Watson Electric Headquarters, and Jasper Place) within the project study area (see **Appendix A**).

3. Trip Distribution and Projections – The site-generated trip distribution was based on existing area traffic and Engineering judgement. It was assumed, for purposes of analysis, that projected trips for the Faison Tract Development would follow similar patterns as existing traffic.

4. Traffic Capacity Analysis – Level of service analyses were performed using Synchro Version 10.3 for the following intersections:

    - NC-97 / Lizard Lick Road / Marshburn Road;
    - NC-97 / Green Pace Road;
    - NC-97 / Site Access 1;
    - NC-97 / Water Plant Road; and
    - NC-96 / Green Pace Road.

5. Review of Proposed Improvements – Roadway improvements proposed to accommodate projected site-generated traffic were evaluated.



Legend

= Study Area Intersection

= Driveway Intersection

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Faison Tract
Traffic Impact Analysis
Site Location Map

Figure 1-1

2 EXISTING INFORMATION

The proposed development will be located off NC-97 (W Gannon Ave) between Green Pace Road and Water Plant Road in Zebulon, NC (see **Figure 1-1**).

2.1 STUDY LIMITS

Access to the proposed site will be provided via one (1) full movement connection to NC-97. Site accesses are shown graphically in **Figure 1-1** and the preliminary site layout in **Figure 2-1**. All figures are located at the end of their respective chapter.

The study limits include the following five (5) intersections:

- NC-97 / Lizard Lick Road / Marshburn Road;
- NC-97 / Green Pace Road;
- NC-97 / Site Access 1;
- NC-97 / Water Plant Road; and
- NC-96 / Green Pace Road.

2.2 EXISTING ROADWAYS

NC-97 (W Gannon Ave) is an undivided facility with a varying two to three-lane cross section, running approximately east-west in the study area. The facility is classified by NCDOT as a minor arterial. Within the study area, NC-97 has a posted 45-mph speed limit and provides connection to downtown Zebulon. Per 2019 NCDOT Average Annual Daily Traffic (AADT) maps, NC-97 carries 9,900 vehicles per day (VPD) east of Lizard Lick Road.

NC-96 (N Arendell Ave) is an undivided facility with a two-lane cross section, running approximately north-south in the study area. The facility is classified by NCDOT as a minor arterial. Within the study area, NC-96 has a posted 35-mph speed limit and provides connection to downtown Zebulon. Per 2019 NCDOT AADT maps, NC-97 carries 15,000 VPD south of Green Pace Road.

SR-2329 (Lizard Lick Road) is a two-lane undivided facility that runs approximately north-south in the project study area. The facility is classified by NCDOT as a major collector. Within the study area, Lizard Lick Road primarily serves residential land uses and has a posted 45-mph speed limit. Per 2019 NCDOT AADT maps, Lizard Lick Road carries 7,800 VPD north of NC-97. The facility changes names to Marshburn Road south of NC-97.

SR-2329 (Marshburn Road) is a two-lane undivided facility that runs approximately north-south in the project study area, providing access to Wendell. The facility is classified by NCDOT as a major collector. Within the study area, Lizard Lick Road primarily serves residential land uses and has a posted 45-mph speed limit. Marshburn Road carries 2,600 VPD north of US-64 per published 2019 NCDOT AADT maps. This facility changes names to Lizard Lick Road north of NC-97.

SR-2368 (Green Pace Road) is a two-lane undivided facility that runs approximately north-south north of NC-97 and approximately east-west when at NC-96. This facility is classified by NCDOT as a local road. Within the study area, Green Pace Road primarily serves residential land uses but has approved industrial developments. Green Pace Road has a posted 45-mph speed limit and carries 1,300 VPD north of NC-97 and 2,800 VPD west of NC-96 (per published 2015 NCDOT AADT maps).

SR-2370 (Water Plant Road) is a two-lane undivided facility that runs approximately north-south in the project study area. The facility is classified by NCDOT as a local road. Within the study area, Water

Plant Road primarily serves residential land uses and has a posted 45-mph speed limit. No AADT data is provided for this facility.

2.3 EXISTING INTERSECTIONS

Using available aerial imagery, Timmons Group compiled the existing geometry for each study area intersection. The existing intersection geometry is shown in **Figure 2-2**.

NC-97 / Lizard Lick Road is a two-phase signalized intersection. The north and southbound intersection approaches consist of a single shared left / through / right-turn lane. The east and westbound intersection approaches consist of an exclusive left-turn lane and a shared through / right-turn lane.

NC-97 / Green Pace Road is an unsignalized intersection with the southbound approach encountering the stopped condition. The southbound approach includes a shared left / right-turn lane. The eastbound approach has an exclusive left turn lane and a through lane. The westbound approach has a shared through / right-turn lane.

NC-97 / Water Plant Road is an unsignalized intersection with the southbound approach encountering the stopped condition. The southbound approach includes a shared left / right-turn lane. The eastbound approach has a shared through / left-turn lane. The westbound approach has an exclusive right-turn lane and a through lane.

NC-96 / Green Pace Road is an unsignalized intersection with the east and westbound approaches encountering the stopped condition. All approaches consist of a single shared lane that serves all movements.

2.4 TRAFFIC VOLUMES

Timmons Group calculated peak hour volumes at the study area intersections using the collected AM (7:00 – 9:00) and PM (4:00 – 6:00) peak period turning movement counts undertaken in May 2022. Collected traffic count data is summarized in **Figure 2-3**. Traffic count data is found in **Appendix B**.

2.5 CAPACITY ANALYSIS

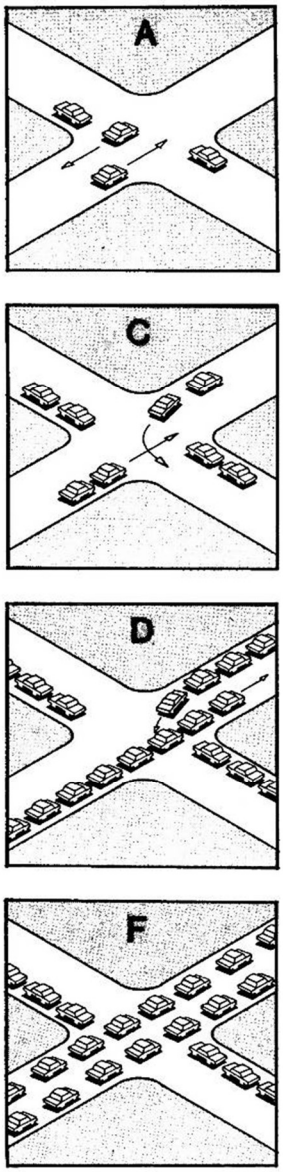
Using field observations, aerial photography, and traffic count data, traffic operations were analyzed during 2022 (existing) and 2025 (without and with the proposed development site trips).

Capacity analysis allows traffic engineers to determine the impacts of traffic on the surrounding roadway network. The Transportation Research Board's (TRB) *Highway Capacity Manual* (HCM) methodologies govern how the capacity analyses are conducted and how the results are interpreted. There are six letter grades of Levels of Service (LOS) from A to F, with LOS A representing the best operating conditions and LOS F the worst operating conditions. At signalized intersections, an overall intersection LOS E is generally considered unacceptable. At unsignalized intersections, a LOS E is generally considered acceptable only if the side street encounters delay. Nevertheless, side streets typically function at a LOS F during peak traffic periods, because the traffic volumes often do not warrant a traffic signal to assist side street traffic. **Table 2-1** shows in detail how each of these levels of service are interpreted.

Table 2-1: Level of Service Definitions

Level of Service	Roadway Segments or Controlled Access Highways	Intersections
A	Free flow, low traffic density.	No vehicle waits longer than one signal indication.
B	Delay is not unreasonable, stable traffic flow.	On a rare occasion motorists wait through more than one signal indication.
C	Stable condition, movements somewhat restricted due to higher volumes, but not objectionable for motorists.	Intermittently drivers wait through more than one signal indication, and occasionally backups may develop behind left turning vehicles, traffic flow still stable and acceptable.
D	Movements more restricted, queues and delays may occur during short peaks, but lower demands occur often enough to permit clearing, thus preventing excessive backups.	Delays at intersections may become extensive with some, especially left-turning vehicles waiting two or more signal indications, but enough cycles with lower demand occur to permit periodic clearance, thus preventing excessive backups.
E	Actual capacity of the roadway invloves delay to all motorists due to congestion.	Very long queues may create lengthly delays, especially for left-turning vehicles.
F	Forced flow with demand volumes greater than capacity resulting in complete congestion. Volumes drop to zero in extreme cases.	Backups from locations downstream restrict or prevent movement of vehicles out of approach creating a storage ares during part or all of an hour.

SOURCE: *"A Policy on Design of Design of Urban Highways and Arterial Streets"* - AASHTO, 1973 based upon material published in *"Highway Capacity Manual"*, National Academy of Sciences, 1965.



For signalized and unsignalized intersections, level of service is defined in terms of **delay**, a measure of driver discomfort, frustration, fuel consumption and lost travel time. **Table 2-2** summarizes the delay associated with each LOS category:

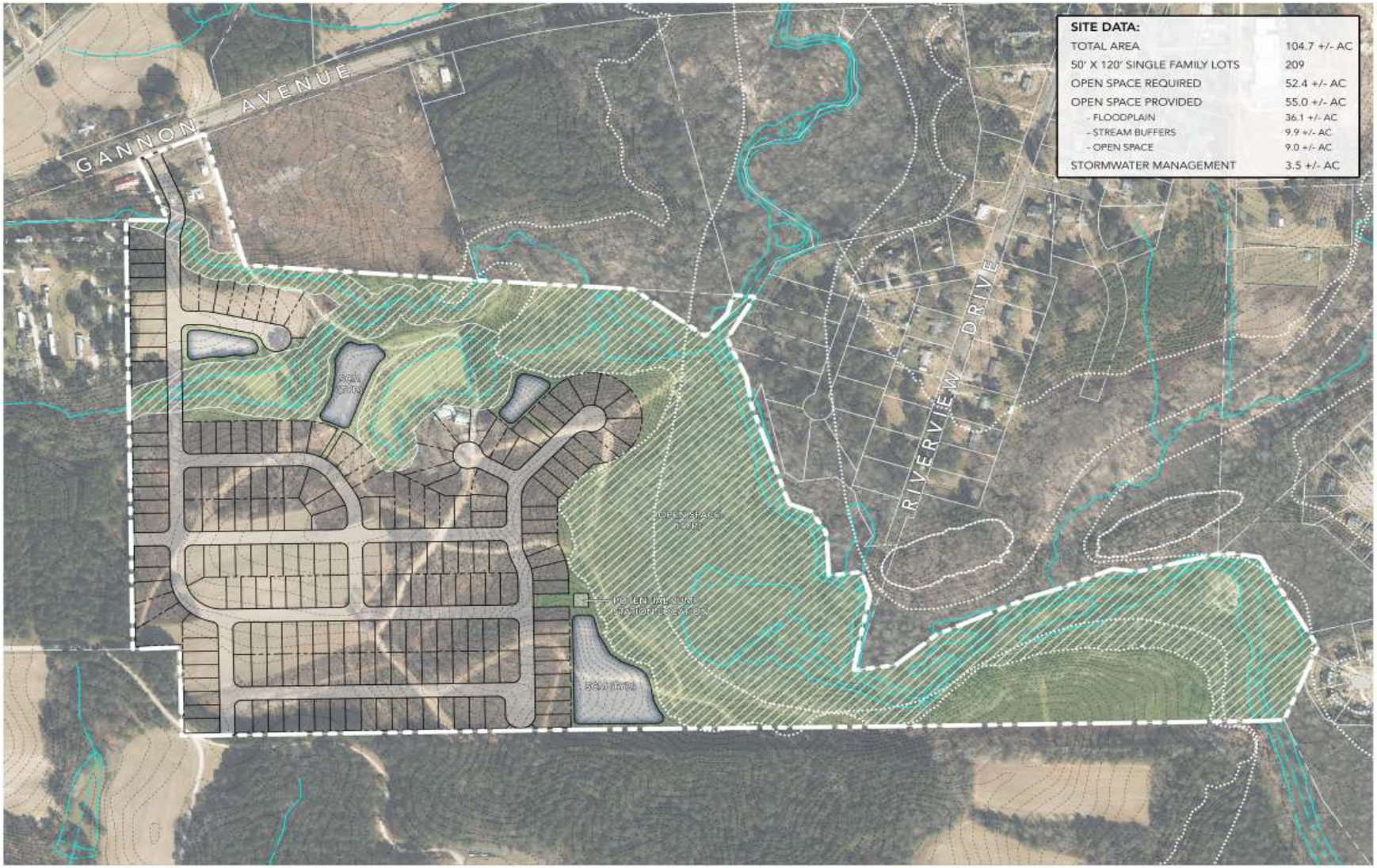
Table 2-2: Signalized and Unsignalized Intersection Level of Service Criteria

Signalized Intersections		Unsignalized Intersections	
Level of Service	Control Delay per Vehicle (sec/veh)	Level of Service	Average Control Delay (sec/veh)
A	≤ 10	A	0 to 10
B	> 10 to ≤ 20	B	> 10 to ≤ 15
C	> 20 to ≤ 35	C	> 15 to ≤ 25
D	> 35 to ≤ 55	D	> 25 to ≤ 35
E	> 55 to ≤ 80	E	> 35 to ≤ 50
F	> 80	F	> 50

Source: Exhibit 16-2 and Exhibit 17-2 from TRB's "Highway Capacity Manual 2000"

Capacity analyses were performed to assess operational conditions. Study area intersections were analyzed using Synchro Version 10.3 based on Highway Capacity Manual (HCM) methodologies with the following assumptions:

- Existing grades;
- 12-foot lane widths;
- No parking activity, bus stops, or pedestrians;
- Peak hour factor (PHF) of 0.90;
- Heavy vehicle percentages 2%; and
- Minimum turning movement volume of 4 VPH for all allowed movements; and
- Existing traffic signal plan signal data (see **Appendix C**).



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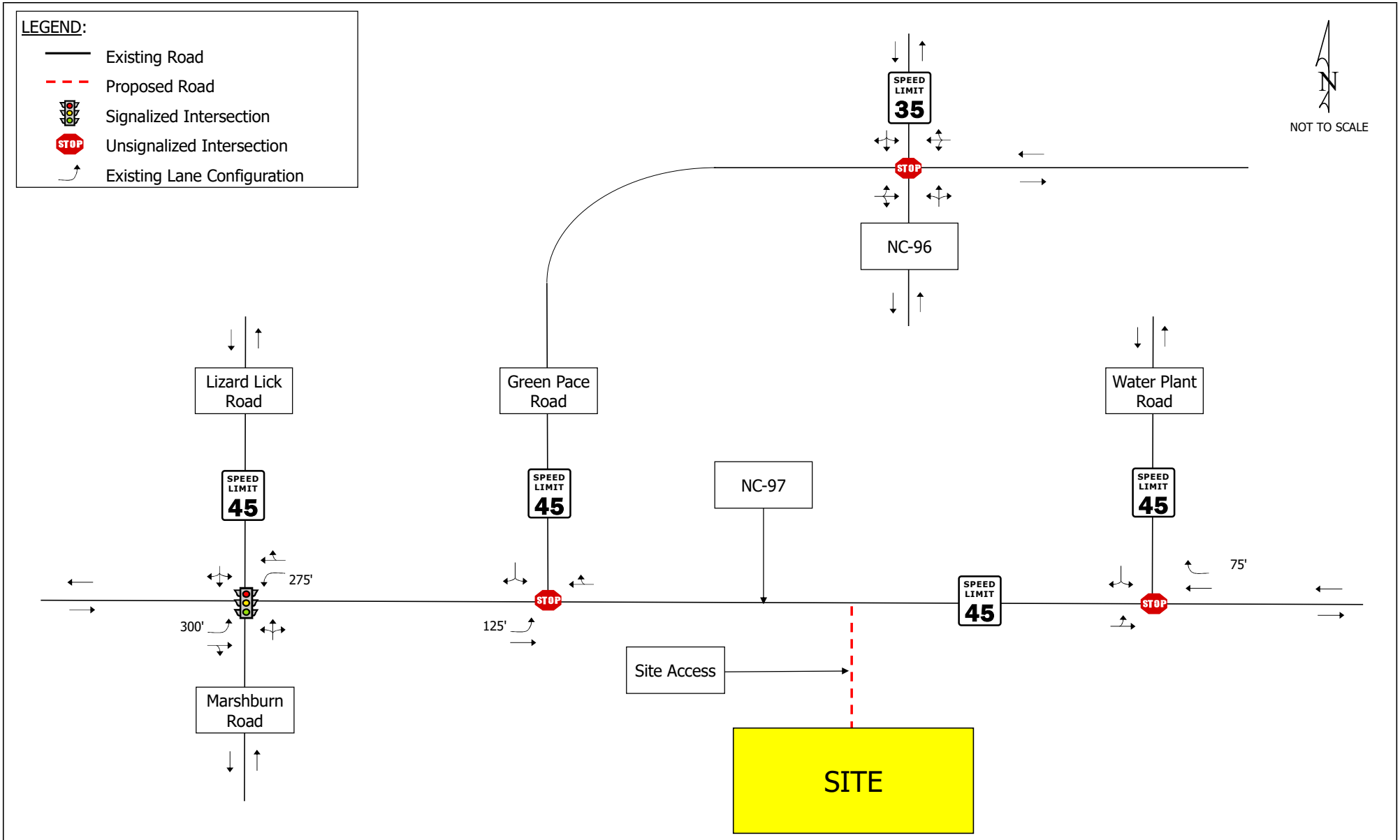
Faison Tract
Traffic Impact Analysis
Preliminary Site Layout

Figure 2-1



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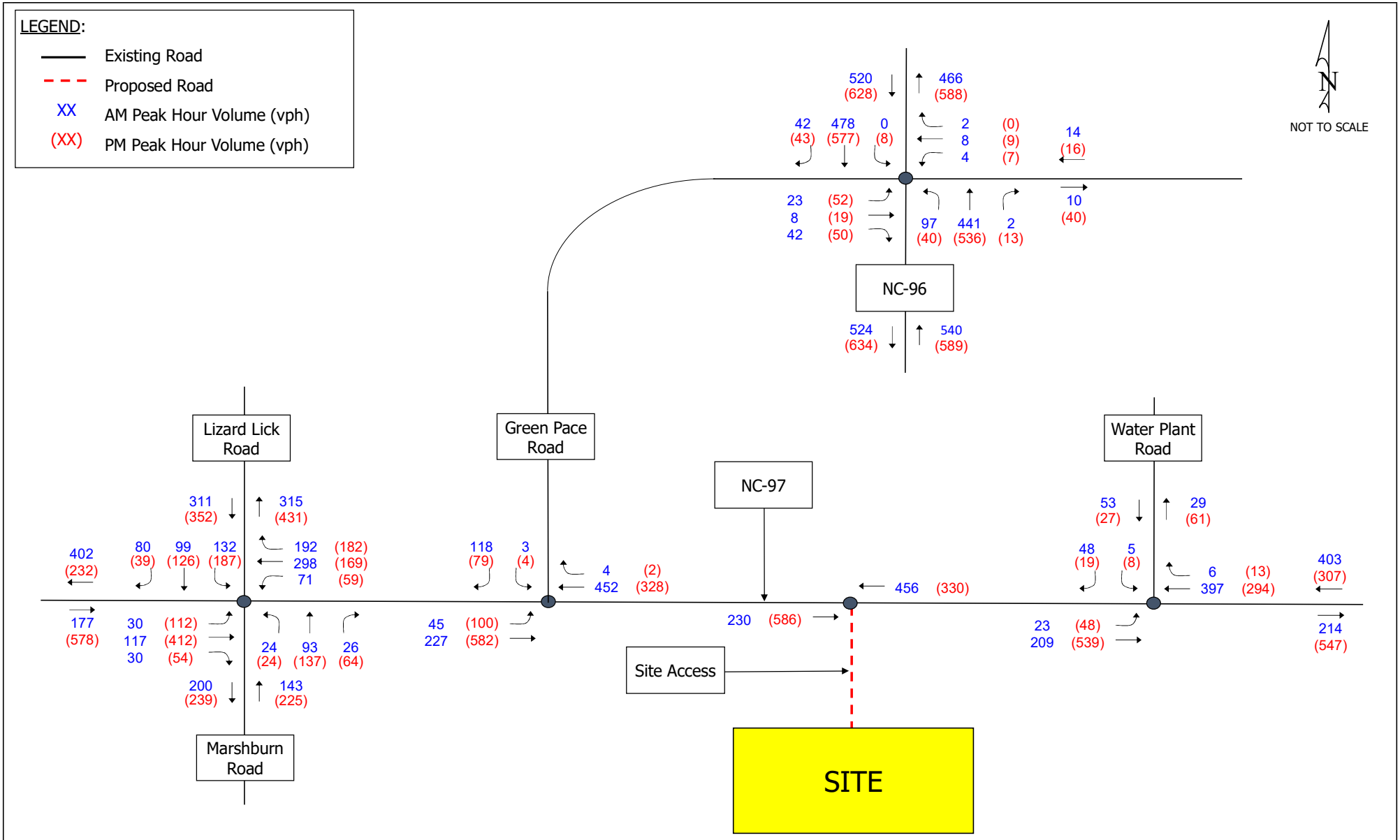
Traffic Impact Analysis
2022 Existing Lane Configuration

Figure 2-2



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Traffic Impact Analysis
2022 Existing Traffic Volumes

Figure 2-3

3 EXISTING AND BACKGROUND CONDITIONS AND ANALYSIS

3.1 2022 EXISTING ANALYSES

Table 3-1 summarizes the 2022 Existing intersection LOS and delay based on the geometry shown in **Figure 2-2** and the 2022 Existing traffic volumes shown in **Figure 2-3**. The corresponding Synchro output is included in **Appendix D**.

The signalized intersection of NC-97 / Lizard Lick Road / Marshburn Road is currently operating at an overall LOS B during both 2022 Existing peak hours. All intersection approaches are currently operating at a LOS C or better during both peak hours.

All NC-97 / Green Pace Road unsignalized intersection approaches are currently operating at a LOS B or better during the 2022 Existing AM and PM peak hours.

All NC-97 / Water Plant Road unsignalized intersection approaches are currently operating at a LOS B or better during the 2022 Existing AM and PM peak hours.

The north / southbound NC-96 / Green Pace Road unsignalized intersection approaches are currently operating at an LOS A during the 2022 Existing AM and PM peak hours. The east / westbound approaches are currently operating at LOS F and E (respectively) during the PM peak hour.

Table 3-1: Intersection Level of Service and Delay Summary
2022 Existing Traffic Volumes

Intersection	Movement and Approach	AM PEAK HOUR		PM PEAK HOUR	
		Delay [1] (sec/veh)	LOS [1]	Delay [1] (sec/veh)	LOS [1]
1: Marshburn Road/Lizard Lick Road & NC-97	EB Approach	10.3	B	19.0	B
	WB Approach	19.8	B	15.9	B
	NB Approach	13.6	B	13.5	B
	SB Approach	20.2	C	23.4	C
	Overall	17.8	B	18.4	B
2: NC-97 & Green Pace Road	EB Approach	1.4	A	1.2	A
	WB Approach	0.0	A	0.0	A
	SB Approach	13.6	B	12.1	B
4: NC-97 & Water Plant Road	EB Approach	0.8	A	0.7	A
	WB Approach	0.0	A	0.0	A
	SB Approach	11.9	B	13.6	B
5: NC-96 & Green Pace Road	EB Approach	30.3	D	***87.8***	***F***
	WB Approach	31.0	D	***40.6***	***E***
	NB Approach	1.6	A	0.6	A
	SB Approach	0.1	A	0.1	A

[1] *Overall intersection LOS and delay reported for signalized intersections and roundabouts only.*

** Delay greater than 9999.99 seconds cannot be calculated by SYNCHRO for signalized intersections.

+ Delay greater than 9999.99 seconds cannot be calculated by SYNCHRO for unsignalized intersections.

SYNCHRO does not provide level of service or delay for unsignalized movements with no conflicting volumes.

3.2 2025 BACKGROUND TRAFFIC VOLUMES

Figure 3-1 shows the 2025 ambient traffic volumes calculated using a 2% growth rate for three (3) years.

The Town of Zebulon has plans to signalize the intersection of Green Pace Road / NC-96. Additionally, north and southbound left-turn lanes will be constructed along NC-96. Geometric plans for this project can be found in **Appendix E**. All future analyses will include the aforementioned intersection improvements.

Per the scoping information (see **Appendix A**), there are currently three (3) approved developments within the study area: Lot 1 Green Pace Business Park, Watson Electric Headquarters, and Jasper Place. Listed below are the approved development and site trip distribution assumptions. Approved development information can be found in **Appendix E**.

- Lot 1 Green Business Park
    - No TIA completed
    - Located off Green Pace Road, north of the subject development
    - Assumed to be fully constructed by 2025
        - 150,000 square foot light industrial
    - Trips generated using the *Institute of Transportation Engineers' Trip Generation Manual 10th Edition (2017)* – Land Use Code (LUC) 110
    - Distribution percentages and volumes are located in **Appendix E** (**Figures E1a** and **E1b**, respectively).
        - Distribution followed existing travel patterns with the following assumptions:
            - 70% of site traffic will be to/from the north
            - 30% of site traffic will be to/from the south
    - No off-site improvements proposed at any of the study area intersections
- Watson Electric Headquarters
    - No TIA completed
    - Located off Green Pace Road, north of the subject development
    - Assumed to be fully constructed by 2025
        - 33,000 square foot warehouse / vehicle storage
    - Trips generated using the *Institute of Transportation Engineers' Trip Generation Manual 10th Edition (2017)* – LUC 150
    - Distribution percentages and volumes are located in **Appendix E** (**Figures E2a** and **E2b**, respectively).
        - Distribution followed existing travel patterns with the following assumptions:
            - 70% of site traffic will be to/from the north
            - 30% of site traffic will be to/from the south
- Jasper Place
    - TIA completed by Timmons Group
    - Located off Gannon Avenue, east of the subject development
    - Trip generation / distribution follows TIA
    - No off-site improvements proposed at any of the study area intersections

The approved development traffic volumes are shown in **Figure 3-2**. The 2025 ambient traffic volumes (**Figure 3-1**) were added to the approved development traffic volumes (**Figure 3-2**) to calculate the 2025 Background traffic volumes (**Figure 3-3**).

3.3 2025 BACKGROUND ANALYSIS

Table 3-2 summarizes the intersection LOS and delay based on the geometry shown in **Figure 2-2** and the 2025 Background traffic volumes shown in **Figure 3-3**. The corresponding Synchro output is included in **Appendix D**.

The signalized intersection of NC-97 / Lizard Lick Road / Marshburn Road is projected to operate at an overall LOS B and C during the 2025 Background AM and PM peak hours, respectively. All intersection approaches are projected to operate at a LOS D or better during both peak hours.

All NC-97 / Green Pace Road unsignalized intersection approaches are projected to operate at a LOS C or better during the 2025 Background AM and PM peak hours.

All NC-97 / Water Plant Road unsignalized intersection approaches are projected to operate at a LOS B or better during the 2025 Background AM and PM peak hours.

The signalized intersection of NC-96 / Green Pace Road is projected to operate at an overall LOS B and C during the 2025 Background AM and PM peak hours, respectively. All intersection approaches are projected to operate at a LOS D or better during both peak hours.

Table 3-2: Intersection Level of Service and Delay Summary
2025 Background Traffic Volumes

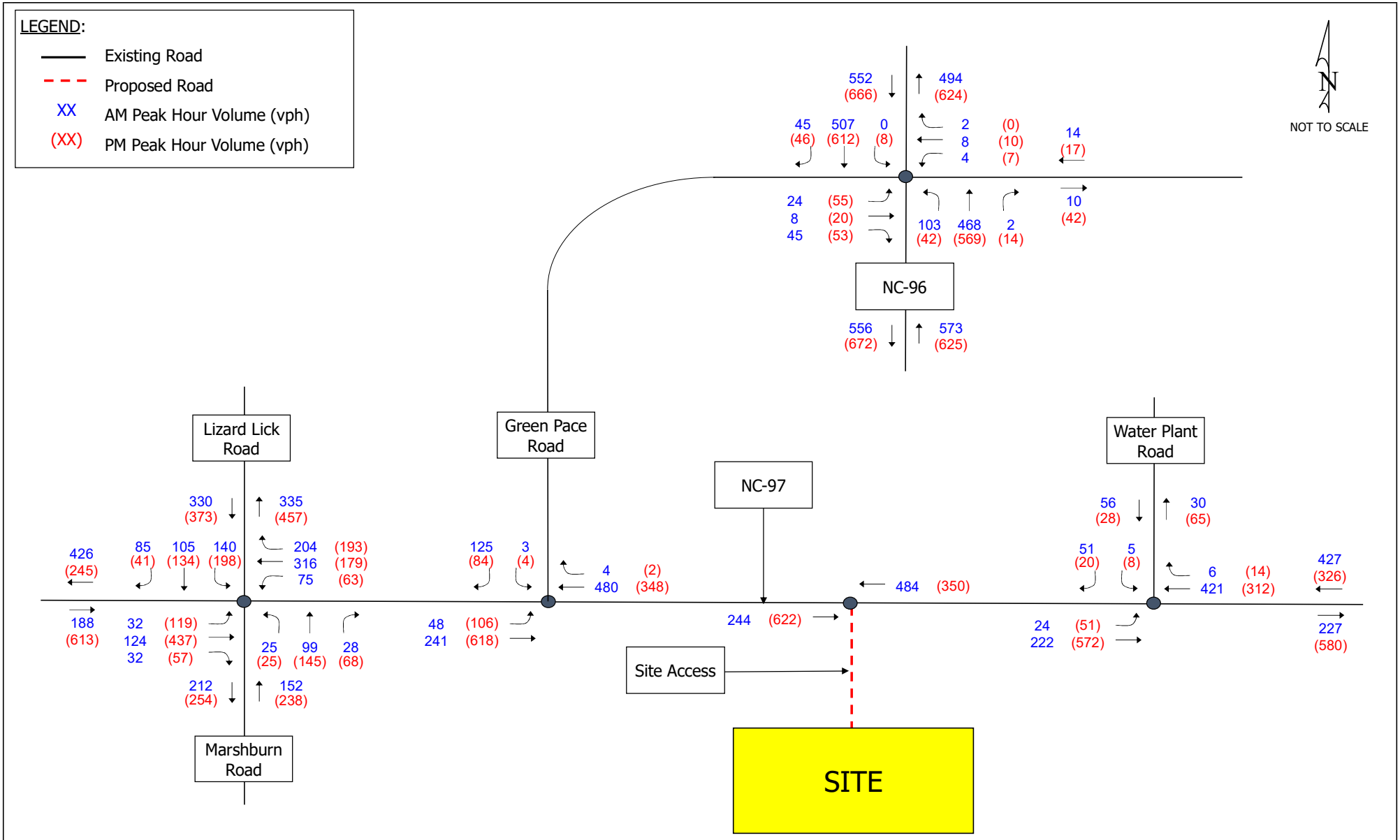
Intersection	Movement and Approach	AM PEAK HOUR		PM PEAK HOUR	
		Delay [1] (sec/veh)	LOS [1]	Delay [1] (sec/veh)	LOS [1]
1: Marshburn Road/Lizard Lick Road & NC-97	EB Approach	9.8	A	19.6	B
	WB Approach	20.3	C	16.8	B
	NB Approach	16.2	B	15.5	B
	SB Approach	26.5	C	35.5	D
	Overall	19.8	B	21.9	C
2: NC-97 & Green Pace Road	EB Approach	1.9	A	1.2	A
	WB Approach	0.0	A	0.0	A
	SB Approach	15.2	C	13.1	B
4: NC-97 & Water Plant Road	EB Approach	0.9	A	0.7	A
	WB Approach	0.0	A	0.0	A
	SB Approach	12.6	B	14.3	B
5: NC-96 & Green Pace Road	EB Approach	36.0	D	39.8	D
	WB Approach	32.0	C	32.7	C
	NB Approach	14.2	B	14.0	B
	SB Approach	23.3	C	22.6	C
	Overall	19.9	B	21.2	C

[1] *Overall intersection LOS and delay reported for signalized intersections and roundabouts only.*

** Delay greater than 9999.99 seconds cannot be calculated by SYNCHRO for signalized intersections.

+ Delay greater than 9999.99 seconds cannot be calculated by SYNCHRO for unsignalized intersections.

SYNCHRO does not provide level of service or delay for unsignalized movements with no conflicting volumes.



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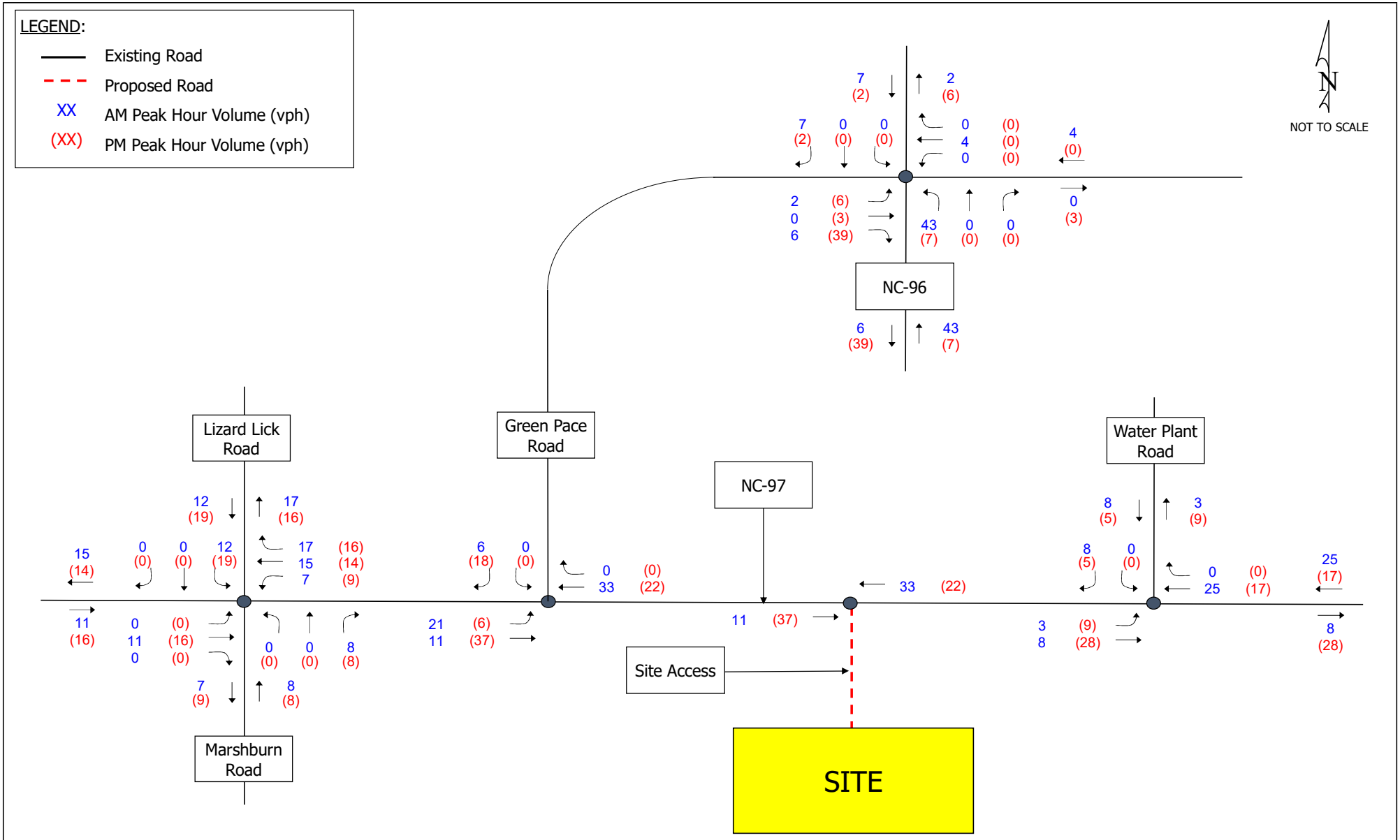
2025 Ambient Traffic Volumes

Figure 3-1



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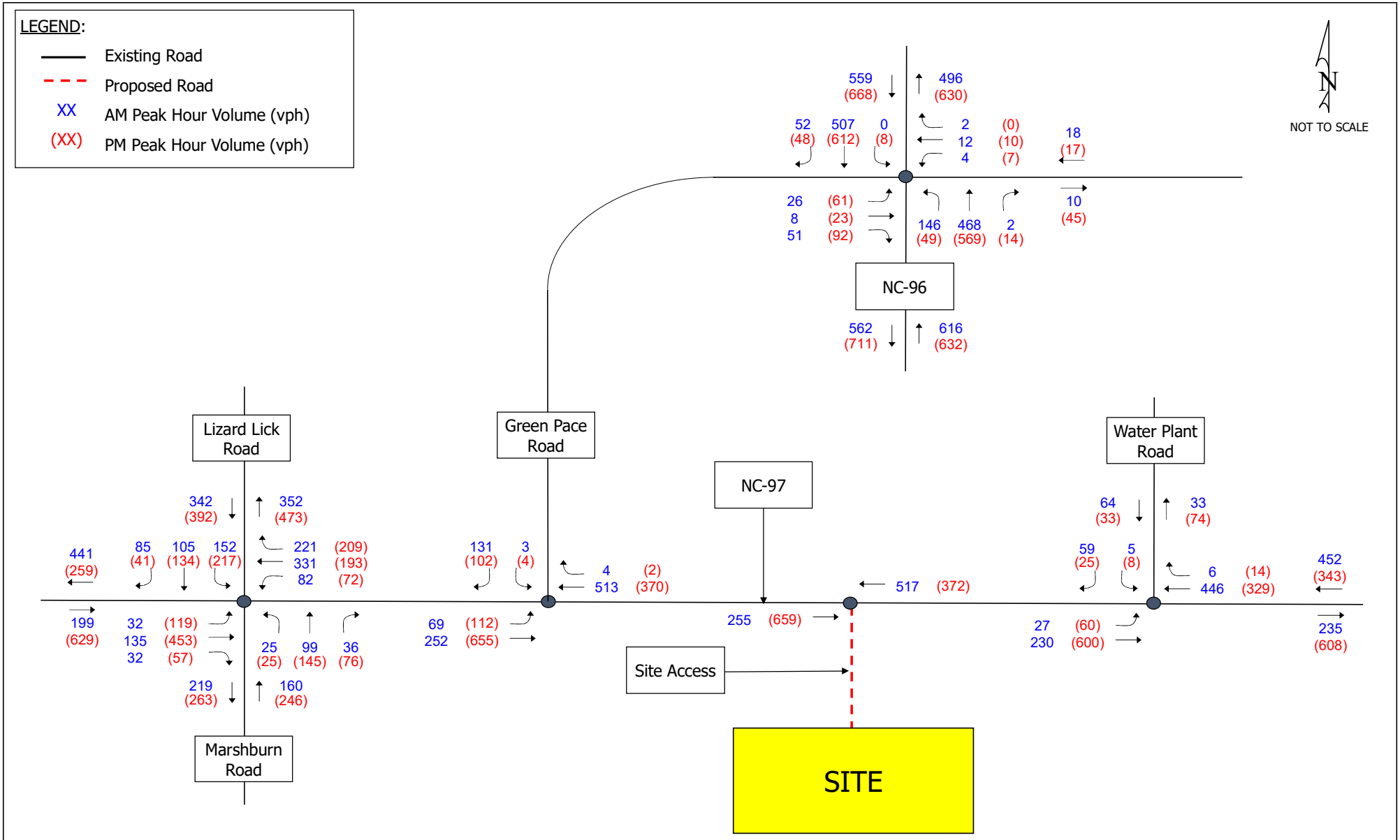
Faison Tract
Traffic Impact Analysis
Approved Development Traffic Volumes

Figure 3-2



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Faison Tract
Traffic Impact Analysis
2025 Background Traffic Volumes

Figure 3-3

4 SITE TRIP GENERATION AND DISTRIBUTION

Proposed development site trips were estimated based on the proposed land uses supplied by the developer and subsequently distributed onto the surrounding roadway network.

4.1 TRIP GENERATION

The site-generated trips shown in **Table 4-1** are based on trip generation information provided in the 10th Edition of the Institute of Transportation Engineers' (ITE's) *Trip Generation Manual* and the anticipated development size. The trip generation was calculated using the proposed number of residential units as the independent variable and the provided equation (per NCDOT standards).

Table 4-1: Trip Generation Summary

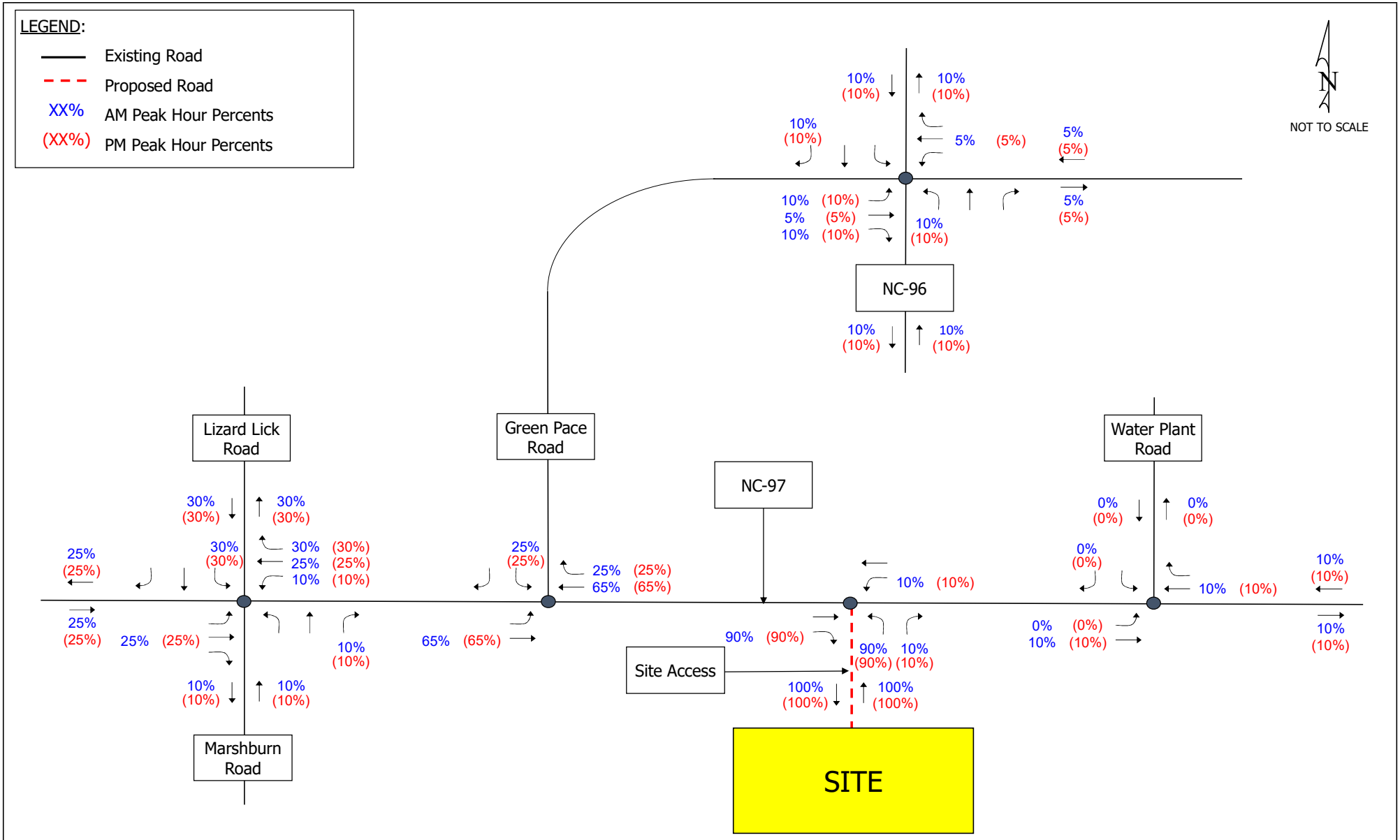
ITE Land Use Code	Independent Variable	ADT	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
210- Single Family Detached Housing	209 Units	2,049	38	115	153	130	76	206

SOURCE: Institute of Transportation Engineers' *Trip Generation Manual* 10th Edition (2017)

AM peak hour trips totaled 38 incoming and 115 outgoing where PM peak hour trips totaled 130 incoming and 76 outgoing. Average daily traffic (ADT) volumes generated by the development totaled 2,049 VPD. No reduction in trips were included due to internal capture or pass-by trips.

4.2 TRIP DISTRIBUTION

The directional traffic patterns, or trip distribution, of the site-generated traffic was determined using the existing traffic characteristics and Engineering judgement. It was assumed, for purposes of this study, that all site traffic would enter and exit the study area in a similar manner as the existing traffic. Area trip distribution is based on traffic counts performed by Timmons Group. Total trips into and out of the study area using NC-97, NC-96, Lizard Lick Road, and Marshburn Road form the basis for the percentage distribution. The percentages were routed, via shortest path, to and from the proposed development. The distribution percentages were then applied to the generated trips to predict routes and project traffic volumes for the 2025 Build scenario. Trip distribution percentages are shown in **Figure 4-1** and trip distribution volumes are shown in **Figure 4-2**.



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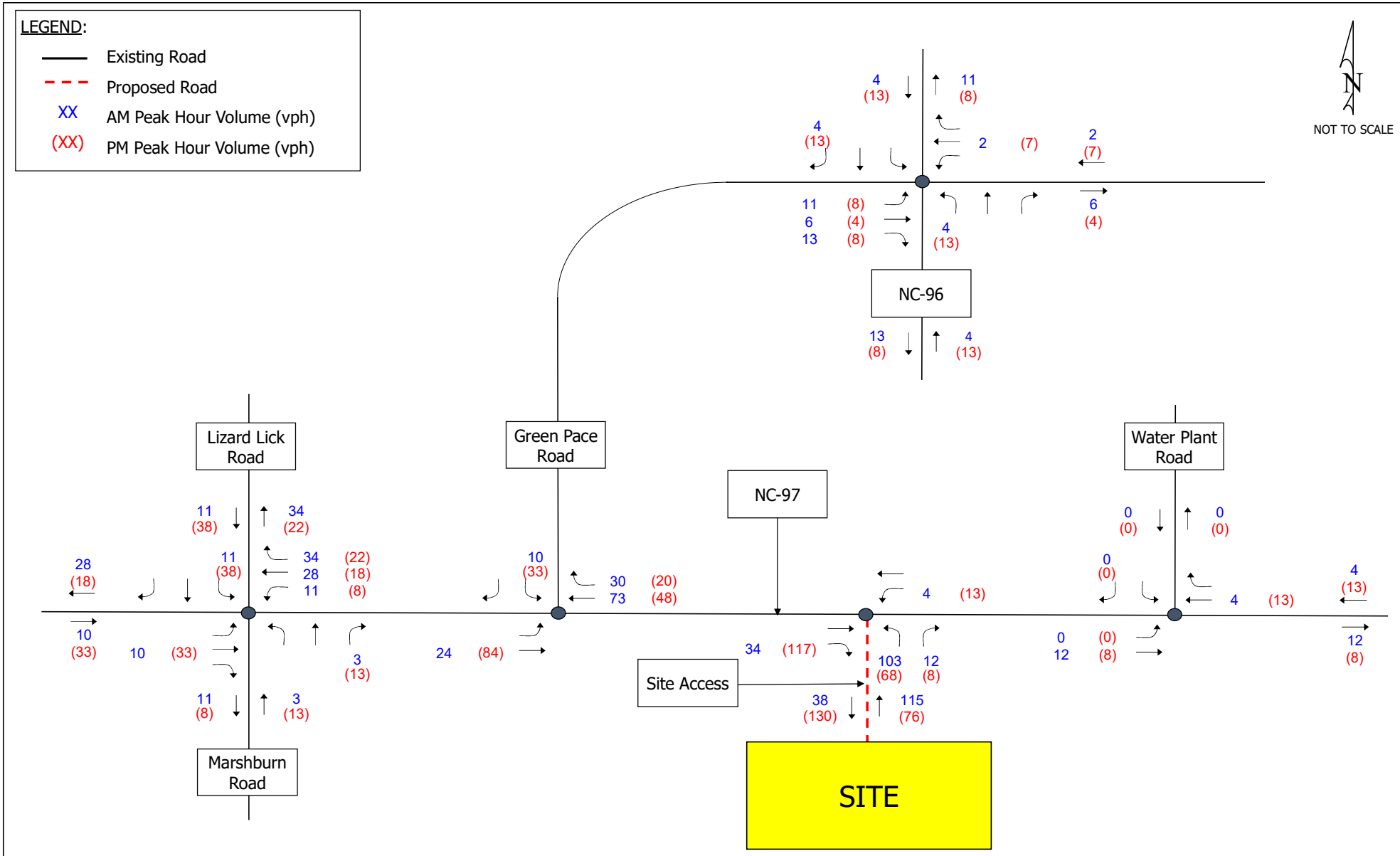
Trip Distribution Percentages

Figure 4-1



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Faison Tract
Traffic Impact Analysis
Trip Distribution Volumes

Figure 4-2

5 2025 BUILD CONDITION AND ANALYSIS

To complete the 2025 Build analyses (including proposed development), the estimated site trips were added to the 2025 Background traffic volumes. The projected total volumes, along with the existing intersection geometry, were used to complete the capacity analyses. The 2025 Background traffic volumes (**Figure 3-3**) were added to the projected site trips (**Figure 4-2**) to generate the 2025 Build traffic volumes (background + site) shown in **Figure 5-1**.

To summarize, the 2025 Build traffic volumes shown in **Figure 5-1** contain the following:

- Existing 2022 traffic volumes grown by a 2% per year ambient growth rate for 3 years;
- Traffic volumes from three (3) approved area developments; and
- Site trips generated by the subject development.

5.1 2025 BUILD ANALYSIS

Table 5-1 summarizes the intersection LOS and delay based on the geometry shown in **Figure 2-2** and the 2025 Build traffic volumes shown in **Figure 5-1**. The corresponding Synchro output is included in **Appendix D**.

The signalized intersection of NC-97 / Lizard Lick Road / Marshburn Road is projected to operate at an overall LOS C during both 2025 peak hours. Analyzed with existing signal timings, the southbound approach is projected to operate at a LOS E during the PM peak hour. All other intersection approaches are anticipated to operate at a LOS C or better during both peak hours. Due to limitations in right-of-way, and the presence of adjacent businesses, intersection widening is not feasible without significant displacements. With optimized signal timings, all intersection approaches are projected to operate at acceptable levels. For these reasons, and because the intersection is projected to operate acceptably overall during both peak hours, no geometric improvements are recommended at this intersection due to the proposed development's construction.

All NC-97 / Green Pace Road unsignalized intersection approaches are projected to operate at an LOS D or better during the 2025 Build AM and PM peak hours. No improvements are recommended at this intersection due to the proposed development's construction.

The northbound NC-97 / Site Access 1 unsignalized intersection approach is anticipated to operate at LOS E during the 2025 Build PM peak hour. All other approaches are projected to operate at an LOS C or better during the 2025 Build AM and PM peak hours. Per the NCDOT Policy on Street and Driveway Access to North Carolina Highways Manual:

"Generally left and right turn lanes and tapers shall be considered when:

- *In accordance with G.S. 136-18(29), the average daily traffic meets or exceeds 4,000 vehicles per day on any secondary route (the average daily traffic should include both the existing traffic plus traffic generated by the proposed development)"*

The 2025 AADT along NC-97 is projected to exceed 4,000 VPD. Because of this, turn lanes were considered at Site Access 1. Per the NCDOT Nomograph (see **Appendix F**) and projected 2025 peak hour volumes, a 75-foot westbound right-turn lane (with appropriate taper) is recommended. Per **Table 5-2**, following this improvement, all approaches are projected to operate acceptably. No additional improvements are recommended at this intersection due to the proposed development's construction.

All NC-97 / Water Plant Road unsignalized intersection approaches are projected to operate at an LOS B or better during the 2025 Build AM and PM peak hours. No improvements are recommended at this intersection due to the proposed development's construction.

The signalized intersection of NC-96 / Green Pace Road is projected to operate at an overall LOS C during the 2025 Build AM and PM peak hours, respectively. All intersection approaches are projected to operate at a LOS D or better during both peak hours. No improvements are recommended at this intersection due to the proposed development's construction.

Table 5-1: Intersection Level of Service and Delay Summary
2025 Build Traffic Volumes

Intersection	Movement and Approach	AM PEAK HOUR		PM PEAK HOUR	
		Delay [1] (sec/veh)	LOS [1]	Delay [1] (sec/veh)	LOS [1]
1: Marshburn Road/Lizard Lick Road & NC-97	EB Approach	9.3	A	20.1	C
	WB Approach	20.7	C	17.9	B
	NB Approach	18.8	B	17.1	B
	SB Approach	33.6	C	***63.9***	***E***
	Overall	22.0	C	29.1	C
2: NC-97 & Green Pace Road	EB Approach	1.9	A	1.2	A
	WB Approach	0.0	A	0.0	A
	SB Approach	19.2	C	33.4	D
3: Site Access & NC-97	EB Approach	0.0	A	0.0	A
	WB Approach	0.1	A	0.3	A
	NB Approach	22.3	C	***35.3***	***E***
4: NC-97 & Water Plant Road	EB Approach	0.9	A	0.7	A
	WB Approach	0.0	A	0.0	A
	SB Approach	12.7	B	14.6	B
5: NC-96 & Green Pace Road	EB Approach	38.6	D	45.0	D
	WB Approach	32.1	C	34.5	C
	NB Approach	15.8	B	14.5	B
	SB Approach	27.8	C	27.7	C
	Overall	23.2	C	24.5	C

[1] *Overall intersection LOS and delay reported for signalized intersections and roundabouts only.*

** Delay greater than 9999.99 seconds cannot be calculated by SYNCHRO for signalized intersections.

+ Delay greater than 9999.99 seconds cannot be calculated by SYNCHRO for unsignalized intersections.

SYNCHRO does not provide level of service or delay for unsignalized movements with no conflicting volumes.

Table 5-2: Intersection Level of Service and Delay Summary
2025 Build + Improvement Traffic Volumes

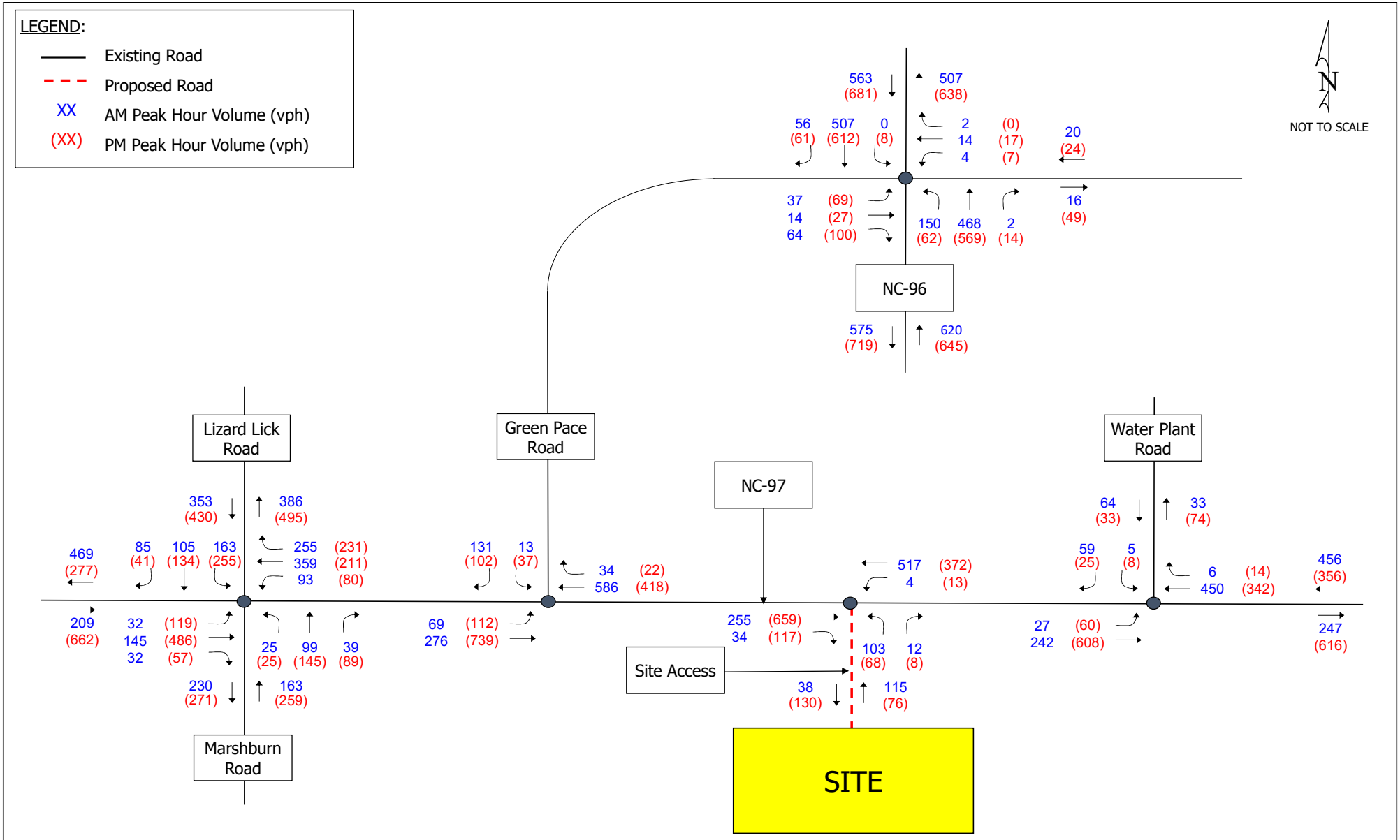
Intersection	Movement and Approach	AM PEAK HOUR		PM PEAK HOUR	
		Delay [1] (sec/veh)	LOS [1]	Delay [1] (sec/veh)	LOS [1]
3: Site Access & NC-97	EB Approach	0.0	A	0.0	A
	WB Approach	0.1	A	0.3	A
	NB Approach	20.9	C	30.2	D

[1] *Overall intersection LOS and delay reported for signalized intersections and roundabouts only.*

** Delay greater than 9999.99 seconds cannot be calculated by SYNCHRO for signalized intersections.

+ Delay greater than 9999.99 seconds cannot be calculated by SYNCHRO for unsignalized intersections.

SYNCHRO does not provide level of service or delay for unsignalized movements with no conflicting volumes.



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Faison Tract
Traffic Impact Analysis
2025 Build Traffic Volumes

Figure 5-1

6 CONCLUSIONS AND RECOMMENDATIONS

Capacity analyses were performed for the following scenarios:

- 2022 Existing traffic volumes
- 2025 Background traffic volumes
- 2025 Build traffic volumes (Background + site trips)

In closing, the following improvements (see **Figure 6-1**) are recommended in conjunction with the construction of the proposed development:

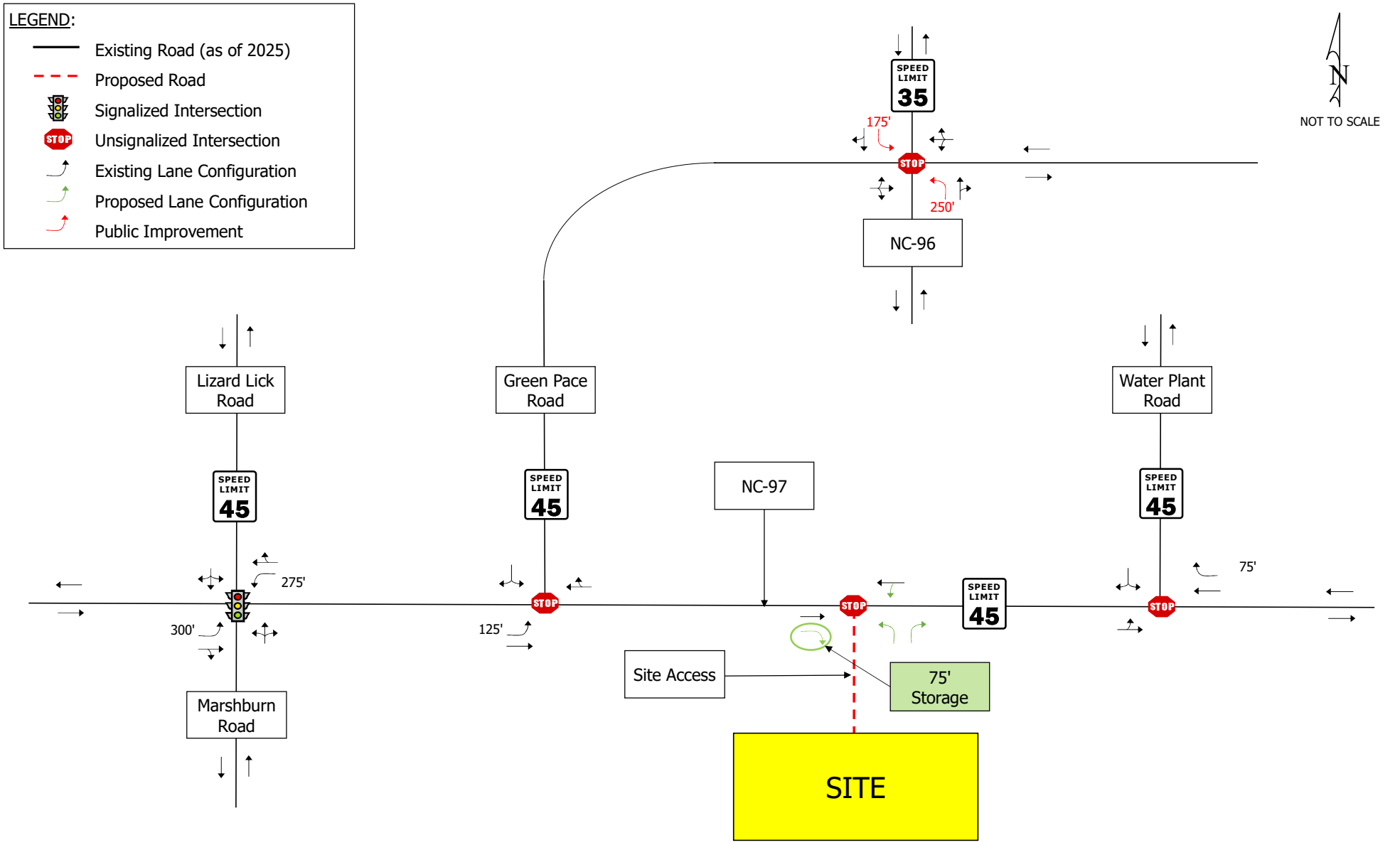
- NC-97 / Lizard Lick Road / Marshburn Road
  - None

- NC-97 / Green Pace Road
  - None

- NC-97 / Site Access 1
  - Construct a 75-foot westbound right-turn lane (with appropriate taper)
  - Construct exclusive northbound left and right-turn lanes
  - A minimum of 100-feet IPS along Site Access 1

- NC-97 / Water Plant Road
  - None

- NC-96 / Green Pace Road
  - None



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Faison Tract
Traffic Impact Analysis
2025 Proposed Lane Configuration

Figure 6-1

Appendix A – Scoping Information

Hunter Mullins

From: Meade Bradshaw <Mbradshaw@townofzebulon.org>
Sent: Friday, May 20, 2022 10:27 AM
To: Jeff Hochanadel
Cc: Hunter Mullins
Subject: RE: Faison Tract TIA Scoping

Warehouse/vehicle storage yard

From: Jeff Hochanadel <Jeff.Hochanadel@timmons.com>
Sent: Friday, May 20, 2022 10:21 AM
To: Meade Bradshaw <Mbradshaw@townofzebulon.org>
Cc: Hunter Mullins <Hunter.Mullins@timmons.com>
Subject: RE: Faison Tract TIA Scoping

What is the land use for the 33K SF building?

From: Meade Bradshaw <Mbradshaw@townofzebulon.org>
Sent: Friday, May 20, 2022 10:20 AM
To: Jeff Hochanadel <Jeff.Hochanadel@timmons.com>
Cc: Hunter Mullins <Hunter.Mullins@timmons.com>
Subject: RE: Faison Tract TIA Scoping

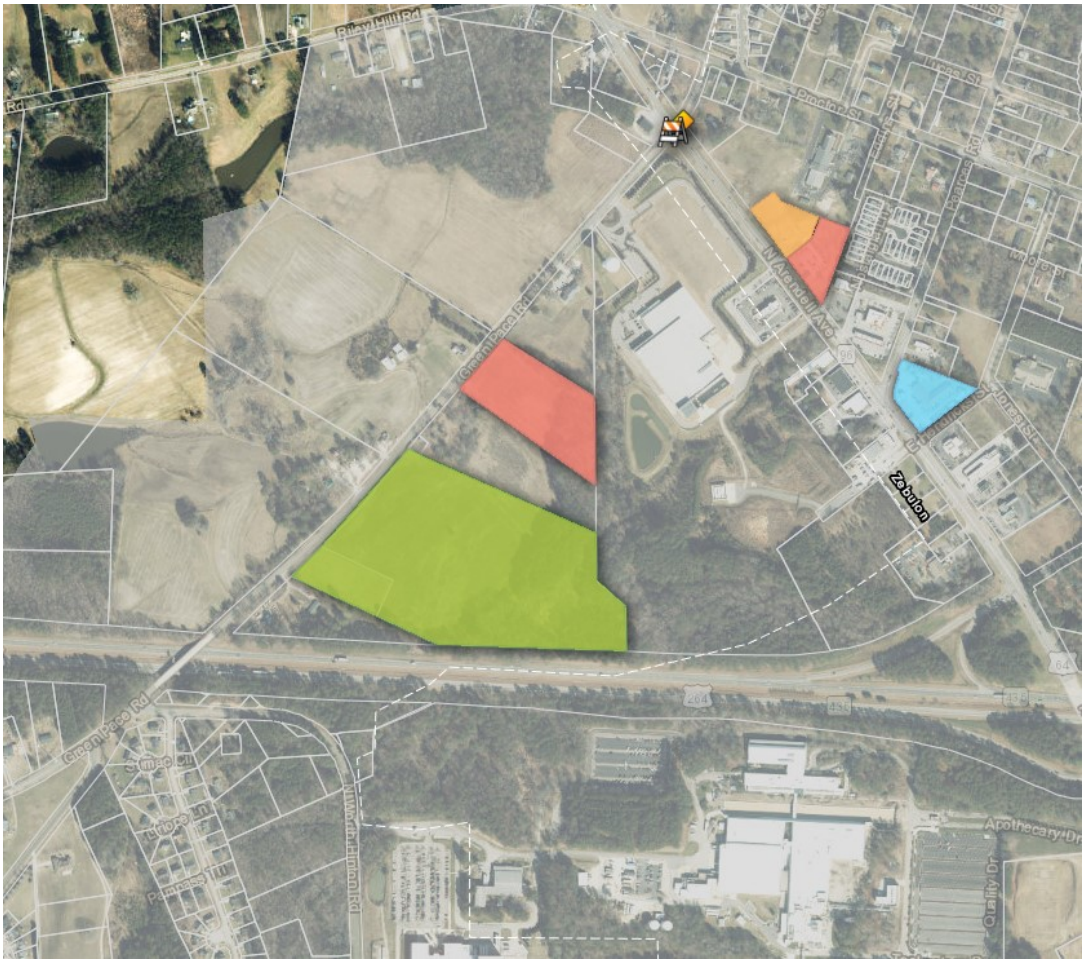
Jeff:

Please include both as both will most likely being operating prior the subdivision being built.

From: Jeff Hochanadel <Jeff.Hochanadel@timmons.com>
Sent: Friday, May 20, 2022 8:51 AM
To: Meade Bradshaw <Mbradshaw@townofzebulon.org>
Cc: Hunter Mullins <Hunter.Mullins@timmons.com>
Subject: RE: Faison Tract TIA Scoping

Which development would you like for us to include? The green is under construction Watson Electric HQ and the pink is a proposed 33K SF building.

Thanks!



From: Meade Bradshaw <Mbradshaw@townofzebulon.org>
Sent: Friday, May 6, 2022 3:34 PM
To: Jeff Hochanadel <Jeff.Hochanadel@timmons.com>
Subject: RE: Faison Tract TIA Scoping

There is a warehouse development on green pace road

From: Jeff Hochanadel <Jeff.Hochanadel@timmons.com>
Sent: Friday, May 6, 2022 1:41 PM
To: Meade Bradshaw <Mbradshaw@townofzebulon.org>
Subject: RE: Faison Tract TIA Scoping

Thanks!

Looks like Jasper Place is the only development located within the study area. We will include traffic from that development in our Background / Build analyses.

Thank You!
Jeff

From: Meade Bradshaw <Mbradshaw@townofzebulon.org>
Sent: Friday, May 6, 2022 11:13 AM
To: Jeff Hochanadel <Jeff.Hochanadel@timmons.com>
Subject: FW: Faison Tract TIA Scoping

If you go to our town website we have a link to an interactive development map which has project locations with project data.

https://www.townofzebulon.org/departments/planning/interactive-development-map

---

From: Jeff Hochanadel <Jeff.Hochanadel@timmons.com>
Sent: Thursday, May 5, 2022 11:29 AM
To: Brennan, Sean P <spbrennan@ncdot.gov>; Warren, Jeremy L <jlwarren@ncdot.gov>; Doumit Ishak (dishak@ncdot.gov) <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; Lineberger, Nicholas C <nclineberger@ncdot.gov>; Walker, Braden M <bmwalker1@ncdot.gov>; Meade Bradshaw <Mbradshaw@townofzebulon.org>
Cc: Beth Blackmon <Beth.Blackmon@timmons.com>
Subject: RE: Faison Tract TIA Scoping

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Per provided comments, below is the updated project scope. Are there any approved area developments?

Thank You!
Jeff

From: Jeff Hochanadel
Sent: Saturday, April 23, 2022 2:08 PM
To: Brennan, Sean P <spbrennan@ncdot.gov>; Warren, Jeremy L <jlwarren@ncdot.gov>; Doumit Ishak (dishak@ncdot.gov) <dishak@ncdot.gov>; Bunting, Clarence B <cbunting@ncdot.gov>; Lineberger, Nicholas C <nclineberger@ncdot.gov>; Walker, Braden M <bmwalker1@ncdot.gov>; Meade Bradshaw <Mbradshaw@townofzebulon.org>
Cc: Beth Blackmon <Beth.Blackmon@timmons.com>
Subject: Faison Tract TIA Scoping

All,

Timmons Group would like to scope a TIA for the subject residential development in Zebulon, NC. The development will consist of 209 single-family residential units and include one site access connection NC-97 (Gannon Avenue) and two stubbed connections to adjacent land parcels. A conceptual site layout is attached to this email.

I am ok scoping this via email or will be happy to set up a virtual meeting to discuss the subject project (as needed).

Our scoping assumptions include the following:

- Study Area Intersections:
    - NC-97 (Gannon Avenue) / Site Access 1

- NC-97 (Gannon Avenue) / Green Pace Road
- NC-97 (Gannon Avenue) / Lizard Lick Road
- NC-97 (Gannon Avenue) / Water Plant Road
- NC-96 (N Arendell Avenue) / Green Pace Road

- Growth Rate:
  - 2% (Per NCDOT AADT maps)

- Approved Area Developments:
  - None

- STIP Projects:
  - None

- Build-Out Year:
  - 2025

Please do not hesitate to contact me with any questions.

Thanks!
Jeff

Jeff Hochanadel, PE, PTOE

Principal | North Carolina Transportation Group Leader
TIMMONS GROUP | www.timmons.com
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Office: 919.866.4511 | Fax: 919.859.5663
Cell: 919.426.8405
jeff.hochanadel@timmons.com
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Appendix B – Traffic Counts

TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon (Water Plant Rd and NC-97)
Site Code :
Start Date : 5/12/2022
Page No : 1

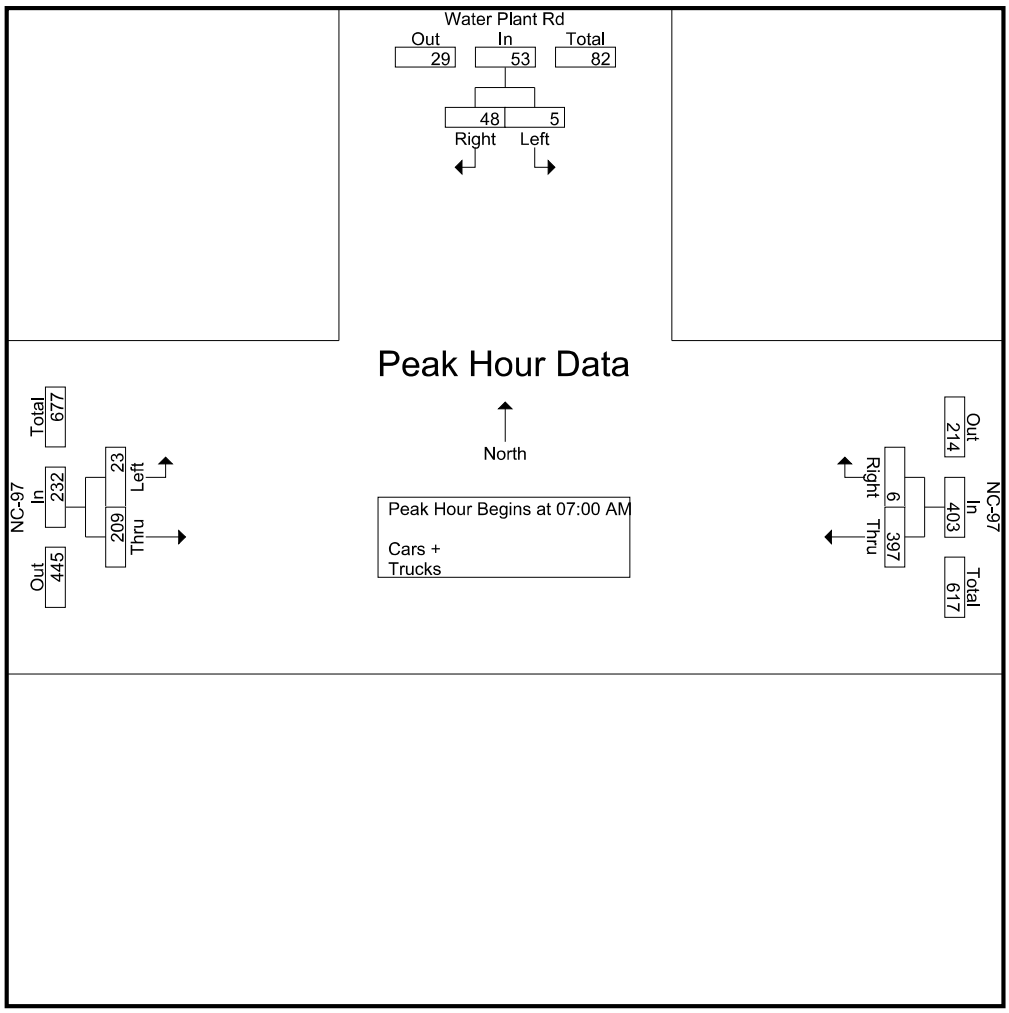
Groups Printed- Cars + - Trucks

	Water Plant Rd Southbound			NC-97 Westbound			NC-97 Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
07:00 AM	21	1	22	0	131	131	26	4	30	183
07:15 AM	10	0	10	2	83	85	59	7	66	161
07:30 AM	9	1	10	2	87	89	57	8	65	164
07:45 AM	8	3	11	2	96	98	67	4	71	180
Total	48	5	53	6	397	403	209	23	232	688
08:00 AM	3	4	7	2	89	91	53	1	54	152
08:15 AM	4	3	7	4	79	83	45	3	48	138
08:30 AM	7	3	10	4	80	84	42	1	43	137
08:45 AM	6	1	7	3	56	59	41	5	46	112
Total	20	11	31	13	304	317	181	10	191	539
Grand Total	68	16	84	19	701	720	390	33	423	1227
Apprch %	81	19		2.6	97.4		92.2	7.8		
Total %	5.5	1.3	6.8	1.5	57.1	58.7	31.8	2.7	34.5	
Cars +	67	15	82	17	670	687	367	29	396	1165
% Cars +	98.5	93.8	97.6	89.5	95.6	95.4	94.1	87.9	93.6	94.9
Trucks	1	1	2	2	31	33	23	4	27	62
% Trucks	1.5	6.2	2.4	10.5	4.4	4.6	5.9	12.1	6.4	5.1

TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon (Water Plant Rd and NC-97)
Site Code :
Start Date : 5/12/2022
Page No : 2

	Water Plant Rd Southbound			NC-97 Westbound			NC-97 Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	**21**	1	**22**	0	**131**	**131**	26	4	30	**183**
07:15 AM	10	0	10	**2**	83	85	59	7	66	161
07:30 AM	9	1	10	2	87	89	57	**8**	65	164
07:45 AM	8	**3**	11	2	96	98	**67**	4	**71**	180
Total Volume	48	5	53	6	397	403	209	23	232	688
% App. Total	90.6	9.4		1.5	98.5		90.1	9.9		
PHF	.571	.417	.602	.750	.758	.769	.780	.719	.817	.940



TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon (Water Plant Rd and NC-97)
Site Code :
Start Date : 5/12/2022
Page No : 1

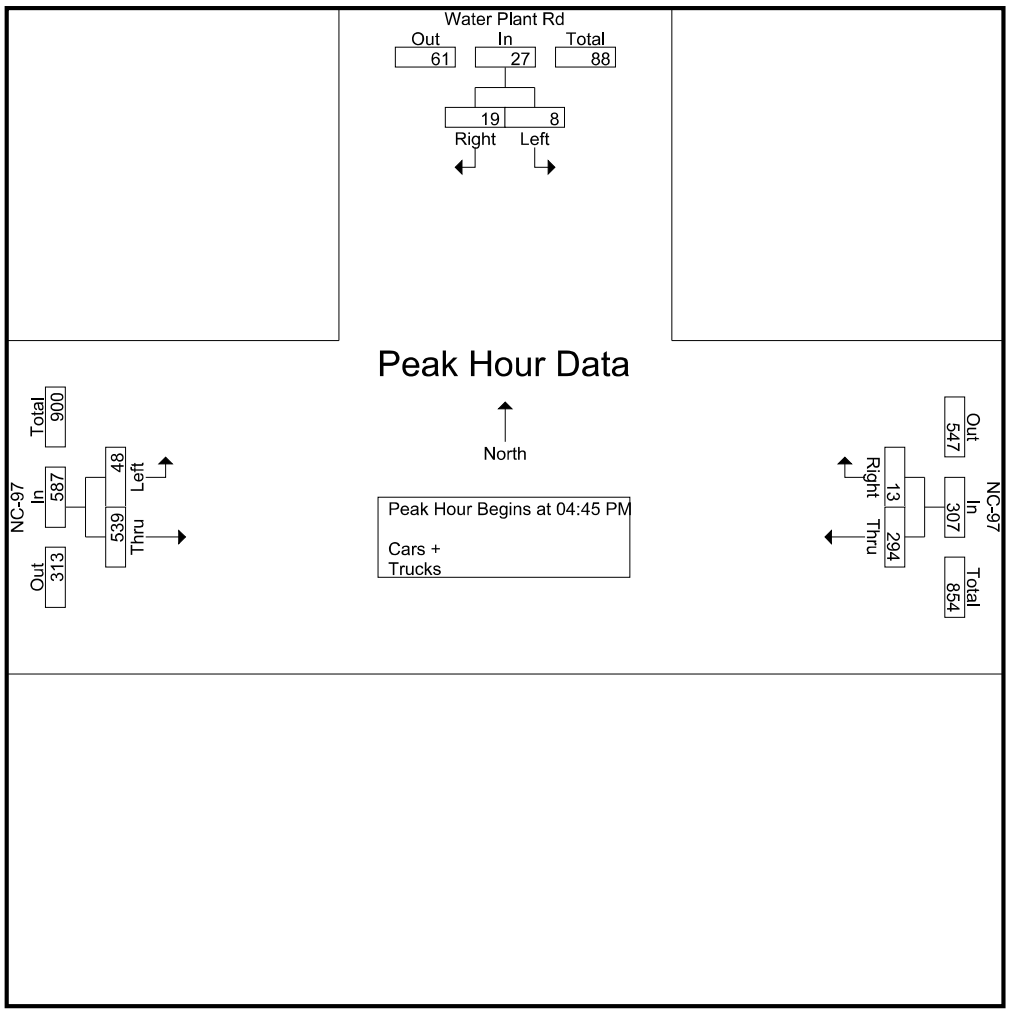
Groups Printed- Cars + - Trucks

	Water Plant Rd Southbound			NC-97 Westbound			NC-97 Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
04:00 PM	6	2	8	2	78	80	86	6	92	180
04:15 PM	3	2	5	3	71	74	103	8	111	190
04:30 PM	7	2	9	1	67	68	104	10	114	191
04:45 PM	1	2	3	4	85	89	125	16	141	233
Total	17	8	25	10	301	311	418	40	458	794
05:00 PM	9	2	11	2	71	73	142	12	154	238
05:15 PM	7	0	7	3	69	72	145	6	151	230
05:30 PM	2	4	6	4	69	73	127	14	141	220
05:45 PM	6	5	11	1	55	56	116	18	134	201
Total	24	11	35	10	264	274	530	50	580	889
Grand Total	41	19	60	20	565	585	948	90	1038	1683
Apprch %	68.3	31.7		3.4	96.6		91.3	8.7		
Total %	2.4	1.1	3.6	1.2	33.6	34.8	56.3	5.3	61.7	
Cars +	40	19	59	20	548	568	925	90	1015	1642
% Cars +	97.6	100	98.3	100	97	97.1	97.6	100	97.8	97.6
Trucks	1	0	1	0	17	17	23	0	23	41
% Trucks	2.4	0	1.7	0	3	2.9	2.4	0	2.2	2.4

TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon (Water Plant Rd and NC-97)
Site Code :
Start Date : 5/12/2022
Page No : 2

	Water Plant Rd Southbound			NC-97 Westbound			NC-97 Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	1	2	3	**4**	**85**	**89**	125	**16**	141	233
05:00 PM	**9**	2	**11**	2	71	73	142	12	**154**	**238**
05:15 PM	7	0	7	3	69	72	**145**	6	151	230
05:30 PM	2	**4**	6	4	69	73	127	14	141	220
Total Volume	19	8	27	13	294	307	539	48	587	921
% App. Total	70.4	29.6		4.2	95.8		91.8	8.2		
PHF	.528	.500	.614	.813	.865	.862	.929	.750	.953	.967



TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon(Green Pace Rd and NC-97)
Site Code :
Start Date : 5/12/2022
Page No : 1

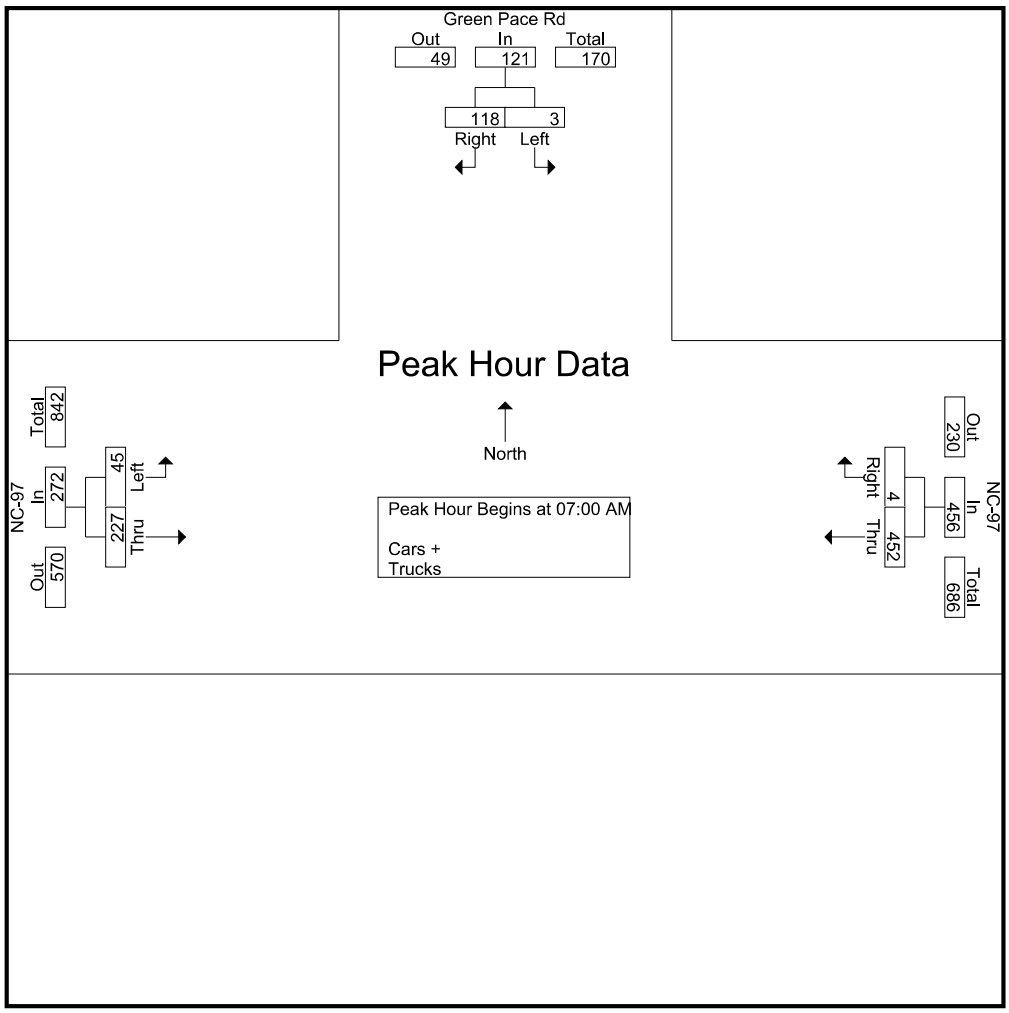
Groups Printed- Cars + - Trucks

	Green Pace Rd Southbound			NC-97 Westbound			NC-97 Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
07:00 AM	29	0	29	1	153	154	32	7	39	222
07:15 AM	39	2	41	2	95	97	62	10	72	210
07:30 AM	29	1	30	1	97	98	62	15	77	205
07:45 AM	21	0	21	0	107	107	71	13	84	212
Total	118	3	121	4	452	456	227	45	272	849
08:00 AM	15	0	15	0	96	96	44	12	56	167
08:15 AM	19	1	20	0	81	81	42	15	57	158
08:30 AM	18	0	18	0	92	92	42	12	54	164
08:45 AM	26	0	26	1	63	64	41	26	67	157
Total	78	1	79	1	332	333	169	65	234	646
Grand Total	196	4	200	5	784	789	396	110	506	1495
Apprch %	98	2		0.6	99.4		78.3	21.7		
Total %	13.1	0.3	13.4	0.3	52.4	52.8	26.5	7.4	33.8	
Cars +	195	4	199	5	769	774	385	109	494	1467
% Cars +	99.5	100	99.5	100	98.1	98.1	97.2	99.1	97.6	98.1
Trucks	1	0	1	0	15	15	11	1	12	28
% Trucks	0.5	0	0.5	0	1.9	1.9	2.8	0.9	2.4	1.9

TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon(Green Pace Rd and NC-97)
Site Code :
Start Date : 5/12/2022
Page No : 2

	Green Pace Rd Southbound			NC-97 Westbound			NC-97 Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 07:00 AM										
07:00 AM	29	0	29	1	**153**	**154**	32	7	39	**222**
07:15 AM	**39**	**2**	**41**	**2**	95	97	62	10	72	210
07:30 AM	29	1	30	1	97	98	62	**15**	77	205
07:45 AM	21	0	21	0	107	107	**71**	13	**84**	212
Total Volume	118	3	121	4	452	456	227	45	272	849
% App. Total	97.5	2.5		0.9	99.1		83.5	16.5		
PHF	.756	.375	.738	.500	.739	.740	.799	.750	.810	.956



TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon(Green Pace Rd and NC-97)
Site Code :
Start Date : 5/12/2022
Page No : 1

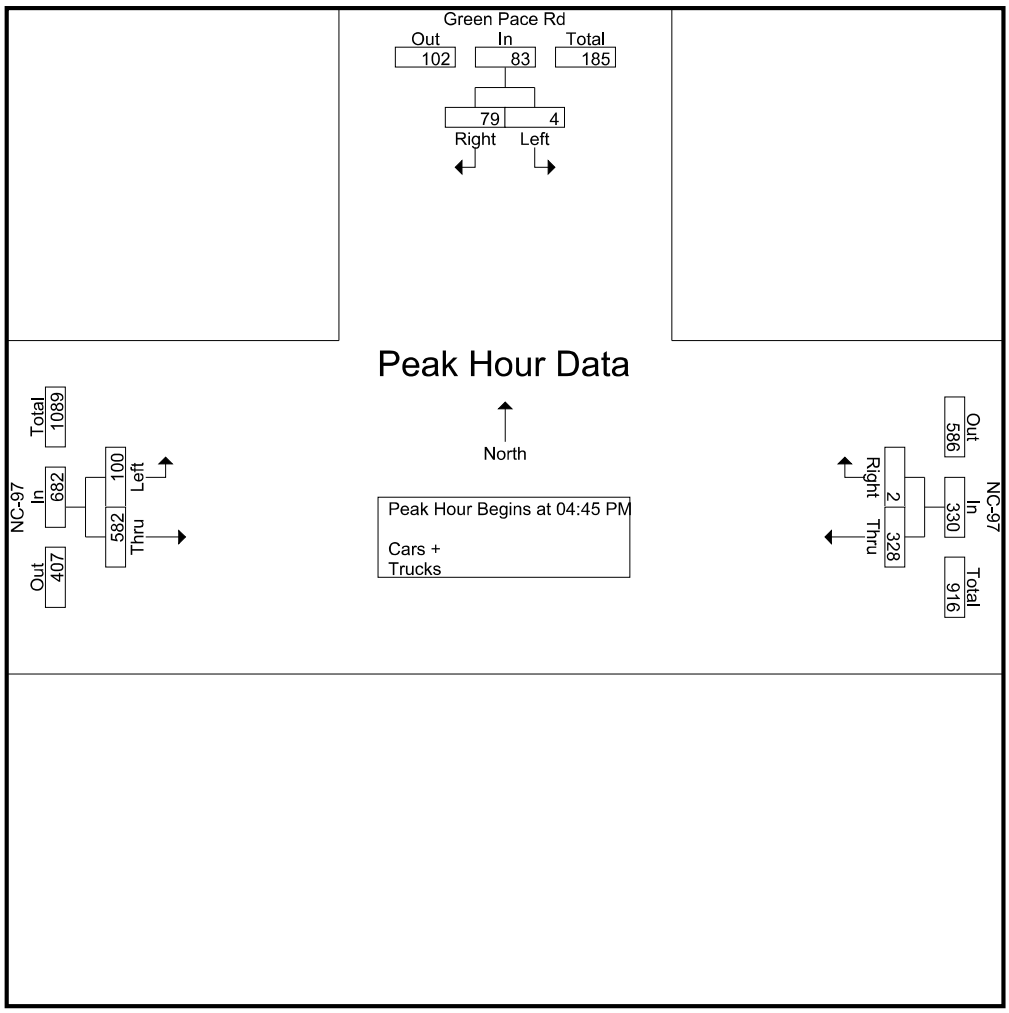
Groups Printed- Cars + - Trucks

	Green Pace Rd Southbound			NC-97 Westbound			NC-97 Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
04:00 PM	15	2	17	0	82	82	98	13	111	210
04:15 PM	24	0	24	0	76	76	118	25	143	243
04:30 PM	30	0	30	1	78	79	137	15	152	261
04:45 PM	29	0	29	0	89	89	148	20	168	286
Total	98	2	100	1	325	326	501	73	574	1000
05:00 PM	16	1	17	1	80	81	139	32	171	269
05:15 PM	19	2	21	0	82	82	144	29	173	276
05:30 PM	15	1	16	1	77	78	151	19	170	264
05:45 PM	18	0	18	0	62	62	133	22	155	235
Total	68	4	72	2	301	303	567	102	669	1044
Grand Total	166	6	172	3	626	629	1068	175	1243	2044
Apprch %	96.5	3.5		0.5	99.5		85.9	14.1		
Total %	8.1	0.3	8.4	0.1	30.6	30.8	52.3	8.6	60.8	
Cars +	166	6	172	3	619	622	1051	175	1226	2020
% Cars +	100	100	100	100	98.9	98.9	98.4	100	98.6	98.8
Trucks	0	0	0	0	7	7	17	0	17	24
% Trucks	0	0	0	0	1.1	1.1	1.6	0	1.4	1.2

TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon(Green Pace Rd and NC-97)
Site Code :
Start Date : 5/12/2022
Page No : 2

	Green Pace Rd Southbound			NC-97 Westbound			NC-97 Eastbound			
Start Time	Right	Left	App. Total	Right	Thru	App. Total	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1										
Peak Hour for Entire Intersection Begins at 04:45 PM										
04:45 PM	**29**	0	**29**	0	**89**	**89**	148	20	168	**286**
05:00 PM	16	1	17	**1**	80	81	139	**32**	171	269
05:15 PM	19	**2**	21	0	82	82	144	29	**173**	276
05:30 PM	15	1	16	1	77	78	**151**	19	170	264
Total Volume	79	4	83	2	328	330	582	100	682	1095
% App. Total	95.2	4.8		0.6	99.4		85.3	14.7		
PHF	.681	.500	.716	.500	.921	.927	.964	.781	.986	.957



TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon(N Arendell Ave and Green Pace Rd)
Site Code :
Start Date : 5/12/2022
Page No : 1

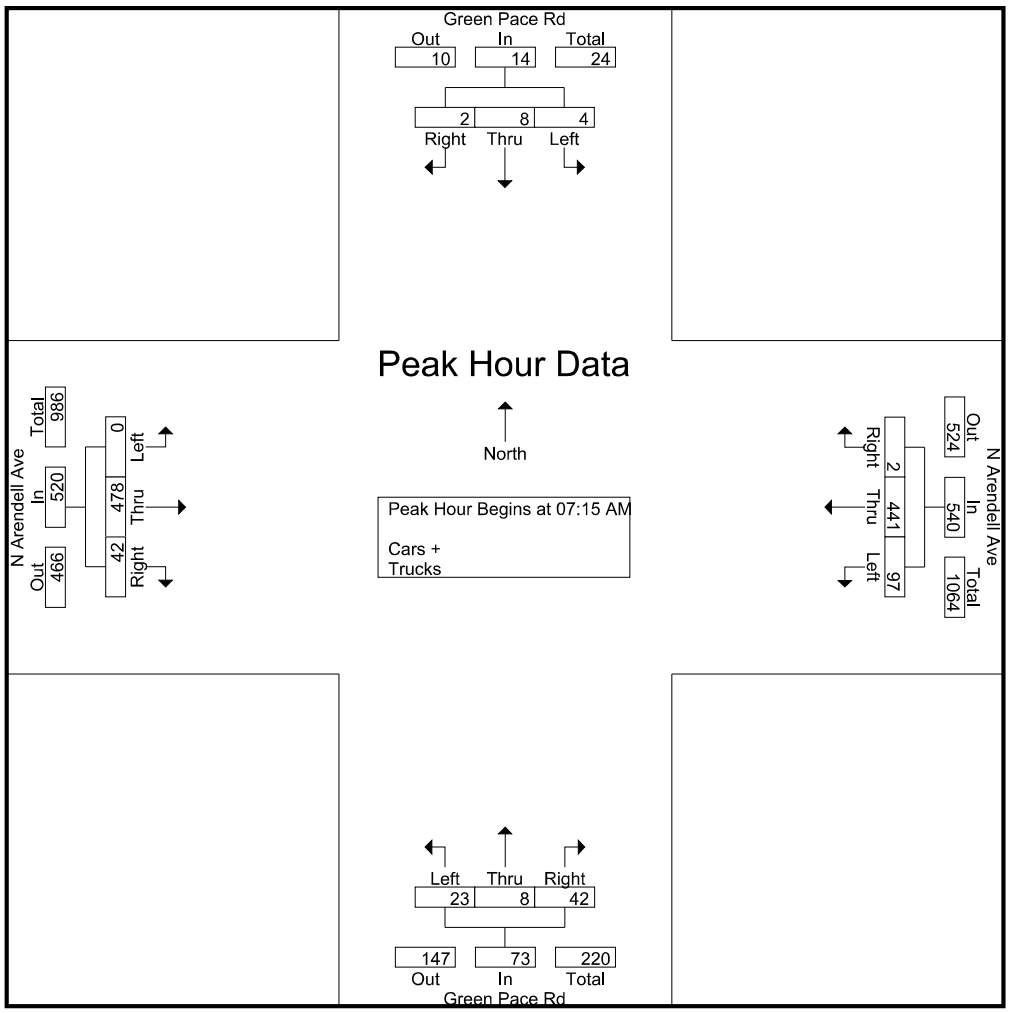
Groups Printed- Cars + - Trucks

	Green Pace Rd Southbound				N Arendell Ave Westbound				Green Pace Rd Northbound				N Arendell Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00 AM	0	6	1	7	0	101	12	113	0	0	0	0	0	0	0	0	120
07:15 AM	2	4	1	7	1	94	24	119	9	0	6	15	13	127	0	140	281
07:30 AM	0	2	1	3	0	93	20	113	18	4	9	31	23	125	0	148	295
07:45 AM	0	2	2	4	0	130	28	158	6	1	2	9	3	108	0	111	282
Total	2	14	5	21	1	418	84	503	33	5	17	55	39	360	0	399	978
08:00 AM	0	0	0	0	1	124	25	150	9	3	6	18	3	118	0	121	289
08:15 AM	0	6	0	6	6	92	18	116	8	4	1	13	5	116	0	121	256
08:30 AM	1	7	1	9	2	86	21	109	13	4	6	23	19	97	0	116	257
08:45 AM	0	0	0	0	0	93	15	108	12	4	22	38	32	110	0	142	288
Total	1	13	1	15	9	395	79	483	42	15	35	92	59	441	0	500	1090
Grand Total	3	27	6	36	10	813	163	986	75	20	52	147	98	801	0	899	2068
Apprch %	8.3	75	16.7		1	82.5	16.5		51	13.6	35.4		10.9	89.1	0		
Total %	0.1	1.3	0.3	1.7	0.5	39.3	7.9	47.7	3.6	1	2.5	7.1	4.7	38.7	0	43.5	
Cars +	3	24	6	33	10	744	152	906	72	18	46	136	89	745	0	834	1909
% Cars +	100	88.9	100	91.7	100	91.5	93.3	91.9	96	90	88.5	92.5	90.8	93	0	92.8	92.3
Trucks	0	3	0	3	0	69	11	80	3	2	6	11	9	56	0	65	159
% Trucks	0	11.1	0	8.3	0	8.5	6.7	8.1	4	10	11.5	7.5	9.2	7	0	7.2	7.7

TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon(N Arendell Ave and Green Pace Rd)
Site Code :
Start Date : 5/12/2022
Page No : 2

	Green Pace Rd Southbound				N Arendell Ave Westbound				Green Pace Rd Northbound				N Arendell Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:15 AM																	
07:15 AM	**2**	**4**	1	**7**	**1**	94	24	119	9	0	6	15	13	**127**	0	140	281
07:30 AM	0	2	1	3	0	93	20	113	**18**	**4**	**9**	**31**	**23**	125	0	**148**	**295**
07:45 AM	0	2	**2**	4	0	**130**	**28**	**158**	6	1	2	9	3	108	0	111	282
08:00 AM	0	0	0	0	1	124	25	150	9	3	6	18	3	118	0	121	289
Total Volume	2	8	4	14	2	441	97	540	42	8	23	73	42	478	0	520	1147
% App. Total	14.3	57.1	28.6		0.4	81.7	18		57.5	11	31.5		8.1	91.9	0		
PHF	.250	.500	.500	.500	.500	.848	.866	.854	.583	.500	.639	.589	.457	.941	.000	.878	.972



TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon(N Arendell Ave and Green Pace Rd)
Site Code :
Start Date : 5/12/2022
Page No : 1

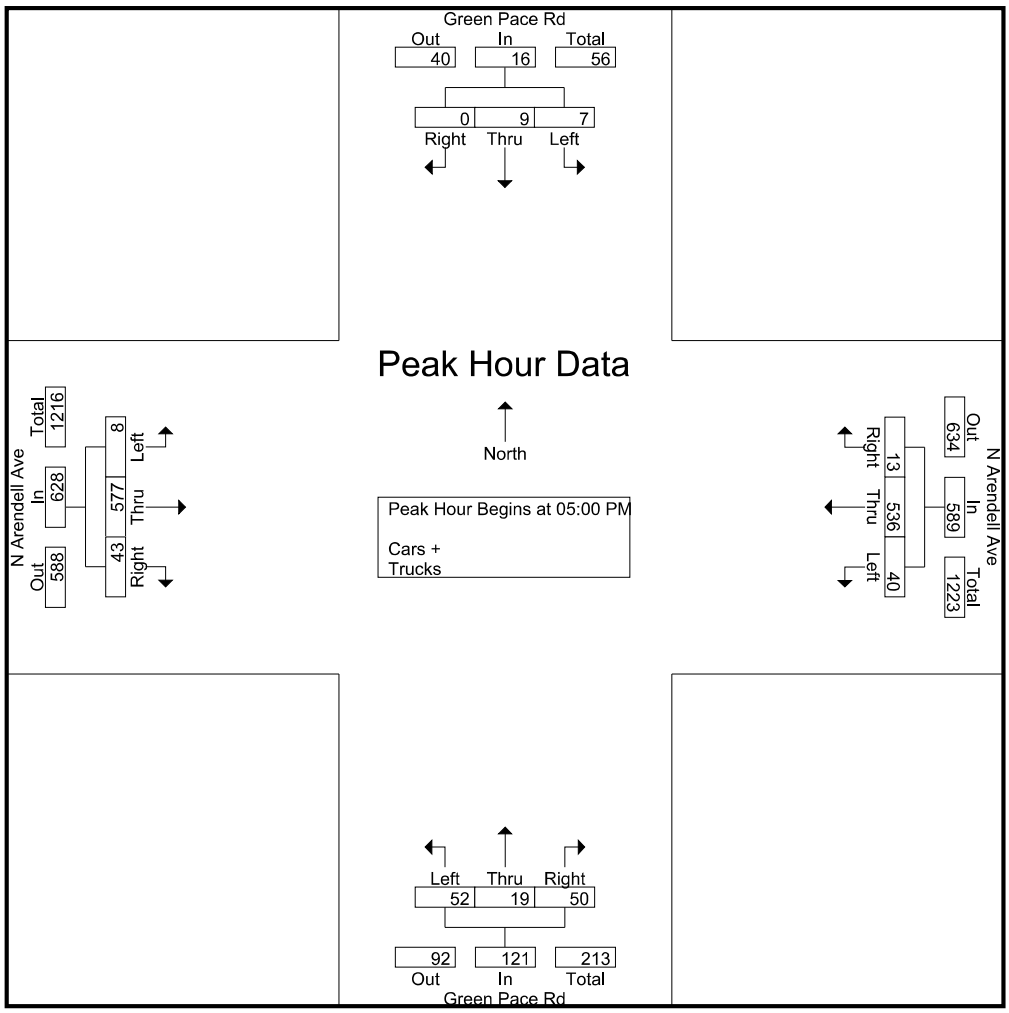
Groups Printed- Cars + - Trucks

	Green Pace Rd Southbound				N Arendell Ave Westbound				Green Pace Rd Northbound				N Arendell Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	0	1	0	1	1	117	18	136	30	3	5	38	31	125	0	156	331
04:15 PM	6	4	0	10	9	136	10	155	9	2	4	15	8	113	4	125	305
04:30 PM	1	7	0	8	10	129	19	158	16	5	4	25	17	67	4	88	279
04:45 PM	1	5	2	8	6	133	9	148	17	2	3	22	11	121	3	135	313
Total	8	17	2	27	26	515	56	597	72	12	16	100	67	426	11	504	1228
05:00 PM	0	2	1	3	3	122	1	126	22	6	17	45	12	139	2	153	327
05:15 PM	0	0	1	1	4	131	10	145	11	4	12	27	9	144	3	156	329
05:30 PM	0	3	1	4	3	140	17	160	9	3	11	23	13	145	0	158	345
05:45 PM	0	4	4	8	3	143	12	158	8	6	12	26	9	149	3	161	353
Total	0	9	7	16	13	536	40	589	50	19	52	121	43	577	8	628	1354
Grand Total	8	26	9	43	39	1051	96	1186	122	31	68	221	110	1003	19	1132	2582
Apprch %	18.6	60.5	20.9		3.3	88.6	8.1		55.2	14	30.8		9.7	88.6	1.7		
Total %	0.3	1	0.3	1.7	1.5	40.7	3.7	45.9	4.7	1.2	2.6	8.6	4.3	38.8	0.7	43.8	
Cars +	8	26	8	42	39	1017	95	1151	120	31	68	219	104	951	19	1074	2486
% Cars +	100	100	88.9	97.7	100	96.8	99	97	98.4	100	100	99.1	94.5	94.8	100	94.9	96.3
Trucks	0	0	1	1	0	34	1	35	2	0	0	2	6	52	0	58	96
% Trucks	0	0	11.1	2.3	0	3.2	1	3	1.6	0	0	0.9	5.5	5.2	0	5.1	3.7

TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon(N Arendell Ave and Green Pace Rd)
Site Code :
Start Date : 5/12/2022
Page No : 2

	Green Pace Rd Southbound				N Arendell Ave Westbound				Green Pace Rd Northbound				N Arendell Ave Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	2	1	3	3	122	1	126	**22**	**6**	**17**	**45**	12	139	2	153	327
05:15 PM	0	0	1	1	**4**	131	10	145	11	4	12	27	9	144	**3**	156	329
05:30 PM	0	3	1	4	3	140	**17**	**160**	9	3	11	23	**13**	145	0	158	345
05:45 PM	0	**4**	**4**	**8**	3	**143**	12	158	8	6	12	26	9	**149**	3	**161**	**353**
Total Volume	0	9	7	16	13	536	40	589	50	19	52	121	43	577	8	628	1354
% App. Total	0	56.2	43.8		2.2	91	6.8		41.3	15.7	43		6.8	91.9	1.3		
PHF	.000	.563	.438	.500	.813	.937	.588	.920	.568	.792	.765	.672	.827	.968	.667	.975	.959



TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon(NC 97 and Marshburn)
Site Code :
Start Date : 5/12/2022
Page No : 1

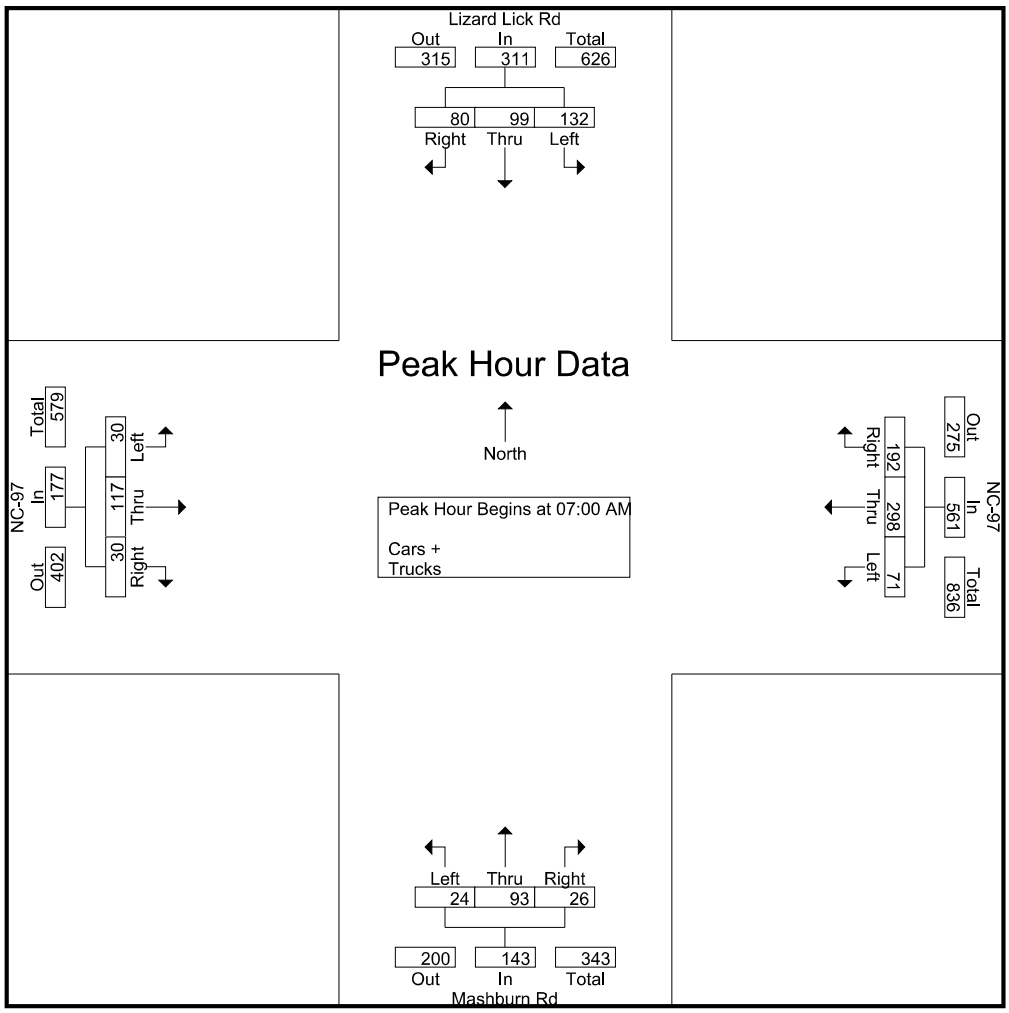
Groups Printed- Cars + - Trucks

	Lizard Lick Rd Southbound				NC-97 Westbound				Mashburn Rd Northbound				NC-97 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
07:00 AM	17	11	22	50	66	101	9	176	6	19	7	32	3	15	7	25	283
07:15 AM	17	29	28	74	54	61	26	141	5	27	4	36	6	46	10	62	313
07:30 AM	24	23	36	83	29	74	18	121	10	26	4	40	9	28	6	43	287
07:45 AM	22	36	46	104	43	62	18	123	5	21	9	35	12	28	7	47	309
Total	80	99	132	311	192	298	71	561	26	93	24	143	30	117	30	177	1192
08:00 AM	14	32	27	73	32	60	14	106	5	29	10	44	7	28	8	43	266
08:15 AM	8	27	17	52	38	44	14	96	12	19	5	36	11	27	8	46	230
08:30 AM	13	25	28	66	38	50	17	105	8	20	1	29	4	24	10	38	238
08:45 AM	8	28	30	66	23	45	16	84	13	29	6	48	5	29	6	40	238
Total	43	112	102	257	131	199	61	391	38	97	22	157	27	108	32	167	972
Grand Total	123	211	234	568	323	497	132	952	64	190	46	300	57	225	62	344	2164
Apprch %	21.7	37.1	41.2		33.9	52.2	13.9		21.3	63.3	15.3		16.6	65.4	18		
Total %	5.7	9.8	10.8	26.2	14.9	23	6.1	44	3	8.8	2.1	13.9	2.6	10.4	2.9	15.9	
Cars +	119	198	218	535	314	477	130	921	63	184	45	292	55	207	57	319	2067
% Cars +	96.7	93.8	93.2	94.2	97.2	96	98.5	96.7	98.4	96.8	97.8	97.3	96.5	92	91.9	92.7	95.5
Trucks	4	13	16	33	9	20	2	31	1	6	1	8	2	18	5	25	97
% Trucks	3.3	6.2	6.8	5.8	2.8	4	1.5	3.3	1.6	3.2	2.2	2.7	3.5	8	8.1	7.3	4.5

TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon(NC 97 and Marshburn)
Site Code :
Start Date : 5/12/2022
Page No : 2

	Lizard Lick Rd Southbound				NC-97 Westbound				Mashburn Rd Northbound				NC-97 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:00 AM																	
07:00 AM	17	11	22	50	**66**	**101**	9	**176**	6	19	7	32	3	15	7	25	283
07:15 AM	17	29	28	74	54	61	**26**	141	5	**27**	4	36	6	**46**	**10**	**62**	**313**
07:30 AM	**24**	23	36	83	29	74	18	121	**10**	26	4	**40**	9	28	6	43	287
07:45 AM	22	**36**	**46**	**104**	43	62	18	123	5	21	**9**	35	**12**	28	7	47	309
Total Volume	80	99	132	311	192	298	71	561	26	93	24	143	30	117	30	177	1192
% App. Total	25.7	31.8	42.4		34.2	53.1	12.7		18.2	65	16.8		16.9	66.1	16.9		
PHF	.833	.688	.717	.748	.727	.738	.683	.797	.650	.861	.667	.894	.625	.636	.750	.714	.952



TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon(NC 97 and Marshburn)
Site Code :
Start Date : 5/12/2022
Page No : 1

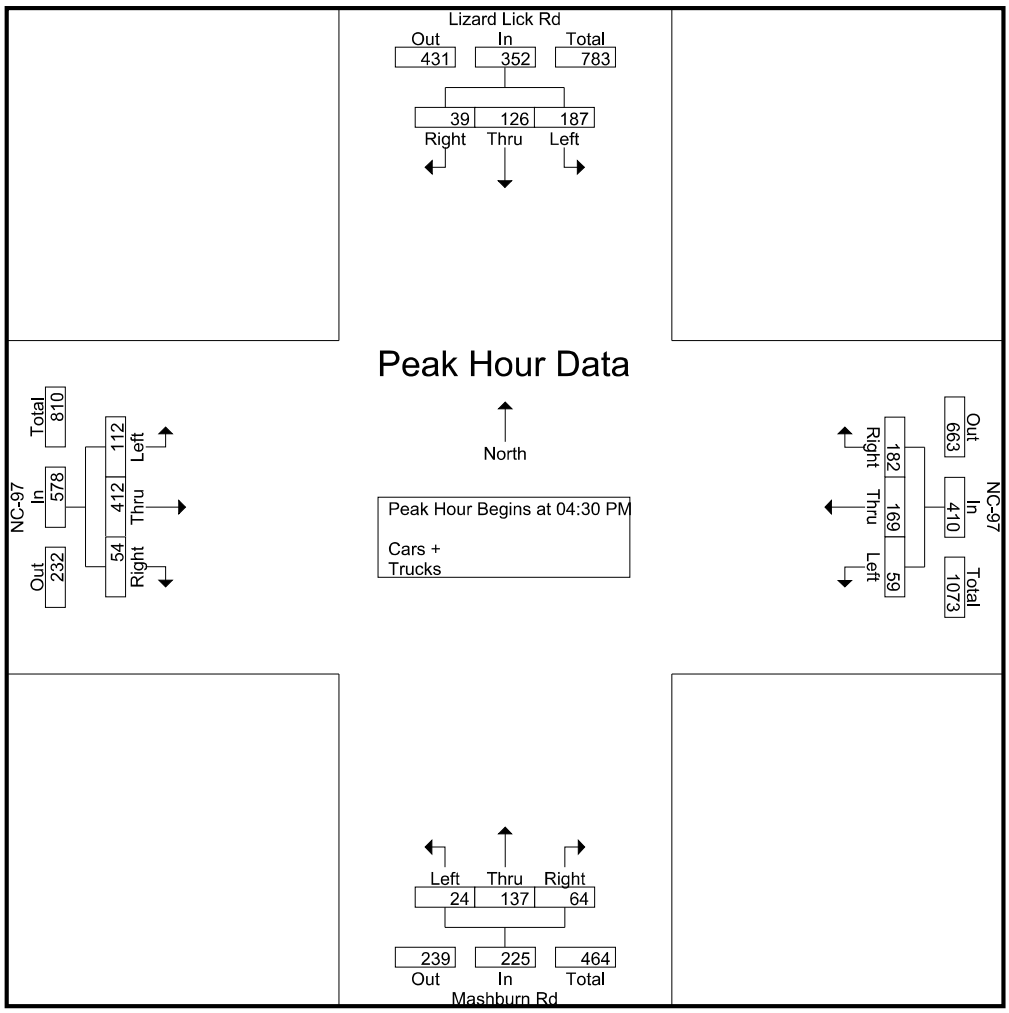
Groups Printed- Cars + - Trucks

	Lizard Lick Rd Southbound				NC-97 Westbound				Mashburn Rd Northbound				NC-97 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
04:00 PM	11	41	40	92	35	47	10	92	15	41	6	62	8	60	18	86	332
04:15 PM	8	27	46	81	35	56	6	97	13	38	7	58	5	89	23	117	353
04:30 PM	11	39	53	103	44	46	14	104	6	29	4	39	11	97	29	137	383
04:45 PM	8	31	54	93	50	46	19	115	16	30	3	49	12	91	24	127	384
Total	38	138	193	369	164	195	49	408	50	138	20	208	36	337	94	467	1452
05:00 PM	11	36	46	93	46	40	11	97	17	36	7	60	19	110	32	161	411
05:15 PM	9	20	34	63	42	37	15	94	25	42	10	77	12	114	27	153	387
05:30 PM	15	46	56	117	32	49	10	91	17	33	2	52	8	91	14	113	373
05:45 PM	12	32	47	91	29	31	14	74	16	35	12	63	7	100	15	122	350
Total	47	134	183	364	149	157	50	356	75	146	31	252	46	415	88	549	1521
Grand Total	85	272	376	733	313	352	99	764	125	284	51	460	82	752	182	1016	2973
Apprch %	11.6	37.1	51.3		41	46.1	13		27.2	61.7	11.1		8.1	74	17.9		
Total %	2.9	9.1	12.6	24.7	10.5	11.8	3.3	25.7	4.2	9.6	1.7	15.5	2.8	25.3	6.1	34.2	
Cars +	85	264	365	714	306	338	97	741	125	280	50	455	82	737	175	994	2904
% Cars +	100	97.1	97.1	97.4	97.8	96	98	97	100	98.6	98	98.9	100	98	96.2	97.8	97.7
Trucks	0	8	11	19	7	14	2	23	0	4	1	5	0	15	7	22	69
% Trucks	0	2.9	2.9	2.6	2.2	4	2	3	0	1.4	2	1.1	0	2	3.8	2.2	2.3

TRAFFIC DATA COLLECTION

File Name : Zebulon-Zebulon(NC 97 and Marshburn)
Site Code :
Start Date : 5/12/2022
Page No : 2

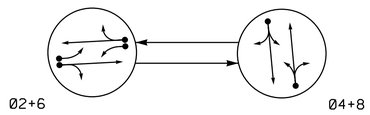
	Lizard Lick Rd Southbound				NC-97 Westbound				Mashburn Rd Northbound				NC-97 Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 04:30 PM																	
04:30 PM	**11**	**39**	53	**103**	44	**46**	14	104	6	29	4	39	11	97	29	137	383
04:45 PM	8	31	**54**	93	**50**	46	**19**	**115**	16	30	3	49	12	91	24	127	384
05:00 PM	11	36	46	93	46	40	11	97	17	36	7	60	**19**	110	**32**	**161**	**411**
05:15 PM	9	20	34	63	42	37	15	94	**25**	**42**	**10**	**77**	12	**114**	27	153	387
Total Volume	39	126	187	352	182	169	59	410	64	137	24	225	54	412	112	578	1565
% App. Total	11.1	35.8	53.1		44.4	41.2	14.4		28.4	60.9	10.7		9.3	71.3	19.4		
PHF	.886	.808	.866	.854	.910	.918	.776	.891	.640	.815	.600	.731	.711	.904	.875	.898	.952



Appendix C – Traffic Signal Plans

PROJECT REFERENCE NO.	SHEET NO.
U-5118EM	Sig. 1.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

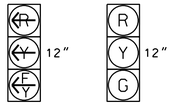
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 02+6	PHASE 04+8	PHASE FLASH
21, 22	G	R	Y
23	~~F Y~~	~~R~~	~~Y~~
41, 42	R	G	R
61, 62	G	R	Y
63	~~F Y~~	~~R~~	~~Y~~
81, 82	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



23
63

21, 22
41, 42
61, 62
81, 82

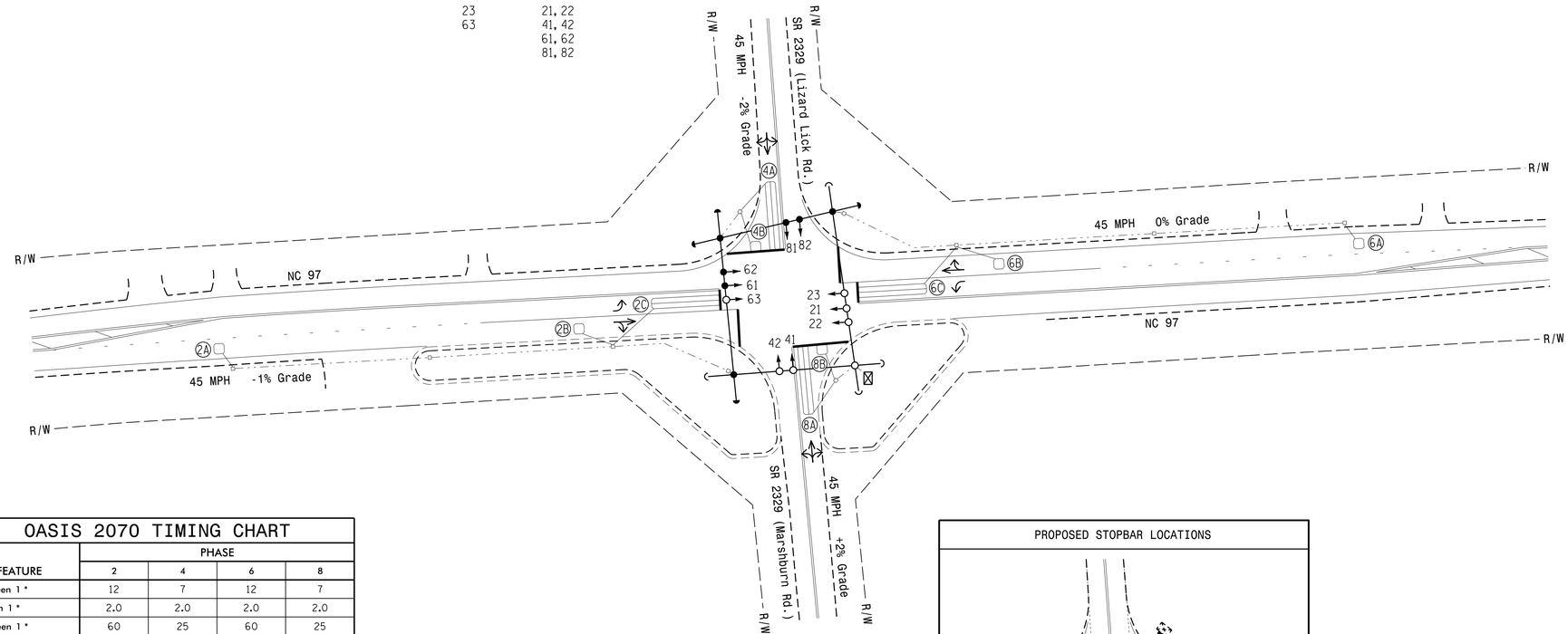
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A	6X6	300	5	Y	2	Y	Y	-	1.6	-	-	Y
2B	6X6	90	3	Y	2	Y	Y	-	-	-	-	Y
2C	6X40	0	2-4-2	Y	2	Y	Y	-	-	-	-	Y
4A	6X40	0	2-4-2	Y	4	Y	Y	-	-	5	-	Y
4B	6X6	0	3	Y	4	Y	Y	-	-	10	-	Y
6A	6X6	300	4	Y	6	Y	Y	-	1.6	-	-	Y
6B	6X6	90	3	Y	6	Y	Y	-	-	-	-	Y
6C	6X40	0	2-4-2	Y	6	Y	Y	-	-	-	-	Y
8A	6X40	0	2-4-2	Y	8	Y	Y	-	-	5	-	Y
8B	6X6	0	3	Y	8	Y	Y	-	-	10	-	Y

2 Phase
Fully Actuated
(Isolated)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Reposition existing signal heads numbered 61 and 62.
4. Set all detector units to presence mode.
5. Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.

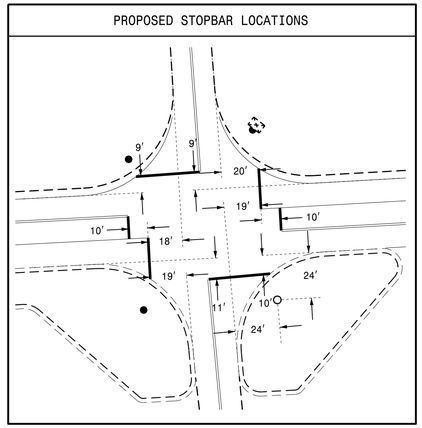


OASIS 2070 TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Min Green 1 *	12	7	12	7
Extension 1 *	2.0	2.0	2.0	2.0
Max Green 1 *	60	25	60	25
Yellow Clearance	4.6	4.7	4.6	4.3
Red Clearance	1.0	1.0	1.0	1.0
Red Revert	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	-	-	-	-
Max Variable Initial *	-	-	-	-
Time Before Reduction *	-	-	-	-
Time To Reduce *	-	-	-	-
Minimum Gap	-	-	-	-
Recall Mode	MIN RECALL	-	MIN RECALL	-
Vehicle Call Memory	YELLOW	-	YELLOW	-
Dual Entry	-	ON	-	ON
Simultaneous Gap	ON	ON	ON	ON

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

PROPOSED STOPBAR LOCATIONS



LEGEND

PROPOSED		EXISTING
○→	Traffic Signal Head	●→
◐→	Modified Signal Head	N/A
⊣	Sign	⊣
▭↓	Pedestrian Signal Head With Push Button & Sign	■↓
○—	Signal Pole with Guy	●—
○⌐	Signal Pole with Sidewalk Guy	●⌐
▭	Inductive Loop Detector	▭
⊠	Controller & Cabinet	⊠
□	Junction Box	■
·-·-·	2-in Underground Conduit	·-·-·
N/A	Right of Way	— — —
→	Directional Arrow	→

This plan supersedes the plan signed and sealed on 8/28/14.

Signal Upgrade

Prepared In the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

NC 97
at
SR 2329 (Marshburn Rd./
Lizard Lick Rd.)

Division 5 Wake County Lizard Lick

PLAN DATE: August 2014 REVIEWED BY:

PREPARED BY: R.N. Zinser REVIEWED BY:

REVISIONS	INIT.	DATE

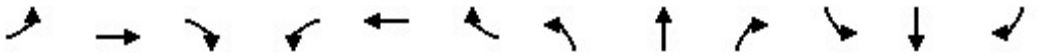
SCALE 0 40 1"=40'

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 036833 ENGINEER RYAN W. HOUGH
Ryan W. Hough 4/20/2015
630320FAA2654C3...
DATE

SIG. INVENTORY NO. 05-0740

Appendix D – Synchro Analysis Outputs

2022 Existing Traffic Volumes



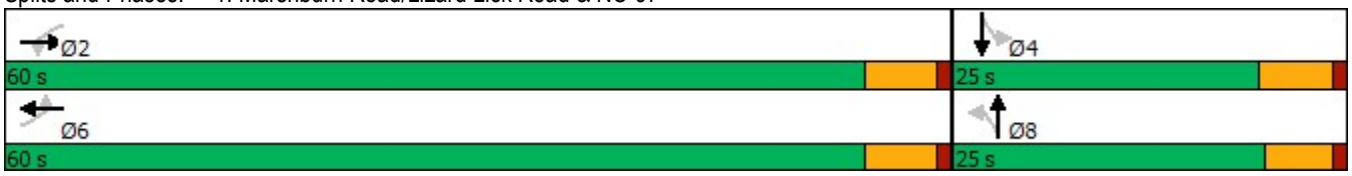
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	117	30	71	298	192	24	93	26	132	99	80
Future Volume (vph)	30	117	30	71	298	192	24	93	26	132	99	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			0%			2%			-2%	
Storage Length (ft)	300		0	275		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970			0.941			0.975			0.965	
Flt Protected	0.950			0.950				0.992			0.979	
Satd. Flow (prot)	1778	1816	0	1770	1753	0	0	1784	0	0	1777	0
Flt Permitted	0.277			0.654				0.911			0.800	
Satd. Flow (perm)	519	1816	0	1218	1753	0	0	1638	0	0	1452	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2404			3804			1375			1367	
Travel Time (s)		36.4			57.6			20.8			20.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	33	130	33	79	331	213	27	103	29	147	110	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	33	163	0	79	544	0	0	159	0	0	346	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.00	1.00	1.00	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	D.Pm	NA		D.Pm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	6	2		2	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	17.6		17.6	20.0		23.3	23.3		20.0	20.0	
Total Split (s)	60.0	60.0		60.0	60.0		25.0	25.0		25.0	25.0	
Total Split (%)	70.6%	70.6%		70.6%	70.6%		29.4%	29.4%		29.4%	29.4%	
Maximum Green (s)	54.4	54.4		54.4	54.4		19.7	19.7		19.3	19.3	
Yellow Time (s)	4.6	4.6		4.6	4.6		4.3	4.3		4.7	4.7	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-0.6	-0.6		-0.6	-0.6			-0.3			-0.7	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	20.3	20.3		20.3	20.3			20.3			20.3	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.40			0.40	
v/c Ratio	0.16	0.22		0.16	0.78			0.24			0.60	
Control Delay	10.9	10.1		9.8	21.3			13.6			20.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	10.9	10.1		9.8	21.3			13.6			20.2	
LOS	B	B		A	C			B			C	
Approach Delay		10.3			19.8			13.6			20.2	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	6	30		14	131			29			74	
Queue Length 95th (ft)	19	58		33	221			84			#225	
Internal Link Dist (ft)		2324			3724			1295			1287	
Turn Bay Length (ft)	300			275								
Base Capacity (vph)	509	1781		1194	1719			655			580	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.06	0.09		0.07	0.32			0.24			0.60	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 50.8
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 17.8 Intersection LOS: B
Intersection Capacity Utilization 74.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Marshburn Road/Lizard Lick Road & NC-97



Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	45	227	452	4	4	118
Future Vol, veh/h	45	227	452	4	4	118
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	252	502	4	4	131

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	506	0	-	0	856	504
Stage 1	-	-	-	-	504	-
Stage 2	-	-	-	-	352	-
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	1059	-	-	-	328	568
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	712	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1059	-	-	-	313	568
Mov Cap-2 Maneuver	-	-	-	-	313	-
Stage 1	-	-	-	-	578	-
Stage 2	-	-	-	-	712	-

Approach	EB	WB	SB
HCM Control Delay, s	1.4	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1059	-	-	-	553
HCM Lane V/C Ratio	0.047	-	-	-	0.245
HCM Control Delay (s)	8.6	-	-	-	13.6
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	1

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	23	209	397	6	5	48
Future Vol, veh/h	23	209	397	6	5	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	75	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	232	441	7	6	53

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	448	0	-	0	725	441
Stage 1	-	-	-	-	441	-
Stage 2	-	-	-	-	284	-
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	1112	-	-	-	392	616
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	764	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1112	-	-	-	381	616
Mov Cap-2 Maneuver	-	-	-	-	381	-
Stage 1	-	-	-	-	631	-
Stage 2	-	-	-	-	764	-

Approach	EB	WB	SB
HCM Control Delay, s	0.8	0	11.9
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1112	-	-	-	582
HCM Lane V/C Ratio	0.023	-	-	-	0.101
HCM Control Delay (s)	8.3	0	-	-	11.9
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.3

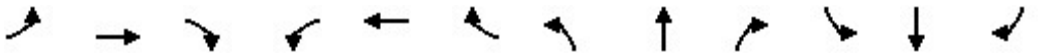
Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	23	8	42	4	8	4	97	441	4	4	478	42
Future Vol, veh/h	23	8	42	4	8	4	97	441	4	4	478	42
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	9	47	4	9	4	108	490	4	4	531	47

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1278	1273	555	1299	1294	492	578	0	0	494	0	0
Stage 1	563	563	-	708	708	-	-	-	-	-	-	-
Stage 2	715	710	-	591	586	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	143	167	531	138	163	577	996	-	-	1070	-	-
Stage 1	511	509	-	426	438	-	-	-	-	-	-	-
Stage 2	422	437	-	493	497	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	119	141	531	106	138	577	996	-	-	1070	-	-
Mov Cap-2 Maneuver	119	141	-	106	138	-	-	-	-	-	-	-
Stage 1	434	506	-	362	372	-	-	-	-	-	-	-
Stage 2	347	371	-	439	494	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	30.3	31	1.6	0.1
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	996	-	-	222	156	1070	-	-
HCM Lane V/C Ratio	0.108	-	-	0.365	0.114	0.004	-	-
HCM Control Delay (s)	9.1	0	-	30.3	31	8.4	0	-
HCM Lane LOS	A	A	-	D	D	A	A	-
HCM 95th %tile Q(veh)	0.4	-	-	1.6	0.4	0	-	-



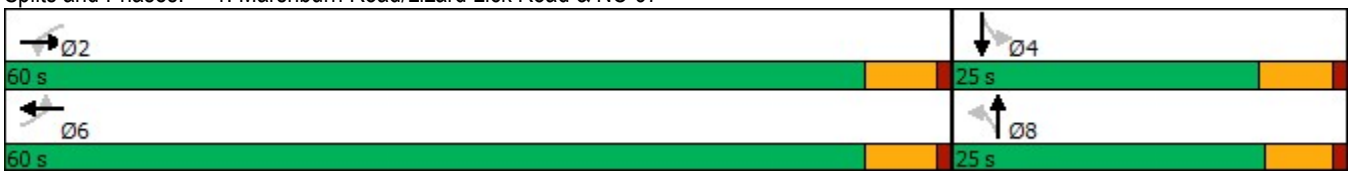
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	412	54	59	169	182	24	137	64	187	126	39
Future Volume (vph)	112	412	54	59	169	182	24	137	64	187	126	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			0%			2%			-2%	
Storage Length (ft)	300		0	275		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.922			0.962			0.985	
Flt Protected	0.950			0.950				0.995			0.974	
Satd. Flow (prot)	1778	1840	0	1770	1717	0	0	1765	0	0	1805	0
Flt Permitted	0.436			0.289				0.936			0.733	
Satd. Flow (perm)	816	1840	0	538	1717	0	0	1661	0	0	1358	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2404			3804			1375			1367	
Travel Time (s)		36.4			57.6			20.8			20.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	124	458	60	66	188	202	27	152	71	208	140	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	124	518	0	66	390	0	0	250	0	0	391	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.00	1.00	1.00	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	D.Pm	NA		D.Pm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	6	2		2	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	17.6		17.6	20.0		23.3	23.3		20.0	20.0	
Total Split (s)	60.0	60.0		60.0	60.0		25.0	25.0		25.0	25.0	
Total Split (%)	70.6%	70.6%		70.6%	70.6%		29.4%	29.4%		29.4%	29.4%	
Maximum Green (s)	54.4	54.4		54.4	54.4		19.7	19.7		19.3	19.3	
Yellow Time (s)	4.6	4.6		4.6	4.6		4.3	4.3		4.7	4.7	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-0.6	-0.6		-0.6	-0.6			-0.3			-0.7	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	18.6	18.6		18.6	18.6			20.2			20.2	
Actuated g/C Ratio	0.38	0.38		0.38	0.38			0.41			0.41	
v/c Ratio	0.40	0.74		0.32	0.60			0.36			0.70	
Control Delay	14.9	20.0		14.9	16.0			13.5			23.4	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	14.9	20.0		14.9	16.0			13.5			23.4	
LOS	B	B		B	B			B			C	
Approach Delay		19.0			15.9			13.5			23.4	
Approach LOS		B			B			B			C	
Queue Length 50th (ft)	24	120		13	84			44			83	
Queue Length 95th (ft)	57	203		36	147			119			#258	
Internal Link Dist (ft)		2324			3724			1295			1287	
Turn Bay Length (ft)	300			275								
Base Capacity (vph)	809	1824		533	1702			686			561	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.15	0.28		0.12	0.23			0.36			0.70	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 48.9
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 18.4 Intersection LOS: B
Intersection Capacity Utilization 83.4% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Marshburn Road/Lizard Lick Road & NC-97



Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	100	582	328	4	4	79
Future Vol, veh/h	100	582	328	4	4	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	647	364	4	4	88

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	368	0	-	0	1235	366
Stage 1	-	-	-	-	366	-
Stage 2	-	-	-	-	869	-
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	1191	-	-	-	195	679
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	410	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1191	-	-	-	177	679
Mov Cap-2 Maneuver	-	-	-	-	177	-
Stage 1	-	-	-	-	637	-
Stage 2	-	-	-	-	410	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	12.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1191	-	-	-	597
HCM Lane V/C Ratio	0.093	-	-	-	0.154
HCM Control Delay (s)	8.3	-	-	-	12.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.3	-	-	-	0.5

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	48	539	294	13	8	19
Future Vol, veh/h	48	539	294	13	8	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	75	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	53	599	327	14	9	21

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	341	0	-	0	1032	327
Stage 1	-	-	-	-	327	-
Stage 2	-	-	-	-	705	-
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	1218	-	-	-	258	714
Stage 1	-	-	-	-	731	-
Stage 2	-	-	-	-	490	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1218	-	-	-	241	714
Mov Cap-2 Maneuver	-	-	-	-	241	-
Stage 1	-	-	-	-	683	-
Stage 2	-	-	-	-	490	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	13.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1218	-	-	-	451
HCM Lane V/C Ratio	0.044	-	-	-	0.067
HCM Control Delay (s)	8.1	0	-	-	13.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.2

Intersection	
Int Delay, s/veh	8.7

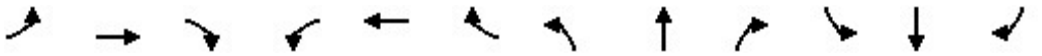
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		⇕			⇕			⇕			⇕	
Traffic Vol, veh/h	52	19	50	7	9	4	40	536	13	8	577	43
Future Vol, veh/h	52	19	50	7	9	4	40	536	13	8	577	43
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	58	21	56	8	10	4	44	596	14	9	641	48

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1381	1381	665	1413	1398	603	689	0	0	610	0	0
Stage 1	683	683	-	691	691	-	-	-	-	-	-	-
Stage 2	698	698	-	722	707	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	121	144	460	115	141	499	905	-	-	969	-	-
Stage 1	439	449	-	435	446	-	-	-	-	-	-	-
Stage 2	431	442	-	418	438	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	105	131	460	83	129	499	905	-	-	969	-	-
Mov Cap-2 Maneuver	105	131	-	83	129	-	-	-	-	-	-	-
Stage 1	407	442	-	403	413	-	-	-	-	-	-	-
Stage 2	386	409	-	345	431	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	87.8	40.6	0.6	0.1
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	905	-	-	162	123	969	-	-
HCM Lane V/C Ratio	0.049	-	-	0.83	0.181	0.009	-	-
HCM Control Delay (s)	9.2	0	-	87.8	40.6	8.8	0	-
HCM Lane LOS	A	A	-	F	E	A	A	-
HCM 95th %tile Q(veh)	0.2	-	-	5.6	0.6	0	-	-

2025 Background Traffic Volumes



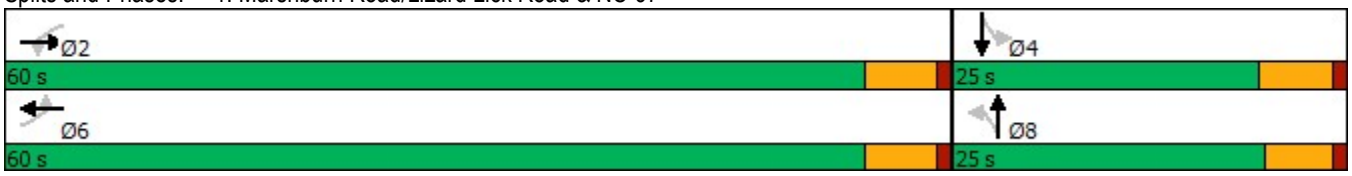
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	135	32	82	331	221	25	99	36	152	105	85
Future Volume (vph)	32	135	32	82	331	221	25	99	36	152	105	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			0%			2%			-2%	
Storage Length (ft)	300		0	275		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.971			0.940			0.970			0.967	
Flt Protected	0.950			0.950				0.992			0.978	
Satd. Flow (prot)	1778	1818	0	1770	1751	0	0	1774	0	0	1779	0
Flt Permitted	0.235			0.640				0.909			0.799	
Satd. Flow (perm)	440	1818	0	1192	1751	0	0	1626	0	0	1454	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2404			3804			1375			1367	
Travel Time (s)		36.4			57.6			20.8			20.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	36	150	36	91	368	246	28	110	40	169	117	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	186	0	91	614	0	0	178	0	0	380	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.00	1.00	1.00	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	D.Pm	NA		D.Pm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	6	2		2	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	17.6		17.6	20.0		23.3	23.3		20.0	20.0	
Total Split (s)	60.0	60.0		60.0	60.0		25.0	25.0		25.0	25.0	
Total Split (%)	70.6%	70.6%		70.6%	70.6%		29.4%	29.4%		29.4%	29.4%	
Maximum Green (s)	54.4	54.4		54.4	54.4		19.7	19.7		19.3	19.3	
Yellow Time (s)	4.6	4.6		4.6	4.6		4.3	4.3		4.7	4.7	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-0.6	-0.6		-0.6	-0.6			-0.3			-0.7	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	23.6	23.6		23.6	23.6			20.4			20.4	
Actuated g/C Ratio	0.44	0.44		0.44	0.44			0.38			0.38	
v/c Ratio	0.19	0.24		0.18	0.81			0.29			0.69	
Control Delay	11.0	9.6		9.3	21.9			16.2			26.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	11.0	9.6		9.3	21.9			16.2			26.5	
LOS	B	A		A	C			B			C	
Approach Delay		9.8			20.3			16.2			26.5	
Approach LOS		A			C			B			C	
Queue Length 50th (ft)	7	35		16	158			38			99	
Queue Length 95th (ft)	21	64		37	259			107			#295	
Internal Link Dist (ft)		2324			3724			1295			1287	
Turn Bay Length (ft)	300			275								
Base Capacity (vph)	420	1736		1138	1672			612			547	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.09	0.11		0.08	0.37			0.29			0.69	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 54.2
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 19.8 Intersection LOS: B
Intersection Capacity Utilization 85.5% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Marshburn Road/Lizard Lick Road & NC-97



Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	69	252	513	4	4	131
Future Vol, veh/h	69	252	513	4	4	131
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	77	280	570	4	4	146

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	574	0	-	0	1006	572
Stage 1	-	-	-	-	572	-
Stage 2	-	-	-	-	434	-
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	999	-	-	-	267	520
Stage 1	-	-	-	-	565	-
Stage 2	-	-	-	-	653	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	999	-	-	-	246	520
Mov Cap-2 Maneuver	-	-	-	-	246	-
Stage 1	-	-	-	-	521	-
Stage 2	-	-	-	-	653	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	15.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	999	-	-	-	503
HCM Lane V/C Ratio	0.077	-	-	-	0.298
HCM Control Delay (s)	8.9	-	-	-	15.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.2	-	-	-	1.2

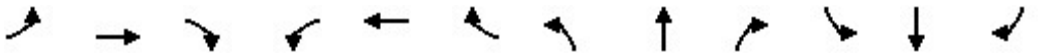
Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	230	446	6	5	59
Future Vol, veh/h	27	230	446	6	5	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	75	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	256	496	7	6	66

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	503	0	-	0	812	496
Stage 1	-	-	-	-	496	-
Stage 2	-	-	-	-	316	-
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	1061	-	-	-	348	574
Stage 1	-	-	-	-	612	-
Stage 2	-	-	-	-	739	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1061	-	-	-	337	574
Mov Cap-2 Maneuver	-	-	-	-	337	-
Stage 1	-	-	-	-	592	-
Stage 2	-	-	-	-	739	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	12.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1061	-	-	-	544
HCM Lane V/C Ratio	0.028	-	-	-	0.131
HCM Control Delay (s)	8.5	0	-	-	12.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4

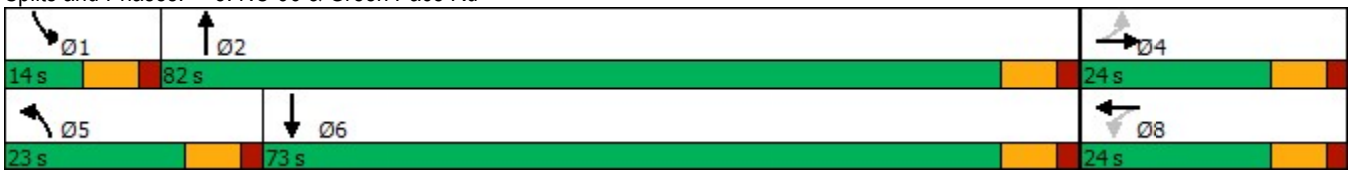


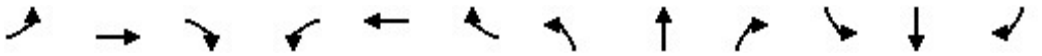
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	8	51	4	12	4	146	468	4	4	507	52
Future Volume (vph)	26	8	51	4	12	4	146	468	4	4	507	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	250		0	175		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.919			0.974			0.999			0.986	
Flt Protected		0.985			0.991		0.950			0.950		
Satd. Flow (prot)	0	1686	0	0	1798	0	1770	1861	0	1770	1837	0
Flt Permitted		0.890			0.940		0.950			0.950		
Satd. Flow (perm)	0	1524	0	0	1705	0	1770	1861	0	1770	1837	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		2127			364			1631			1393	
Travel Time (s)		32.2			5.5			31.8			27.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	29	9	57	4	13	4	162	520	4	4	563	58
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	95	0	0	21	0	162	524	0	4	621	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		14.0	20.0		14.0	20.0	
Total Split (s)	24.0	24.0		24.0	24.0		23.0	82.0		14.0	73.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%		19.2%	68.3%		11.7%	60.8%	
Maximum Green (s)	17.0	17.0		17.0	17.0		16.0	75.0		7.0	66.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		12.9			12.9		14.5	54.0		9.7	34.5	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.18			0.18		0.20	0.74		0.13	0.47	
v/c Ratio		0.36			0.07		0.46	0.38		0.02	0.72	
Control Delay		36.0			32.0		35.6	7.6		38.0	23.2	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		36.0			32.0		35.6	7.6		38.0	23.2	
LOS		D			C		D	A		D	C	
Approach Delay		36.0			32.0			14.2			23.3	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		39			8		67	82		2	232	
Queue Length 95th (ft)		103			32		160	263		13	421	
Internal Link Dist (ft)		2047			284			1551			1313	
Turn Bay Length (ft)							250			175		
Base Capacity (vph)		427			477		470	1740		235	1615	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.22			0.04		0.34	0.30		0.02	0.38	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 73.4			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay: 19.9		Intersection LOS: B	
Intersection Capacity Utilization 58.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: NC-96 & Green Pace Rd





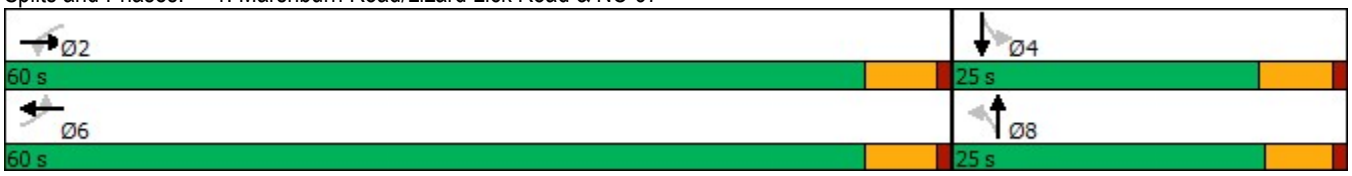
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	453	57	72	193	209	25	145	76	217	134	41
Future Volume (vph)	119	453	57	72	193	209	25	145	76	217	134	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			0%			2%			-2%	
Storage Length (ft)	300		0	275		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983			0.922			0.958			0.986	
Flt Protected	0.950			0.950				0.995			0.973	
Satd. Flow (prot)	1778	1840	0	1770	1717	0	0	1758	0	0	1805	0
Flt Permitted	0.382			0.256				0.932			0.701	
Satd. Flow (perm)	715	1840	0	477	1717	0	0	1647	0	0	1300	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2404			3804			1375			1367	
Travel Time (s)		36.4			57.6			20.8			20.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	132	503	63	80	214	232	28	161	84	241	149	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	566	0	80	446	0	0	273	0	0	436	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.00	1.00	1.00	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	D.Pm	NA		D.Pm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	6	2		2	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	17.6		17.6	20.0		23.3	23.3		20.0	20.0	
Total Split (s)	60.0	60.0		60.0	60.0		25.0	25.0		25.0	25.0	
Total Split (%)	70.6%	70.6%		70.6%	70.6%		29.4%	29.4%		29.4%	29.4%	
Maximum Green (s)	54.4	54.4		54.4	54.4		19.7	19.7		19.3	19.3	
Yellow Time (s)	4.6	4.6		4.6	4.6		4.3	4.3		4.7	4.7	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-0.6	-0.6		-0.6	-0.6			-0.3			-0.7	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	20.5	20.5		20.5	20.5			20.3			20.3	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.40			0.40	
v/c Ratio	0.46	0.77		0.42	0.65			0.42			0.84	
Control Delay	16.3	20.3		17.7	16.7			15.5			35.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	16.3	20.3		17.7	16.7			15.5			35.5	
LOS	B	C		B	B			B			D	
Approach Delay		19.6			16.8			15.5			35.5	
Approach LOS		B			B			B			D	
Queue Length 50th (ft)	27	137		16	101			56			112	
Queue Length 95th (ft)	64	226		46	171			144			#332	
Internal Link Dist (ft)		2324			3724			1295			1287	
Turn Bay Length (ft)	300			275								
Base Capacity (vph)	700	1802		467	1682			656			518	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.19	0.31		0.17	0.27			0.42			0.84	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 50.9
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 21.9 Intersection LOS: C
Intersection Capacity Utilization 89.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Marshburn Road/Lizard Lick Road & NC-97



Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	112	655	370	4	4	102
Future Vol, veh/h	112	655	370	4	4	102
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	124	728	411	4	4	113

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	415	0	-	0	1389	413
Stage 1	-	-	-	-	413	-
Stage 2	-	-	-	-	976	-
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	1144	-	-	-	157	639
Stage 1	-	-	-	-	668	-
Stage 2	-	-	-	-	365	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1144	-	-	-	140	639
Mov Cap-2 Maneuver	-	-	-	-	140	-
Stage 1	-	-	-	-	596	-
Stage 2	-	-	-	-	365	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	13.1
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1144	-	-	-	563
HCM Lane V/C Ratio	0.109	-	-	-	0.209
HCM Control Delay (s)	8.5	-	-	-	13.1
HCM Lane LOS	A	-	-	-	B
HCM 95th %tile Q(veh)	0.4	-	-	-	0.8

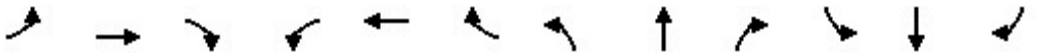
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	600	329	14	8	25
Future Vol, veh/h	60	600	329	14	8	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	75	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	667	366	16	9	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	382	0	-	0	1167	366
Stage 1	-	-	-	-	366	-
Stage 2	-	-	-	-	801	-
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	1176	-	-	-	214	679
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	442	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1176	-	-	-	195	679
Mov Cap-2 Maneuver	-	-	-	-	195	-
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	442	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	14.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1176	-	-	-	424
HCM Lane V/C Ratio	0.057	-	-	-	0.086
HCM Control Delay (s)	8.2	0	-	-	14.3
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	23	92	7	10	4	49	569	14	8	612	48
Future Volume (vph)	61	23	92	7	10	4	49	569	14	8	612	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	250		0	175		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.930			0.977			0.996			0.989	
Flt Protected		0.983			0.983		0.950			0.950		
Satd. Flow (prot)	0	1703	0	0	1789	0	1770	1855	0	1770	1842	0
Flt Permitted		0.876			0.892		0.950			0.950		
Satd. Flow (perm)	0	1518	0	0	1623	0	1770	1855	0	1770	1842	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		2127			364			1631			1393	
Travel Time (s)		32.2			5.5			31.8			27.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	68	26	102	8	11	4	54	632	16	9	680	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	196	0	0	23	0	54	648	0	9	733	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		14.0	20.0		14.0	20.0	
Total Split (s)	24.0	24.0		24.0	24.0		23.0	82.0		14.0	73.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%		19.2%	68.3%		11.7%	60.8%	
Maximum Green (s)	17.0	17.0		17.0	17.0		16.0	75.0		7.0	66.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		17.9			17.9		11.1	47.3		9.8	40.9	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.23			0.23		0.14	0.61		0.13	0.52	
v/c Ratio		0.56			0.06		0.21	0.58		0.04	0.76	
Control Delay		39.8			32.7		39.4	11.9		41.9	22.4	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		39.8			32.7		39.4	11.9		41.9	22.4	
LOS		D			C		D	B		D	C	
Approach Delay		39.8			32.7			14.0			22.6	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		90			9		26	159		4	321	
Queue Length 95th (ft)		#235			37		73	362		22	503	
Internal Link Dist (ft)		2047			284			1551			1313	
Turn Bay Length (ft)							250			175		
Base Capacity (vph)		402			430		444	1662		222	1543	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.49			0.05		0.12	0.39		0.04	0.48	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 78.1			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 21.2		Intersection LOS: C	
Intersection Capacity Utilization 62.7%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: NC-96 & Green Pace Rd

2025 Build Traffic Volumes

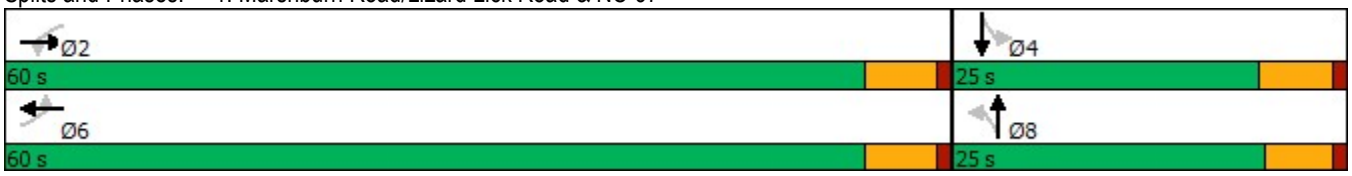
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	32	145	32	93	359	255	25	99	39	163	105	85
Future Volume (vph)	32	145	32	93	359	255	25	99	39	163	105	85
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			0%			2%			-2%	
Storage Length (ft)	300		0	275		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.973			0.938			0.968			0.968	
Flt Protected	0.950			0.950				0.992			0.977	
Satd. Flow (prot)	1778	1822	0	1770	1747	0	0	1771	0	0	1779	0
Flt Permitted	0.203			0.634				0.914			0.788	
Satd. Flow (perm)	380	1822	0	1181	1747	0	0	1632	0	0	1435	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2404			3804			1375			1367	
Travel Time (s)		36.4			57.6			20.8			20.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	36	161	36	103	399	283	28	110	43	181	117	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	197	0	103	682	0	0	181	0	0	392	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.00	1.00	1.00	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	D.Pm	NA		D.Pm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	6	2		2	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	17.6		17.6	20.0		23.3	23.3		20.0	20.0	
Total Split (s)	60.0	60.0		60.0	60.0		25.0	25.0		25.0	25.0	
Total Split (%)	70.6%	70.6%		70.6%	70.6%		29.4%	29.4%		29.4%	29.4%	
Maximum Green (s)	54.4	54.4		54.4	54.4		19.7	19.7		19.3	19.3	
Yellow Time (s)	4.6	4.6		4.6	4.6		4.3	4.3		4.7	4.7	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-0.6	-0.6		-0.6	-0.6			-0.3			-0.7	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	27.2	27.2		27.2	27.2			20.5			20.5	
Actuated g/C Ratio	0.47	0.47		0.47	0.47			0.35			0.35	
v/c Ratio	0.20	0.23		0.19	0.83			0.31			0.77	
Control Delay	10.9	9.0		8.8	22.5			18.8			33.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	10.9	9.0		8.8	22.5			18.8			33.6	
LOS	B	A		A	C			B			C	
Approach Delay		9.3			20.7			18.8			33.6	
Approach LOS		A			C			B			C	
Queue Length 50th (ft)	7	37		19	187			44			116	
Queue Length 95th (ft)	21	65		40	300			121			#347	
Internal Link Dist (ft)		2324			3724			1295			1287	
Turn Bay Length (ft)	300			275								
Base Capacity (vph)	349	1674		1085	1605			576			507	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.10	0.12		0.09	0.42			0.31			0.77	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 58
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 22.0 Intersection LOS: C
Intersection Capacity Utilization 89.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Marshburn Road/Lizard Lick Road & NC-97



Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	69	276	586	34	13	131
Future Vol, veh/h	69	276	586	34	13	131
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	77	307	651	38	14	146

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	689	0	-	0	1131	670
Stage 1	-	-	-	-	670	-
Stage 2	-	-	-	-	461	-
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	905	-	-	-	225	457
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	635	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	905	-	-	-	206	457
Mov Cap-2 Maneuver	-	-	-	-	206	-
Stage 1	-	-	-	-	466	-
Stage 2	-	-	-	-	635	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	19.2
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	905	-	-	-	412
HCM Lane V/C Ratio	0.085	-	-	-	0.388
HCM Control Delay (s)	9.3	-	-	-	19.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.3	-	-	-	1.8

Intersection	
Int Delay, s/veh	2.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	255	34	4	517	103	12
Future Vol, veh/h	255	34	4	517	103	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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	283	38	4	574	114	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	321	0	884	302
Stage 1	-	-	-	-	302	-
Stage 2	-	-	-	-	582	-
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	-	-	1239	-	316	738
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	559	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1239	-	314	738
Mov Cap-2 Maneuver	-	-	-	-	314	-
Stage 1	-	-	-	-	750	-
Stage 2	-	-	-	-	556	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	22.3
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	334	-	-	1239	-
HCM Lane V/C Ratio	0.383	-	-	0.004	-
HCM Control Delay (s)	22.3	-	-	7.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	1.7	-	-	0	-

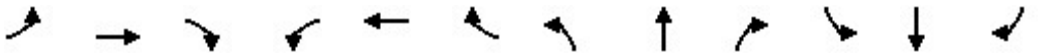
Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	242	450	6	5	59
Future Vol, veh/h	27	242	450	6	5	59
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	75	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	30	269	500	7	6	66

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	507	0	-	0	829	500
Stage 1	-	-	-	-	500	-
Stage 2	-	-	-	-	329	-
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	1058	-	-	-	340	571
Stage 1	-	-	-	-	609	-
Stage 2	-	-	-	-	729	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1058	-	-	-	329	571
Mov Cap-2 Maneuver	-	-	-	-	329	-
Stage 1	-	-	-	-	589	-
Stage 2	-	-	-	-	729	-

Approach	EB	WB	SB
HCM Control Delay, s	0.9	0	12.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1058	-	-	-	540
HCM Lane V/C Ratio	0.028	-	-	-	0.132
HCM Control Delay (s)	8.5	0	-	-	12.7
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5

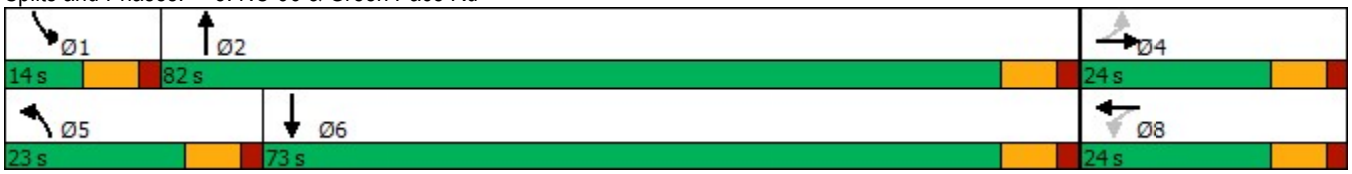


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	14	64	4	14	4	150	468	4	4	507	56
Future Volume (vph)	37	14	64	4	14	4	150	468	4	4	507	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	250		0	175		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.925			0.977			0.999			0.985	
Flt Protected		0.984			0.992		0.950			0.950		
Satd. Flow (prot)	0	1695	0	0	1805	0	1770	1861	0	1770	1835	0
Flt Permitted		0.885			0.943		0.950			0.950		
Satd. Flow (perm)	0	1525	0	0	1716	0	1770	1861	0	1770	1835	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		2127			364			1631			1393	
Travel Time (s)		32.2			5.5			31.8			27.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	41	16	71	4	16	4	167	520	4	4	563	62
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	128	0	0	24	0	167	524	0	4	625	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		14.0	20.0		14.0	20.0	
Total Split (s)	24.0	24.0		24.0	24.0		23.0	82.0		14.0	73.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%		19.2%	68.3%		11.7%	60.8%	
Maximum Green (s)	17.0	17.0		17.0	17.0		16.0	75.0		7.0	66.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		14.1			14.1		14.6	51.5		9.5	33.8	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.18			0.18		0.19	0.66		0.12	0.43	
v/c Ratio		0.47			0.08		0.51	0.43		0.02	0.79	
Control Delay		38.6			32.1		38.0	8.8		39.5	27.7	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		38.6			32.1		38.0	8.8		39.5	27.7	
LOS		D			C		D	A		D	C	
Approach Delay		38.6			32.1			15.8			27.8	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		57			10		74	92		2	251	
Queue Length 95th (ft)		133			36		168	271		13	437	
Internal Link Dist (ft)		2047			284			1551			1313	
Turn Bay Length (ft)							250			175		
Base Capacity (vph)		389			437		427	1710		213	1574	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.33			0.05		0.39	0.31		0.02	0.40	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 78.2			
Natural Cycle: 60			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.79			
Intersection Signal Delay: 23.2		Intersection LOS: C	
Intersection Capacity Utilization 62.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 5: NC-96 & Green Pace Rd



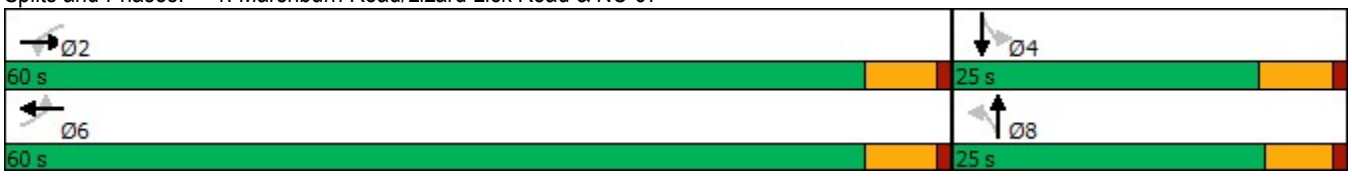
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	119	486	57	80	211	231	25	145	89	255	134	41
Future Volume (vph)	119	486	57	80	211	231	25	145	89	255	134	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-1%			0%			2%			-2%	
Storage Length (ft)	300		0	275		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.921			0.954			0.987	
Flt Protected	0.950			0.950				0.995			0.971	
Satd. Flow (prot)	1778	1842	0	1770	1716	0	0	1750	0	0	1803	0
Flt Permitted	0.343			0.231				0.935			0.667	
Satd. Flow (perm)	642	1842	0	430	1716	0	0	1645	0	0	1239	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		2404			3804			1375			1367	
Travel Time (s)		36.4			57.6			20.8			20.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	132	540	63	89	234	257	28	161	99	283	149	46
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	603	0	89	491	0	0	288	0	0	478	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	0.99	0.99	0.99	1.00	1.00	1.00	1.01	1.01	1.01	0.99	0.99	0.99
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	D.Pm	NA		D.Pm	NA		Perm	NA		Perm	NA	
Protected Phases		2			6			8			4	
Permitted Phases	6			2			8			4		
Detector Phase	6	2		2	6		8	8		4	4	
Switch Phase												
Minimum Initial (s)	12.0	12.0		12.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	20.0	17.6		17.6	20.0		23.3	23.3		20.0	20.0	
Total Split (s)	60.0	60.0		60.0	60.0		25.0	25.0		25.0	25.0	
Total Split (%)	70.6%	70.6%		70.6%	70.6%		29.4%	29.4%		29.4%	29.4%	
Maximum Green (s)	54.4	54.4		54.4	54.4		19.7	19.7		19.3	19.3	
Yellow Time (s)	4.6	4.6		4.6	4.6		4.3	4.3		4.7	4.7	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	-0.6	-0.6		-0.6	-0.6			-0.3			-0.7	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Act Effct Green (s)	21.9	21.9		21.9	21.9			20.4			20.4	
Actuated g/C Ratio	0.42	0.42		0.42	0.42			0.39			0.39	
v/c Ratio	0.49	0.78		0.50	0.68			0.45			1.00	
Control Delay	17.4	20.7		21.0	17.3			17.1			63.9	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	17.4	20.7		21.0	17.3			17.1			63.9	
LOS	B	C		C	B			B			E	
Approach Delay		20.1			17.9			17.1			63.9	
Approach LOS		C			B			B			E	
Queue Length 50th (ft)	28	150		19	115			63			~140	
Queue Length 95th (ft)	67	245		54	192			161			#397	
Internal Link Dist (ft)		2324			3724			1295			1287	
Turn Bay Length (ft)	300			275								
Base Capacity (vph)	621	1783		416	1661			638			480	
Starvation Cap Reductn	0	0		0	0			0			0	
Spillback Cap Reductn	0	0		0	0			0			0	
Storage Cap Reductn	0	0		0	0			0			0	
Reduced v/c Ratio	0.21	0.34		0.21	0.30			0.45			1.00	

Intersection Summary

Area Type: Other
Cycle Length: 85
Actuated Cycle Length: 52.5
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 29.1 Intersection LOS: C
Intersection Capacity Utilization 93.8% ICU Level of Service F
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Marshburn Road/Lizard Lick Road & NC-97



Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	112	739	418	22	37	102
Future Vol, veh/h	112	739	418	22	37	102
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	124	821	464	24	41	113

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	488	0	-	0	1545	476
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	1069	-
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	1075	-	-	-	126	589
Stage 1	-	-	-	-	625	-
Stage 2	-	-	-	-	330	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1075	-	-	-	112	589
Mov Cap-2 Maneuver	-	-	-	-	112	-
Stage 1	-	-	-	-	553	-
Stage 2	-	-	-	-	330	-

Approach	EB	WB	SB
HCM Control Delay, s	1.2	0	33.4
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1075	-	-	-	276
HCM Lane V/C Ratio	0.116	-	-	-	0.56
HCM Control Delay (s)	8.8	-	-	-	33.4
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.4	-	-	-	3.2

Intersection	
Int Delay, s/veh	2.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	659	117	13	372	68	8
Future Vol, veh/h	659	117	13	372	68	8
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	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	732	130	14	413	76	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	862	0	1238	797
Stage 1	-	-	-	-	797	-
Stage 2	-	-	-	-	441	-
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	-	-	780	-	194	387
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	648	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	780	-	190	387
Mov Cap-2 Maneuver	-	-	-	-	190	-
Stage 1	-	-	-	-	444	-
Stage 2	-	-	-	-	633	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	35.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	201	-	-	780	-
HCM Lane V/C Ratio	0.42	-	-	0.019	-
HCM Control Delay (s)	35.3	-	-	9.7	0
HCM Lane LOS	E	-	-	A	A
HCM 95th %tile Q(veh)	1.9	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	60	608	342	14	8	25
Future Vol, veh/h	60	608	342	14	8	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	75	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	67	676	380	16	9	28

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	396	0	-	0	1190	380
Stage 1	-	-	-	-	380	-
Stage 2	-	-	-	-	810	-
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	1163	-	-	-	207	667
Stage 1	-	-	-	-	691	-
Stage 2	-	-	-	-	438	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1163	-	-	-	188	667
Mov Cap-2 Maneuver	-	-	-	-	188	-
Stage 1	-	-	-	-	627	-
Stage 2	-	-	-	-	438	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	14.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1163	-	-	-	412
HCM Lane V/C Ratio	0.057	-	-	-	0.089
HCM Control Delay (s)	8.3	0	-	-	14.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	69	27	100	7	17	4	62	569	14	8	612	61
Future Volume (vph)	69	27	100	7	17	4	62	569	14	8	612	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	250		0	175		0
Storage Lanes	0		0	0		0	1		0	1		0
Taper Length (ft)	100			100			100			100		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.931			0.983			0.996			0.986	
Flt Protected		0.983			0.987		0.950			0.950		
Satd. Flow (prot)	0	1705	0	0	1807	0	1770	1855	0	1770	1837	0
Flt Permitted		0.870			0.920		0.950			0.950		
Satd. Flow (perm)	0	1509	0	0	1685	0	1770	1855	0	1770	1837	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			35			35	
Link Distance (ft)		2127			364			1631			1393	
Travel Time (s)		32.2			5.5			31.8			27.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	77	30	111	8	19	4	69	632	16	9	680	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	218	0	0	31	0	69	648	0	9	748	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		0			0			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Detector Phase	4	4		8	8		5	2		1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		7.0	10.0		7.0	10.0	
Minimum Split (s)	20.0	20.0		20.0	20.0		14.0	20.0		14.0	20.0	
Total Split (s)	24.0	24.0		24.0	24.0		23.0	82.0		14.0	73.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%		19.2%	68.3%		11.7%	60.8%	
Maximum Green (s)	17.0	17.0		17.0	17.0		16.0	75.0		7.0	66.0	
Yellow Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)		-2.0			-2.0		-2.0	-2.0		-2.0	-2.0	
Total Lost Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lead/Lag							Lead	Lag		Lead	Lag	
Lead-Lag Optimize?							Yes	Yes		Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	None		None	None		None	Min		None	Min	
Act Effct Green (s)		19.3			19.3		11.8	51.9		9.8	41.6	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Actuated g/C Ratio		0.23			0.23		0.14	0.62		0.12	0.49	
v/c Ratio		0.63			0.08		0.28	0.57		0.04	0.82	
Control Delay		45.0			34.5		42.0	11.5		44.1	27.5	
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	
Total Delay		45.0			34.5		42.0	11.5		44.1	27.5	
LOS		D			C		D	B		D	C	
Approach Delay		45.0			34.5			14.5			27.7	
Approach LOS		D			C			B			C	
Queue Length 50th (ft)		107			13		34	159		4	341	
Queue Length 95th (ft)		#294			48		90	359		23	536	
Internal Link Dist (ft)		2047			284			1551			1313	
Turn Bay Length (ft)							250			175		
Base Capacity (vph)		369			412		410	1624		205	1463	
Starvation Cap Reductn		0			0		0	0		0	0	
Spillback Cap Reductn		0			0		0	0		0	0	
Storage Cap Reductn		0			0		0	0		0	0	
Reduced v/c Ratio		0.59			0.08		0.17	0.40		0.04	0.51	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 84.1			
Natural Cycle: 70			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay: 24.5		Intersection LOS: C	
Intersection Capacity Utilization 71.7%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 5: NC-96 & Green Pace Rd

2025 Build + Improvements Traffic Volumes

Intersection	
Int Delay, s/veh	2.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	255	34	4	517	103	12
Future Vol, veh/h	255	34	4	517	103	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	-	75	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	283	38	4	574	114	13

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	321	0	865	283
Stage 1	-	-	-	-	283	-
Stage 2	-	-	-	-	582	-
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	-	-	1239	-	324	756
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	559	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1239	-	322	756
Mov Cap-2 Maneuver	-	-	-	-	322	-
Stage 1	-	-	-	-	765	-
Stage 2	-	-	-	-	556	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.1	20.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	322	756	-	-	1239	-
HCM Lane V/C Ratio	0.355	0.018	-	-	0.004	-
HCM Control Delay (s)	22.2	9.8	-	-	7.9	0
HCM Lane LOS	C	A	-	-	A	A
HCM 95th %tile Q(veh)	1.6	0.1	-	-	0	-

Intersection	
Int Delay, s/veh	1.9

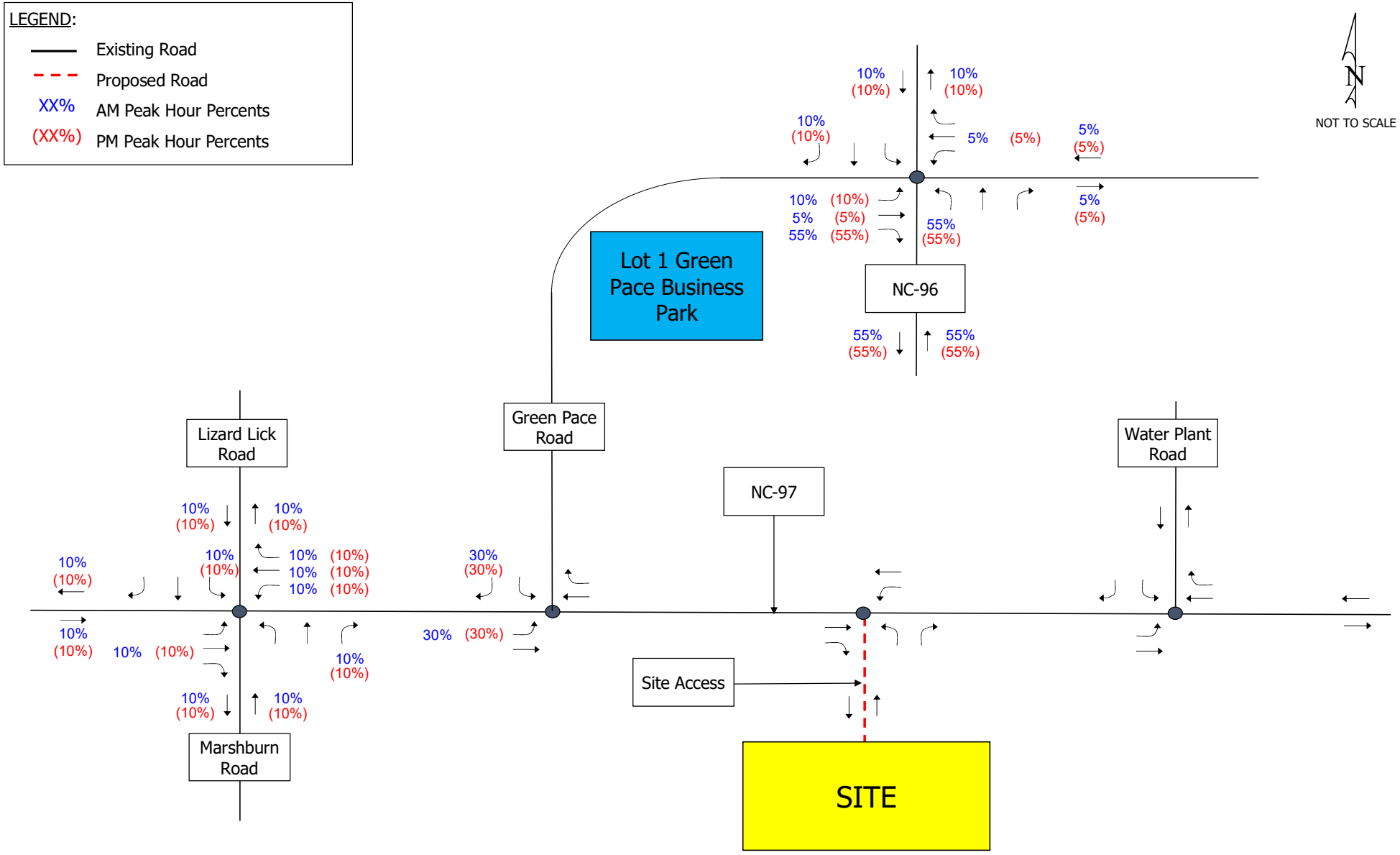
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	659	117	13	372	68	8
Future Vol, veh/h	659	117	13	372	68	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	75	-	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	732	130	14	413	76	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	862	0	1173	732
Stage 1	-	-	-	-	732	-
Stage 2	-	-	-	-	441	-
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	-	-	780	-	212	421
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	648	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	780	-	207	421
Mov Cap-2 Maneuver	-	-	-	-	207	-
Stage 1	-	-	-	-	476	-
Stage 2	-	-	-	-	633	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	30.2
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	207	421	-	-	780	-
HCM Lane V/C Ratio	0.365	0.021	-	-	0.019	-
HCM Control Delay (s)	32.1	13.7	-	-	9.7	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	1.6	0.1	-	-	0.1	-

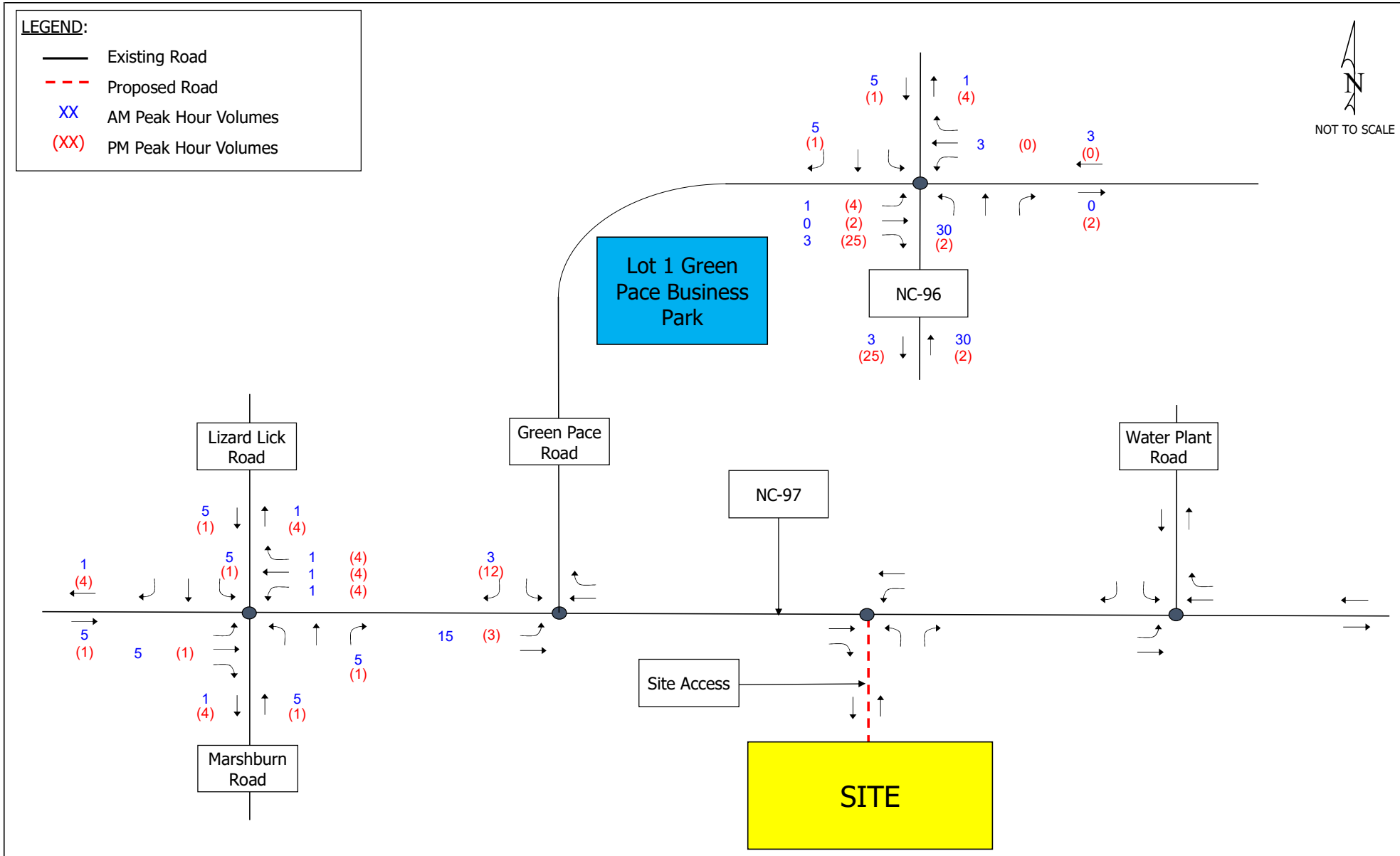
Appendix E Approved Developments



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Faison Tract
Traffic Impact Analysis
Approved Development Trip Distribution Percentages
Lot 1 Green Pace Business Park

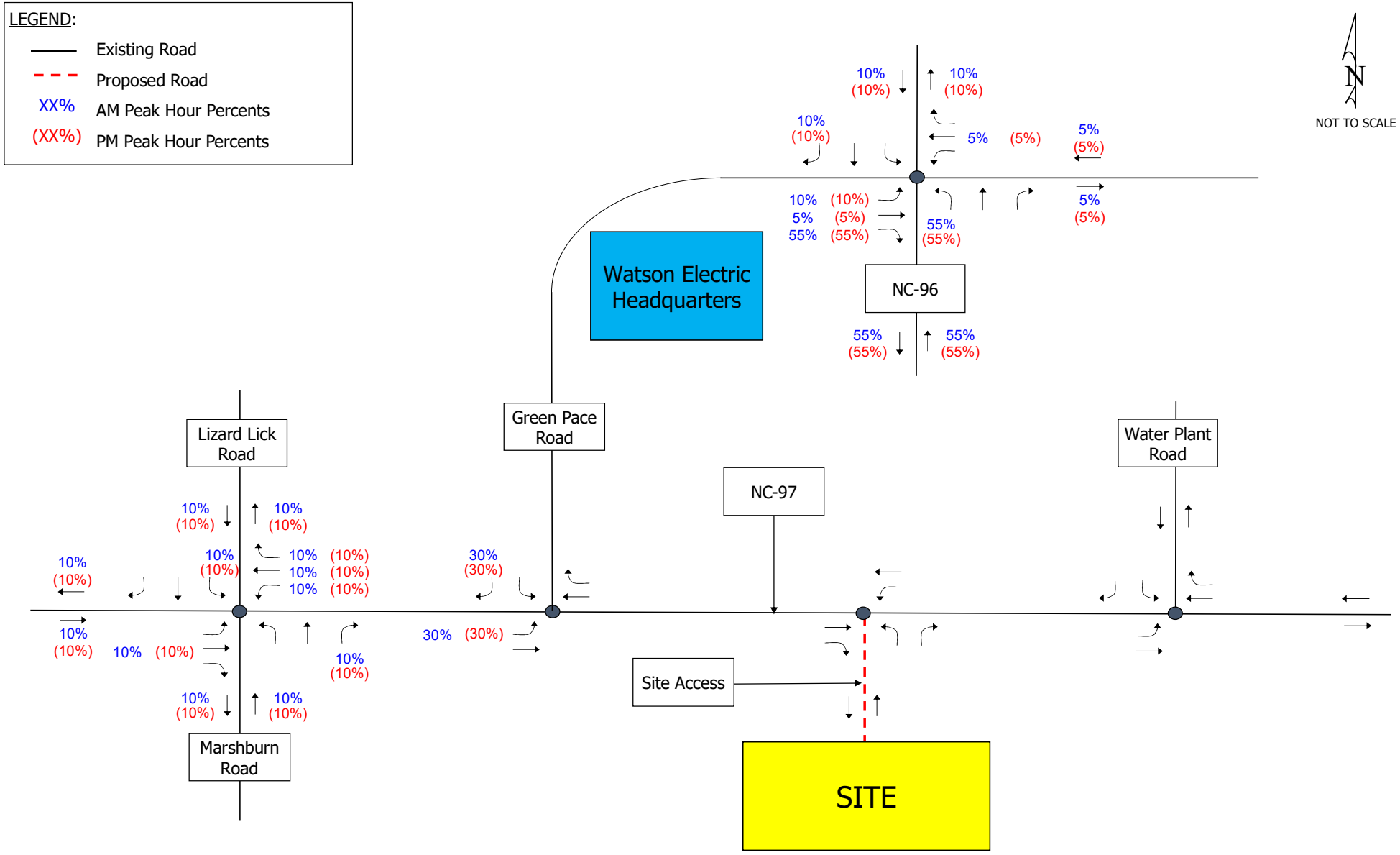
Figure E1a



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Faison Tract
Traffic Impact Analysis
Approved Development Trip Distribution Volumes
Lot 1 Green Pace Business Park

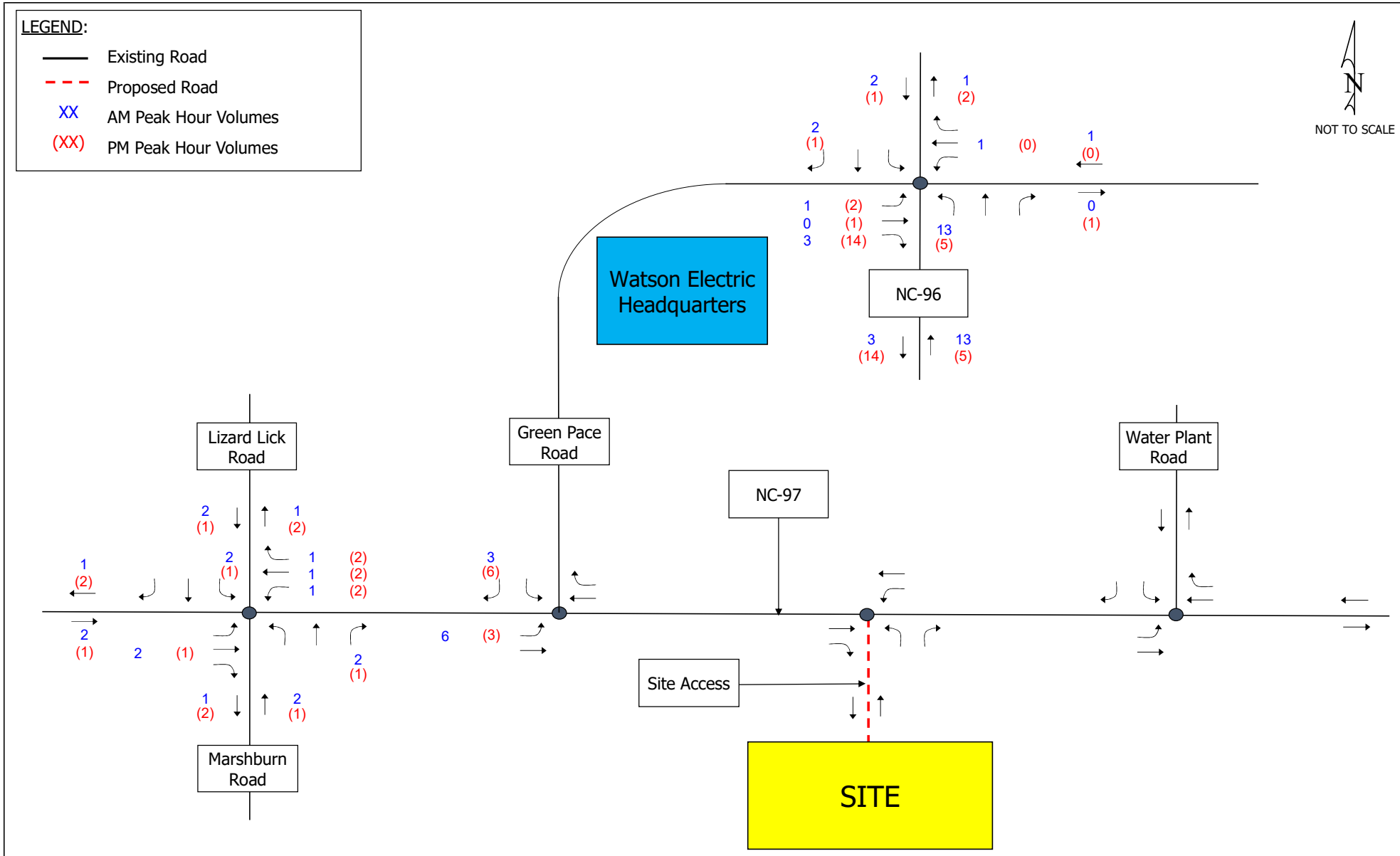
Figure E1b



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Faison Tract
Traffic Impact Analysis
Approved Development Trip Distribution Percentages
Watson Electric Headquarters

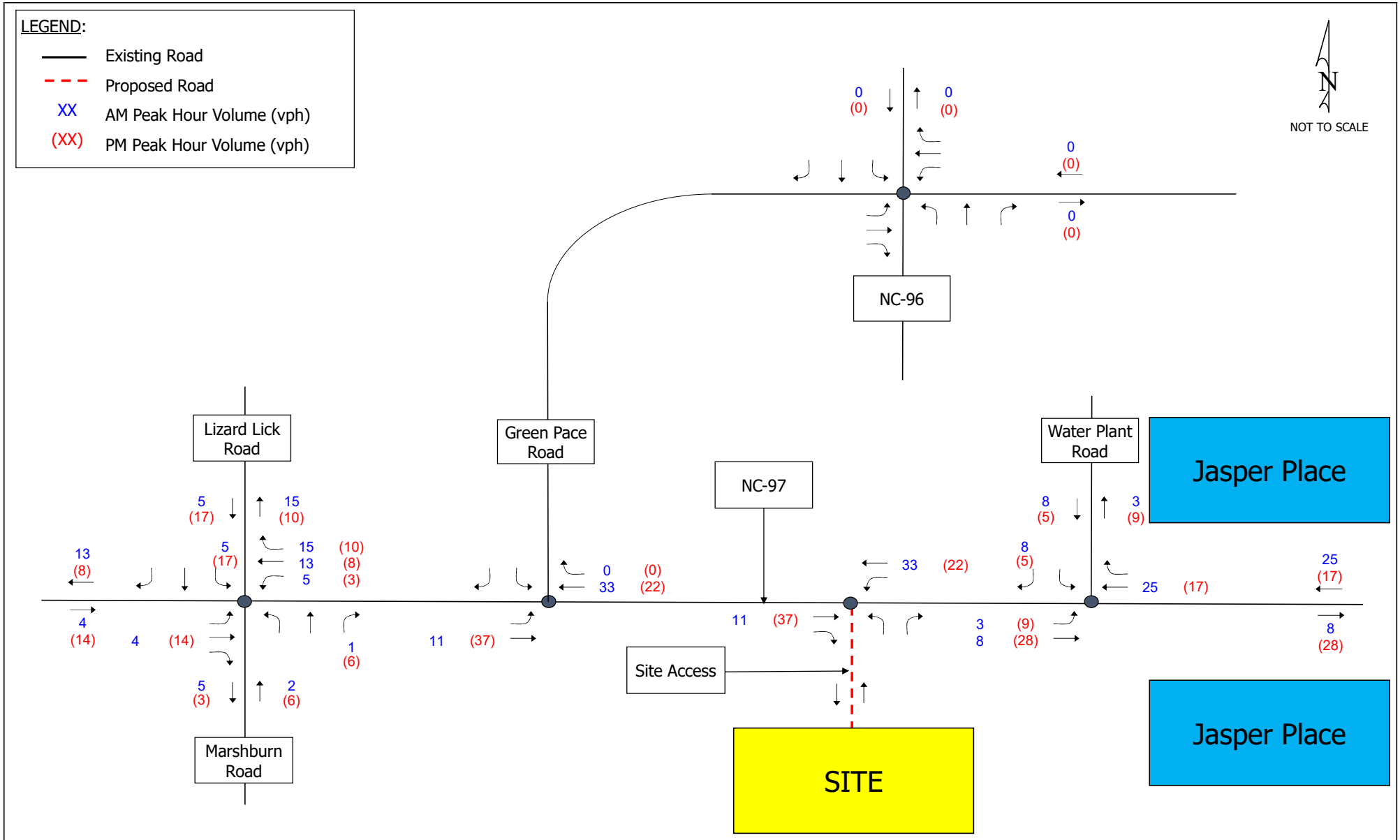
Figure E2a



TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Faison Tract
Traffic Impact Analysis
Approved Development Trip Distribution Volumes
Watson Electric Headquarters

Figure E2b



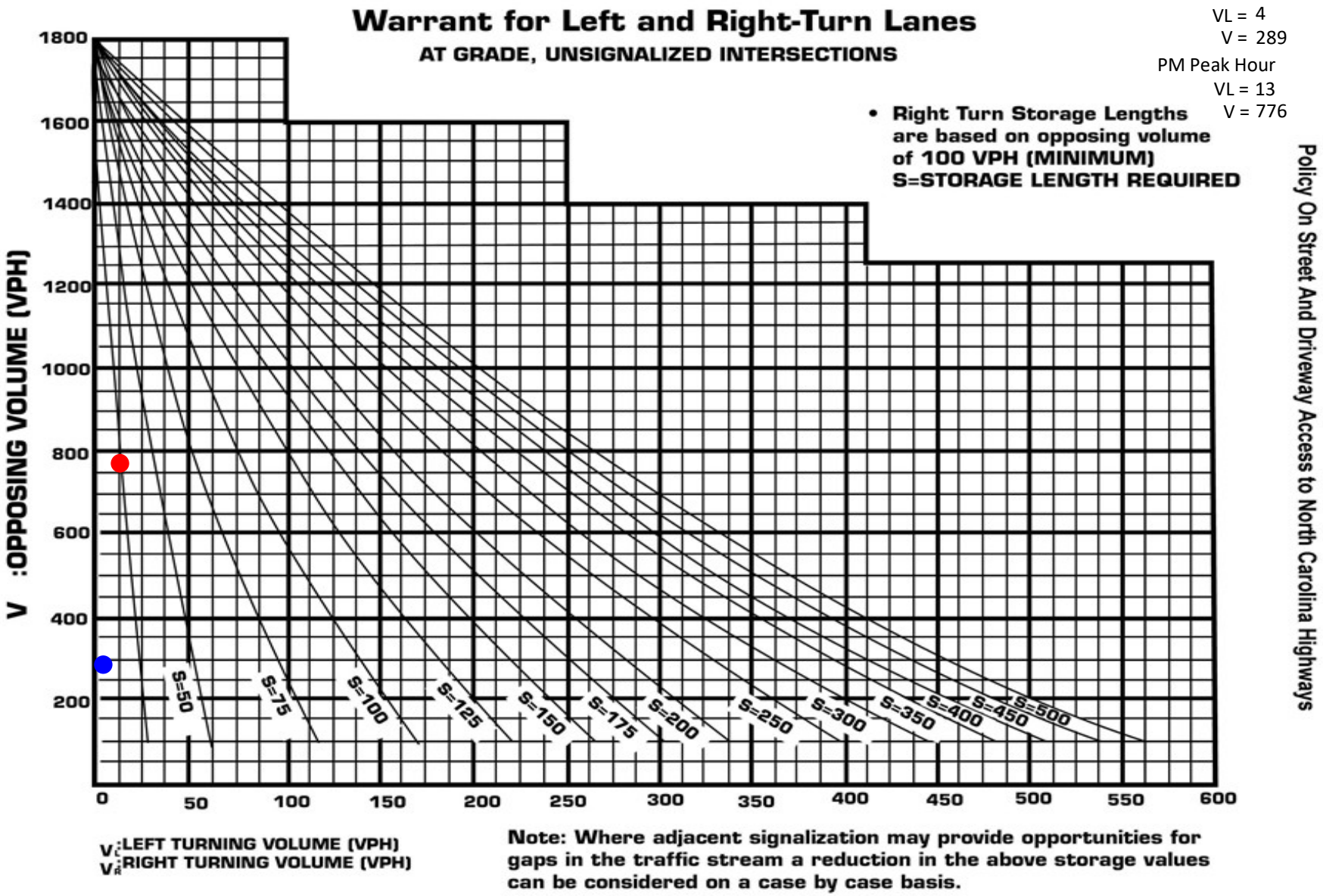
TIMMONS GROUP
YOUR VISION ACHIEVED THROUGH OURS.

Faison Tract
Traffic Impact Analysis
Approved Development Trip Distribution Volumes
Jasper Place

Figure E3

Appendix F – NCDOT Nomographs

AM Peak Hour
VL = 4
V = 289
PM Peak Hour
VL = 13
V = 776



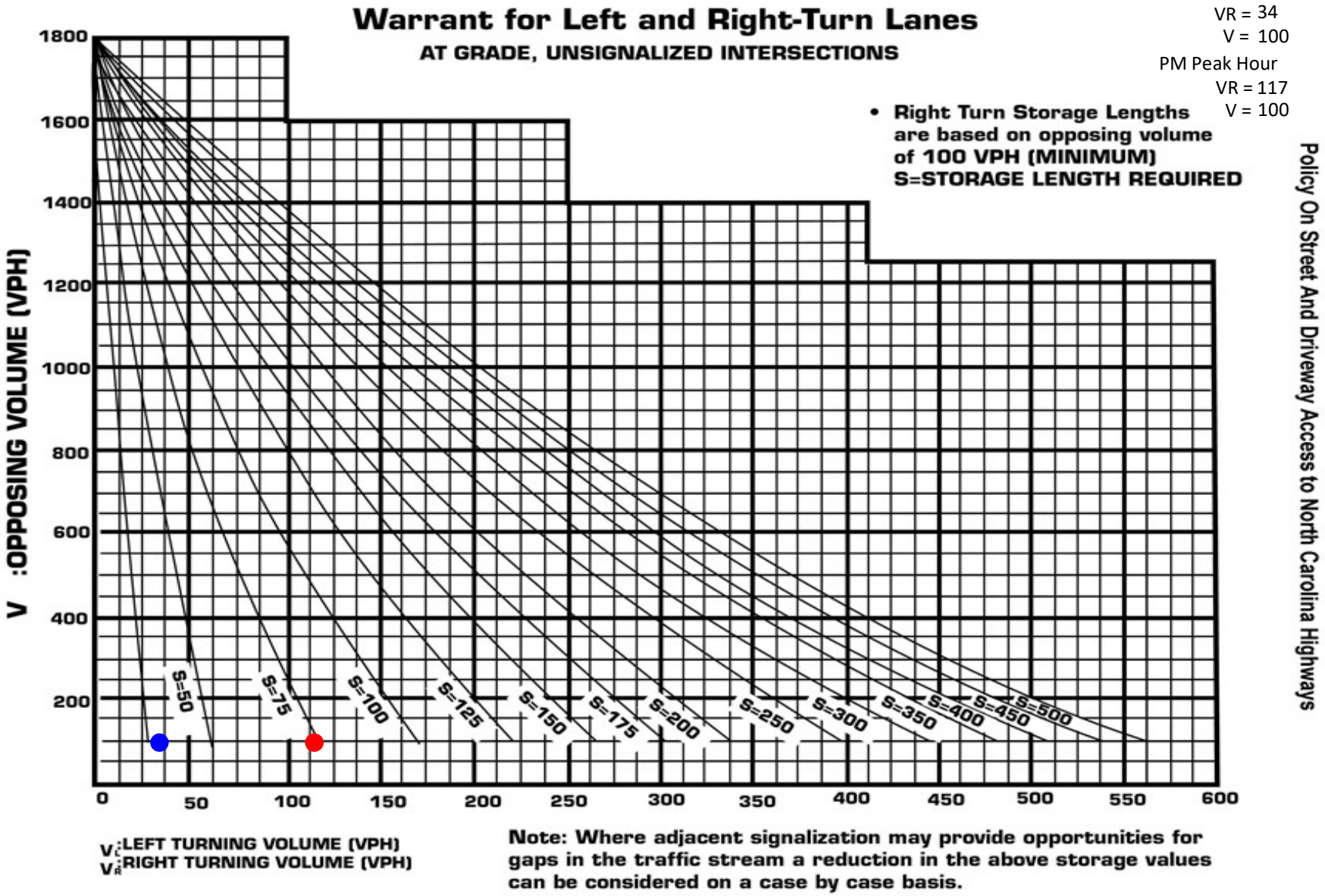
NC-97 (W Gannon Ave) / Site Access

Westbound Left Turn

2025 Build AM & PM Peak Hour

LEGEND
● = AM Peak
● = PM Peak

AM Peak Hour
VR = 34
V = 100
PM Peak Hour
VR = 117
V = 100



NC-97 (W Gannon Ave) / Site Access

Eastbound Right Turn

2025 Build AM & PM Peak Hour

LEGEND
● = AM Peak
● = PM Peak