Deal Lake

Traffic Impact Analysis UPDATE

Weddington, North Carolina

Prepared for:

Toll Brothers, Inc.

October 2024

Kimley»Horn

Traffic Impact Analysis UPDATE for
Deal Lake
Weddington, North Carolina

Prepared for:

Toll Brothers, Inc.
Charlotte, North Carolina

Prepared by:

Kimley-Horn and Associates, Inc.
NC License #F - 0102
200 South Tryon Street, Suite 200
Charlotte, North Carolina 28202
(704) 333-5131

October 2024
012826089

TABLE OF CONTENTS

List of Figures

List of Tables

1.0 Executive Summary

The purpose of this Traffic Impact Analysis (TIA) is to evaluate the vehicular traffic impacts on the surrounding transportation infrastructure as a result of the proposed Deal Lake development. The primary objectives of the study are:

- To estimate trip generation and distribution for the proposed development.
- To perform intersection capacity analyses for the identified study area.
- To determine the potential traffic impacts of the proposed development.
- To identify improvements to mitigate the proposed development's traffic impacts.

The proposed Deal Lake development is located along both sides of Weddington Road (NC 84) between Lake Forest Drive and Baron Road in Weddington, North Carolina. Based on the site plan, the proposed development is currently envisioned to consist of 17 single-family detached homes on the north side of Weddington Road and 65 single-family detached homes on the south side of Weddington Road (82 single-family detached homes total).

For the purposes of this TIA, a build-out year of 2029 was considered. Based on the site plan, the proposed development will be accessed via two external access points along Weddington Road (NC 84):

- Access A – an unsignalized, right-in/right-out (RIRO) connection to Weddington Road (NC 84) approximately 940 feet east of Lake Forest Drive; this access serves both sides of the development.
- Access B – an unsignalized, RIRO connection to Weddington Road approximately 560 feet east of Access A; this access serves both sides of the development.

North Carolina Department of Transportation (NCDOT) TIA Scoping Checklist was prepared based on the provided site plan that documented all scoping parameters to be used for the TIA and was reviewed and agreed upon by NCDOT and Town of Weddington staff. The approved TIA Scoping Checklist, along with NCDOT and Town scoping comments, are included in the **Appendix.** The analysis in this TIA is based on the development plan described above and as shown in the approved NCDOT TIA Scoping Checklist (included in the **Appendix**). However, the development plan was revised after approval of the TIA Scoping Checklist to reduce density from 93 units (31 north and 62 south) to 82 units (17 north and 65 south). Furthermore, the addition of the southbound approach at the Weddington Road (NC 84) and Access A intersection has now been included.

Per coordination with Town of Weddington Staff, an additional interim scenario was analyzed without any of the NCDOT Statewide Transportation Improvement Program (STIP) Projects in place. This interim scenario was utilized to determine the impacts and recommend mitigation at the proposed study intersections should the proposed development be completed before the STIP projects. It was assumed that in this interim scenario, the proposed access points would operate as full movement until the STIP project widens and installs a median along Weddington Road (NC 84). Upon further coordination with NCDOT Staff, the proposed access points will operate under RIRO conditions in this scenario without the STIP project along Weddington Road (NC 84).

NCDOT and Town of Weddington TIA comments on the April 2024 TIA, along with Kimley Horn's comment response letter, can be found in the **Appendix.**

The following AM, Midday (MID), and PM peak-hour scenarios were analyzed to determine the proposed development's transportation impacts on the surrounding network:

- 2024 Existing Conditions
- 2029 Background Conditions (with STIP projects)
- 2029 Background Conditions (without STIP projects)
- 2029 Build-out Conditions (with STIP projects)
- 2029 Build-out Conditions (without STIP projects)

Based on coordination with the Town and NCDOT, this TIA evaluated operations under each of the AM, MID, and PM peak-hour scenarios above for the following study area intersections:

1. S Providence Road (NC 16) and Rea Road/U-3467
2. Weddington Road (NC 84) and Cox Road
3. Weddington Road (NC 84) and Twelve Mile Creek Road
4. Weddington Road (NC 84) and U-3467 (Future) (with STIP projects scenario only)
5. Weddington Road (NC 84) and Access A
6. Weddington Road (NC 84) and Access B

Kimley-Horn was retained to determine the potential traffic impacts of this development (in accordance with the traffic study guidelines in the *NCDOT Policy on Street and Driveway Access to North Carolina Highways* and set forth by the *Town of Weddington Traffic Impact Analysis (TIA) Process and Procedures Manual*, and to identify transportation improvements that may be required to mitigate these impacts.

Based on the capacity analyses performed at each of the identified study intersections, along with review of the auxiliary turn-lane warrants contained herein, no improvements are required to mitigate the impact of the proposed development on the adjacent street network under either scenario. The following site and mitigation improvements needed for the proposed Deal Lake development are as follows:

With STIP Projects

Weddington Road (NC 84) and Access A

- Construction of the northbound and southbound approaches of Access A under RIRO operations with one ingress lane, one egress lane, stop-control, and an internal protected stem (IPS) of 100 feet.
- Construction of an eastbound right-turn lane along Weddington Road (NC 84) with maximized storage.

Weddington Road (NC 84) and Access B

- Construction of the northbound and southbound approaches of Access B under RIRO operations with one ingress lane, one egress lane, stop-control, and an IPS of 100 feet.

Without STIP Projects

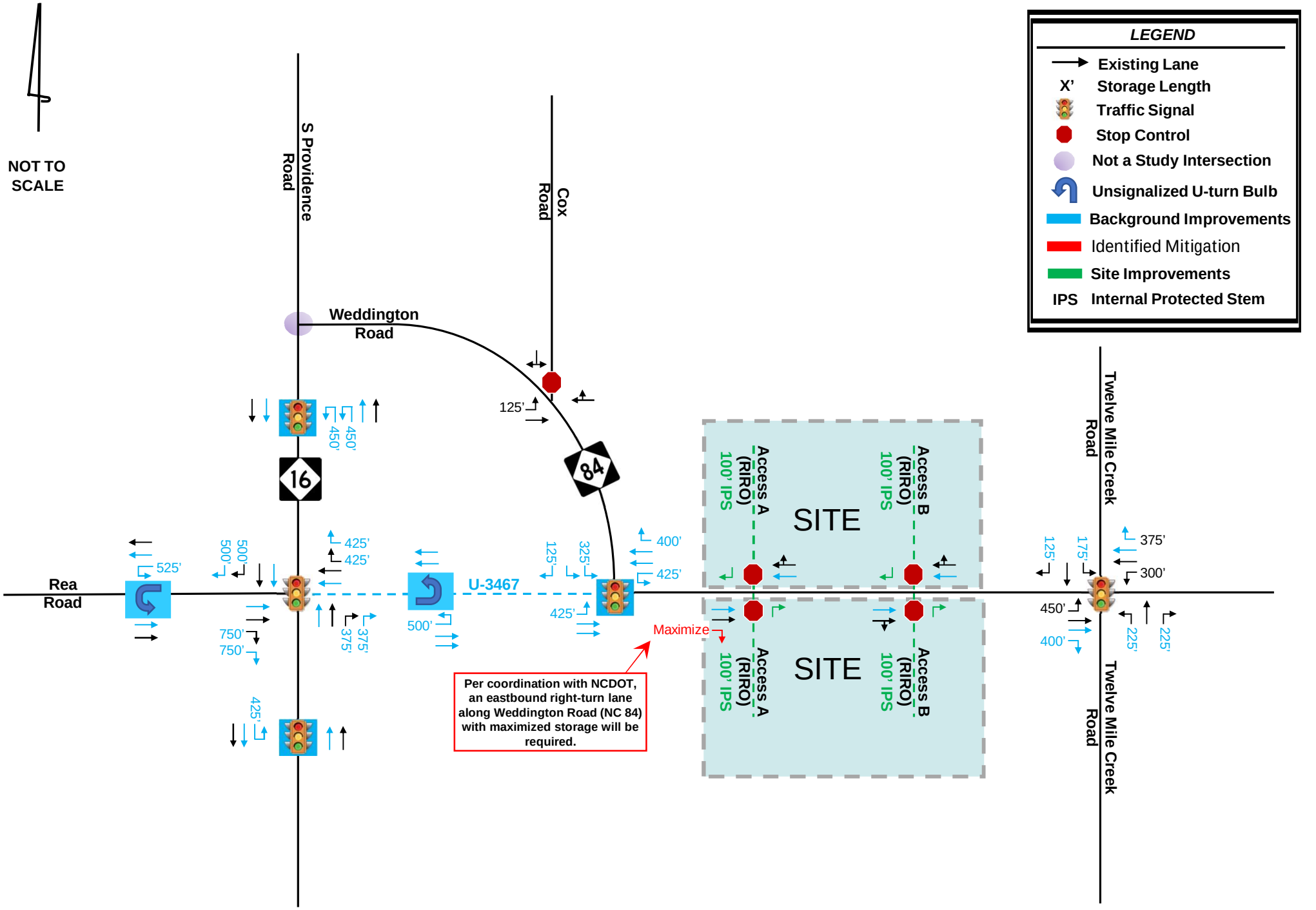
Weddington Road (NC 84) and Access A

- Construction of the northbound and southbound approaches of Access A under RIRO operations with one ingress lane, one egress lane, stop-control, and an IPS of 100 feet.
- Ongoing coordination with NCDOT will be needed as the development progresses to determine if turn lanes and medians are constructed by the development or if a fee-in-lieu will be needed.

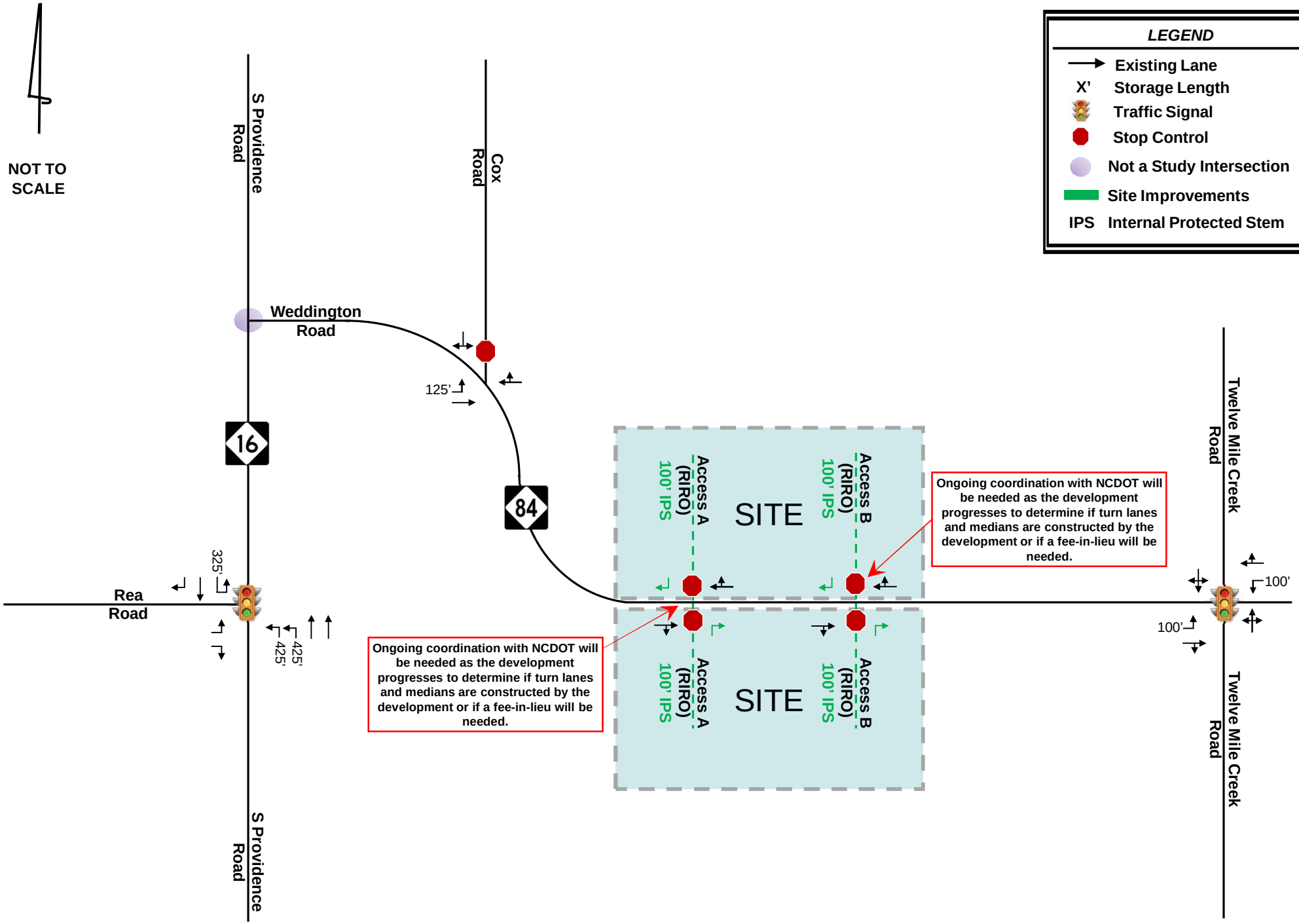
Weddington Road (NC 84) and Access B

- Construction of the northbound and southbound approaches of Access B under RIRO operations with one ingress lane, one egress lane, stop-control, and an IPS of 100 feet.
- Ongoing coordination with NCDOT will be needed as the development progresses to determine if turn lanes and medians are constructed by the development or if a fee-in-lieu will be needed.

The site and mitigation improvements identified within the study area are shown in **Figures 1.1A and 1.1B.** The improvements shown on these figures are subject to approval by NCDOT and the Town of Weddington. All additions and attachments to the State and Town roadway system shall be properly permitted, designed, and constructed in conformance to standards maintained by the agencies.



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	Identified Site/Mitigation Improvements w/ STIPs	Figure 1.1A



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	Identified Site/Mitigation Improvements w/o STIPs	Figure 1.1B

2.0 Introduction

The proposed Deal Lake development is located along both sides of Weddington Road (NC 84) between Lake Forest Drive and Baron Road in Weddington, North Carolina. Based on the site plan, the proposed development is currently envisioned to consist of 17 single-family detached homes on the north side of Weddington Road and 65 single-family detached homes on the south side of Weddington Road (82 single-family detached homes total).

For the purposes of this TIA, a build-out year of 2029 was considered. Based on the site plan, the proposed development will be accessed via two external access points along Weddington Road (NC 84):

- Access A – an unsignalized, right-in/right-out (RIRO) connection to Weddington Road (NC 84) approximately 940 feet east of Lake Forest Drive; this access serves both sides of the development.
- Access B – an unsignalized, RIRO connection to Weddington Road approximately 560 feet east of Access A; this access serves both sides of the development.

North Carolina Department of Transportation (NCDOT) TIA Scoping Checklist was prepared based on the provided site plan that documented all scoping parameters to be used for the TIA and was reviewed and agreed upon by NCDOT and Town of Weddington staff. The approved TIA Scoping Checklist, along with NCDOT and Town scoping comments, are included in the **Appendix.** The analysis in this TIA is based on the development plan described above and as shown in the approved NCDOT TIA Scoping Checklist (included in the **Appendix**). However, the development plan was revised after approval of the TIA Scoping Checklist to reduce density from 93 units (31 north and 62 south) to 82 units (17 north and 65 south). Furthermore, the addition of the southbound approach at the Weddington Road (NC 84) and Access A intersection has now been included.

Per coordination with Town of Weddington Staff, an additional interim scenario was analyzed without any of the NCDOT Statewide Transportation Improvement Program (STIP) Projects in place. This interim scenario was utilized to determine the impacts and recommend mitigation at the proposed study intersections should the proposed development be completed before the STIP projects. It was assumed that in this interim scenario, the proposed access points would operate as full movement until the STIP project widens and installs a median along Weddington Road (NC 84). Upon further coordination with NCDOT Staff, the proposed access points will operate under RIRO conditions in this scenario without the STIP project along Weddington Road (NC 84).

Kimley-Horn was retained to determine the potential traffic impacts of this development (in accordance with the traffic study guidelines in the *NCDOT Policy on Street and Driveway Access to North Carolina Highways* and set forth by the *Town of Weddington Traffic Impact Analysis (TIA) Process and Procedures Manual*, and to identify transportation improvements that may be required to mitigate these impacts.

3.0 Existing Traffic Conditions

Existing traffic conditions were coordinated with Town of Weddington and NCDOT staff and collected through field observations and turning-movement counts to establish the existing conditions baseline analysis.

3.1 STUDY AREA

Based on coordination with the Town and NCDOT, the study area for this TIA includes the following existing intersections:

1. S Providence Road (NC 16) and Rea Road
2. Weddington Road (NC 84) and Cox Road
3. Weddington Road (NC 84) and Twelve Mile Creek Road

Figure 3.1 shows the study area intersections and the site location, **Figure 3.2** shows the proposed site plan for the development, and **Figure 3.3** shows the existing roadway geometry at the study intersections.

The primary roadways in the vicinity of the site are S Providence Road (NC 16), Weddington Road (NC 84), Rea Road, Cox Road, and Twelve Mile Creek Road.

S Providence Road (NC 16) is currently a four-lane, divided minor arterial with a posted speed limit of 45 miles per hour (mph) in the vicinity of the proposed development that transitions to a two-lane, undivided road just south of Rea Road. S Providence Road (NC 16) carries an annual average daily traffic (AADT) volume of 29,200 vehicles per day (vpd) north of Rea Road and 19,700 vpd south of Rea Road based on 2023 and 2022 NCDOT AADT data, respectively.

Weddington Road (NC 84) is a two-lane, undivided minor arterial with a posted speed limit of 45 mph in the vicinity of the proposed development. Weddington Road (NC 84) carries an AADT volume of 15,700 vpd west of Cox Road and 15,400 vpd east of Twelve Mile Creek Road based on 2023 NCDOT AADT data.

Rea Road is currently a four-lane, divided minor arterial road with a posted speed limit of 45 mph in the vicinity of the proposed development. Rea Road carries an AADT volume of 14,800 west of S Providence Road (NC 16) based on 2022 NCDOT AADT data.

Cox Road is currently a two-lane, undivided local road with a posted speed limit of 45 mph in the vicinity of the proposed development. Cox Road carries an AADT volume of 1,000 vpd north of Weddington Road (NC 84) based on 2022 NCDOT AADT data.

Twelve Mile Creek Road is a two-lane, undivided local road with a posted speed limit of 45 mph in the vicinity of the proposed development. Twelve Mile Creek Road carries an AADT volume of 3,500 vpd north of Weddington Road (NC 84) and 5,800 vpd south of Weddington Road (NC 84) based on 2023 and 2022 NCDOT AADT data, respectively.

3.2 EXISTING TRAFFIC VOLUME DEVELOPMENT

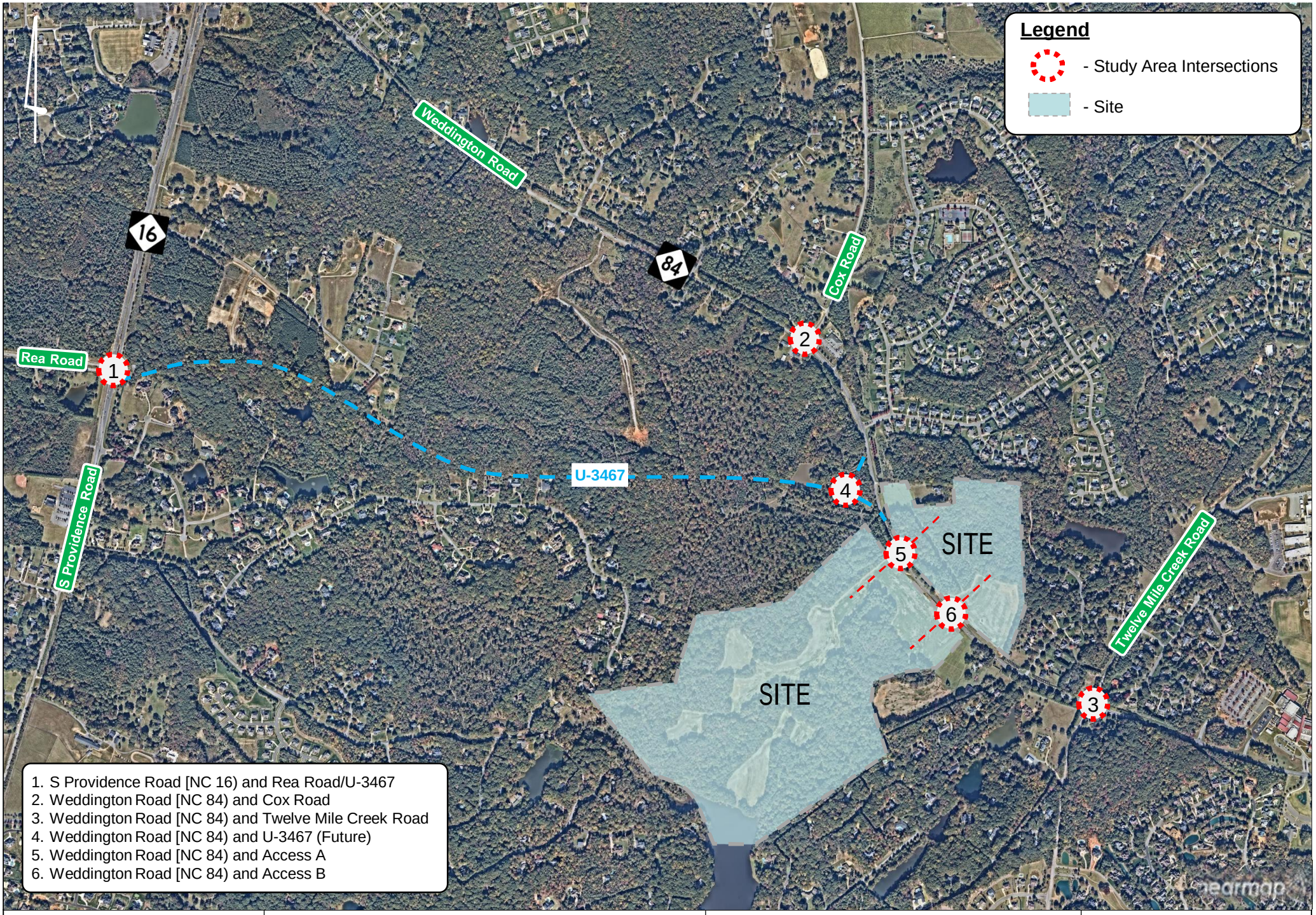
AM (7:00-9:00 AM), MID (2:00-4:00 PM), and PM (4:00-6:00 PM) intersection turning-movement, heavy-vehicle, pedestrian, and bicycle counts were collected by Quality Counts on Thursday, March 7, 2024, at the following intersections:

- S Providence Road (NC 16) and Rea Road
- Weddington Road (NC 84) and Cox Road
- Weddington Road (NC 84) and Twelve Mile Creek Road

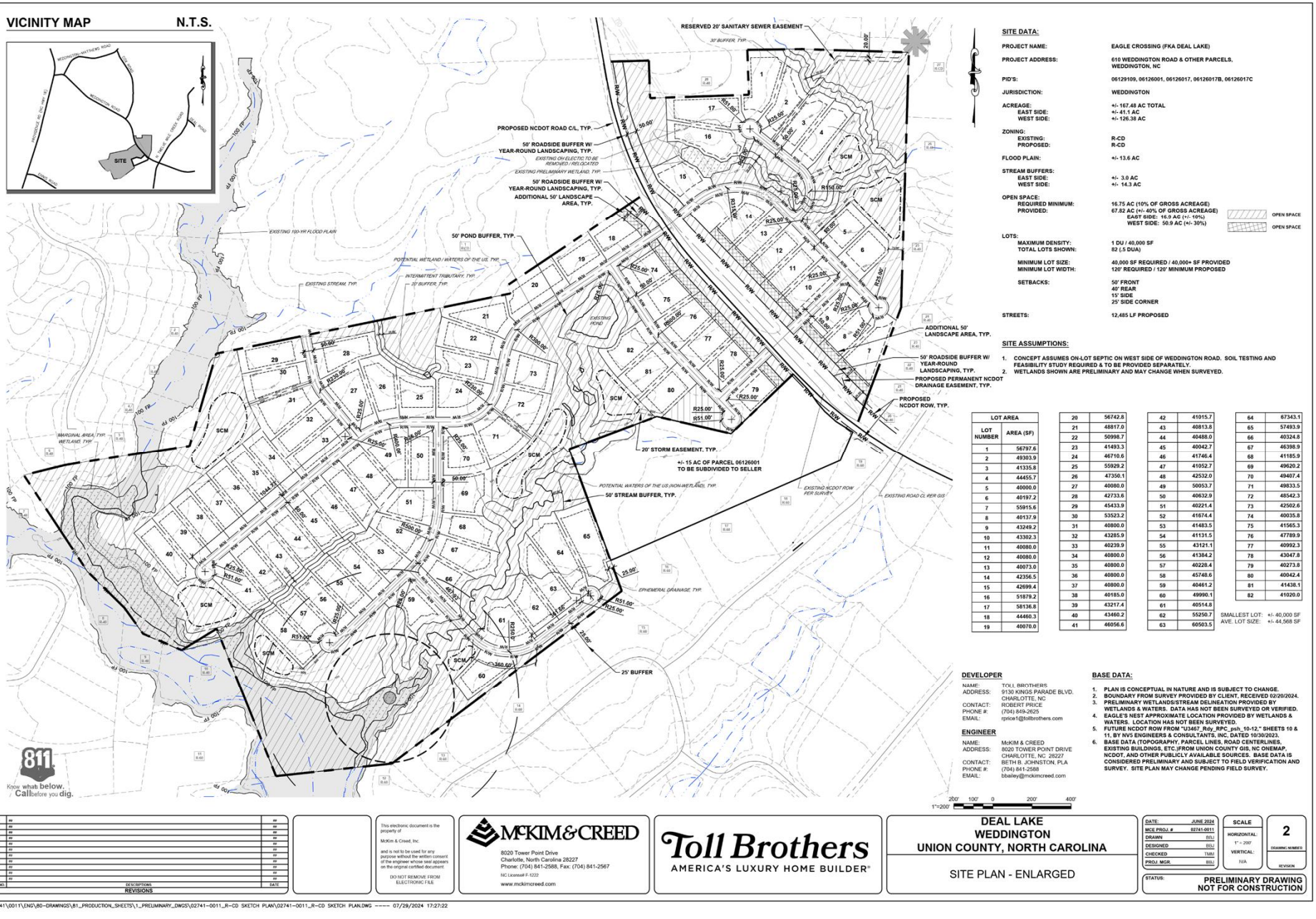
The turning-movement counts collected by Quality Counts were utilized for the existing volumes at the existing study area intersections for both build-out scenarios. As documented in the approved NCDOT TIA Scoping Checklist, a growth rate of two percent (2%) was applied to the 2024 counts to determine future year traffic volumes under the scenarios without STIP projects**.** The NCDOT traffic forecast was used in lieu of the traffic counts to determine future year traffic volumes under the scenarios with STIP projects, as outlined in **Section 4.2**.

Volumes were not balanced between the study area intersections due to the presence of public streets and other residential and commercial driveways. Peak-hour intersection turning-movement count data is provided in the **Appendix**.

Figure 3.4 illustrates the 2024 existing AM, MID, and PM peak-hour traffic volumes.



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	Study Area/Site Location	Figure 3.1



SITE DATA:

PROJECT NAME:	EAGLE CROSSING (FKA DEAL LAKE)
PROJECT ADDRESS:	610 WEDDINGTON ROAD & OTHER PARCELS, WEDDINGTON, NC
PID'S:	06129109, 06126001, 06126017, 06126017B, 06126017C
JURISDICTION:	WEDDINGTON
ACREAGE:	+/- 167.48 AC TOTAL
EAST SIDE:	+/- 41.1 AC
WEST SIDE:	+/- 126.38 AC
ZONING:	
EXISTING:	R-CD
PROPOSED:	R-CD
FLOOD PLAIN:	+/- 13.6 AC
STREAM BUFFERS:	
EAST SIDE:	+/- 3.0 AC
WEST SIDE:	+/- 14.3 AC
OPEN SPACE:	
REQUIRED MINIMUM:	16.75 AC (10% OF GROSS ACREAGE)
PROVIDED:	67.82 AC (+/- 40% OF GROSS ACREAGE) EAST SIDE: 16.9 AC (+/- 10%) WEST SIDE: 50.9 AC (+/- 30%)
LOTS:	
MAXIMUM DENSITY:	1 DU / 40,000 SF
TOTAL LOTS SHOWN:	82 (.5 DUA)
MINIMUM LOT SIZE:	40,000 SF REQUIRED / 40,000+ SF PROVIDED
MINIMUM LOT WIDTH:	120' REQUIRED / 120' MINIMUM PROPOSED
SETBACKS:	50' FRONT 40' REAR 15' SIDE 25' SIDE CORNER
STREETS:	12,485 LF PROPOSED

OPEN SPACE
OPEN SPACE

SITE ASSUMPTIONS:

1. CONCEPT ASSUMES ON-LOT SEPTIC ON WEST SIDE OF WEDDINGTON ROAD. SOIL TESTING AND FEASIBILITY STUDY REQUIRED & TO BE PROVIDED SEPARATELY.
2. WETLANDS SHOWN ARE PRELIMINARY AND MAY CHANGE WHEN SURVEYED.

LOT AREA	
LOT NUMBER	AREA (SF)
1	56797.6
2	49303.9
3	41335.8
4	44455.7
5	40000.0
6	40197.2
7	55915.6
8	40137.9
9	43249.2
10	43302.3
11	40080.0
12	40080.0
13	40073.0
14	42356.5
15	42699.4
16	51879.2
17	58136.8
18	44460.3
19	40070.0
20	56742.8
21	48817.0
22	50998.7
23	41493.3
24	46710.6
25	55929.2
26	47350.1
27	40080.0
28	42733.6
29	45433.9
30	53523.2
31	40800.0
32	43285.9
33	40239.9
34	40800.0
35	40800.0
36	40800.0
37	40800.0
38	40185.0
39	43217.4
40	43460.2
41	46056.6
42	41015.7
43	40813.8
44	40488.0
45	40042.7
46	41746.4
47	41052.7
48	42532.0
49	50053.7
50	40632.9
51	40221.4
52	41674.4
53	41483.5
54	41131.5
55	43121.1
56	41384.2
57	40228.4
58	45748.6
59	40461.2
60	49990.1
61	40514.8
62	55250.7
63	60503.5
64	67343.1
65	57493.9
66	40324.8
67	46398.9
68	41185.9
69	49620.2
70	49407.4
71	49833.5
72	48542.3
73	42502.6
74	40035.8
75	41565.3
76	47789.9
77	40992.3
78	43047.8
79	40273.8
80	40042.4
81	41438.1
82	41020.0

SMALLEST LOT: +/- 40,000 SF
AVE. LOT SIZE: +/- 44,568 SF

DEVELOPER

NAME: TOLL BROTHERS
ADDRESS: 9130 KINGS PARADE BLVD. CHARLOTTE, NC
CONTACT: ROBERT PRICE
PHONE #: (704) 849-2625
EMAIL: rprice1@tollbrothers.com

ENGINEER

NAME: McKIM & CREED
ADDRESS: 8020 TOWER POINT DRIVE CHARLOTTE, NC 28227
CONTACT: BETH B. JOHNSTON, PLA
PHONE #: (704) 841-2588
EMAIL: bbailey@mckimcreed.com

BASE DATA:

1. PLAN IS CONCEPTUAL IN NATURE AND IS SUBJECT TO CHANGE.
2. BOUNDARY FROM SURVEY PROVIDED BY CLIENT, RECEIVED 02/20/2024.
3. PRELIMINARY WETLANDS/STREAM DELINEATION PROVIDED BY WETLANDS & WATERS. DATA HAS NOT BEEN SURVEYED OR VERIFIED.
4. EAGLE'S NEST APPROXIMATE LOCATION PROVIDED BY WETLANDS & WATERS. LOCATION HAS NOT BEEN SURVEYED.
5. FUTURE NCDOT ROW FROM "U3467_Rdy_RPC_psh_10-12," SHEETS 10 & 11, BY NV5 ENGINEERS & CONSULTANTS, INC, DATED 10/30/2023.
6. BASE DATA (TOPOGRAPHY, PARCEL LINES, ROAD CENTERLINES, EXISTING BUILDINGS, ETC.)FROM UNION COUNTY GIS, NC ONEMAP, NCDOT, AND OTHER PUBLICLY AVAILABLE SOURCES. BASE DATA IS CONSIDERED PRELIMINARY AND SUBJECT TO FIELD VERIFICATION AND SURVEY. SITE PLAN MAY CHANGE PENDING FIELD SURVEY.

REV. NO.	DESCRIPTIONS REVISIONS	DATE
##	##	##

This electronic document is the property of McKim & Creed, Inc. and is not to be used for any purpose without the written consent of the engineer whose seal appears on the original certified document. DO NOT REMOVE FROM ELECTRONIC FILE

McKIM&CREED
8020 Tower Point Drive
Charlotte, North Carolina 28227
Phone: (704) 841-2588, Fax: (704) 841-2567
NC License# F-1222
www.mckimcreed.com

Toll Brothers
AMERICA'S LUXURY HOME BUILDER®

DEAL LAKE
WEDDINGTON
UNION COUNTY, NORTH CAROLINA

SITE PLAN - ENLARGED

DATE:	JUNE 2024
MCE PROJ. #	02741-0011
DRAWN	BSJ
DESIGNED	BSJ
CHECKED	TMM
PROJ. MGR.	BSJ

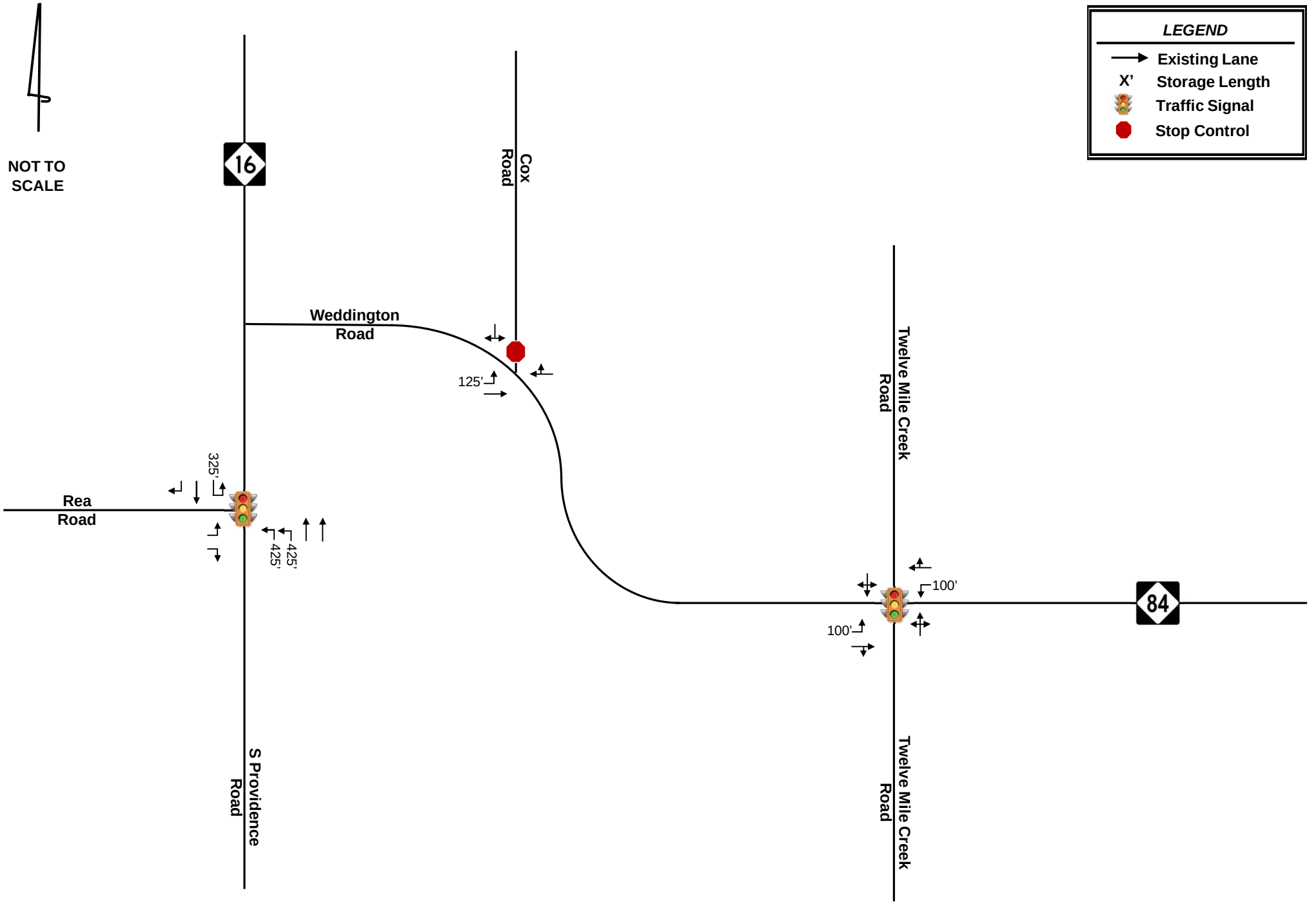
SCALE
HORIZONTAL: 1" = 200'
VERTICAL: N/A

2
DRAWING NUMBER

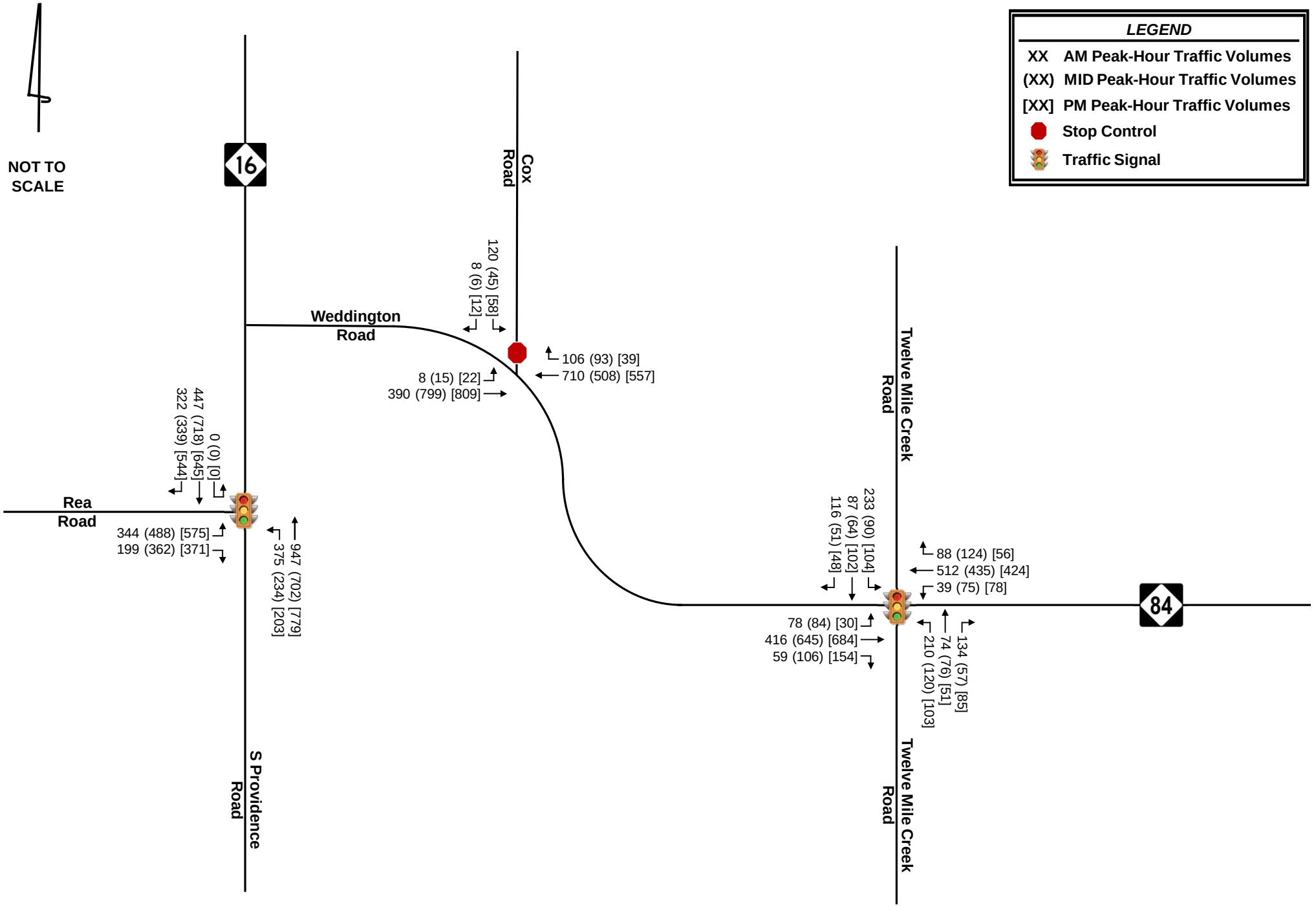
REVISION

STATUS: PRELIMINARY DRAWING NOT FOR CONSTRUCTION

I:\02741\0011\ENG\80-DRAWINGS\81_PRODUCTION_SHEETS\1_PRELIMINARY_DWGS\02741-0011_R-CD SKETCH PLAN\02741-0011_R-CD SKETCH PLAN.DWG ---- 07/29/2024 17:27:22



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	Existing Roadway Laneage	Figure 3.3



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	2024 Existing Traffic Volumes	Figure 3.4

4.0 Background Traffic Volume Development

Projected background (non-project) traffic is defined as the expected growth or change in traffic volumes on the surrounding roadway network between the year the existing counts were collected (2024) and the expected build-out year (2029) absent the construction and opening of the proposed project. This includes both non-specific general growth based on historical increase in local traffic volumes (historical background growth), along with specific growth and/or change in traffic volumes caused by either approved, but not yet fully-constructed, off-site developments and/or planned transportation projects specifically identified within the vicinity of the proposed development.

4.1 HISTORICAL BACKGROUND GROWTH TRAFFIC

Historical background growth is the increase in existing traffic volumes due to usage increases and non-specific growth throughout the area, and accounts for growth that is independent of specific off-site developments or planned transportation projects. Historical background growth traffic is calculated using an annual growth rate, which is applied to the existing traffic volumes up to the future horizon years. As shown in the approved NCDOT scoping checklist, an annual growth rate of two percent (2%) was applied to the 2024 existing peak-hour traffic volumes to calculate base 2029 background traffic volumes under the future year scenarios without STIP projects. This growth rate was determined based on review of historical NCDOT AADT maps in coordination with NCDOT and Town of Weddington, along with consideration of the additional specific traffic being added by the two (2) approved developments discussed below.

4.2 FORECAST TRAFFIC VOLUMES

The 2029 background volumes used for the future analyses with STIP projects, were calculated based on the forecast volumes on the latest roadway plan set provided by NCDOT for Statewide Transportation Improvement Program (STIP) Project U-3467. The NCDOT Intersection Analysis Utility (IAU) spreadsheet was used to calculate/convert the AADT volumes from the roadway plans into peak-hour intersection turning-movement volumes. The *FS-1810D Project Level Traffic Forecast Report* (RK&K, September 2018) and U-3467 Environmental Assessment (Mulkey Engineers & Consultants, May 2015) were also utilized in order to determine the directional splits for all study area intersections. This methodology was determined based on coordination with Town of Weddington and NCDOT staff. IAU worksheets and MID peak-hour traffic volume calculations are included in the **Appendix.**

4.3 APPROVED DEVELOPMENTS

At the direction of the Town of Weddington and NCDOT staff, no approved developments were identified for inclusion in this TIA at the time of the original Scoping Process. However, per coordination with Town of Weddington Staff, two approved developments have been added to this TIA UPDATE, as outlined in **Table 4.1**.

Table 4.1 – Approved Developments		
Development	**Land Use/Intensity**	**Required Improvements**
Providence & Rea (NW of NC 16 & Rea Rd)	Single-Family (Detached) – 56 DUs	No required improvements at study intersections.
Weddington Office Park (N of NC 84)	General Office – 10,000 SF Medical Office- 10,000 SF	No required improvements at study intersections.

Site trips for both developments were obtained from their respective TIAs:

- Providence & Rea (Design Resource Group, June 2024)
- Weddington Office Road (Design Resource Group, May 2024)

Approved development volumes for the midday peak hour were not included in these TIAs. These volumes were calculated utilizing the hourly breakdowns provided in ITE Trip Generation and applied to the PM peak hour approved development volumes to determine the midday approved development volumes.

Calculations for approved development traffic are included in the **Appendix**.

4.4 PLANNED TRANSPORTATION PROJECTS

Two (2) future transportation projects have been identified within the study area based on review of the following adopted transportation plans for the area:

- NCDOT 2024-2033 State Transportation Improvement Program (STIP)
- Charlotte Regional Transportation Planning Organization (CRTPO) 2050 Metropolitan Transportation Plan (MTP)
- CRTPO Comprehensive Transportation Plan (CTP)

Below is a summary of the two (2) future transportation projects identified:

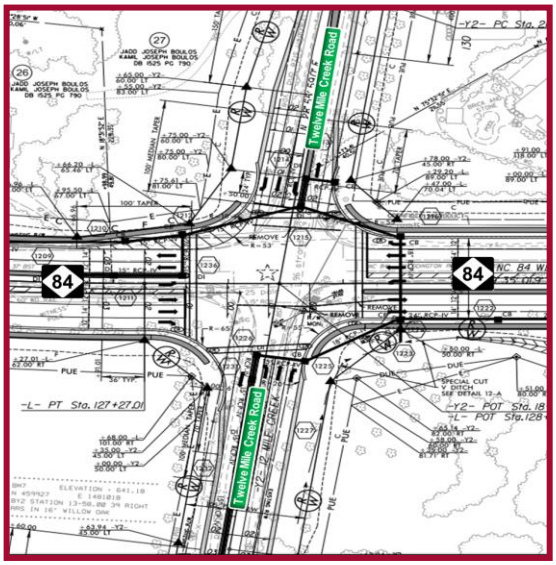
1. **Weddington Road (NC 84) (U-3467)**
   - Construct four-lane road from NC 16 to Waxhaw-Indian Trail Rd (see below for more detail)
   - Funded for Utilities FY 2024-2025
   - Funded for ROW FY 2024-2028
   - Funded for Construction FY 2027-2030
2. **S Providence Road (NC 16) (U-5769A)**
   - NC 16 Widening from Rea Rd to Bonds Grove Church Rd (see below for more detail)
   - Funded for Utilities FY 2025-2026
   - Funded for ROW FY 2025-2029
   - Funded for Construction FY 2029-2032

Based on input during the TIA Scoping Process and given the current schedule, both TIP projects were included in 2029 analyses. However, based on subsequent coordination with Town of Weddington Staff, an additional scenario was added to reflect operations in the study area should the proposed development be complete before these TIP projects.

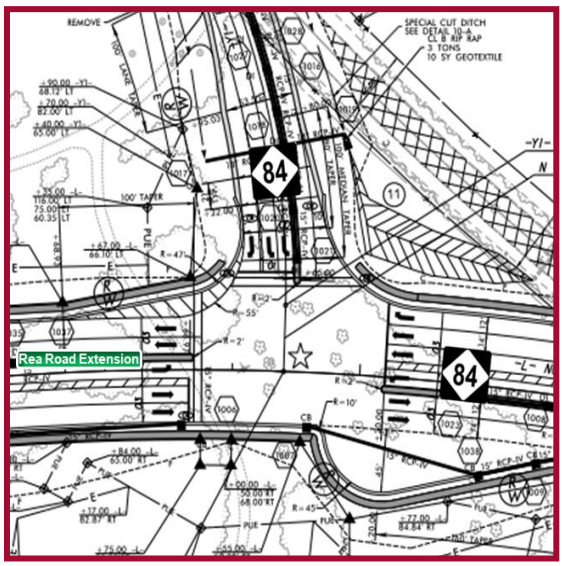
U-3467 will extend Rea Road 1.7 miles east from S Providence Road (NC 16) to Weddington Road (NC 84) near Twelve Mile Creek Road. Proposed work also involves widening 2.7 miles of the existing Weddington Road (NC 84) from two to four lanes from Twelve Mile Creek Road to Waxhaw-Indian Trail Road in Wesley Chapel. Based on the current NCDOT STIP as of April 2024, this project is scheduled to begin construction in FY 2027 and was included in the 2029 background and build-out analysis scenarios. Final intersection configurations for U-3467 may differ from the improvements assumed in this TIA.

Based on the latest roadway plan set provided by NCDOT included in the **Appendix** and confirmed in the latest public hearing map intersection concepts shown below, this project intends to improve the following study area intersections:

3. **Weddington Rd (NC 84) and Twelve Mile Creek Rd** – this signalized intersection is planned to remain full-movement with the following approach laneage:
   - Northbound – One through lane, one left-turn lane, and one right-turn lane along Twelve Mile Creek Road.
   - Southbound – One through lane, one left-turn lane, and one right-turn lane along Twelve Mile Creek Road.
   - Eastbound – Two through lanes, one left-turn lane, and one right-turn lane along Weddington Road (NC 84).
   - Westbound – Two through lanes, one left-turn lane, and one right-turn lane along Weddington Road (NC 84).



4. **Weddington Rd (NC 84) and Rea Rd Extension –** this proposed intersection is planned to be full-movement with the following approach laneage:
   - Southbound – Two left-turn lanes and one right-turn lane along Weddington Road (NC 84).
   - Eastbound – Two through lanes and one left-turn lane along Rea Road Extension.
   - Westbound – Two through lanes, one U-turn lane, and one right-turn lane along Weddington Road (NC 84).

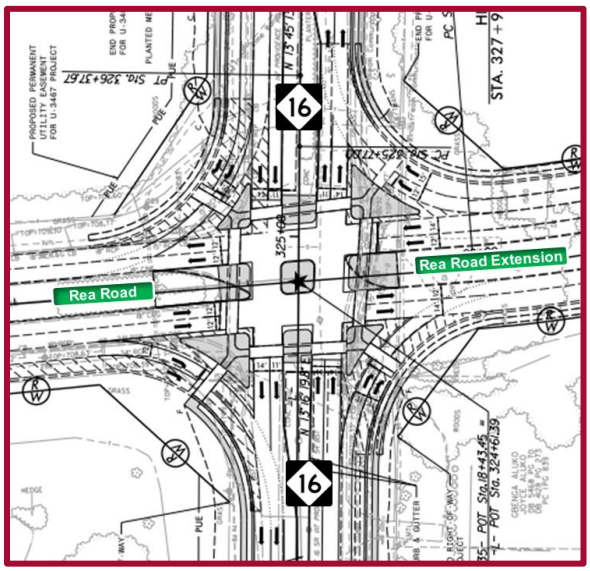


The latest ROW design plans for NCDOT TIP Project No. U-3467, funded to improve Weddington Road (NC 84) between S Providence Road (NC 16) and Waxhaw Indian Tail Road, are also included in the **Appendix**.

U-5769A will widen S Providence Road (NC 16) between Rea Road Extension and Bonds Grove Church Road from a two (2)-lane facility to a median-divided, four (4)-lane facility. This project intends to improve S Providence Road (NC 16) through a combination of conventional and reduced conflict intersections (RCIs). Based on the current NCDOT STIP as of April 2024, this project is scheduled to begin construction in FY 2029 and was included in the 2029 background and build-out analysis scenarios. Final intersection configurations for U-5769A may differ from the improvements assumed in this TIA.

Based on the latest roadway plan set provided by NCDOT included in the **Appendix** and as shown below, this project intends to improve the following study area intersection:

1. **S Providence Rd (NC 16) and Rea Rd/Rea Rd Extension** - this intersection is planned to be converted from the existing standard full-movement configuration to a RCI where left-turns are not allowed at the main intersection. Instead, all left-turn movements will be redirected to U-turn bulbs on each leg of the S Providence Rd (NC 16) and Rea Road/Rea Road Extension intersection. U-turn bulbs on S Providence Rd (NC 16) will be signalized and U-turn bulbs on Rea Rd/Rea Rd Extension will be unsignalized. U-3467 will construct the fourth leg of this intersection and then will be modified to a RCI as part of U-5769A. Based on these plans, the following approach laneage was assumed:

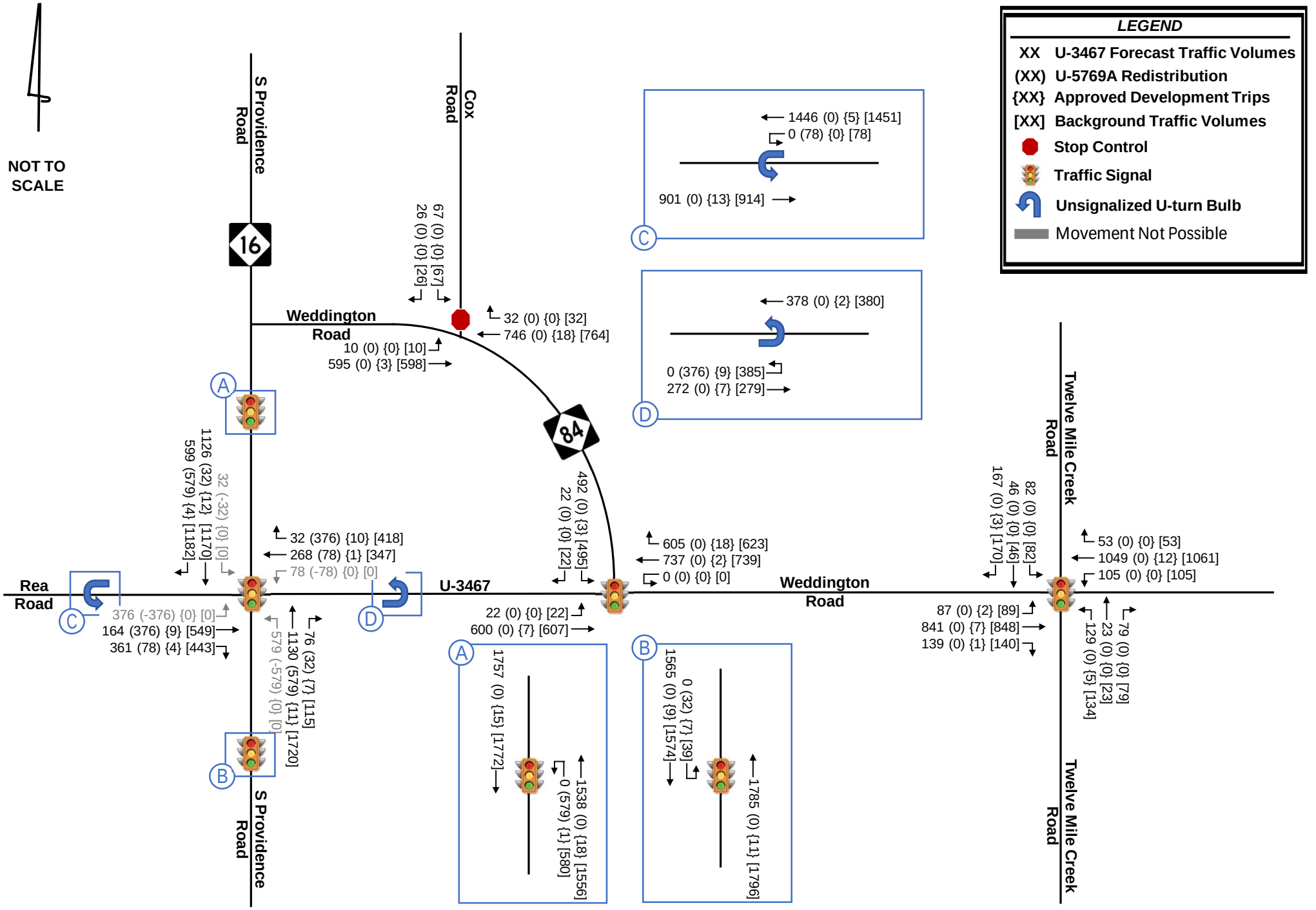


   - Northbound – Two through lanes and two right-turn lanes along S Providence Rd (NC 16)
   - Southbound – Two through lanes and two right-turn lanes along S Providence Rd (NC 16)
   - Eastbound – Two through lanes and two right-turn lanes along Rea Rd
   - Westbound – Two through lanes and two right-turn lanes along Rea Rd Extension

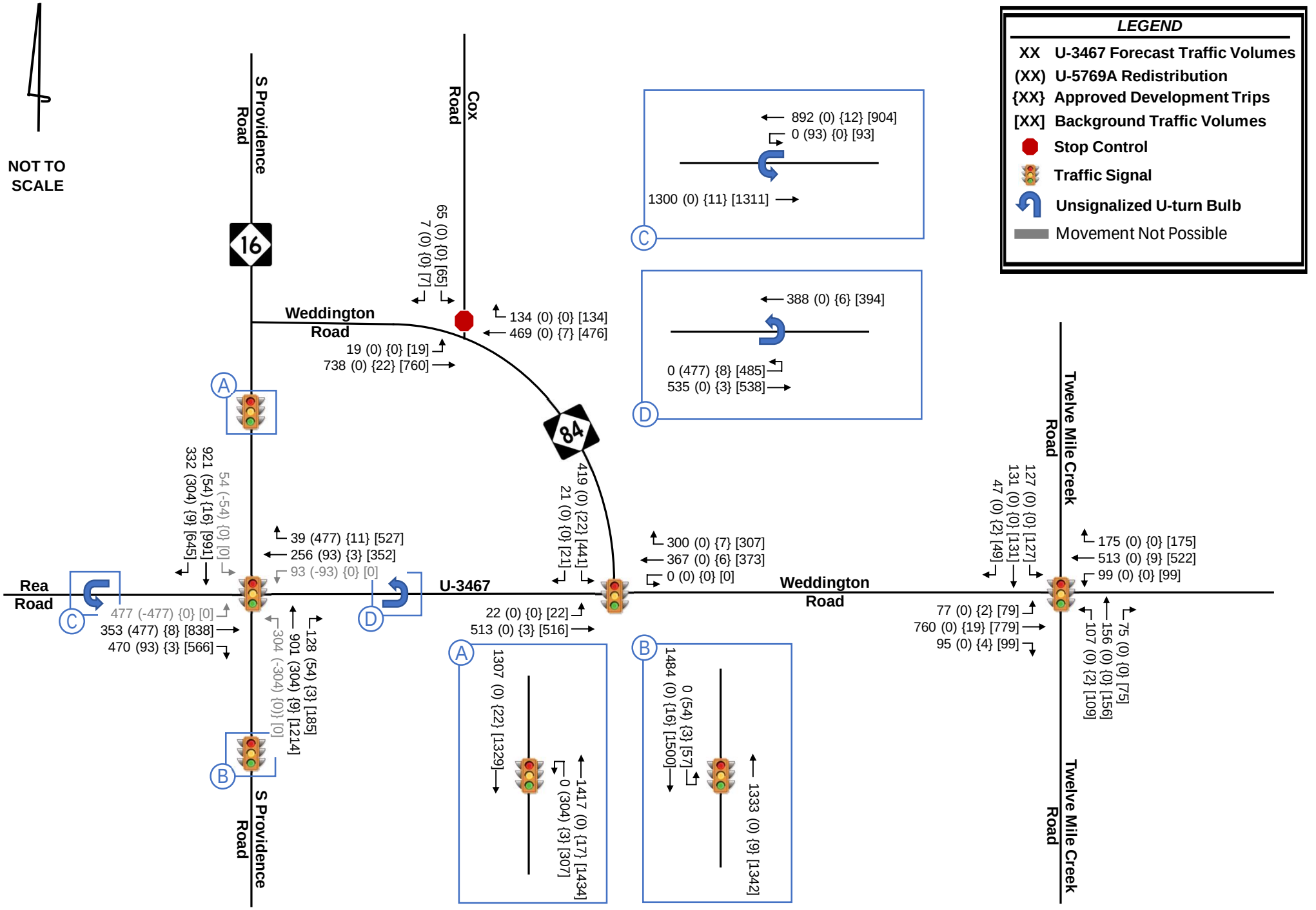
The projected 2029 background peak-hour traffic volumes are shown in the following figures:

- **Figure 4.1** – 2029 Background AM Peak-Hour Traffic Volumes w/ STIPs
- **Figure 4.2** – 2029 Background MID Peak-Hour Traffic Volumes w/ STIPs
- **Figure 4.3** – 2029 Background PM Peak-Hour Traffic Volumes w/ STIPs
- **Figure 4.4** – 2029 Background AM Peak-Hour Traffic Volumes w/o STIPs
- **Figure 4.5** – 2029 Background MID Peak-Hour Traffic Volumes w/o STIPs
- **Figure 4.6** – 2029 Background PM Peak-Hour Traffic Volumes w/o STIPs

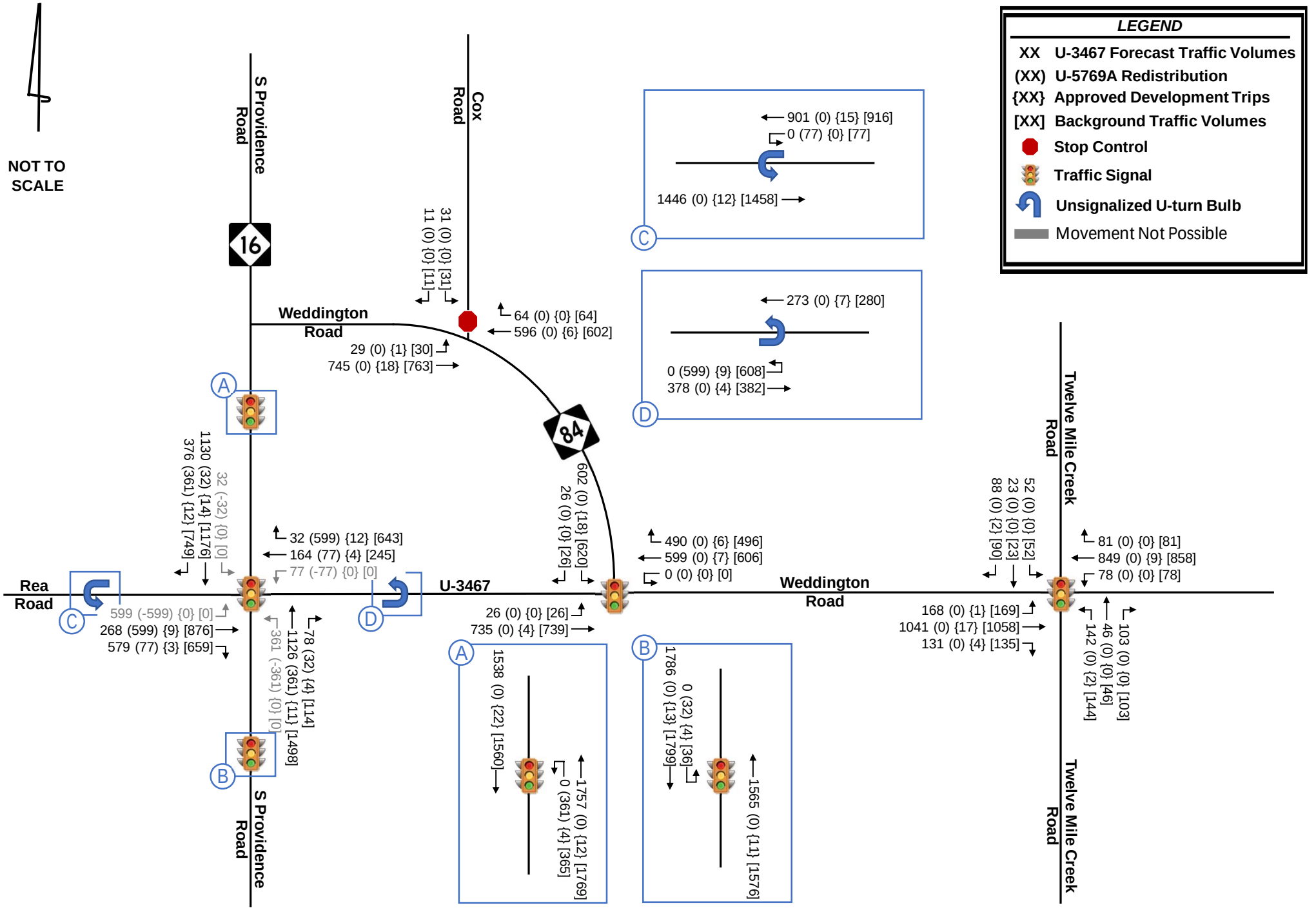
Redistribution calculations are provided in the **Appendix**.



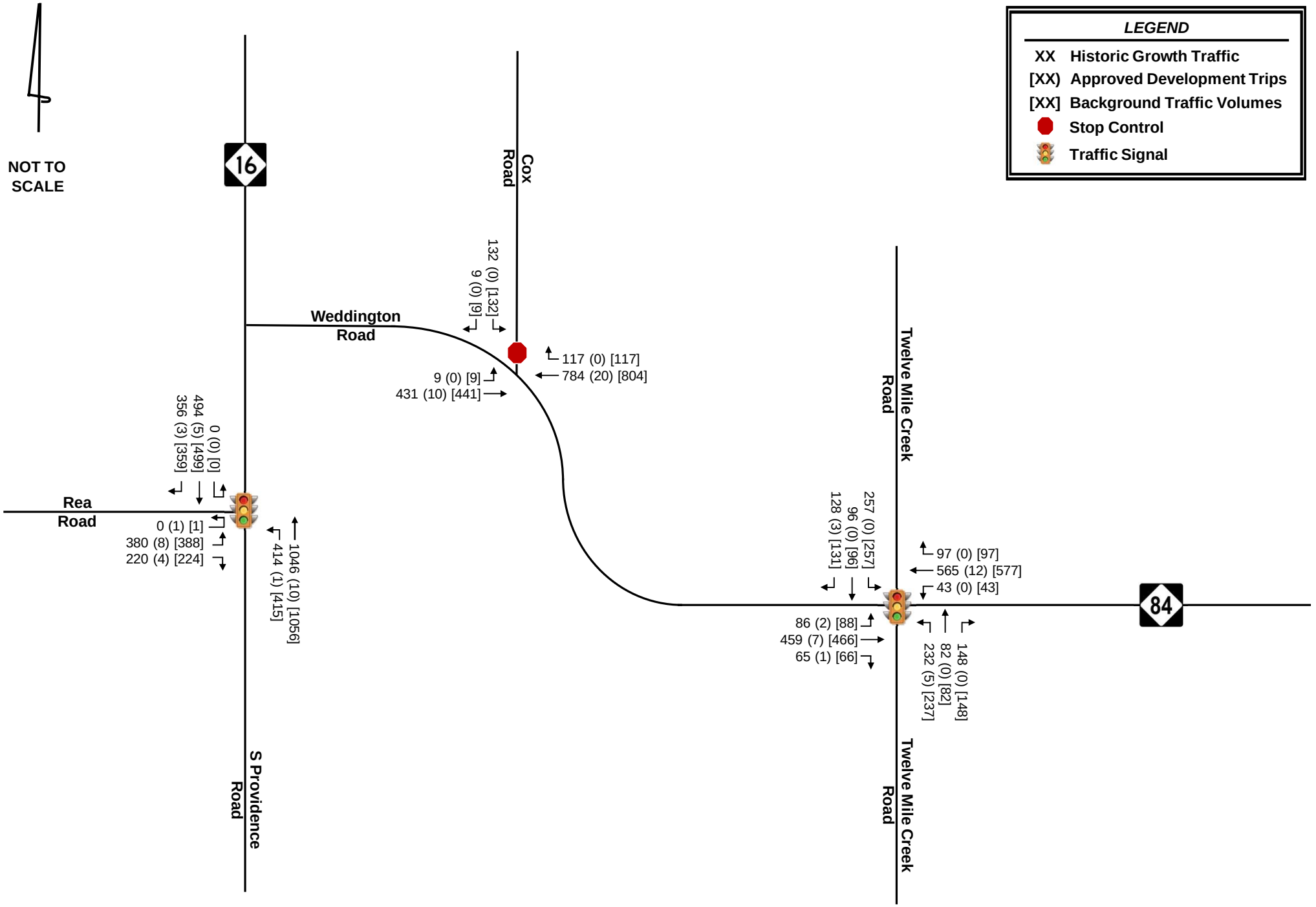
Kimley»Horn	**Deal Lake** **Traffic Impact Analysis UPDATE**	**2029 Background AM** **Peak-Hour Traffic Volumes** **w/ STIPs**	**Figure 4.1**



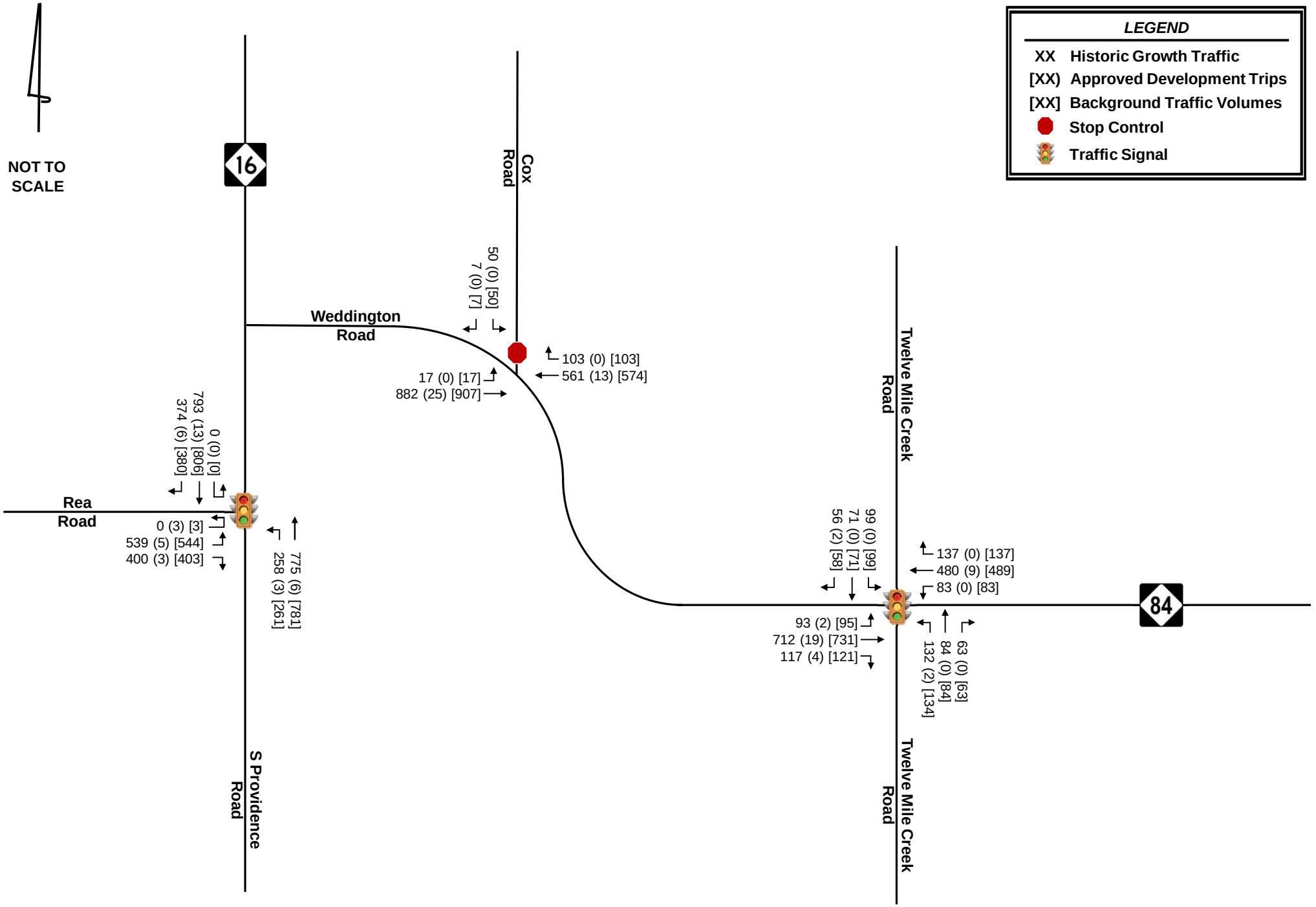
Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	2029 Background MID Peak-Hour Traffic Volumes w/ STIPs	Figure 4.2



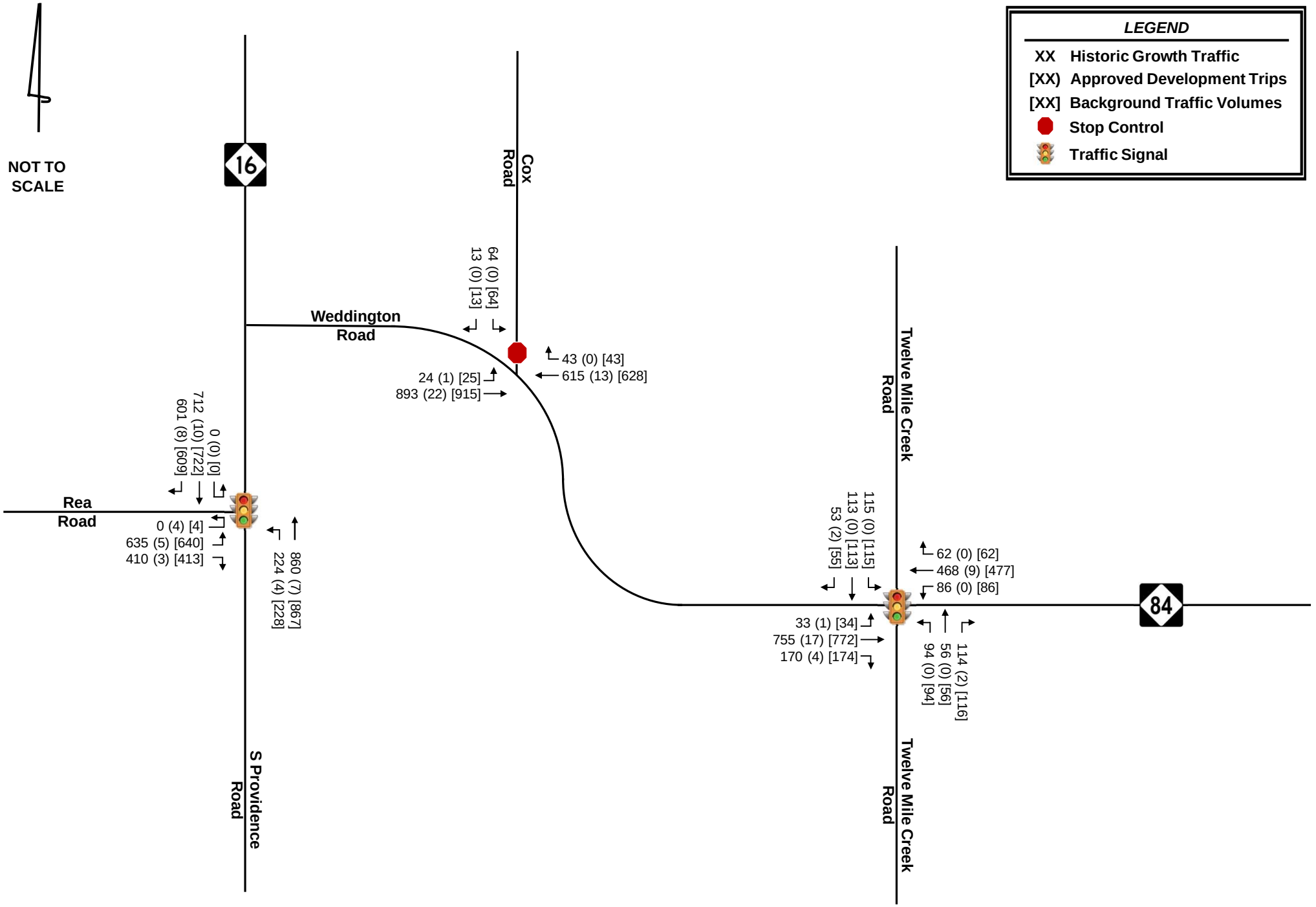
Kimley»Horn	**Deal Lake** **Traffic Impact Analysis UPDATE**	**2029 Background PM** **Peak-Hour Traffic Volumes** **w/ STIPs**	**Figure 4.3**



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	2029 Background AM Peak-Hour Traffic Volumes w/o STIPs	Figure 4.4



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	2029 Background MID Peak-Hour Traffic Volumes w/o STIPs	Figure 4.5



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	2029 Background PM Peak-Hour Traffic Volumes w/o STIPs	Figure 4.6

5.0 Site Traffic Volume Development

Site traffic developed for this TIA is defined as the vehicle trips expected to be generated and added to the study area by construction of the proposed development, and the distribution and assignment of that traffic throughout the surrounding network.

5.1 SITE ACCESS

For the purposes of this TIA, a build-out year of 2029 was considered. Based on the site plan, the proposed development will be accessed via two external access points along Weddington Road (NC 84):

- Access A – an unsignalized, right-in/right-out (RIRO) connection to Weddington Road (NC 84) approximately 940 feet east of Lake Forest Drive; this access serves both sides of the development.
- Access B – an unsignalized, RIRO connection to Weddington Road approximately 560 feet east of Access A; this access serves both sides of the development.

5.2 TRAFFIC GENERATION

The traffic generation potential of the proposed development was determined using the trip generation rates published in *Trip Generation* (Institute of Transportation Engineers, Eleventh Edition, 2021). Based on the site plan, the proposed development is currently envisioned to consist of 17 single-family detached homes on the north side of Weddington Road and 65 single-family detached homes on the south side of Weddington Road (82 single-family detached homes).

Table 5.1 summarizes the projected trip generation for the proposed development. During a typical weekday, it has the potential to generate 65, 72, and 85 net new external trips during the AM, MID, and PM peak hours, respectively.

Table 5.1 - Trip Generation

ITE LUC	Land Use	Intensity		Daily	AM Peak Hour			Midday Peak Hour*			PM Peak Hour		
					Total	In	Out	Total	In	Out	Total	In	Out
210	Single-Family Detached Housing (North Parcel)	17	DU	198	15	4	11	16	10	6	19	12	7
210	Single-Family Detached Housing (South Parcel)	65	DU	679	50	13	37	56	35	21	66	42	24
Net New External Trips				**877**	**65**	**17**	**48**	**72**	**45**	**27**	**85**	**54**	**31**

*ITE does not provide weekday, midday peak-hour traffic generation rates. The hourly breakdowns provided in ITE Trip Generation were applied to the PM peak-hour trip generation to determine midday peak-hour trip generation. It was assumed that midday trips would operate with the same in/out percentages as the PM peak-hour.

5.3 SITE TRAFFIC DISTRIBUTION AND ASSIGNMENT

The proposed development's trips were assigned to the surrounding network based on existing peak-hour turning movements, surrounding land uses, locations of similar land use and population densities in the area. The following site traffic distribution was reviewed and approved as part of the TIA Scoping Checklist by the Town of Weddington and NCDOT:

- 20% to/from the east along Weddington Road (NC 84)
- 20% to/from the west along Rea Road
- 30% to/from the north along S Providence Road (NC 16)
- 10% to/from the south along S Providence Road (NC 16)
- 5% to/from the north along Cox Road
- 5% to/from the north along Twelve Mile Creek Road
- 10% to/from the south along Twelve Mile Creek Road

The overall site traffic distribution and assignment can be seen in the following figures:

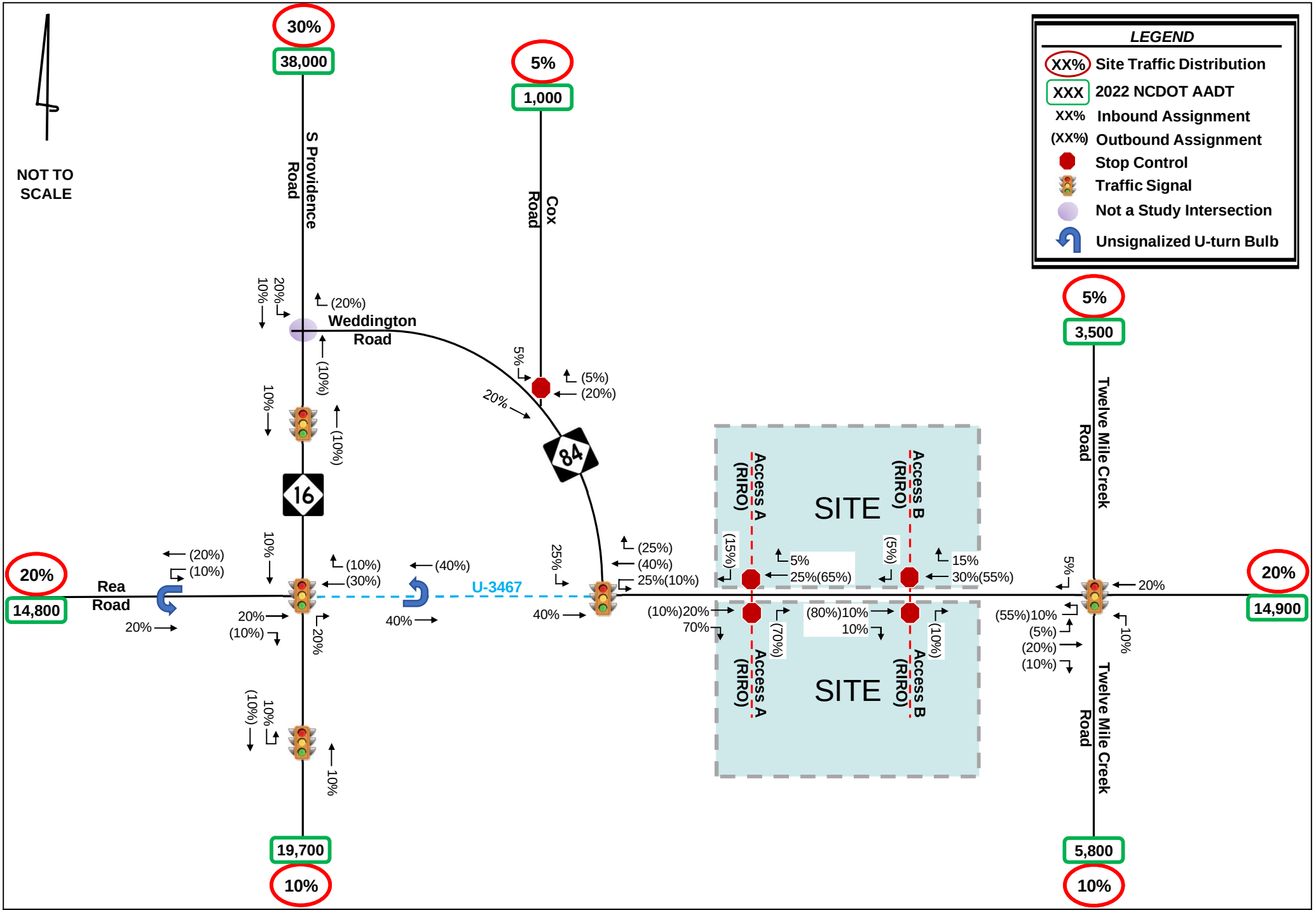
- **Figure 5.1** – Sight Traffic Distribution and Assignment w/ STIPs
- **Figure 5.2** – Sight Traffic Distribution and Assignment w/o STIPs

5.4 BUILD-OUT TRAFFIC VOLUMES

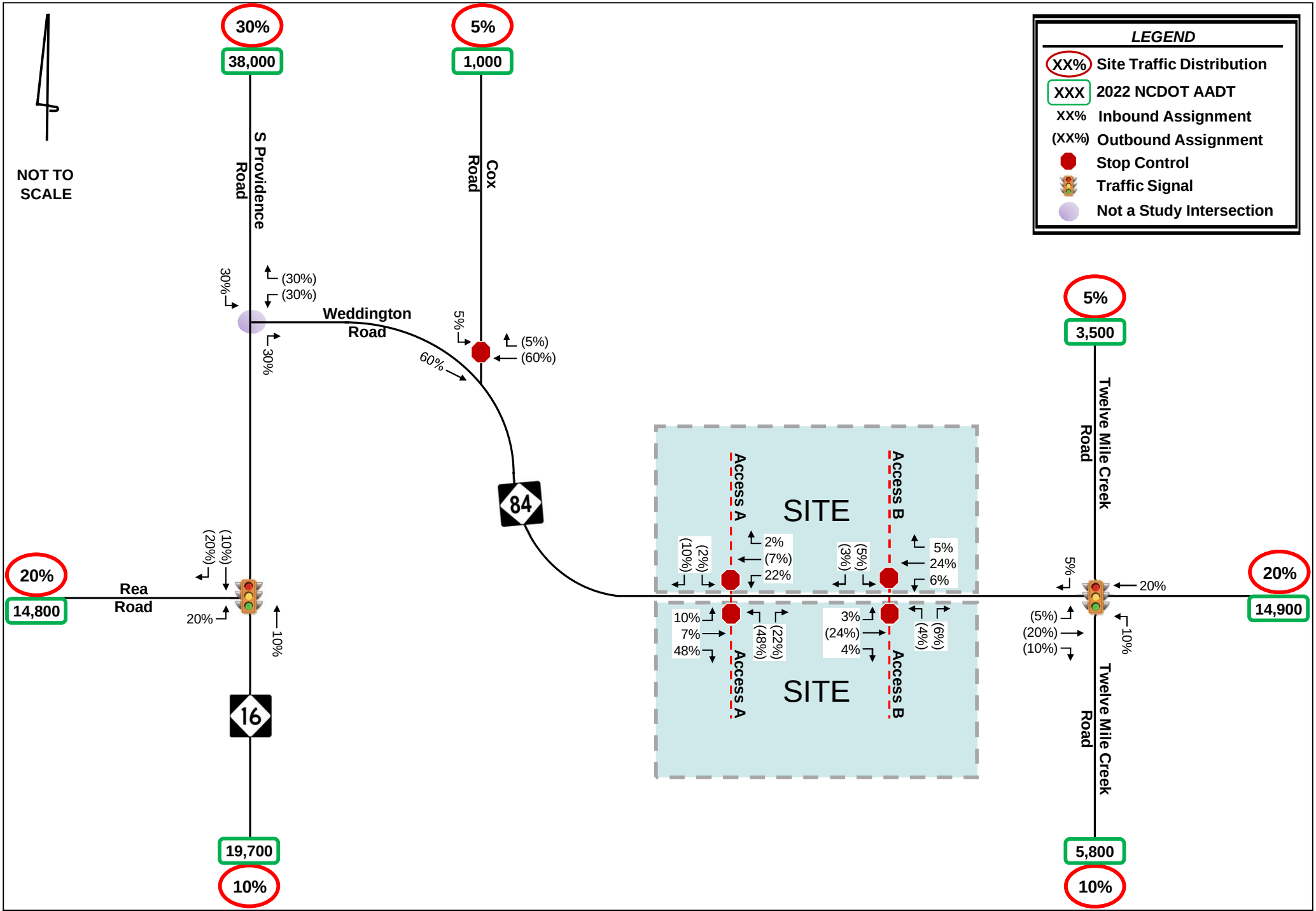
The build-out traffic volumes include the assignment of the projected site traffic generation added to the appropriate background traffic volumes. Build-out traffic volumes are shown in the following figures:

- **Figure 5.3** – 2029 Build-out AM Peak-Hour Traffic Volumes w/ STIPs
- **Figure 5.4** – 2029 Build-out MID Peak-Hour Traffic Volumes w/ STIPs
- **Figure 5.5** – 2029 Build-out PM Peak-Hour Traffic Volumes w/ STIPs
- **Figure 5.6** – 2029 Build-out AM Peak-Hour Traffic Volumes w/o STIPs
- **Figure 5.7** – 2029 Build-out MID Peak-Hour Traffic Volumes w/o STIPs
- **Figure 5.8** – 2029 Build-out PM Peak-Hour Traffic Volumes w/o STIPs

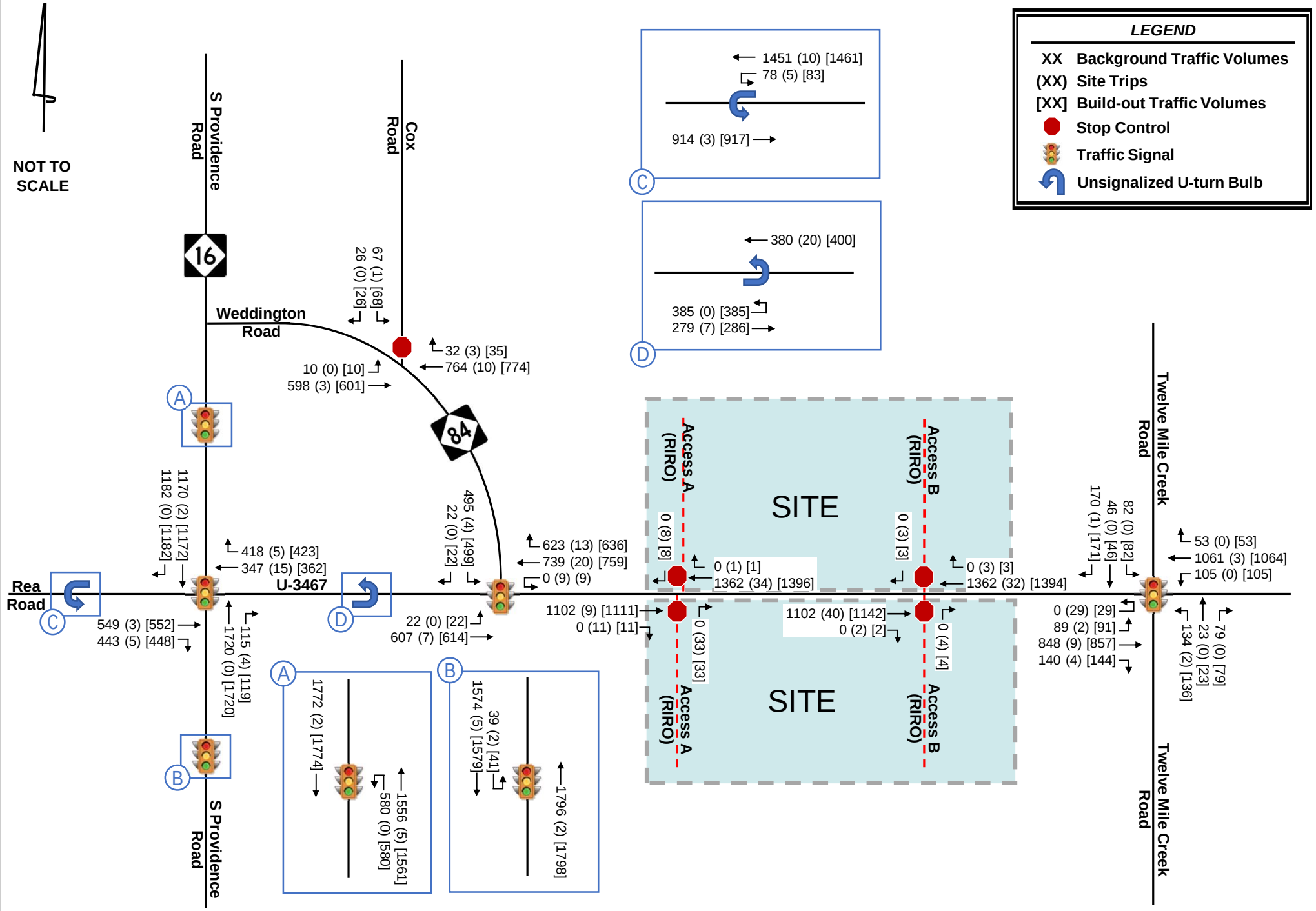
Intersection volume development worksheets for all intersections within the study network are provided in the **Appendix**.



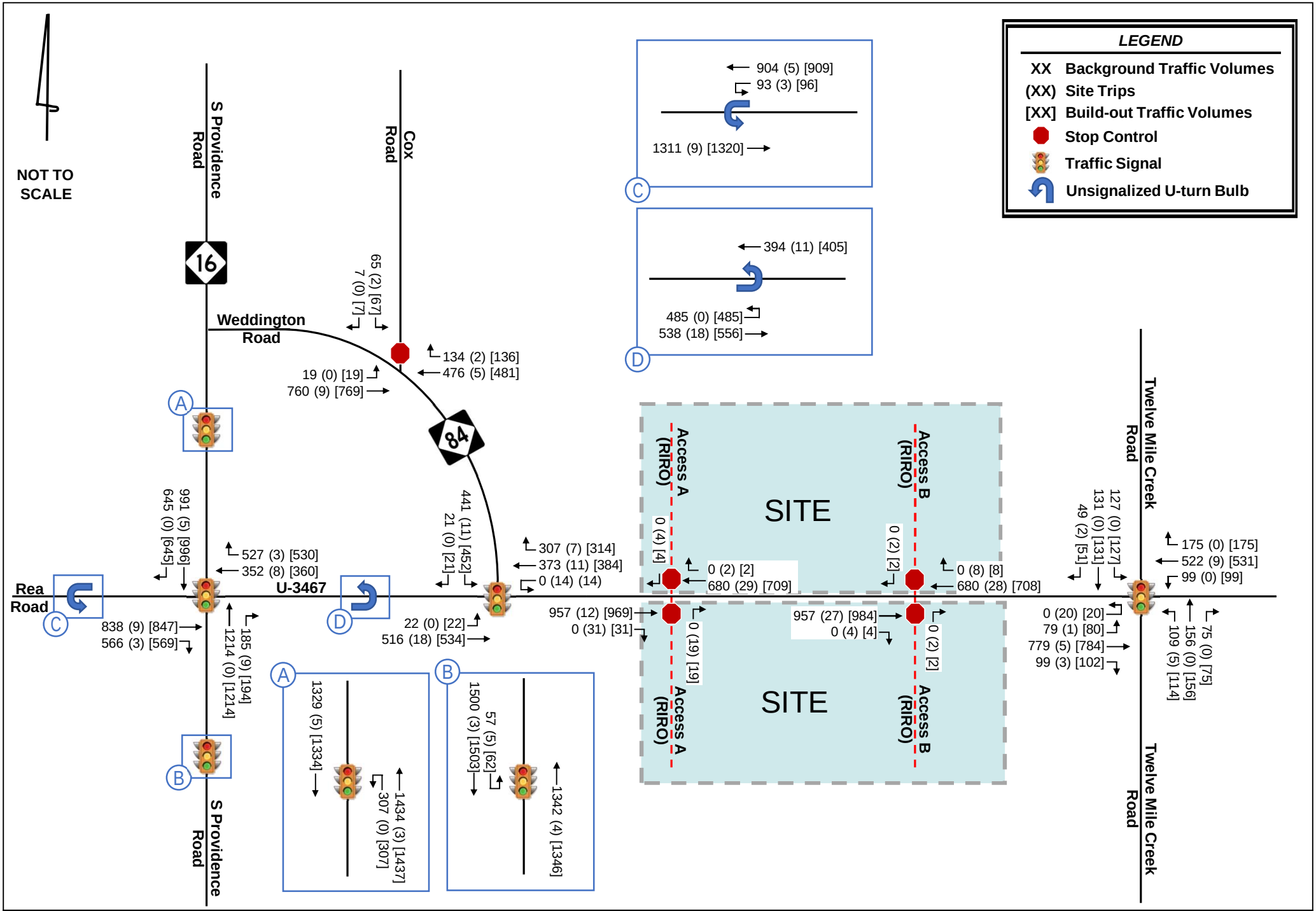
Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	Site Traffic Distribution and Assignment w/ STIPs	Figure 5.1



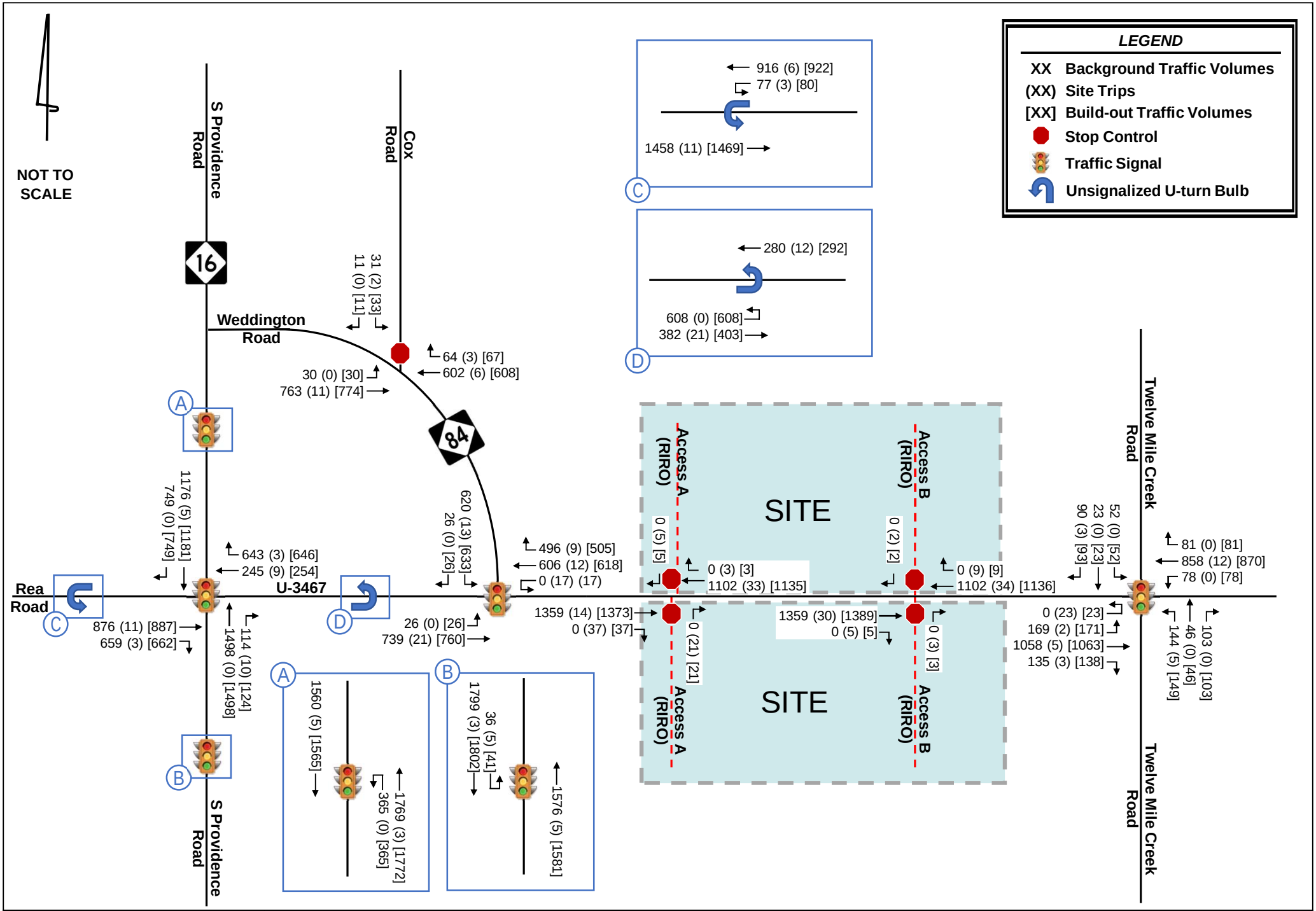
Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	Site Traffic Distribution and Assignment w/o STIPs	Figure 5.2



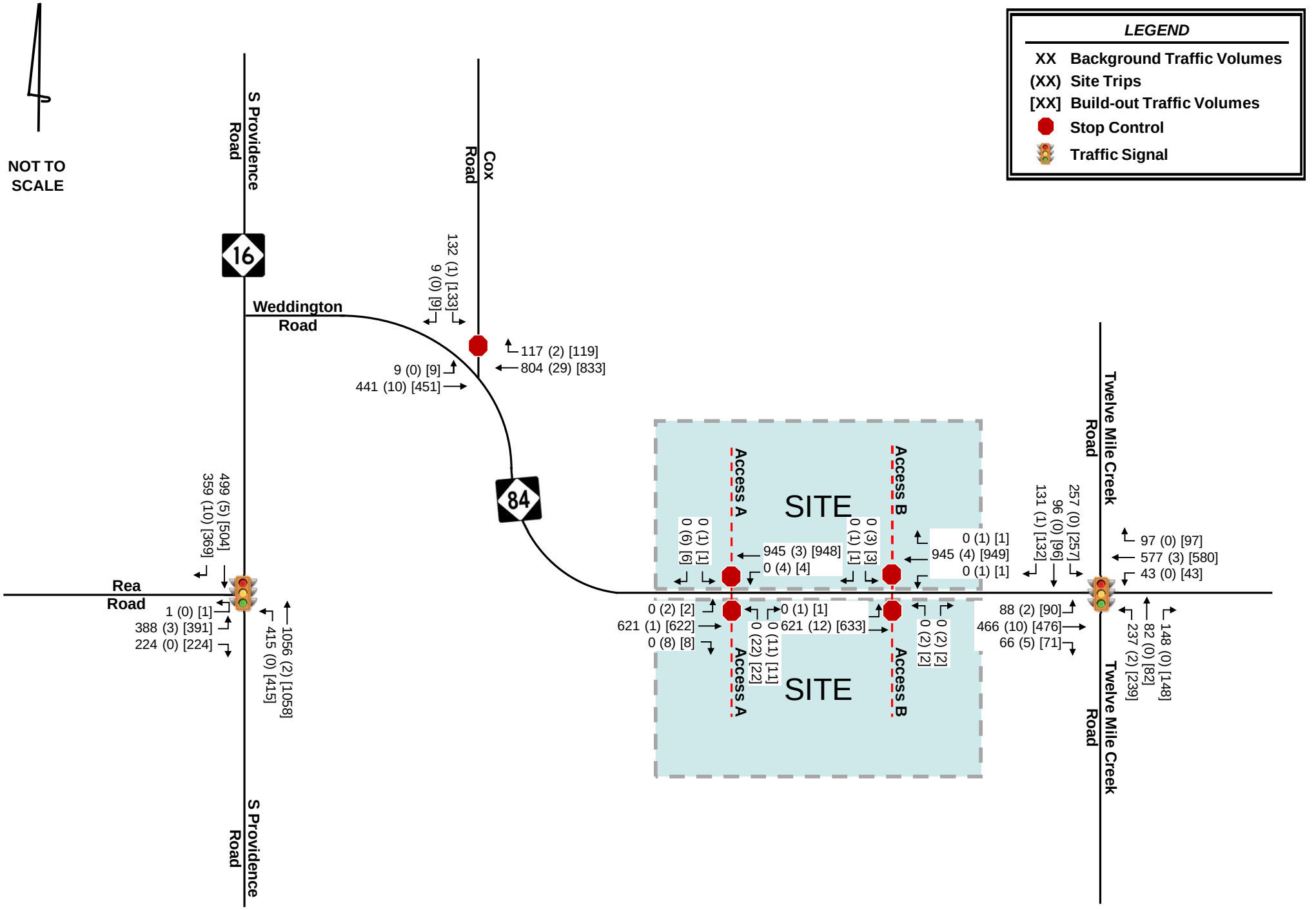
Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	2029 Build-out AM Peak-Hour Traffic Volumes w/ STIPs	Figure 5.3



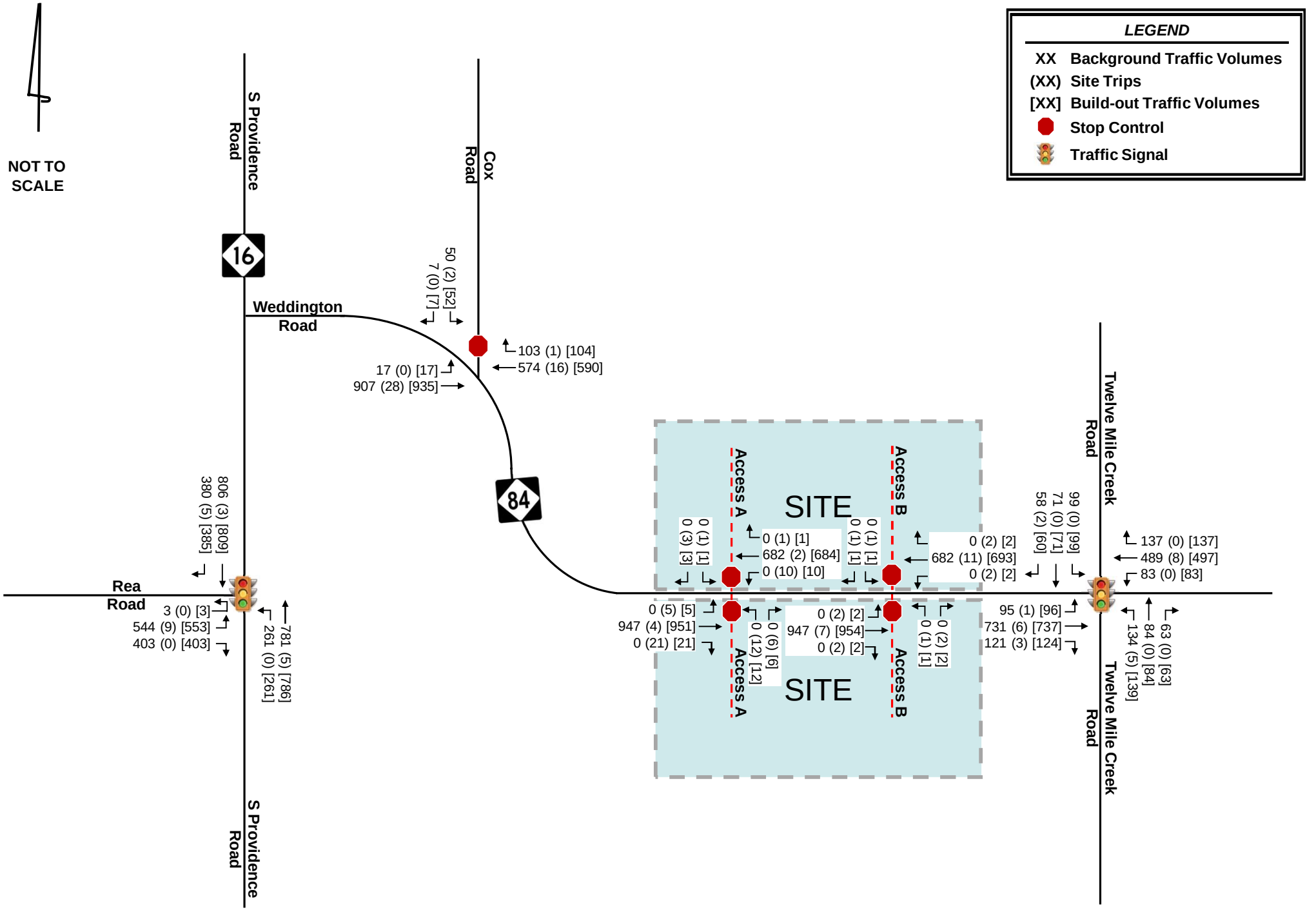
Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	2029 Build-out MID Peak-Hour Traffic Volumes w/ STIPs	Figure 5.4



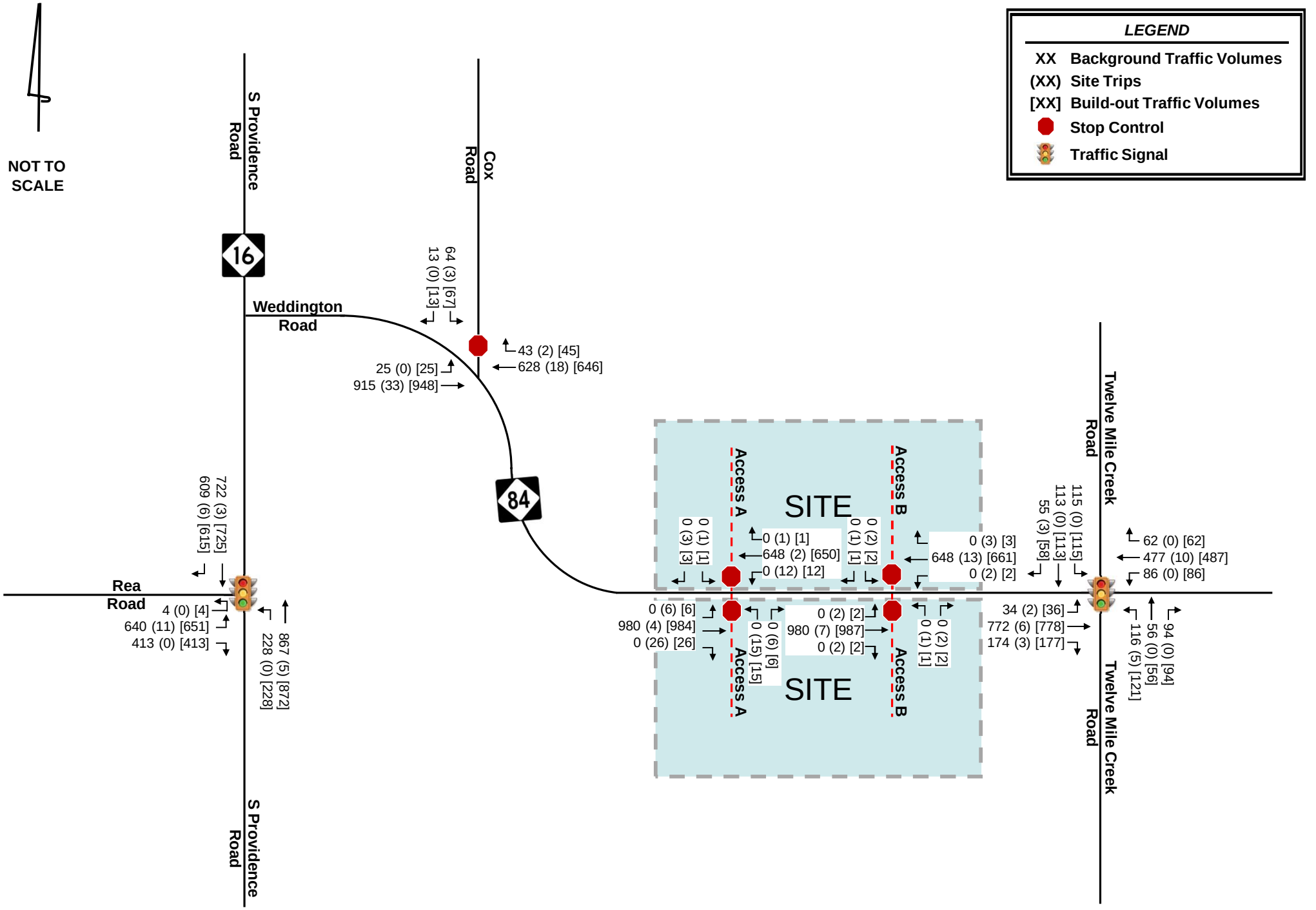
Kimley»Horn	**Deal Lake** **Traffic Impact Analysis UPDATE**	**2029 Build-out PM** **Peak-Hour Traffic Volumes** **w/ STIPs**	**Figure 5.5**



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	2029 Build-out AM Peak-Hour Traffic Volumes w/o STIPs	Figure 5.6



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	2029 Build-out MID Peak-Hour Traffic Volumes w/o STIPs	Figure 5.7



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	2029 Build-out PM Peak-Hour Traffic Volumes w/o STIPs	Figure 5.8

6.0 Capacity Analysis

Based on the requirements set forth by the Town of Weddington Traffic Impact Analysis (TIA) Process and Procedures Manual and in accordance with the traffic study guidelines in the *NCDOT Policy on Street and Driveway Access to North Carolina Highways*, capacity analyses were performed at the study area intersections for each of the following AM, MID, and PM peak-hour scenarios:

- 2024 Existing Conditions
- 2029 Background Conditions (with STIP projects)
- 2029 Background Conditions (without STIP projects)
- 2029 Build-out Conditions (with STIP projects)
- 2029 Build-out Conditions (without STIP projects)

Capacity analyses were performed for the AM, MID, and PM peak hours using Synchro Version 11 software to determine the operating characteristics at the study area intersections of the adjacent street network and to evaluate the impacts of the proposed development. Capacity is defined as the maximum number of vehicles that can pass over a particular road segment, or through a particular intersection, within a specified period of time under prevailing operational, geometric and controlling conditions within a set time duration. This software program uses methodologies contained in the *Highway Capacity Manual* (HCM) to determine the operating characteristics of an intersection.

The HCM defines LOS as a "quantitative stratification of a performance measure or measures representing quality of service" and is used to "translate complex numerical performance results into a simple A-F system representative of travelers' perceptions of the quality of service provided by a facility or service". The HCM defines six levels of service, LOS A through LOS F, with A having the best operating conditions from the traveler's perspective and F having the worst. However, it must be understood that "the LOS letter result hides much of the complexity of facility performance", and that "the appropriate LOS for a given system element in the community is a decision for local policy makers". According to the HCM, "for cost, environmental impact, and other reasons, roadways are typically designed not to provide LOS A conditions during peak periods but instead to provide some lower LOS that balances individual travers' desires against society's desires and financial resources. Nevertheless, during low-volume periods of the day, a system element may operate at LOS A."

LOS for a two-way stop-controlled (TWSC) intersection is determined by the control delay at the side-street approaches, typically during the highest volume periods of the day, the AM and PM peak periods. Control delay includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. With respect to field measurements, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time the vehicle departs from the stop line. It is typical for stop sign-controlled side streets and driveways intersecting major streets to experience long delays during peak hours, particularly for left-turn movements. The majority of the traffic moving through the intersection on the major street experiences little or no delay.

LOS for signalized intersections is reported for the intersection as a whole, and typically during the highest volume periods of the day, the AM and PM peak periods. Once or more movements at an intersection may experience a low level-or-service, while the intersection as a whole may operate acceptably,

Table 6.0-A and **Table 6.0-B** list the LOS control delay thresholds published in the HCM for unsignalized and signalized intersections, respectively, as well as the unsignalized operational descriptions assumed herein.

Table 6.0-A **Vehicular LOS Control Delay Thresholds for Unsignalized Intersections**		
Level-of-Service	**Average Control Delay per Vehicle [sec/veh]**	
A	≤ 10	Short Delays
B	> 10 – 15	
C	> 15 – 25	
D	> 25 – 35	Moderate Delays
E	> 35 – 50	
F	> 50	Long Delays

Table 6.0-B **Vehicular LOS Control Delay Thresholds for Signalized Intersections**	
Level-of-Service	**Average Control Delay per Vehicle [sec/veh]**
A	≤ 10
B	> 10 – 20
C	> 20 – 35
D	> 35 – 55
E	> 55 – 80
F	> 80

The signal geometric plans for each of the following signalized intersections were obtained from NCDOT's signal plan database and were used in the development of the existing conditions Synchro network:

1. S Providence Road (NC 16) and Rea Road
3. Weddington Road (NC 84) and Twelve Mile Creek Road

Based on the provided signal plans, the intersection of S Providence Road (NC 16)/Rea Road is part of the NC 16 (Providence Road) Closed Loop System and the intersection of Weddington Road (NC 84)/Twelve Mile Creek Road is isolated and not part of a coordinated signal system. Using the signal timing plans provided by NCDOT, cycle lengths and splits were optimized separately. The signal geometrics plans are included in the **Appendix**.

As discussed in **Section 4.3**, due to the significant reconfiguration of the study area signalized intersections as part of U-3467 and U-5769A, the cycle lengths and splits were optimized under background and build-out conditions. It was assumed that signals along/adjacent to S Providence Road (NC 16) would be part of a coordinated signal system, while signals along NC 84 between Cox Road and Twelve Mile Creek Road would be part of a separate coordinated signal system.

For the scenario without the STIP projects, the S Providence Road (NC 16) and Rea Road and Weddington Road (NC 84) and Twelve Mile Creek intersections were optimized separately under background and build-out conditions.

The following modifications from the background data collected were applied to the capacity analyses to meet NCDOT *Congestion Management Capacity Analysis Guidelines:*

- Right-turn-on-red (RTOR) operations were not allowed.
- Protected-only left-turn phasing was used for analysis of future operations where protected/permitted left-turn phasing exists in the field.
- Lost time adjust was added to the yellow and all-red times provided in the existing signal and time-of-day plans to maintain a total lost time of 5 seconds for each movement.
- A minimum of 4 vehicles per hour were used for permissible movements, excluding movements into and out of the proposed site.

In the existing condition, the observed peak hour factor (PHF) was used in the analysis, whereas a 0.9 PHF was used for all future conditions with the exception of the Weddington Road (NC 84) and Twelve Mile Creek Road intersection. A weighted PHF was used in the AM and MID peaks hours to account for the impacts of existing school traffic.

In the existing and future conditions, the observed heavy vehicle percentage was used in the analysis, subject to a 2% minimum.

Capacity analysis reports generated by Synchro Version 11 software and queuing and blocking reports generated by the SimTraffic microsimulation model are included in the **Appendix**.

6.1 S PROVIDENCE ROAD (NC 16) AND REA ROAD/U-3467

Table 6.1A summarizes the LOS, control delay and 95th percentile queue lengths at the signalized intersection of S Providence Road (NC 16) and Rea Road/U-3467

Table 6.1A - S Providence Road (NC 16) and Rea Road/U-3467

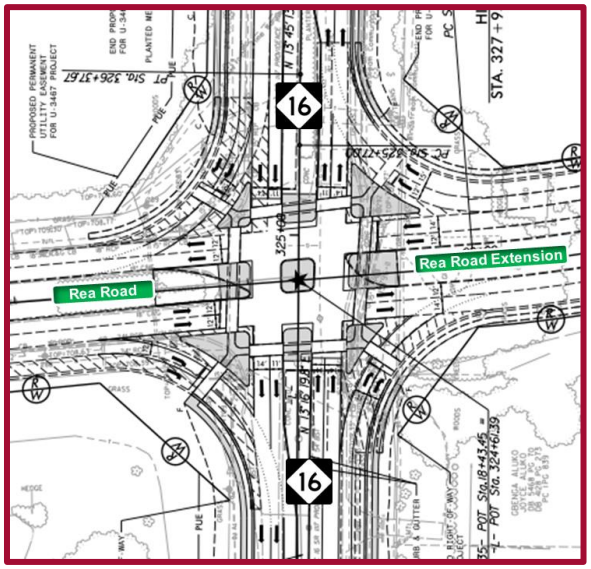
Condition	Measure	EB			WB		NB			SB			Intersection
		EBL	EBT	EBR	WBT	WBR	NBL	NBT	NBR	SBLU	SBT	SBR	LOS (Delay)
AM Peak Hour													
2024 Existing	LOS (Delay)		D (38.7)			-		C (21.2)			C (21.4)		C (25.0)
	Synchro 95th Q	#338'	-	115'	-	-	#184'	202'	-	8'	326'	90'	
2029 Background w/ STIPs	LOS (Delay)		C (34.5)			C (32.3)		B (19.8)			B (11.7)		C (20.7)
	Synchro 95th Q	-	214'	196'	134'	184'	-	#800'	m31'	-	316'	445'	
2029 Build-out w/ STIPs	LOS (Delay)		C (34.4)			C (32.4)		B (20.0)			B (11.8)		C (20.8)
	Synchro 95th Q	-	215'	198'	139'	187'	-	#800'	m32'	-	317'	446'	
MD Peak Hour													
2024 Existing	LOS (Delay)		D (48.8)			-		C (25.2)			D (37.2)		D (36.9)
	Synchro 95th Q	#509'	-	241'	-	-	#132'	151'	-	8'	#652'	70'	
2029 Background w/ STIPs	LOS (Delay)		C (21.7)			B (18.8)		B (19.1)			B (13.5)		B (18.0)
	Synchro 95th Q	-	245'	181'	94'	167'	-	#240'	46'	-	200'	121'	
2029 Build-out w/ STIPs	LOS (Delay)		C (21.6)			B (18.7)		B (19.3)			B (13.6)		B (18.1)
	Synchro 95th Q	-	248'	182'	97'	168'	-	#243'	47'	-	193'	123'	
PM Peak Hour													
2024 Existing	LOS (Delay)		D (46.5)			-		C (22.4)			C (32.1)		C (33.5)
	Synchro 95th Q	#567'	-	230'	-	-	#108'	183'	-	8'	#608'	136'	
2029 Background w/ STIPs	LOS (Delay)		C (28.7)			C (26.0)		C (26.9)			B (13.6)		C (22.9)
	Synchro 95th Q	-	316'	266'	82'	259'	-	#637'	17'	-	257'	146'	
2029 Build-out w/ STIPs	LOS (Delay)		C (28.8)			C (26.0)		C (26.7)			B (13.8)		C (23.0)
	Synchro 95th Q	-	323'	268'	84'	260'	-	#623'	34'	-	269'	152'	
Background Storage				750'		425'			375'			500'	

95th percentile volume exceeds capacity, queue may be longer

m Volume for 95th percentile queue is metered by upstream signal

As shown in **Table 6.1**, under 2024 existing conditions, the overall intersection is expected to operate at LOS C during the AM and PM peak hours and LOS D during the MID peak hour.

As discussed in **Section 4.3**, U-5769A was included in the 2029 w/ STIPs analyses. Based on the roadway plan set provided by NCDOT and shown in the image to the right, this intersection is planned to be converted from the existing standard full-movement configuration to a RCI where left-turns are not allowed at the main intersection. Instead, all left-turn movements will be redirected to U-turn bulbs on each leg of the S Providence Rd (NC 16) and Rea Road/Rea Road Extension intersection. U-3467 will construct the fourth leg of this intersection and then will be modified to a RCI as part of U-5769A. Based on these plans, the following approach laneage was assumed in 2029:



- Northbound – Two through lanes and two right-turn lanes along S Providence Rd (NC 16)
- Southbound – Two through lanes and two right-turn lanes along S Providence Rd (NC 16)
- Eastbound – Two through lanes and two right-turn lanes along Rea Rd
- Westbound – Two through lanes and two right-turn lanes along Rea Rd Extension

Table 6.1A shows that with these planned improvements in place, the overall intersection is expected to operate at LOS C or better for all peak hours under 2029 background conditions. With

the addition of the site traffic, the overall intersection is expected to continue to operate at LOS C or better for all peak hours. Therefore, no improvements are identified for capacity purposes.

6.1B – S Providence Road (NC 16) and Northern U-turn Bulb

Table 6.1B summarizes the LOS, control delay and 95th percentile queue lengths at the signalized U-5769A northbound U-turn bulb planned to be located along S Providence Road (NC 16) approximately 675 feet north of Rea Road.

Table 6.1B - S Providence Road (NC 16) and Northern U-turn Bulb				
Condition	Measure	NB	SB	Intersection
		NBU	SBT	LOS (Delay)
AM Peak Hour				
2029 Background w/ STIPs	LOS (Delay)	C (34.9)	B (16.7)	C (21.2)
	Synchro 95th Q	m215'	572'	
2029 Build-out w/ STIPs	LOS (Delay)	C (34.9)	B (16.8)	C (21.2)
	Synchro 95th Q	m215'	573'	
MD Peak Hour				
2029 Background w/ STIPs	LOS (Delay)	C (25.5)	A (7.9)	B (11.2)
	Synchro 95th Q	m89'	243'	
2029 Build-out w/ STIPs	LOS (Delay)	C (26.0)	A (8.0)	B (11.3)
	Synchro 95th Q	m91'	243'	
PM Peak Hour				
2029 Background w/ STIPs	LOS (Delay)	C (29.0)	B (10.3)	B (13.8)
	Synchro 95th Q	m114'	365'	
2029 Build-out w/ STIPs	LOS (Delay)	C (29.8)	A (10.0)	B (13.7)
	Synchro 95th Q	m118'	352'	
Background Storage		450'		
m Volume for 95th percentile queue is metered by upstream signal				

Table 6.1B shows that with the planned improvements in place, the overall intersection is expected to operate at LOS C or better for all peak hours under 2029 background conditions. With the addition of the site traffic, the overall intersection is expected to continue to operate at LOS C or better for all peak hours. Therefore, no improvements are identified for capacity purposes.

6.1C – S Providence Road (NC 16) and Southern U-turn Bulb

Table 6.1C summarizes the LOS, control delay and 95th percentile queue lengths at the signalized U-5769A southbound U-turn bulb planned to be located along S Providence Road (NC 16) approximately 600 feet south of Rea Road.

Table 6.1C - S Providence Road (NC 16) and Southern U-turn Bulb				
Condition	Measure	SB	NB	Intersection
		SBU	NBT	LOS (Delay)
AM Peak Hour				
2029 Background w/ STIPs	LOS (Delay)	D (44.4)	A (4.0)	A (4.9)
	Synchro 95th Q	m44'	274'	
2029 Build-out w/ STIPs	LOS (Delay)	D (45.3)	A (4.1)	A (5.0)
	Synchro 95th Q	m47'	275'	
MD Peak Hour				
2029 Background w/ STIPs	LOS (Delay)	C (32.3)	A (4.8)	A (5.9)
	Synchro 95th Q	m49'	185'	
2029 Build-out w/ STIPs	LOS (Delay)	C (32.6)	A (4.8)	A (6.0)
	Synchro 95th Q	m53'	186'	
PM Peak Hour				
2029 Background w/ STIPs	LOS (Delay)	C (34.9)	A (4.1)	A (4.8)
	Synchro 95th Q	m29'	242'	
2029 Build-out w/ STIPs	LOS (Delay)	D (39.0)	A (4.2)	A (5.1)
	Synchro 95th Q	m35'	245'	
Background Storage		425'		

m Volume for 95th percentile queue is metered by upstream signal

Table 6.1C shows that with the planned improvements in place, the overall intersection is expected to operate at LOS A or better for all peak hours under 2029 background conditions. With the addition of the site traffic, the overall intersection is expected to continue to operate at LOS A or better for all peak hours. Therefore, no improvements are identified for capacity purposes.

6.1D – Read Road and Western U-turn Bulb

Table 6.1D summarizes the LOS, control delay and 95th percentile queue lengths at the unsignalized U-3467 westbound U-turn bulb planned to be located along Rea Road approximately 1,000 feet west of S Providence Road (NC 16).

Table 6.1D - Rea Road and Western U-turn Bulb			
Condition	Measure	EB	WB
		EBT	WBU
AM Peak Hour			
2029 Background w/ STIPs	LOS (Delay)	A (0.0)	B (13.8)
	Synchro 95th Q	0'	15'
2029 Build-out w/ STIPs	LOS (Delay)	A (0.0)	B (14.0)
	Synchro 95th Q	0'	18'
MD Peak Hour			
2029 Background w/ STIPs	LOS (Delay)	A (0.0)	C (19.1)
	Synchro 95th Q	0'	30'
2029 Build-out w/ STIPs	LOS (Delay)	A (0.0)	C (19.4)
	Synchro 95th Q	0'	30'
PM Peak Hour			
2029 Background w/ STIPs	LOS (Delay)	A (0.0)	C (20.4)
	Synchro 95th Q	0'	28'
2029 Build-out w/ STIPs	LOS (Delay)	A (0.0)	C (20.9)
	Synchro 95th Q	0'	28'
Background Storage			525'

Table 6.1D shows that with these planned improvements in place, the eastbound and westbound approaches are expected to operate at LOS C or better for all peak hours under 2029 background conditions. With the addition of the site traffic, the approaches are expected to continue to operate at LOS C or better for all peak hours. Therefore, no improvements are identified for capacity purposes.

6.1E – Read Road Extension and Eastern U-turn Bulb

Table 6.1E summarizes the LOS, control delay and 95th percentile queue lengths at the unsignalized U-3467 eastbound U-turn bulb planned to be located along Rea Road Extension approximately 850 feet east of S Providence Road (NC 16).

Table 6.1E - Rea Road Extension and Eastern U-turn Bulb			
Condition	Measure	WB	EB
		WBT	EBU
AM Peak Hour			
2029 Background w/ STIPs	LOS (Delay)	A (0.0)	C (15.7)
	Synchro 95th Q	0'	90'
2029 Build-out w STIP	LOS (Delay)	A (0.0)	C (16.1)
	Synchro 95th Q	0'	93'
MD Peak Hour			
2029 Background w/ STIPs	LOS (Delay)	A (0.0)	C (21.1)
	Synchro 95th Q	0'	155'
2029 Build-out w STIP	LOS (Delay)	A (0.0)	C (21.5)
	Synchro 95th Q	0'	158'
PM Peak Hour			
2029 Background w/ STIPs	LOS (Delay)	A (0.0)	D (26.3)
	Synchro 95th Q	0'	233'
2029 Build-out w STIP	LOS (Delay)	A (0.0)	D (27.1)
	Synchro 95th Q	0'	238'
Background Storage			500'

Table 6.1E shows that with the planned improvements in place, the westbound and eastbound approaches are expected to operate at LOS D or better for all peak hours under 2029 background conditions. With the addition of the site traffic, the approaches are expected to continue to operate at LOS D or better for all peak hours with minimal increases in delay and queuing. Therefore, no improvements are identified for capacity purposes.

6.1F – S Providence Road (NC 16) and Rea Road

Table 6.1F summarizes the LOS, control delay and 95th percentile queue lengths at the signalized intersection of S Providence Road (NC 16) and Rea Road without STIP projects.

Table 6.1F - S Providence Road (NC 16) and Rea Road									
Condition	Measure	EB		NB		SB			Intersection
		EBUL	EBR	NBL	NBT	SBU	SBT	SBR	LOS (Delay)
AM Peak Hour									
2024 Existing	LOS (Delay)	D (38.7)		C (21.2)		C (21.4)			C (25.0)
	Synchro 95th Q	#338'	115'	#184'	202'	8'	326'	90'	
2029 Background w/o STIPs	LOS (Delay)	D (38.4)		C (23.0)		C (22.2)			C (26.0)
	Synchro 95th Q	#392'	126'	#209'	256'	9'	#457'	57'	
2029 Build-out w/o STIPs	LOS (Delay)	D (38.6)		C (23.1)		C (22.5)			C (26.2)
	Synchro 95th Q	#395'	126'	#209'	257'	9'	#464'	58'	
MD Peak Hour									
2024 Existing	LOS (Delay)	D (48.8)		C (25.2)		D (37.2)			D (36.9)
	Synchro 95th Q	#509'	241'	#132'	151'	8'	#652'	70'	
2029 Background w/o STIPs	LOS (Delay)	E (71.3)		C (34.9)		D (54.0)			D (52.9)
	Synchro 95th Q	#751'	377'	#205'	226'	8'	#999'	144'	
2029 Build-out w/o STIPs	LOS (Delay)	E (74.9)		C (34.8)		D (54.6)			D (54.2)
	Synchro 95th Q	#769'	377'	#205'	228'	8'	#1004'	148'	
PM Peak Hour									
2024 Existing	LOS (Delay)	D (46.5)		C (22.4)		C (32.1)			C (33.5)
	Synchro 95th Q	#567'	230'	#108'	183'	8'	#608'	136'	
2029 Background w/o STIPs	LOS (Delay)	E (67.2)		C (34.3)		D (50.4)			D (50.5)
	Synchro 95th Q	#852'	348'	#181'	300'	9'	#917'	285'	
2029 Build-out w/o STIPs	LOS (Delay)	E (71.1)		C (34.3)		D (51.3)			D (52.0)
	Synchro 95th Q	#873'	348'	#181'	301'	9'	#925'	291'	
Background Storage				425'		325'			

95th percentile volume exceeds capacity, queue may be longer

Based on coordination with the Town, an additional interim scenario was run without either of the NCDOT TIP Projects in place.

Table 6.1F shows that without the planned improvements in place, the overall intersection is expected to operate at LOS D or better for all peak hours through 2029 background conditions. With the addition of the site traffic, the overall intersection is expected to continue to operate at LOS D or better for all peak hours with minimal increases in delay and queues. Therefore, no improvements are identified for capacity purposes.

6.2 WEDDINGTON ROAD (NC 84) AND COX ROAD

Table 6.2A summarizes the LOS, control delay and 95th percentile queue lengths at the unsignalized, stop-controlled intersection of Weddington Road (NC 84) and Cox Road.

Table 6.2A - Weddington Road (NC 84) and Cox Road					
Condition	Measure	EB		WB	SB
		*EBL	EBT	WBTR	SBLR
AM Peak Hour					
2024 Existing	LOS (Delay)	B (10.7)	A (0.0)	A (0.0)	E (38.0)
	Synchro 95th Q	3'	0'	0'	95'
2029 Background w/ STIPs	LOS (Delay)	B (10.1)	A (0.0)	A (0.0)	D (26.5)
	Synchro 95th Q	0'	0'	0'	43'
2029 Build-out w/ STIPs	LOS (Delay)	B (10.1)	A (0.0)	A (0.0)	D (27.0)
	Synchro 95th Q	0'	0'	0'	45'
MD Peak Hour					
2024 Existing	LOS (Delay)	A (9.6)	A (0.0)	A (0.0)	C (24.9)
	Synchro 95th Q	3'	0'	0'	33'
2029 Background w/ STIPs	LOS (Delay)	A (9.1)	A (0.0)	A (0.0)	C (22.7)
	Synchro 95th Q	3'	0'	0'	28'
2029 Build-out w/ STIPs	LOS (Delay)	A (9.2)	A (0.0)	A (0.0)	C (23.4)
	Synchro 95th Q	3'	0'	0'	30'
PM Peak Hour					
2024 Existing	LOS (Delay)	A (9.1)	A (0.0)	A (0.0)	D (25.6)
	Synchro 95th Q	3'	0'	0'	40'
2029 Background w/ STIPs	LOS (Delay)	A (9.3)	A (0.0)	A (0.0)	C (20.8)
	Synchro 95th Q	3'	0'	0'	15'
2029 Build-out w/ STIPs	LOS (Delay)	A (9.4)	A (0.0)	A (0.0)	C (21.3)
	Synchro 95th Q	3'	0'	0'	18'
Background Storage		125'			

*Conflicting left-turn movements are broken out per NCDOT guidelines under unsignalized conditions

As shown in **Table 6.2A**, under 2024 existing conditions, the stop-controlled southbound approach of Cox Road is expected to operate with moderate delays during the AM and PM peak hours and short delays during the MID peak hour.

Under 2029 background conditions, the stop-controlled southbound approach is expected to operate with moderate delay during the AM peak hour and short delays during the MID and PM peak hours. The decrease in delay shown in **Table 6.2A** between existing and background conditions reflects the change in PHFs to meet NCDOT Congestion Management Capacity Analysis Guidelines as discussed in **Section 6.0**. This is due to the existing PHF being less than 0.9 for multiple movements during each peak hour. An increase in PHF to 0.9 causes the traffic volume to be more evenly distributed throughout the peak hour results in reduction in the average delay.

With the addition of site traffic, the stop-controlled southbound approach is expected to continue to operate with moderate delays during the AM peak hour and short delays during the MID and PM

peak hours with minimal increases in delay and queueing. Therefore, no improvements are identified for capacity purposes at this intersection.

6.2B – Weddington Road (NC 84) and Cox Road

Table 6.2B summarizes the LOS, control delay and 95th percentile queue lengths at the unsignalized, stop-controlled intersection of S Providence Road (NC 16) and Rea Road without STIP projects.

Table 6.2B - Weddington Road (NC 84) and Cox Road					
Condition	Measure	EB		WB	SB
		*EBL	EBT	WBTR	SBLR
AM Peak Hour					
2024 Existing	LOS (Delay)	B (10.7)	A (0.0)	A (0.0)	E (38.0)
	Synchro 95th Q	3'	0'	0'	95'
2029 Background w/o STIPs	LOS (Delay)	B (10.7)	A (0.0)	A (0.0)	E (36.5)
	Synchro 95th Q	0'	0'	0'	88'
2029 Build-out w/o STIPs	LOS (Delay)	B (10.9)	A (0.0)	A (0.0)	E (39.6)
	Synchro 95th Q	0'	0'	0'	93'
MD Peak Hour					
2024 Existing	LOS (Delay)	A (9.6)	A (0.0)	A (0.0)	C (24.9)
	Synchro 95th Q	3'	0'	0'	33'
2029 Background w/o STIPs	LOS (Delay)	A (9.4)	A (0.0)	A (0.0)	D (25.8)
	Synchro 95th Q	3'	0'	0'	25'
2029 Build-out w/o STIPs	LOS (Delay)	A (9.5)	A (0.0)	A (0.0)	D (26.9)
	Synchro 95th Q	3'	0'	0'	28'
PM Peak Hour					
2024 Existing	LOS (Delay)	A (9.1)	A (0.0)	A (0.0)	D (25.6)
	Synchro 95th Q	3'	0'	0'	40'
2029 Background w/o STIPs	LOS (Delay)	A (9.3)	A (0.0)	A (0.0)	D (29.5)
	Synchro 95th Q	3'	0'	0'	40'
2029 Build-out w/o STIPs	LOS (Delay)	A (9.4)	A (0.0)	A (0.0)	D (31.8)
	Synchro 95th Q	3'	0'	0'	45'
Background Storage		125'			

*Conflicting left-turn movements are broken out per NCDOT guidelines under unsignalized conditions

Based on coordination with the Town, an additional interim scenario was run without either of the NCDOT TIP Projects in place.

Table 6.2B shows that without the planned improvements in place, under 2024 existing conditions, the stop-controlled southbound approach of Cox Road is expected to operate with moderate delays during the AM and PM peak hours and short delays during the MID peak hour.

Under 2029 background conditions, the stop-controlled southbound approach is expected to operate with moderate delay during all peak hours.

With the addition of the site traffic, the stop-controlled southbound approach is expected to continue to operate with moderate delay for all peak hours with minimal increases in delay and queues. Therefore, no improvements are identified for capacity purposes.

6.3 WEDDINGTON ROAD (NC 84) AND TWELVE MILE CREEK ROAD

Table 6.3A summarizes the LOS, control delay and 95th percentile queue lengths at the signalized, intersection of Weddington Road (NC 84) and Twelve Mile Creek Road.

Table 6.3A - Weddington Road (NC 84) and Twelve Mile Creek Road

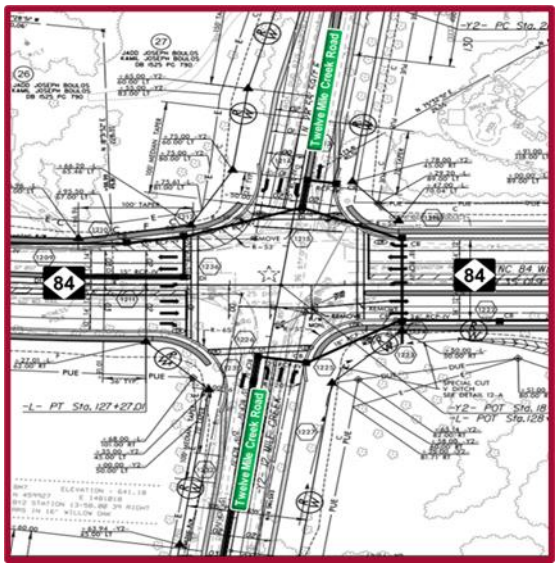
Condition	Measure	EB			WB			NB			SB			Intersection
		EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	LOS (Delay)
AM Peak Hour														
2024 Existing	LOS (Delay)	F (124.3)			F (265.5)			F (409.8)			F (212.6)			F (246.0)
	Synchro 95th Q	70'	#623'	-	44'	#931'	-	-	#473'	-	-	#611'	-	
2029 Background w/ STIPs	LOS (Delay)	D (38.7)			D (48.9)			E (71.1)			E (75.7)			D (50.7)
	Synchro 95th Q	138'	354'	131'	165'	605'	63'	#258'	37'	97'	124'	66'	202'	
2029 Build-out w/ STIPs	LOS (Delay)	D (39.6)			D (54.6)			E (72.6)			E (75.8)			D (53.2)
	Synchro 95th Q	164'	343'	128'	#177'	624'	64'	#265'	37'	97'	124'	66'	203'	
MD Peak Hour														
2024 Existing	LOS (Delay)	E (69.5)			D (45.8)			F (123.6)			D (47.3)			E (66.3)
	Synchro 95th Q	62'	#1012'	-	#78'	658'	-	-	#354'	-	-	195'	-	
2029 Background w/ STIPs	LOS (Delay)	C (30.1)			C (33.1)			E (57.6)			E (58.0)			D (39.7)
	Synchro 95th Q	113'	276'	87'	131'	256'	184'	#161'	169'	90'	#182'	135'	56'	
2029 Build-out w/ STIPs	LOS (Delay)	C (30.6)			C (34.3)			E (58.3)			E (58.0)			D (40.3)
	Synchro 95th Q	131'	273'	88'	131'	267'	188'	#173'	169'	90'	#182'	135'	58'	
PM Peak Hour														
2024 Existing	LOS (Delay)	E (77.3)			D (40.2)			F (145.4)			E (74.1)			E (74.8)
	Synchro 95th Q	30'	#1355'	-	#151'	563'	-	-	#570'	-	-	348'	-	
2029 Background w/ STIPs	LOS (Delay)	C (25.3)			C (33.2)			E (75.9)			E (58.2)			D (35.3)
	Synchro 95th Q	204'	393'	115'	113'	430'	88'	#258'	69'	135'	89'	44'	125'	
2029 Build-out w/ STIPs	LOS (Delay)	C (25.8)			D (36.3)			E (70.7)			E (58.1)			D (36.1)
	Synchro 95th Q	226'	399'	121'	113'	#468'	93'	#258'	68'	133'	89'	44'	128'	
Background Storage		450'		400'	300'		375'	225'		225'	175'		125'	

Exceeds storage

95th percentile volume exceeds capacity, queue may be longer

As shown in **Table 6.3A**, under 2024 existing conditions, the overall intersection is expected to operate at LOS F during the AM peak hour and LOS E during the MID and PM peak hours.

As discussed in **Section 4.3**, U-3467 was included in the 2029 analyses. Based on the latest roadway plan set provided by NCDOT and shown in the image to the right, this intersection is planned to remain full-movement with the following approach laneage:



- Northbound – One through lane, one left-turn lane, and one right-turn lane along Twelve Mile Creek Road.
- Southbound – One through lane, one left-turn lane, and one right-turn lane along Twelve Mile Creek Road.
- Eastbound – Two through lanes, one left-turn lane, and one right-turn lane along Weddington Road (NC 84).
- Westbound – Two through lanes, one left-turn lane, and one right-turn lane along Weddington Road (NC 84).

Table 6.3A shows that with these planned improvements in place, the overall intersection is expected to operate at LOS D or better for all peak hours under 2029 background conditions.

With the addition of site traffic, the overall intersection is expected to operate at LOS D during all peak hours. Therefore, no improvements are identified for capacity purposes.

Based on review of the Synchro 95th percentile queues, the following queues are expected to exceed the planned storage under build-out conditions:

- Northbound left-turn queue along Twelve Mile Creek Road during the AM and PM peak hours
- Southbound left-turn queue along Twelve Mile Creek Road during the MID peak hour
- Southbound right-turn queue along Twelve Mile Creek Road during the AM and PM peak hours

Since the storage is exceeded under both background and build-out conditions and the proposed site is not expected to significantly extend the projected queue lengths, extension of these turn lanes is not recommended as mitigation for the proposed Deal Lake development.

6.3B – Weddington Road (NC 84) and Twelve Mile Creek Road

Table 6.3B summarizes the LOS, control delay and 95th percentile queue lengths at the signalized intersection of Weddington Road (NC 84) and Twelve Mile Creek Road without STIP projects.

Table 6.3B - Weddington Road (NC 84) and Twelve Mile Creek Road

Condition	Measure	EB		WB		NB	SB	Intersection
		EBL	EBTR	WBL	WBTR	NBLTR	SBLTR	LOS (Delay)
AM Peak Hour								
2024 Existing	LOS (Delay)	F (124.3)		F (265.5)		F (409.8)	F (212.6)	F (246.0)
	Synchro 95th Q	70'	#623'	44'	#931'	#473'	#611'	
2029 Background w/o STIPs	LOS (Delay)	F (189.4)		F (324.7)		F (549.9)	F (290.5)	F (328.9)
	Synchro 95th Q	#152'	#717'	74'	#1058'	#561'	#789'	
2029 Build-out w/o STIPs	LOS (Delay)	F (192.2)		F (306.7)		F (548.1)	F (306.8)	F (327.9)
	Synchro 95th Q	#155'	#733'	74'	#1052'	#563'	#800'	
MD Peak Hour								
2024 Existing	LOS (Delay)	E (69.5)		D (45.8)		F (123.6)	D (47.3)	E (66.3)
	Synchro 95th Q	62'	#1012'	#78'	658'	#354'	195'	
2029 Background w/o STIPs	LOS (Delay)	F (120.6)		F (80.3)		F (177.6)	E (66.1)	F (108.1)
	Synchro 95th Q	#217'	#1493'	#221'	#1017'	#508'	271'	
2029 Build-out w/o STIPs	LOS (Delay)	F (123.2)		F (81.6)		F (185.8)	E (64.2)	F (110.5)
	Synchro 95th Q	#217'	#1447'	#215'	#993'	#498'	258'	
PM Peak Hour								
2024 Existing	LOS (Delay)	E (77.3)		D (40.2)		F (145.4)	E (74.1)	E (74.8)
	Synchro 95th Q	30'	#1355'	#151'	563'	#570'	348'	
2029 Background w/o STIPs	LOS (Delay)	F (88.8)		D (47.3)		F (169.2)	E (71.5)	F (84.4)
	Synchro 95th Q	78'	#1415'	#229'	531'	#540'	#441'	
2029 Build-out w/o STIPs	LOS (Delay)	F (97.7)		D (48.0)		F (163.8)	E (68.3)	F (87.6)
	Synchro 95th Q	81'	#1448'	#229'	555'	#546'	#434'	
Background Storage		100'		100'				

Exceeds storage

95th percentile volume exceeds capacity, queue may be longer

Based on coordination with the Town, an additional interim scenario was run without either of the NCDOT TIP Projects in place.

As shown in **Table 6.3B**, under 2024 existing conditions, the overall intersection is expected to operate at LOS F during the AM peak hour and LOS E during the MID and PM peak hours.

The overall intersection is projected to operate at LOS F during all peak hours under 2029 background conditions. With the addition of the site traffic, the overall intersection is expected to operate with similar operations as compared to 2029 background conditions with no overall or approach LOS degradations. Delay on the eastbound approach during the PM peak hour is shown to increase, however this is a result of the optimization of the traffic signal where additional green time is provided to the side street movements – resulting in an increase in delay to the mainlines and reduction in delay for the side street movements.

Based on review of the Synchro 95th percentile queues, the following queues are expected to exceed the planned storage under build-out conditions:

- Eastbound left-turn queue along Weddington Road (NC 84) during the AM and MID peak hours
- Westbound left-turn queue along Weddington Road (NC 84) during the MID and PM peak hours

Since the storage is exceeded under both background and build-out conditions and the proposed site is not expected to significantly extend the projected queue lengths, extension of these turn lanes is not recommended as mitigation for the proposed Deal Lake development.

6.4 WEDDINGTON ROAD (NC 84) AND U-3467

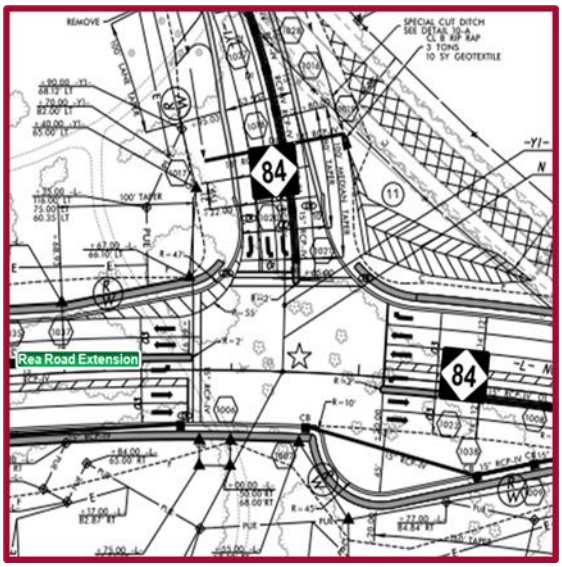
As discussed in **Section 4.3**, a new signalized, tee-intersection is planned as part of U-3467 in which existing Weddington Road (NC 84) will be realigned to tie into the new Rea Road Extension approximately 1,050 feet south of Lake Forest Drive. **Table 6.4** summarizes the LOS, control delay and 95th percentile queue lengths at the future, signalized tee-intersection of Weddington Road (NC 84) and U-3467. The new eastbound approach (Rea Road Extension) is referred to as U-3467, with the existing realigned Weddington Road (NC 84) as the southbound and westbound approaches for the purposes of this analysis.

Table 6.4 - Weddington Road (NC 84) and U-3467

Condition	Measure	EB		WB			SB		Intersection
		EBL	EBT	WBU	WBT	WBR	SBL	SBR	LOS (Delay)
AM Peak Hour									
2029 Background w/ STIPs	LOS (Delay)	B (12.5)		A (5.8)			D (52.7)		B (17.1)
	Synchro 95th Q	52'	219'	m4'	m130'	m59'	280'	33'	
2029 Build-out w/ STIPs	LOS (Delay)	B (12.7)		A (5.4)			D (52.7)		B (16.8)
	Synchro 95th Q	52'	226'	m10'	m109'	m15'	282'	33'	
MD Peak Hour									
2029 Background w/ STIPs	LOS (Delay)	B (10.6)		A (6.9)			D (47.0)		B (19.1)
	Synchro 95th Q	45'	161'	m8'	120'	40'	222'	28'	
2029 Build-out w/ STIPs	LOS (Delay)	B (12.5)		A (6.2)			D (46.9)		B (19.2)
	Synchro 95th Q	45'	173'	m27'	70'	6'	227'	28'	
PM Peak Hour									
2029 Background w/ STIPs	LOS (Delay)	B (15.2)		B (11.0)			D (42.3)		C (20.3)
	Synchro 95th Q	52'	286'	m6'	m209'	m37'	289'	29'	
2029 Build-out w/ STIPs	LOS (Delay)	B (17.8)		A (7.9)			D (42.2)		B (19.7)
	Synchro 95th Q	52'	307'	m24'	m115'	m7'	294'	29'	
Background Storage		425'		425'		400'	325'	125'	

m Volume for 95th percentile queue is metered by upstream signal

Based on the latest roadway plan set provided by NCDOT and shown in the image to the right, this new intersection is planned to operate as full-movement with the following approach laneage:



- Southbound – Two left-turn lanes and one right-turn lane along Weddington Road (NC 84).
- Eastbound – Two through lanes and one left-turn lane along Rea Road Extension.
- Westbound – Two through lanes, one U-turn lane, and one right-turn lane along Weddington Road (NC 84).

Table 6.4 shows the overall intersection is expected to operate at LOS C or better during all peak hours under 2029 background conditions.

With the addition of the site traffic, the overall intersection is expected to operate at LOS B during all peak hours. The decrease in delay and queue shown in **Table 6.4** between background and

build-out conditions is in part due to the optimization of the splits and offsets for the coordinated traffic signals along Weddington Road (NC 84). Therefore, no improvements are identified for capacity purposes.

6.5 WEDDINGTON ROAD (NC 84) AND ACCESS A

Table 6.5A summarizes the LOS, control delay and 95th percentile queue lengths at the proposed unsignalized, stop-controlled intersection of Weddington Road (NC 84) and Access A (RIRO).

Table 6.5A - Weddington Road (NC 84) and Access A					
Condition	Measure	EB	WB	NB	SB
		EBTR	WBTR	NBR	SBR
AM Peak Hour					
2029 Build-out w/ STIPs	LOS (Delay)	A (0.0)	A (0.0)	B (11.0)	B (12.2)
	Synchro 95th Q	0'	0'	5'	3'
MD Peak Hour					
2029 Build-out w/ STIPs	LOS (Delay)	A (0.0)	A (0.0)	B (10.3)	A (9.5)
	Synchro 95th Q	0'	0'	3'	0'
PM Peak Hour					
2029 Build-out w/ STIPs	LOS (Delay)	A (0.0)	A (0.0)	B (12.3)	B (10.9)
	Synchro 95th Q	0'	0'	3'	0'

As shown in **Table 6.5A**, the stop-controlled northbound and southbound approaches of Access A are expected to operate with short delays during all peak hours under build-out conditions.

Based on the anticipated SimTraffic maximum queues (reports included in the **Appendix**), the northbound and southbound approaches of Access A should be constructed under RIRO operations with one ingress lane, one egress lane, stop-control, and the NCDOT minimum IPS of 100 feet.

Review of auxiliary turn-lane warrants at this intersection are included in **Section 7.0.**

6.5B – Weddington Road (NC 84) and Access A

Table 6.5B summarizes the LOS, control delay and 95th percentile queue lengths at the unsignalized, stop-controlled intersection of Weddington Road (NC 84) and Access A without TIP projects. This access was assumed to operate as full movement under this scenario.

Table 6.5B - Weddington Road (NC 84) and Access A							
Condition	Measure	EB		WB		NB	SB
		*EBL	EBTR	*WBL	WBTR	NBLTR	SBLTR
AM Peak Hour							
2029 Build-out w/o STIPs	LOS (Delay)	B (10.5)	A (0.0)	A (9.0)	A (0.0)	F (72.4)	D (25.4)
	Synchro 95th Q	0'	0'	0'	0'	43'	3'
MD Peak Hour							
2029 Build-out w/o STIPs	LOS (Delay)	A (9.3)	A (0.0)	B (10.7)	A (0.0)	F (70.8)	D (29.7)
	Synchro 95th Q	0'	0'	3'	0'	25'	3'
PM Peak Hour							
2029 Build-out w/o STIPs	LOS (Delay)	A (9.1)	A (0.0)	B (10.9)	A (0.0)	F (96.6)	F (58.8)
	Synchro 95th Q	0'	0'	3'	0'	43'	15'

*Conflicting left-turn movements are broken out per NCDOT guidelines under unsignalized conditions

Based on coordination with the Town, an additional interim scenario was run without either of the NCDOT TIP Projects in place.

Table 6.5B shows that without the NCDOT TIP projects in place, under 2024 build-out conditions, the stop-controlled northbound approach of Access A is projected to operate at LOS F during all peak hours. The stop-controlled southbound approach is projected to operate at LOS D during the AM and MID peak hours and LOS F during the PM peak hour.

As discussed in **Section 6.0**, it is typical for stop sign-controlled side streets and driveways intersecting major streets to experience long delays during peak hours, particularly for left-turn movements. The majority of the traffic moving through the intersection on the major experiences little to no delay. Additionally, given minimal major street- or right-turning traffic, additional turn lane improvements yield little improvement to side-street approach delay. Therefore, no additional improvements are identified for capacity purposes.

Based on the anticipated SimTraffic maximum queues (reports included in the **Appendix**), the northbound and southbound approaches of Access A should be constructed with one ingress lane, one egress lane, stop-control, and the NCDOT minimum IPS of 100 feet.

Upon further coordination with NCDOT staff, Access A will operate under RIRO conditions in the scenario without TIP projects.

Ongoing coordination with NCDOT will be needed as the development progresses to determine if turn lanes and medians are constructed by the development or if a fee-in-lieu will be needed.

Review of auxiliary turn-lane warrants at this intersection are included in **Section 7.0.**

6.6 WEDDINGTON ROAD (NC 84) AND ACCESS B

Table 6.6A summarizes the LOS, control delay and 95th percentile queue lengths at the proposed unsignalized, stop-controlled intersection of Weddington Road (NC 84) and Access B (RIRO).

Table 6.6A - Weddington Road (NC 84) and Access B					
Condition	Measure	EB	WB	NB	SB
		EBTR	WBTR	NBR	SBR
AM Peak Hour					
2029 Build-out w/ STIPs	LOS (Delay)	A (0.0)	A (0.0)	B (10.9)	B (12.1)
	Synchro 95th Q	0'	0'	0'	0'
MD Peak Hour					
2029 Build-out w/ STIPs	LOS (Delay)	A (0.0)	A (0.0)	B (10.2)	A (9.5)
	Synchro 95th Q	0'	0'	0'	0'
PM Peak Hour					
2029 Build-out w/ STIPs	LOS (Delay)	A (0.0)	A (0.0)	B (12.0)	B (10.8)
	Synchro 95th Q	0'	0'	0'	0'

As shown in **Table 6.6A**, the stop-controlled northbound and southbound approaches of Access B are expected to operate with short delays during all peak hours through build-out conditions.

Based on the anticipated SimTraffic maximum queues (reports included in the **Appendix**), the northbound and southbound approaches of Access B should be constructed under RIRO operations with one ingress lane, one egress lane, stop-control, and the NCDOT minimum IPS of 100 feet.

Review of auxiliary turn-lane warrants at this intersection are included in **Section 7.0.**

6.6B – Weddington Road (NC 84) and Access B

Table 6.6B summarizes the LOS, control delay and 95th percentile queue lengths at the unsignalized, stop-controlled intersection of Weddington Road (NC 84) and Access B without TIP projects. This access was assumed to operate as full movement under this scenario.

Table 6.6B - Weddington Road (NC 84) and Access B							
Condition	Measure	EB		WB		NB	SB
		*EBL	EBTR	*WBL	WBTR	NBLTR	SBLTR
AM Peak Hour							
2029 Build-out w/o STIPs	LOS (Delay)	B (10.5)	A (0.0)	A (9.0)	A (0.0)	E (38.2)	F (52.6)
	Synchro 95th Q	0'	0'	0'	0'	3'	5'
MD Peak Hour							
2029 Build-out w/o STIPs	LOS (Delay)	A (9.3)	A (0.0)	B (10.5)	A (0.0)	E (35.9)	E (41.8)
	Synchro 95th Q	0'	0'	0'	0'	3'	3'
PM Peak Hour							
2029 Build-out w/o STIPs	LOS (Delay)	A (9.2)	A (0.0)	B (10.7)	A (0.0)	F (57.2)	F (55.8)
	Synchro 95th Q	0'	0'	0'	0'	13'	13'

*Conflicting left-turn movements are broken out per NCDOT guidelines under unsignalized conditions

Based on coordination with the Town, an additional interim scenario was run without either of the NCDOT TIP Projects in place.

Table 6.6B shows that without the NCDOT TIP projects in place, under 2024 build-out conditions, the stop-controlled northbound approach of Access A is projected to operate at LOS E during the AM and MID peak hours and LOS F during the PM peak hour. The stop-controlled southbound approach is projected to operate at LOS F during the AM and PM peak hours and LOS E during the MID peak hour.

As discussed in **Section 6.0**, it is typical for stop sign-controlled side streets and driveways intersecting major streets to experience long delays during peak hours, particularly for left-turn movements. The majority of the traffic moving through the intersection on the major experiences little to no delay. Additionally, given minimal major street- or right-turning traffic, additional turn lane improvements yield little improvement to side-street approach delay. Therefore, no additional improvements are identified for capacity purposes.

Based on the anticipated SimTraffic maximum queues (reports included in the **Appendix**), the northbound approach of Access A should be constructed with one ingress lane, one egress lane, stop-control, and the NCDOT minimum IPS of 100 feet.

Upon further coordination with NCDOT staff, Access B will operate under RIRO conditions in the scenario without TIP projects.

Ongoing coordination with NCDOT will be needed as the development progresses to determine if turn lanes and medians are constructed by the development or if a fee-in-lieu will be needed.

Review of auxiliary turn-lane warrants at this intersection are included in **Section 7.0.**

7.0 Auxiliary Turn Lane Warrants

Warrants for additional turn-lane improvements for unsignalized intersection beyond those necessary for capacity were determined based on a review of the figure titled 'Warrant for Left and Right-Turn Lanes' found on page 80 in the *NCDOT Policy On Street And Driveway Access to North Carolina Highways*. The results of the warrants for left and right-turn lanes under the 2029 build-out conditions indicate that turn lanes are not warranted at the proposed site accesses along Weddington Road (NC 84) under either scenario. The turn-lane warrant figures are included in the **Appendix**.

However, based on review of the April 2024 version of this TIA, the following turn-lane will be required by NCDOT for the scenario with TIP projects:

Weddington Road (NC 84) and Access A

- Eastbound right-turn lane with maximized storage based on proximity to the u-turn bulb

If the proposed development is completed prior to the widening of Weddington Road (NC 84), ongoing coordination with NCDOT will be needed to determine if turn lanes and medians are constructed by the development or if a fee-in-lieu will be needed.

8.0 Identified Mitigation Improvements

Based on the capacity analyses performed at each of the identified study intersections, along with review of the auxiliary turn-lane warrants contained herein, no improvements are required to mitigate the impact of the proposed development on the adjacent street network under either scenario. The following site and mitigation improvements needed for the proposed Deal Lake development are as follows:

With STIP Projects

Weddington Road (NC 84) and Access A

- Construction of the northbound and southbound approaches of Access A under RIRO operations with one ingress lane, one egress lane, stop-control, and an IPS of 100 feet.
- Construction of an eastbound right-turn lane along Weddington Road (NC 84) with maximized storage.

Weddington Road (NC 84) and Access B

- Construction of the northbound and southbound approaches of Access B under RIRO operations with one ingress lane, one egress lane, stop-control, and an IPS of 100 feet.

Without STIP Projects

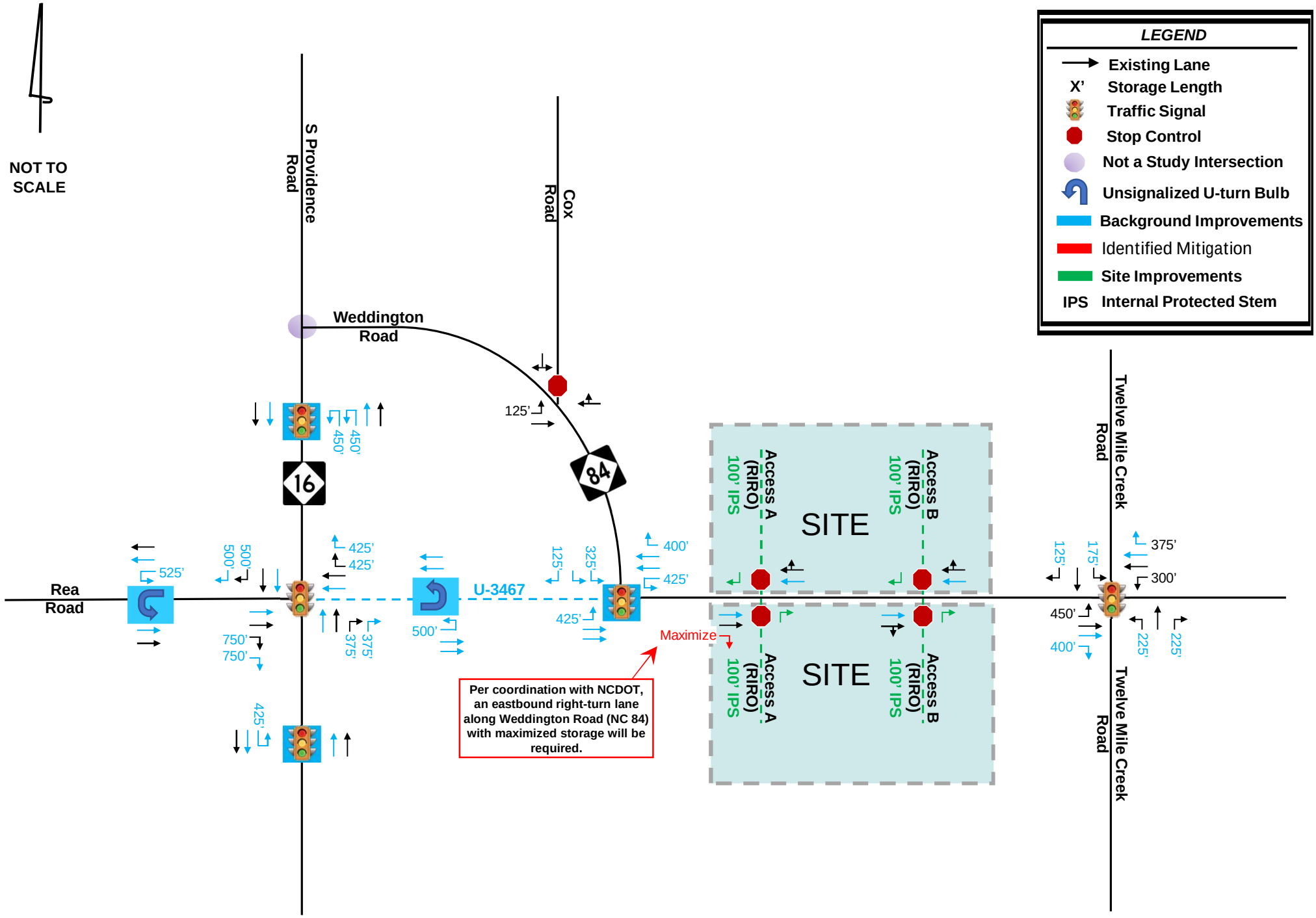
Weddington Road (NC 84) and Access A

- Construction of the northbound and southbound approaches of Access A under RIRO operations with one ingress lane, one egress lane, stop-control, and an IPS of 100 feet.
- Ongoing coordination with NCDOT will be needed as the development progresses to determine if turn lanes and medians are constructed by the development or if a fee-in-lieu will be needed.

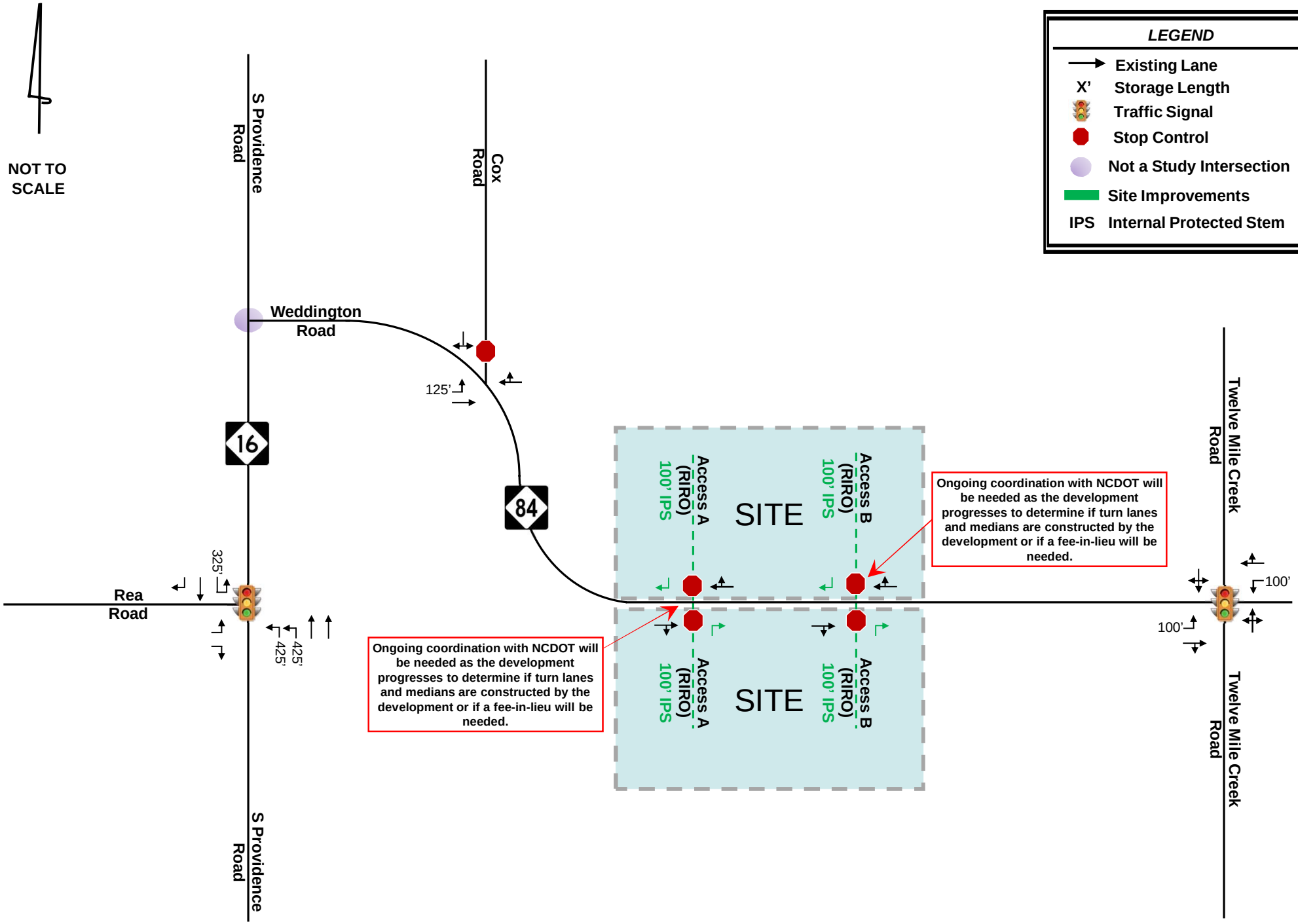
Weddington Road (NC 84) and Access B

- Construction of the northbound and southbound approaches of Access B under RIRO operations with one ingress lane, one egress lane, stop-control, and an IPS of 100 feet.
- Ongoing coordination with NCDOT will be needed as the development progresses to determine if turn lanes and medians are constructed by the development or if a fee-in-lieu will be needed.

The site and mitigation improvements identified within the study area are shown in **Figures 8.1A and 8.1B**. The improvements shown on these figures are subject to approval by NCDOT and the Town of Weddington. All additions and attachments to the State and Town roadway system shall be properly permitted, designed, and constructed in conformance to standards maintained by the agencies.



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	Identified Site/Mitigation Improvements w/ STIPs	Figure 8.1A



Kimley»Horn	Deal Lake Traffic Impact Analysis UPDATE	Identified Site/Mitigation Improvements w/o STIPs	Figure 8.1B

Appendix

NCDOT Scoping Checklist

NCDOT Traffic Impact Analysis Need Screening / Scoping Request

TIA Need Screening → TIA Scoping → TIA Submittal

A Traffic Impact Analysis (TIA) may be required for developments based on the site trip generation estimates, site context, or at the discretion of the NCDOT District Engineer. The Applicant or the TIA Consultant shall submit this form along with the site plan to the District Engineer to determine the TIA need and, if a TIA is required, initiate the TIA scoping process. Without an approved scope, the TIA is incomplete and will be rejected until the study is revised to conform to NCDOT's TIA requirements.

Project Name: Deal Lake **Previous Name:** If Applicable

Location: 610 Weddington Road **County:** Union **Municipality:** Weddington

Project Description: 31 single-family detached homes on the north side of Weddington Road and 62 single-family detached homes on the south side of Weddington Road (93 single-family detached homes total)

Project Contact:	Applicant	TIA Consultant
Company Name	Toll Brothers	Kimley-Horn and Associates
Contact Person	Robert Price	Laura Reid, PE
Phone Number	(704) 849-2625	(704) 319-7696
Email	rprice1@tollbrothers.com	laura.reid@kimley-horn.com
Mailing Address	9130 Kings Parade Boulevard Charlotte, NC 28273	200 South Tryon Street, Suite 200 Charlotte, NC 28202

Site Plan Prepared By: McKim & Creed **Site Plan Date:** February 2024

See site plan/vicinity map requirements on page 2.

Parcel Size: 167.48 Acre(s) **Anticipated Build-Out Year:** 2029

Weekday Site Trip Generation - Do NOT adjust for mode split, pass-by, internal capture, or diverted trips.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
210	SF Det. (North)	62	DU	650	Adj. Street	12	36	48	40	23	63	ITE Equation
210	SF Det. (South)	31	DU	344	Adj. Street	7	19	26	21	12	33	ITE Equation
Total		93	DU	994		19	55	74	61	35	96	

Refer to the current *NCDOT Congestion Management Capacity Analysis Guidelines* for acceptable trip calculation methods and data sources.

**Explain local or other data sources, if used:

☐ The estimated site trips meet NCDOT's TIA trip threshold of 3,000 daily trips.

☒ The estimated site trips meet the municipal TIA trip threshold of >500 daily and/or > 50 peak hour

☒ This project is located in a known STIP and/ or local CIP project # U-3467, U-5769A

☐ This project includes a rezoning request.

☐ The proposed site access is located within 1,000 feet of an interchange.

☐ The Applicant requests for a new or modified control-of-access break.

☐ The Applicant requests for a new or modified median break.

Applicant's Signature | Print Name | Date

NCDOT Traffic Impact Analysis Need Screening / Scoping Request

TIA Need Screening → TIA Scoping → TIA Submittal

Site Plan/Vicinity Map Requirement for TIA Need Screening: While the site plan may not be finalized during the TIA scoping stage, the graphic representation of the proposed development shall provide adequate details on the development scope and context. More specifically, the site plan/map shall clearly show the location and type of each access point, spacing to adjacent and opposing driveways or intersections, internal street network, proposed buildings/parcels with their anticipated uses and sizes at full build-out and, if applicable, any nearby interstate, US, NC or Secondary Roads (SR).

Project Name: Deal Lake **Project Reference Number:** _____

☒ **A TIA is Required by the Local Government.** In addition, the study area is expected to include NCDOT maintained transportation facilities.

☐ **A TIA is Required by NCDOT,** per the *Policy on Street and Driveway Access to North Carolina Highways*.

If either or both of the boxes above are checked, the Applicant/TIA Consultant is hereby requested to fill out as much as possible of the following TIA scoping checklist, and return it along with the supporting documents to NCDOT prior to the scoping meeting.

☐ **A TIA is NOT required**. This decision is based on the development information presented above. Changes in the development plan will require re-evaluation of the TIA need, and may necessitate a TIA. The Applicant should inform the District Engineer of any significant changes in a timely fashion to avoid delays or rejections of the driveway permit / encroachment agreement applications.

Additional Comments:

The TIA need decision is made by the NCDOT Division ____ District____ on _____.

NCDOT District Representative's Signature
Email concurrence may be used in lieu of the signature.

Print Name

NCDOT TIA Scoping Checklist

TIA Need Screening → TIA Scoping → TIA Submittal

Project Name: Deal Lake **TIA Scoping Date:** _____

☒ **TIA Need Screening Forms are Attached.** Project Reference #: _____ Decision Date: _____

☒ **Site Plan and Access**

☒ Provide a site plan illustrating site access, internal and external roadways, buildings and land uses.
Refer to NCDOT's *Policy on Street and Driveway Access to North Carolina Highways* pages 14 and 15 for site plan requirements.

☒ Identify site access.

New Access	On Road	Access Type		Driveway Spacing		
	Road Name	Permitted Movements	Traffic Control	Distance (ft)	Direction	Nearest Intersection / Access
Access A	Weddington Road	RIRO	2-Way Stop	940	South	Lake Forest Drive
Access B	Weddington Road	RIRO	2-Way Stop	560	South	Access A
Access C						
Access D						
Access E						
Access F						
Access G						
Access H						

Existing Access	Existing Intersection of		Access Modification	**Proposed Interconnectivity** (If Applicable)		
	Road A	Road B		Connector #	Road Connected	Adjacent Development
Access 1				Connector 1		
Access 2				Connector 2		
Access 3				Connector 3		
Access 4				Connector 4		

☒ Additional access clarifications and provisions (e.g., proposed control-of-access or median breaks, modifications of existing access, loading/unloading area access, bike/pedestrian accommodation).

NCDOT STIP No. U-3467 Public Meeting Maps show a median across the site frontage. Per NCDOT, full-movement access will not be allowed.

☒ **Proposed K-12 School Site**

☐ NCDOT MSTA School Traffic Calculator for _____ shall be used.

☐ Peak Hour Factors (PHFs) shall be adjusted/weighted for new school trips (0.5 PHF by default).

☐ Internal school circulation analysis is required, and should be submitted in advance or concurrent with the TIA submittal.

☐ Clarify traffic operation plans (e.g. traffic circulation pattern, pedestrian access, drop-off/pick-up zone location and configuration, queue storage area and, if applicable, staggered start times).

☒ Trip Generation

The TIA Consultant shall prepare trip generation estimates following the current *NCDOT Congestion Management Capacity Analysis Guidelines*, and submit the calculation sheets and supporting information to the District Engineer for approval prior to capacity analysis.

ITE LUC	Proposed Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
210	SF Det. (North)	62	DU	650	Adj. Street	12	36	48	40	23	63	ITE Equation
210	SF Det. (South)	31	DU	344	Adj. Street	7	19	26	21	12	33	ITE Equation
Unadjusted Site Trips				994		19	55	74	61	35	96	
Internal Capture Trips (Attach Calculation Sheets)												
Internal Capture % of Unadjusted Site Trips				%			%			%		
LUC	Proposed Land Use	Any Internal Trips?		Pass-By % of External Trips								
				%			%			%		
				%			%			%		
				%			%			%		
				%			%			%		
				%			%			%		
Pass-By Trips (Attach Calculation Sheets)												
Adjacent Street Volumes												
Non-Pass-By Primary Trips				994		19	55	74	61	35	96	
Diverted Trips, if Applicable and Justifiable												

**Explain local or other data sources, if used:

☐ Existing Site Trip Information for Redevelopment Projects (Attach separate sheets as needed)

ITE LUC	Existing Land Use	Size	Unit	Daily Trips	Peak Hour Type	AM Peak Hour Trips			PM Peak Hour Trips			Data Source
						Enter	Exit	Total	Enter	Exit	Total	
Total Existing Site Trips												

☒ **Trip Distribution**

☒ Trip distribution diagrams are submitted concurrently with this document (attach separate sheets).

☐ Trip distribution diagrams will be submitted separately, along with supporting information, to the District Engineer for review and approval prior to capacity analysis. The trip distribution shall be based on the current and anticipated traffic patterns, as well as instructions noted below.

If required by the District Engineer, the following additional diagrams shall also be submitted:

☐ Mixed-Use Developments (separate diagrams for residential, commercial, and office trips)

☐ Inter-Development Trips (if 'internal" trips cross public streets)

☐ Pass-By Trips

☐ Diverted Trips

☐ Each Analysis Period

☐ **Mode Split**

☐ Provide Data Source and Justification

Mode / Period	Auto		
AM Peak	%	%	%
PM Peak	%	%	%
Daily	%	%	%
	%	%	%

☐ Identify proper infrastructure and accommodation for other modes of travel.

☒ **Analysis Peak Periods:**

☒ Weekday AM Peak 7:00-9:00 AM

☒ Weekday PM Peak 4:00-6:00 PM

☐ Weekday Midday Peak _____

☒ Weekday PM School Peak 2:00-4:00 PM

☐ Weekend _____ Peak _____

☐ Other _____

☒ Study Area Intersections and Data Collection

The study area shall include the site access intersections (both new and existing) identified under "Site Plan and Access" on page 1, as well as the following external and, if applicable, internal intersections.

External Intersection	Intersection of		Traffic Control	Intersection Turning Movement Counts			Notes
	Road A	Road B		New / Existing	Date of Counts	Growth Adjustment	
#1	NC 16	Rea Road	Signal	Require New Counts			
#2	Weddington Road	Cox Road	2-Way Stop	Require New Counts			
#3	Weddington Road	12 Mile Creek Rd	Signal	Require New Counts			
#4	Weddington Road	U-3467	Signal				Future
#5	Weddington Road	Access A	2-Way Stop				Build
#6	Weddington Road	Access B	2-Way Stop				Build
#7							
#8							
#9							
#10							
#11							
#12							

Internal Intersection	Intersection of		Access Type		Intersection Spacing		
	Road A	Road B	Traffic Control	Permitted Movements	Distance (ft)	Direction	Nearest Intersection
#101							
#102							
#103							
#104							
#105							

The following data will be collected:

☒ New traffic turning movement counts in ☒ 15-min intervals ☐ 5-min intervals (near schools)
Unless otherwise noted above, new traffic counts shall be collected at the existing study intersections during the analysis periods. Weekday counts shall avoid Mondays, Fridays, holidays, school breaks, road closures, and major weather events.

☒ To account for the impact of existing and/or proposed school traffic, PHFs will be adjusted for:

intersections numbered: #3 - AM and school peak hours

and access points numbered: _____

☒ Traffic Forecast Data for TIP: U-3467 for intersections along Rea Road

☒ Roadway/Intersection Configuration & Traffic Control

☒ Traffic Signal Phasing & Timing Data

☐ Crash Data: _____ Period: _____

☒ Other:

NCDOT STIP No. U-5769A U-turn bulbs along NC 16 will be included for modeling purposes but not evaluated for mitigation.

☒ Future Year Conditions

☒ Project Build-Out Year: 2029

☒ Future Analysis Year(s): 2029

☒ Identify below any funded/committed future transportation improvements, as well as any approved but incomplete developments near the site.

Funded STIP / Local CIP Project	Project Description	Year Complete
U-3467	Construct four-lane road from NC 16 to Waxhaw Indian Trail	2030
U-5769A	NC 16 widening from Rea Rd to Bonds Grove Church Rd	2031

Nearby Approved Development	Location	Future Land Use (exclude any completed phases)	Committed Improvements
None			

☒ Annual Growth Factor: 2 %

Justification/Data Source: NCDOT AADT data

☒ Local Comprehensive Transportation Plan Compliance

☒ Identify Applicable Local Transportation Planning Documents

CRTPO MTP/CTP

☒ Identify Applicable Roadways inside the Study Area

Road Name	Classification	Speed Limit	Proposed Cross-Section	Proposed Right-of-Way	Compliance Requirements	Affect Study Intersection #
NC 16	Minor Arterial	45				
Weddington Road	Minor Arterial	45				
Rea Road	Minor Arterial	45				
Cox Road	Local	45				
Twelve Mile Creek Road	Local	45				

☒ Study Method

The traffic analysis shall follow the current *NCDOT Congestion Management Capacity Analysis Guidelines*, *Policy on Street and Driveway Access to North Carolina Highways*, and use the current approved version of analysis software (e.g. Synchro/SimTraffic, HCS, Sidra Intersection, TransModeler).

The study shall include the following analysis scenarios for each analysis period.

1. Existing Conditions
2. Future No-Build Conditions (existing + background growth + approved developments + committed or funded improvements)
3. Future Build Conditions (future no-build + site trips)
4. Future Build with Improvements Conditions (future build traffic with improvements to mitigate the proposed development's impacts) and, if applicable:

☐ 5. TIP Design Year Analysis _____

☐ 6. Alternative Access Scenario (without proposed control-of-access or median break / modification)

The following additional analysis/outputs should be provided as warranted:

☐ Signal Warrant Analysis for accesses/intersections _____
☐ Multi-Modal Level of Service Analysis
☐ School Loading Zone Traffic Simulation
☐ Phasing Analysis (scope separately as needed)
☐ Safety/Crash Analysis
☐ Control-of-Access Modification Justification
☐ Median Break / Modification Justification
☐ Other _____

☒ Submittals

In addition to the hardcopies required below, the TIA Consultant shall provide the District Engineer and, if required, the local government an electronic copy of the study documents, including the latest site plan, figures and appendices, in searchable PDF files and the original traffic analysis files (e.g., Synchro, HCS). To expedite review, the NCDOT electronic submittals shall also be delivered concurrently to:

☐ Div. Traffic Engr ☐ Regional Traffic Engr ☐ Congestion Management ☐ Other _____

Submittals	NCDOT		Local Government	
	Electronic	Hardcopy	Electronic	Hardcopy
Trip Generation & Distribution	Required			
Draft TIA Report	Required			
Final Sealed TIA Report	Required			

☐ **Additional Comments (**municipal TIA requirements, approved variations from NCDOT guidelines)

Agreement by All Parties

The undersigned agree to the contents and methodology described above for completing the required traffic impact analysis for the proposed development identified herein. Any changes to the above methodology contemplated by the Applicant or the TIA Consultant must be submitted to the District Engineer in writing. If approved by NCDOT, then such changes may be accepted for the TIA report. Subsequent revisions to the development plan (e.g. land use, density, site access, or schedule) may require additional scoping and analysis, and may modify the TIA requirements.

This agreement shall become effective on the date approved by NCDOT, and shall expire ____ months after the effective date or upon significant changes to the roadway network and/or development assumptions, whichever occurs first. Once expired, renewal or re-scoping will be required for subsequent TIA submittals.

APPLICANT

Signature	Print Name	Date

TIA CONSULTANT

Signature	Laura Reid, PE Print Name	Date

LOCAL GOVERNMENT REPRESENTATIVE (If Applicable)

Signature	Print Name	Date

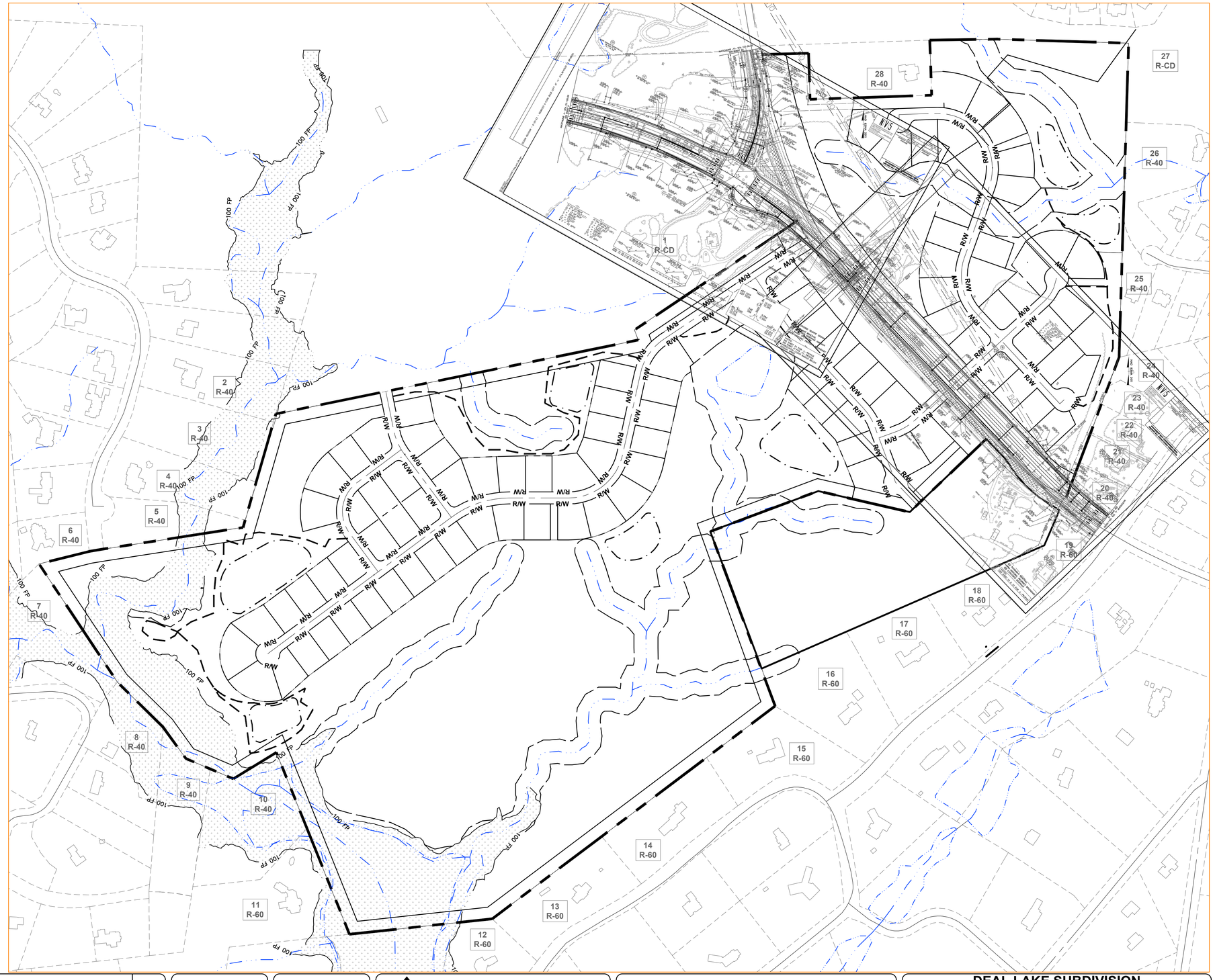
Email concurrence may be used in lieu of the signature.

NCDOT DISTRICT REPRESENTATIVE

Reviewed and approved by the NCDOT Division ____District____ on _____.

Signature	Print Name

Email concurrence may be used in lieu of the signature.



200' 0 200' 400'

SCALE: 1"=200' (Horiz.)

REV.NO.	DESCRIPTIONS	DATE
	REVISIONS	

McKIM&CREED

8020 Tower Point Drive
Charlotte, North Carolina 28227
Phone: (704) 841-2588, Fax: (704) 841-2567

NC License# F-1222

www.mckimcreed.com

Toll Brothers
AMERICA'S LUXURY HOME BUILDER®

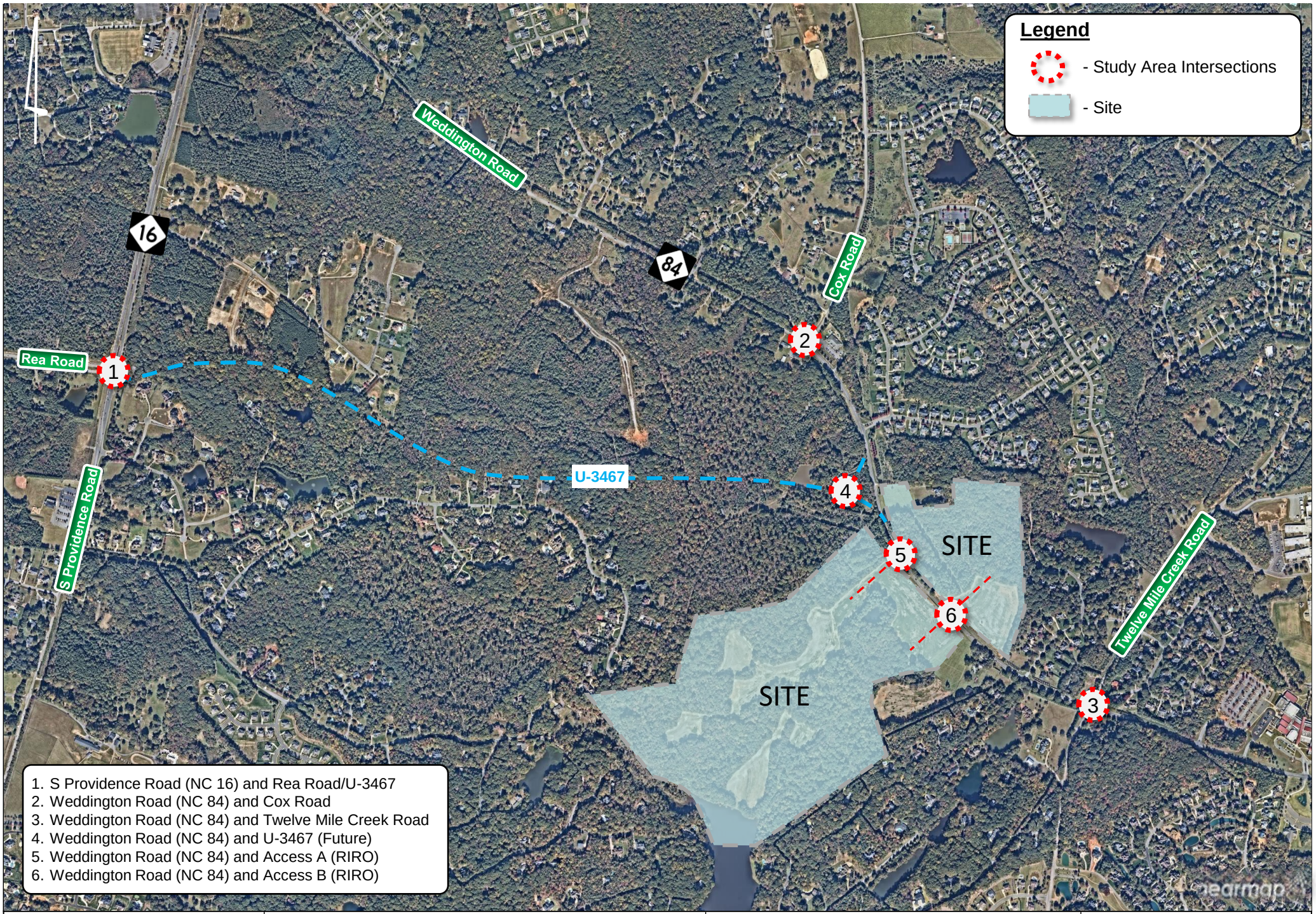
DEAL LAKE SUBDIVISION
WEDDINGTON
UNION COUNTY, NC

DATE:	FEBRUARY 2024
MCE PROJ. #	02741-0011
DRAWN	
DESIGNED	
CHECKED	
PROJ. MGR.	TMM

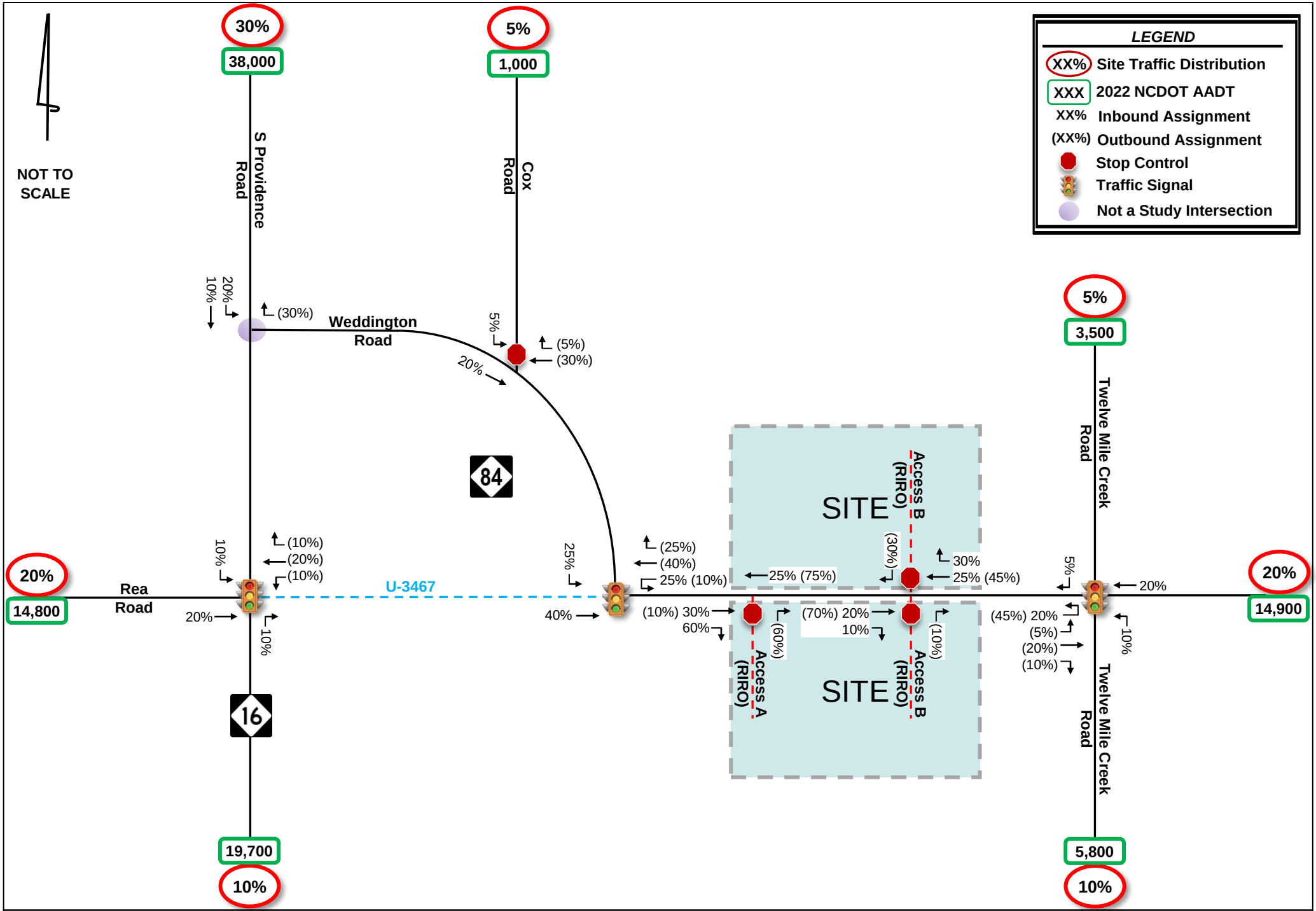
SCALE
HORIZONTAL:
VERTICAL:

DRAWING NUMBER
REVISION

STATUS: REVIEW DRAWINGS ONLY NOT FOR CONSTRUCTION



Kimley»Horn	**Deal Lake** **Traffic Impact Analysis**	**Study Area/Site Location**	**Figure 2**



Kimley»Horn	Deal Lake Traffic Impact Analysis	Site Traffic Distribution and Assignment	Figure 3

NCDOT AADT										
	2022	2021	2019	2018	2017	2016	2015	2014	2013	Growth Rate (2013-2022)
Weddington Road (west of Cox Road)	15,900	14,400	20,000	19,500	18,400	16,900	18,000	15,500	-	0.3%
Cox Road (north of Weddington Road)	1,000	1,200	1,300	1,200	1,100	1,000	1,300	1,300	900	1.2%
Twelve Mile Creek Road (north of Weddington Road)	3,500	3,500	3,700	3,600	3,300	3,500	3,400	3,500	-	0.0%
Twelve Mile Creek Road (South of Weddington Road)	5,800	5,400	5,800	5,600	5,200	4,900	3,900	3,700	3,500	5.8%
NC 16 (south of Weddington Road)	28,300	29,200	33,500	32,600	30,600	27,800	25,300	23,900	-	2.1%
Average										***1.9%***

LaBella
Powered by partnership.

January 23, 2024

Mr. Robert G. Tefft
Town Planner
Town of Weddington
1924 Weddington Road
Weddington, NC 28104

RE: Review of Scoping for Traffic Impact Analysis (TIA)
Deal Lake
Town of Weddington

Mr. Tefft:

In accordance with your request, the following is our review of the Scoping document prepared for Toll Brothers, by Laura Reid, PE, Kimley Horn & Associates, dated, October 24, 2023.

The Applicant is proposing to develop 93 single-family residential units on two parcels of approximately 168 acres of vacant land located on Weddington Road between Cox Road and Twelve Mile Creek Road. The north Parcel is proposed to contain 31 single-family units and the south parcel is proposed to contain 62 single-family dwelling units. The applicant proposes to study six (6) intersections consisting of: S. Providence Road (NC 16) and Rea Road; Weddington Road and Cox Road; Weddington Road and Twelve Mile Creek Road; Weddington Road and U-3467; Weddington Road and Access A; and, Weddington Road and Access "B."

A. Intersections to be Studied.

From an overall transportation perspective, the intersections to be studied appear to be appropriate to determine the traffic impacts of the proposed development.

B. Trip Generation.

The Scoping document identifies the single-family housing as Land-use 210 which is considered appropriate for this application. However, because the two parcels are on opposite sides of Weddington Road, each with a different arrival/departure pattern, and which generates a few more trips than as a combined Site, and to perform a more conservative analysis, it is suggested that the two Sites be treated separately for analysis purposes.

C. Trip Distribution and Assignment

The Scoping document contains an exhibit showing the distribution and assignment of the new trips. However, the assignments consider the roadway interconnect (U-3467) between Weddington Road and S. Providence Road (NC 16) to be completed. Further, the Scoping Document indicates that this STIP will not be completed until 2026-2030. Accordingly, it is assumed that the Traffic Impact Analysis (TIA) will be based on that time frame and that the Horizon Year of the completion of the STIP will be that time when occupancy of the single-family homes will be allowed. Alternatively, should the proposed development be phased and occupancy be proposed to begin before the roadway interconnect is completed, an interim TIA is to be performed with a shorter time frame for the Horizon Year as well with a different (appropriate) Site distribution.

D. Analysis Peak Periods

The Scoping Document indicates that the time periods when data is to be collected is between 7:00 and 9:00a.m. and between 4:00 and 6:00 p.m. While these time frames generally reflect the Peak Highway Hours and are consistent with ITE Trip Generation characteristics of single-family homes, the Scoping Document also indicates that the "MSTA School Traffic Calculator" is to be used. Further, there appears to be a number of schools in the vicinity. Accordingly, it is suggested that the afternoon timeframe for data collection also include the school dismissal period, typically between 2:00 and 3:00 p.m. Should the data indicate peaks of significant volumes during the school departure period, additional traffic impacts analyses should be performed during that time frame.

E. Conclusion

We trust the information herein is sufficient for your immediate needs. Please do not hesitate to contact me at 914-269-5610 or Ms. Fisher at 704-941-2132 should you have any questions.

Respectfully submitted,

Bernard Adler, P.E.
Senior Transportation Consultant
LaBella Associates
One North Broadway, Suite 803
White Plains, NY 10601

Bonnie A. Fisher, P.E.
Senior Civil Engineer
Project Manager

Ortiz-Hernandez, Julian

From:	Helms, Amelia C <achelms@ncdot.gov>
Sent:	Friday, February 2, 2024 1:46 PM
To:	Reid, Laura; Robert Tefft; Dewey, Karen; Gardner, Zachary L
Cc:	Richard, Elizabeth; Robert Price
Subject:	RE: [External] Deal Lake - TIA Scoping Document
Attachments:	2024-01-03_Deal Lake_SCOPING.pdf
Categories:	External

Laura,

The site plan should clearly show each access point and all NC and SR routes need to be labeled. Also, please provide the STIP project overlaid on the site plan.

U-3467 will be converting NC 84 to a divided facility with reduced conflict intersections, therefore full movement access will not be allowed on NC 84.

Thank you,

Amelia Helms, P.E.
District Engineer
Division 10 - District 3
North Carolina Department of Transportation

704 218 5100 office
704 292 1800 fax
achelms@ncdot.gov

130 South Sutherland Avenue
Monroe, NC 28112

From: Reid, Laura <laura.reid@kimley-horn.com>
Sent: Wednesday, January 3, 2024 5:26 PM
To: Robert Tefft <rtefft@townofweddington.com>; Dewey, Karen <kdewey@townofweddington.com>; Helms, Amelia C <achelms@ncdot.gov>; Gardner, Zachary L <zlgardner@ncdot.gov>
Cc: Richard, Elizabeth <Elizabeth.Richard@kimley-horn.com>; Robert Price <rprice1@tollbrothers.com>
Subject: [External] Deal Lake - TIA Scoping Document

Hi all,

Please see attached for the TIA scoping document for the Deal Lake development in Weddington. We understand we'll need to have a scoping meeting with the Town for this site, so please let us know if there is any additional information you need from us to get that scheduled.

This site is below the NCDOT TIA threshold, but we've included them on this email given the connection to NC 84 and the TIP projects in the vicinity.

Thanks,

Laura Reid, PE (NC & SC)
Kimley-Horn | 200 South Tryon Street, Suite 200, Charlotte, NC 28202
Direct: 704 319 7696 | Mobile: 443 804 7984 | www.kimley-horn.com
Connect with us: Twitter | LinkedIn | Facebook | Instagram

Deal Lake

TIA SCOPING REVIEW

BULLET LIST OF CONGESTION MGMT. COMMENTS AND CONCERNS (SC-2024-036)

March 4, 2024

The Congestion Management Section (CMS) has performed a review of the scoping document for the proposed Deal Lake development prepared by Kimley-Horn and Associates (received February 20, 2024). According to the document, the proposed development is to be located on both sides of NC 84 (Weddington Rd) 1,300' west of SR 1341 (Twelve Mile Creek Rd) in Weddington, NC. The scoping document states that the full build-out of the development is to be constructed by 2029 and is to consist of residential land use consisting of 93 dwelling units of single-family detached housing (LUC 210) generating 994 unadjusted daily trips. Based on our review, we have the following comments at this time:

Trip Generation

- The Trip Generation appears reasonable.

Trip Distribution and Growth Rate

- Trip distribution appears reasonable.
- Growth rate of 2% appears reasonable.

Study Intersections

- Study Intersections appear reasonable.

Site Plan and Proposed Driveways

- Site plan appears reasonable and appears to match with the trip generation.
- TIP Projects U-3467 and U-5769A are in the immediate area of this project. The scoping documents indicate that TIP Design Year Analyses will not be provided and that a rezoning request will be not be made for this project. (Observation)
- Prior to seeking driveway permit, overlay development project plans on TIP project plans to demonstrate compatibility. Final plans are subject to review by the NCDOT District, Division, and Roadway Design Offices.
- Please ensure that the proposed driveway(s) are in accordance with the NCDOT Driveway Manual and Internal Protected Stem lengths are provided with the TIA.

NOTE: This list should not be considered all-inclusive. Further review may identify additional areas of concern.

NCDOT TIA Comments

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

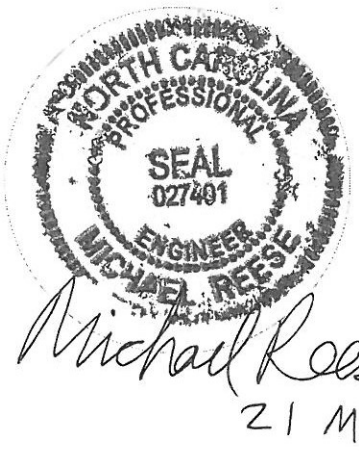
J.R. "JOEY" HOPKINS
SECRETARY

May 21, 2024

Deal Lake
Weddington, NC

Traffic Impact Analysis (TIA) Review Report
Congestion Management Section

TIA Project: SC-2024-036
Division: 10
County: Union
Description: Located on both sides of NC 84 (Weddington Rd) west of SR 1341 (Twelve Mile Creek Rd) in Weddington, Union County.



Michael Reese
21 MAY 2024

Michael P. Reese, PE, CPM
Congestion Management Regional Engineer

Jonathan W. Haire
Congestion Management Design Engineer

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
TRANSPORTATION MOBILITY & SAFETY DIVISION
TRAFFIC MANAGEMENT UNIT
1561 MAIL SERVICE CENTER
RALEIGH, NC 27699-1561

TELEPHONE: 919-814-5000
FAX: 919-771-2745

WEBSITE: WWW.NCDOT.ORG

LOCATION:
750 NORTH GREENFIELD PARKWAY
GARNER NC 27529

Deal Lake TIA

SC-2024-036 **Union County**

Per your request, the Congestion Management Section (CMS) of the Transportation Mobility and Safety Division has completed a review of the subject site. The comments and recommendations contained in this review are based on data for background conditions presented in the sealed Traffic Impact Analysis (TIA) and are subject to the approval of the local District Engineer's Office and appropriate local authorities.

Key Dates	
Initially Received by CMS	4/30/2024
Date of Latest Information Received by CMS	4/30/2024
Date of Preliminary Review Accepting TIA for Review	5/21/2024
Sealed TIA Prepared by Kimley-Horn and Associates, Inc.	4/26/2024
Site Plan Prepared by McKim & Creed	2/10/2024

Proposed Development

According to the TIA, the proposed Deal Lake development is to be located on both sides of NC 84 (Weddington Rd) west of SR 1341 (Twelve Mile Creek Rd) in Weddington, Union County. The TIA states the development is to be constructed by 2029 and is to consist of the following:

Land Use	Land Use Code	Size
Single-Family Detached Housing (South of NC 84)	210	62 DU
Single-Family Detached Housing (North of NC 84)	210	31 DU

Trip Generation - Unadjusted Volumes During a Typical Weekday
Based on appropriate methodology outlined in the *ITE Trip Generation Manual, 11th Ed.*

	IN	OUT	TOTAL
AM Peak Hour	19	55	74
Mid-Day Peak Hour	52	30	82
PM Peak Hour	61	35	96
Daily Trips			994

Requested Access Points		
Driveway	Public Roadway	Access Type
Access A	South side of NC 84 (Weddington Rd) 400' east of Proposed NC 84/Rea Rd Extension Intersection	Right-In/Right-Out
Access B	Both sides of NC 84 (Weddington Rd) 1250' east of Proposed NC 84/Rea Rd Extension Intersection	Right-In/Right-Out

Study Area

Study Area and Proposed Site Location - ↑ N

Photo Credit: Google Maps

TIP Projects in Study Area

Project	Description	Let Date
U-3467	SR 1316 (Rea Road Extension) and NC 84 (Weddington Road) from NC 16 to SR 1008 (Waxhaw-Indian Trail Rd) in Wesley Chapel. Construct four lane roadway part on new location.	July 2027
U-5769A	NC 16 (Providence Road South) from SR 1316 (Rea Road Extension) to SR 1321 (Cuthbertson Road) in Weddington. Widen to multilanes.	June 2029

CRTPO Comprehensive Transportation Plan	
Route	Facility Vision
NC 84 (Weddington Rd)	Boulevard – Needs Improvement
Rea Rd Extension	Boulevard – Recommended
NC 16 (Providence Rd)	Boulevard – Needs Improvement
SR 1341 (Twelve Mile Creek)	Minor Thoroughfare – Needs Improvement
SR 1343 (Cox Rd)	Minor Thoroughfare – Needs Improvement

TIA Comments

The following items vary from our recommended practices (cumulative of all TIA submittals):

- The locations/distances of the proposed driveway accesses varied in Synchro from what is shown on the site plan.
- The distribution of trip generation traffic to/from the north parcel and to/from the south parcel differ from the data shown in the trip generation table
- The U-5769 roadway plans indicate a single southbound U-turn lane is proposed on Providence Road, not dual U-turn lanes as represented in the TIA.
- Internal Protected Stem lengths for each proposed driveway should be provided in the TIA in conformance with requirements in the Driveway Manual.

General Reference

For reference to various documents applicable to this review please reference the following links: **https://connect.ncdot.gov/resources/safety/Pages/Congestion-Management.aspx** and **https://connect.ncdot.gov/resources/safety/Teppl/Pages/Teppl-Topic.aspx?Topic_List=C37**.

It should be noted that poor LOS and excessive queuing may persist throughout network after recommended developer and outside mitigation.

Analysis of all lanes with finite storage should include an appropriate default taper of 100 feet or more in the analysis. Our storage distances in our reports are minimums that do not include deceleration or taper distances.

Any signing and pavement marking revisions/modifications or improvements necessitated by the development should be the responsibility of the developer unless otherwise noted.

It should be noted that the comments and recommendations contained in this review are subject to the approval of the local District Engineer's Office.

Once the driveway permit has been approved and issued, a copy of the final driveway permit requirements should be forwarded to this office. If we can provide further assistance, please contact the Congestion Management Section at (919) 814-5000.

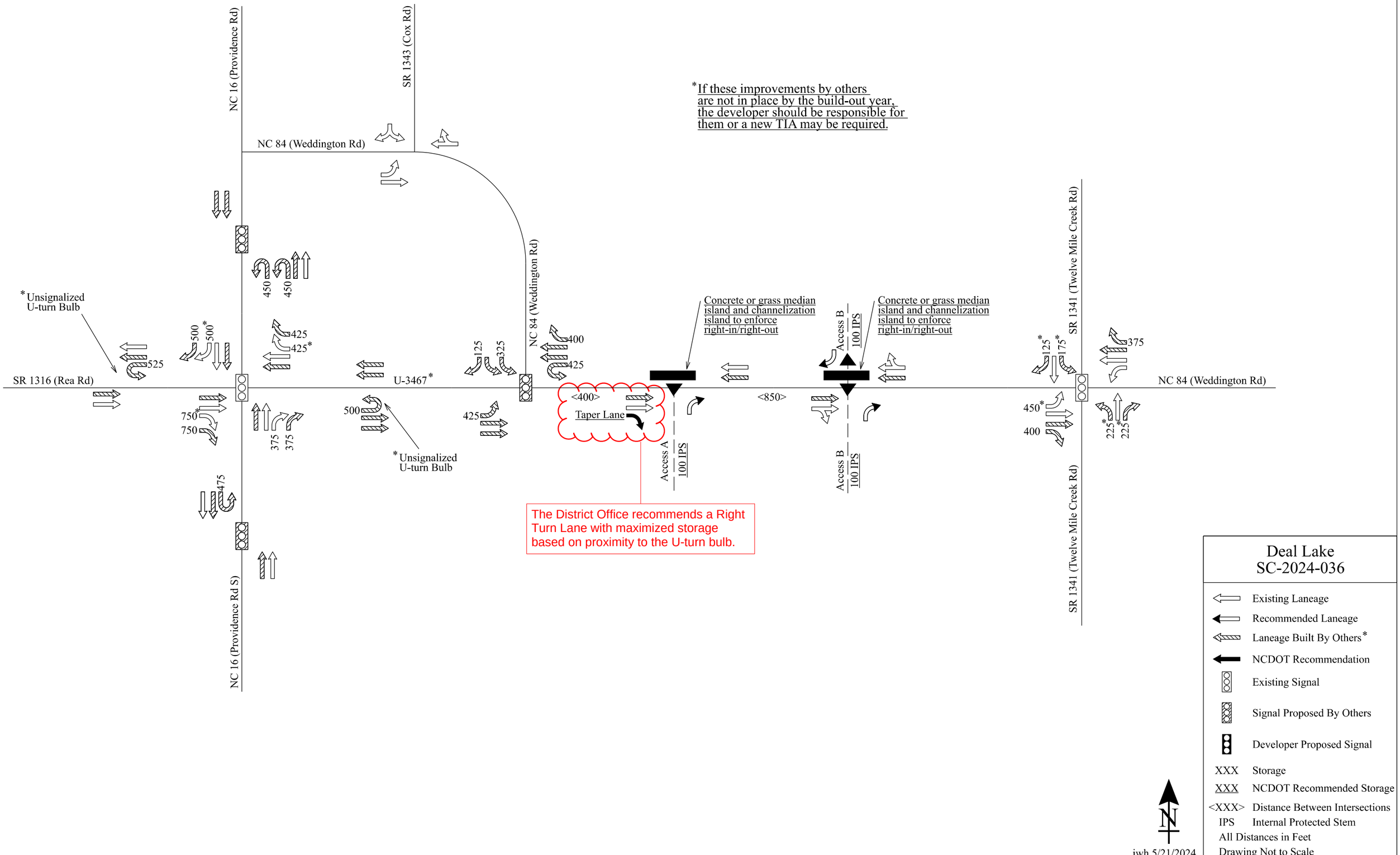
Recommendations

Refer to attached diagram(s).

Network Analysis

Based upon opening year 2029 with TIP U-5769 and TIP U-3467 improvements in place.

□


*If these improvements by others are not in place by the build-out year, the developer should be responsible for them or a new TIA may be required.
NC 16 (Providence Rd)
SR 1343 (Cox Rd)
NC 84 (Weddington Rd)
NC 84 (Weddington Rd)
SR 1341 (Twelve Mile Creek Rd)
SR 1316 (Rea Rd)
U-3467*
NC 84 (Weddington Rd)
*Unsignalized U-turn Bulb
*Unsignalized U-turn Bulb
Concrete or grass median island and channelization island to enforce right-in/right-out
Concrete or grass median island and channelization island to enforce right-in/right-out
Access B 100 IPS
Access A 100 IPS
Access B 100 IPS
<400>
Taper Lane
<850>
The District Office recommends a Right Turn Lane with maximized storage based on proximity to the U-turn bulb.
NC 16 (Providence Rd S)
SR 1341 (Twelve Mile Creek Rd)
525
500
500*
425
425*
450
450
750*
750
375
375
500
*Unsignalized U-turn Bulb
125
325
425
400
425
125*
175*
375
450*
400
225*
225*
475
Deal Lake
SC-2024-036
Existing Laneage
Recommended Laneage
Laneage Built By Others*
NCDOT Recommendation
Existing Signal
Signal Proposed By Others
Developer Proposed Signal
XXX Storage
XXX NCDOT Recommended Storage
<XXX> Distance Between Intersections
IPS Internal Protected Stem
All Distances in Feet
Drawing Not to Scale
N
jwh 5/21/2024

Outlook

RE: [External] Deal Lake - TIA Submittal

From Reid, Laura <laura.reid@kimley-horn.com>

Date Mon 10/14/2024 2:57 PM

To Weltner, Robert C <rcweltner@ncdot.gov>; Gardner, Zachary L <zlgardner@ncdot.gov>; Helms, Amelia C <achelms@ncdot.gov>; Robert Price <rprice1@tollbrothers.com>; Foster, Alexander J <ajfoster@ncdot.gov>; Dewey, Karen <kdewey@townofweddington.com>; Gregory Gordos <ggordos@townofweddington.com>

Cc Richard, Elizabeth <Elizabeth.Richard@kimley-horn.com>; Key, Bryan C <bckey@ncdot.gov>; Attaluri, Radha <rattaluri@ncdot.gov>; Ortiz-Hernandez, Julian <Julian.Ortiz@kimley-horn.com>; Haire, Jonathan W <jwhaire@ncdot.gov>; Sikes, Zachary D <zdsikes@ncdot.gov>; Adler, Bernie <badler@LaBellaPC.com>; Thiruvengadam, Vaishali <vaishali@LaBellaPC.com>

Hi all,

The development team discussed the comments below with NCDOT this afternoon. Per NCDOT, no additional scoping is needed for this site. Our team will issue an updated version of the TIA with the following text edits to the scenario without the TIP projects:

- The driveways will operate as right-in/right-out (RIRO) only.
- Ongoing coordination with NCDOT will be needed as the development progresses to determine if turn lanes and medians are constructed by the development or if a fee-in-lieu will be needed.

Amelia – Can you confirm that this is consistent with what we discussed or if NCDOT would like to see any changes? Thanks!

Laura Reid, PE (NC & SC)
Kimley-Horn | 200 South Tryon Street, Suite 200, Charlotte, NC 28202
Direct: 704 319 7696 | Mobile: 443 804 7984 | www.kimley-horn.com
Connect with us: Twitter | LinkedIn | Facebook | Instagram

From: Reid, Laura
Sent: Monday, October 7, 2024 3:15 PM
To: Weltner, Robert C <rcweltner@ncdot.gov>; Gardner, Zachary L <zlgardner@ncdot.gov>; Helms, Amelia C <achelms@ncdot.gov>; Robert Price <rprice1@tollbrothers.com>; Foster, Alexander J <ajfoster@ncdot.gov>; Dewey, Karen <kdewey@townofweddington.com>; Gregory Gordos <ggordos@townofweddington.com>
Cc: Richard, Elizabeth <Elizabeth.Richard@kimley-horn.com>; Key, Bryan C <bckey@ncdot.gov>; Attaluri, Radha <rattaluri@ncdot.gov>; Ortiz-Hernandez, Julian <Julian.Ortiz@kimley-horn.com>; Haire, Jonathan W <jwhaire@ncdot.gov>; Sikes, Zachary D <zdsikes@ncdot.gov>; Fisher, Bonnie

<BFisher@LaBellaPC.com>; Adler, Bernie <badler@LaBellaPC.com>; Thiruvengadam, Vaishali <vaishali@LaBellaPC.com>
Subject: RE: [External] Deal Lake - TIA Submittal

Hi Bob,

Just tried to give you a call, so know you're out of the office this afternoon, but wanted to follow-up on your email from last week.

We were under the impression from NCDOT's July 1 email that an updated scoping document and updated analysis was not needed for the change in unit count or the additional access point. We assumed that with the additions to the scope from the Town being above and beyond the initial scope approval, that we would still be covered by the original scope since these items make the analysis more conservative than the first submittal.

Please let me know when you're available to discuss so we can get this resolved.
Thanks!

Laura Reid, PE (NC & SC)
Kimley-Horn | 200 South Tryon Street, Suite 200, Charlotte, NC 28202
Direct: 704 319 7696 | Mobile: 443 804 7984 | www.kimley-horn.com
Connect with us: Twitter | LinkedIn | Facebook | Instagram

From: Weltner, Robert C <rcweltner@ncdot.gov>
Sent: Thursday, October 3, 2024 8:15 AM
To: Reid, Laura <laura.reid@kimley-horn.com>; Gardner, Zachary L <zlgardner@ncdot.gov>; Helms, Amelia C <achelms@ncdot.gov>; Robert Price <rprice1@tollbrothers.com>; Foster, Alexander J <ajfoster@ncdot.gov>; Dewey, Karen <kdewey@townofweddington.com>; Gregory Gordos <ggordos@townofweddington.com>
Cc: Richard, Elizabeth <Elizabeth.Richard@kimley-horn.com>; Key, Bryan C <bckey@ncdot.gov>; Attaluri, Radha <rattaluri@ncdot.gov>; Ortiz-Hernandez, Julian <Julian.Ortiz@kimley-horn.com>; Haire, Jonathan W <jwhaire@ncdot.gov>; Sikes, Zachary D <zdsikes@ncdot.gov>; Fisher, Bonnie <BFisher@LaBellaPC.com>; Adler, Bernie <badler@LaBellaPC.com>; Thiruvengadam, Vaishali <vaishali@LaBellaPC.com>
Subject: RE: [External] Deal Lake - TIA Submittal

Laura,
The new TIA is rejected by NCDOT as a new scope was not completed for the proposed changes.

Thank You,
Robert Weltner
Engineer 1
Division 10 - District 3
North Carolina Dept of Transportation

704-218-5100 – Office
704-292-1800 fax
rcweltner@ncdot.gov

From: Reid, Laura <laura.reid@kimley-horn.com>
Sent: Friday, August 30, 2024 3:10 PM
To: Gardner, Zachary L <zlgardner@ncdot.gov>; Helms, Amelia C <achelms@ncdot.gov>; Robert Price <rprice1@tollbrothers.com>; Foster, Alexander J <ajfoster@ncdot.gov>; Dewey, Karen <kdewey@townofweddington.com>; Gregory Gordos <ggordos@townofweddington.com>
Cc: Richard, Elizabeth <Elizabeth.Richard@kimley-horn.com>; Key, Bryan C <bckey@ncdot.gov>; Attaluri, Radha <rattaluri@ncdot.gov>; Ortiz-Hernandez, Julian <Julian.Ortiz@kimley-horn.com>; Haire, Jonathan W <jwhaire@ncdot.gov>; Weltner, Robert C <rcweltner@ncdot.gov>; Sikes, Zachary D <zdsikes@ncdot.gov>; Fisher, Bonnie <BFisher@LaBellaPC.com>; Adler, Bernie <badler@LaBellaPC.com>; Thiruvengadam, Vaishali <vaishali@LaBellaPC.com>
Subject: RE: [External] Deal Lake - TIA Submittal

Hi all,

See link below for the updated TIA for this site. Note that contrary to our previous emails, we have gone back and updated the report to the current unit counts and driveway configuration. Also, per coordination with Town staff & their consultant, we've also added:

- Two approved developments
- Build scenario without the TIP projects
- Additional results for the u-turn bulbs in the scenario with the TIP projects

These changes are outlined in detail in the report. Please let us know if you have any questions as you review. We're happy to jump on a call to discuss as needed!

Sharefile Link: https://kimley-horn.securevdr.com/d-s3046a91997c94a71b16376604982bc96

Thanks,

Laura Reid, PE (NC & SC)
Kimley-Horn | 200 South Tryon Street, Suite 200, Charlotte, NC 28202
Direct: 704 319 7696 | Mobile: 443 804 7984 | www.kimley-horn.com
Connect with us: Twitter | LinkedIn | Facebook | Instagram

Town of Weddington
TIA Comments

July 19, 2024

Mr. Greg Gordos
Town Planner
Town of Weddington
1924 Weddington Road
Weddington, NC 28104

RE: Review of Traffic Impact Analysis (TIA)
Deal Lake
Town of Weddington, NC

Mr. Gordos:

Pursuant to your request, LaBella Associates has reviewed the Traffic Impact Analysis (TIA) for the proposed subject development, prepared for Toll Brothers, by Laura Reid, PE, Kimley Horn & Associates, dated, April 2024.

The Applicant is proposing to develop 93 single-family residential units on two parcels of approximately 168 acres of vacant land located on Weddington Road between Cox Road and Twelve Mile Creek Road. The north Parcel is proposed to contain 31 single-family units and the south parcel is proposed to contain 62 single-family dwelling units. The applicant proposes to study six (6) intersections consisting of: S. Providence Road (NC 16) and Rea Road; Weddington Road and Cox Road; Weddington Road and Twelve Mile Creek Road; Weddington Road and U-3467; Weddington Road and Access A; and, Weddington Road and Access "B."

A. Traffic Volume Turning-Movement Counts
The TIA states that turning-movement count were conducted by Quality Counts on March 7, 2024. Yet, later in the TIA, there is a statement that the NCDOT Intersection Analysis Utility (IAU) spreadsheet was used to convert the AADT volumes from the roadway plans into peak-hour intersection turning-movement volumes. These are inconsistent statements.

B. Intersections Studied.
From an overall transportation perspective, the intersections to be studied are appropriate to determine the traffic impacts of the proposed development. However, The TIA notes that left turns will be prohibited at the intersection of South Providence Road and Rea Road. It is, therefore, incumbent that the U-turn bulbs on Rea Road east and west of S Providence Road be analyzed.

C. Vicinity Developments
The TIA notes that the Town of Weddington has advised Kimley Horn that there are no approved developments in the area that are to be included in the instant study. However, there are two concurrent applications in the study area which could possibly impact the analyses. These projects are: Weddington Office Park and Providence and Rea. Without

including these proposed developments, the instant TIA would not be considered comprehensive.

D. Trip Distribution and Assignment

For the No-Build and Build conditions, the TIA considers the roadway interconnect (U-3467) between Weddington Road and S. Providence Road (NC 16) to be completed. It is further stated that implementation of this project will not begin until FY 2029. It is, therefore, assumed that the construction will not be completed until at least 2030. However, the Horizon Year (full development and occupancy) of the proposed development is still 2029. There appears to be an inconsistency in using the new roadway while still undeveloped as part of the background and Build conditions.

E. Identified Mitigation Improvements

The TIA identifies the access to the development as mitigation measures. However, since these are a part of the access to the development, they are not considered mitigation but necessary components of the development.

We trust the information herein is sufficient for your immediate needs. Please do not hesitate to contact me at 914-269-5610 or Ms. Fisher at 704-941-2132 should you have any questions

Respectfully submitted,

Bernard Adler, P.E.
Senior Transportation Consultant
LaBella Associates
One North Broadway, Suite 803
White Plains, NY 10601

Bonnie A. Fisher, P.E.
Senior Civil Engineer
Project Manager

Kimley-Horn
Comments Response Letter

COMMENT RESPONSE LETTER

To: Bernard Adler, P.E.
LaBella Associates, Senior Transportation Consultant

Bonnie A. Fisher, P.E.
LaBella Associates, Senior Civil Engineer/Project Manager

From: Laura Reid, PE
Kimley-Horn and Associates, Inc.

Date: July 23, 2024

Subject: Deal Lake Traffic Impact Analysis – Comment Response Letter

The purpose of this Comment Response Letter is to incorporate the Town of Weddington's review comments (dated July 19, 2024) and provide responses regarding the Traffic Impact Analysis (TIA) prepared by Kimley-Horn and Associates, Inc. (dated April 26, 2024) for the proposed Deal Lake development.

North Carolina Department of Transportation (NCDOT) Congestion Management and Division staff have also provided comment on the Deal Lake TIA, but these comments are not discussed in detail in this letter.

The Town and NCDOT comments are attached. The responses to Town comments are provided in *italics* below.

TOWN COMMENTS

Traffic Volume Turning-Movement Counts

- The TIA states that turning-movement counts were conducted by Quality Counts on March 7, 2024. Yet, later in the TIA, there is a statement that the NCDOT intersection Analysis Utility (IAU) spreadsheet was used to convert the AADT volumes from the roadway plans into peak-hour intersection turning-movement volumes. These are inconsistent statements.

  The turning-movement counts collected by Quality Counts were utilized for the existing volumes at the existing study area intersections. The NCDOT Intersection Analysis Utility (IAU) spreadsheet was used to calculate the 2029 background volumes used for future analyses for the intersections part of the NCDOT TIP Project No. U-3467. This methodology was defined in the approved NCDOT TIA Scoping checklist (page 4 of 7) and is explained in Sections 3.2 and 4.1 of the TIA . The approved NCDOT TIA Scoping checklist is ***attached.***

Intersections Studied

- From an overall transportation perspective, the intersections to be studied are appropriate to determine the traffic impacts of the proposed development. However, the TIA notes that left

turns will be prohibited at the intersection of South Providence Road and Rea Road. It is, therefore, incumbent that the U-turn bulbs on Rea Road east and west of S Providence Road be analyzed.

The U-3467 eastern and western U-turn bulbs along Rea Road/Rea Road Extension were modeled in Synchro for future year conditions. As these were not study area intersections, LOS and delays at these intersections were not reported in the TIA. However, the reported results do reflect the impacts of these bulbs as adjacent intersections. The Synchro Capacity Analysis reports included in the TIA Appendix reported these as nodes 103 and 104.

Vicinity Developments

- The TIA notes that the Town of Weddington has advised Kimley-Horn that there are no approved developments in the area that are to be included in the instant study. However, there are two concurrent applications in the study area which could possibly impact the analyses. These projects are: Weddington Office Park and Providence and Rea. Without including these proposed developments, the instant TIA would not be considered comprehensive.

  At the time of the TIA Scoping, NCDOT and the Town agreed that there were not any approved developments within the study area that should be included in the analysis. The provided analysis is therefore consistent with the approved NCDOT TIA Scoping checklist. The approved NCDOT TIA Scoping checklist is ***attached.***

  Additionally, if these developments are still in the application stage and not yet approved, then they would typically not be included in future year analysis; the Town TIA Procedures Manual does specify that developments should be approved to be included in the analysis.

Trip Distribution and Assignment

- For the No-Build and Build conditions, the TIA considers the roadway interconnect (U-3467) between Weddington Road and S. Providence Road (NC 16) to be completed. It is further stated that implementation of this project will not begin until FY 2029. It is, therefore, assumed that the construction will not be completed until at least 2030. However, the Horizon Year (full development and occupancy) of the proposed development is still 2029. There appears to be an inconsistency in using the new roadway while still undeveloped as part of the background and build conditions.

  Based on preliminary TIA scoping discussions, it was assumed that the project timeline coincided closely enough with the TIP project timeline to assume one build-out year of 2029. This assumption was outlined in the approved NCDOT TIA Scoping checklist which s ***attached.***

  Per the LaBella Associates TIA scoping comments, "should the proposed development be phased and occupancy be proposed to begin before the roadway interconnect if completed, an interim TIA is to be performed".

Identified Mitigation Improvements

- The TIA identifies the access to the development as mitigation measures. However, since these are a part of the access to the development, they are not considered mitigation but necessary components of the development.

  The accesses are shown as mitigation since they are new laneage and NCDOT requires that internal protected stem lengths for each driveway be identified as part of TIA mitigation. These new lanes can be shown differently if the Town prefers.

Please reach out to our team should you want to discuss further.

Cc:

- Greg Gordos, Town of Weddington
- Robert Price, Toll Brothers
- Elizabeth Richard, Kimley-Horn and Associates, Inc.
- Julian Ortiz-Hernandez, Kimley-Horn and Associates, Inc.

Attachments:

- Town TIA comments
- NCDOT TIA Congestion Management Comments
- NCDOT TIA Division Comments
- Approved NCDOT TIA Scoping Checklist

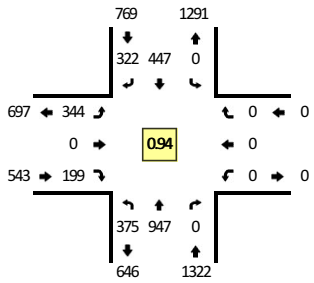
Turning Movement Counts

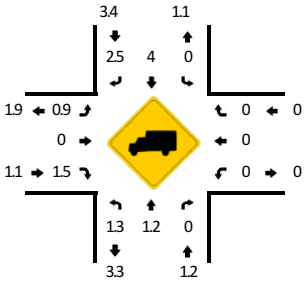
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

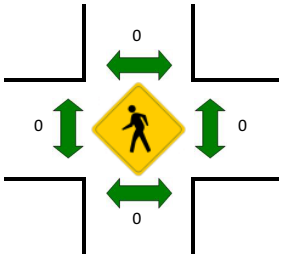
LOCATION: S Providence Rd -- Rea Rd/Marvin School Rd | **QC JOB #:** 16497107
CITY/STATE: Weddington, NC | **DATE:** Thu, Mar 7 2024

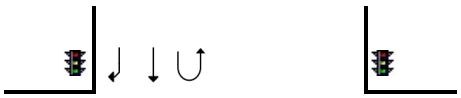
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

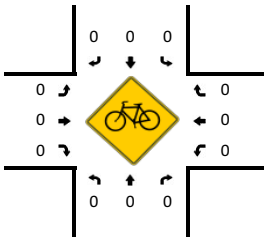
TRUE DATA TO IMPROVE MOBILITY

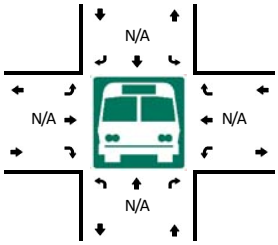


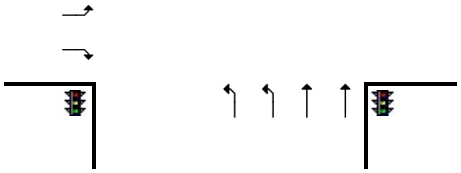


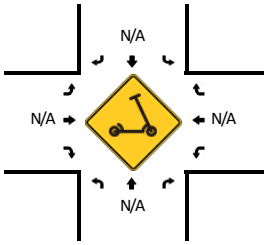












15-Min Count Period Beginning At	S Providence Rd (Northbound)				S Providence Rd (Southbound)				Rea Rd/Marvin School Rd (Eastbound)				Rea Rd/Marvin School Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	102	245	0	0	0	78	71	0	86	0	43	0	0	0	0	0	625	
7:15 AM	80	259	0	0	0	98	94	0	100	0	67	0	0	0	0	0	698	
7:30 AM	100	217	0	0	0	123	78	0	97	0	41	0	0	0	0	0	656	
7:45 AM	93	226	0	0	0	148	79	0	61	0	48	0	0	0	0	0	655	2634
8:00 AM	60	199	0	0	0	149	85	0	75	0	41	0	0	0	0	0	609	2618
8:15 AM	70	213	0	0	0	147	97	0	82	0	23	0	0	0	0	0	632	2552
8:30 AM	64	227	0	0	0	129	83	0	86	0	37	0	0	0	0	0	626	2522
8:45 AM	68	225	0	0	0	153	112	0	106	0	48	0	0	0	0	0	712	2579

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	320	1036	0	0	0	392	376	0	400	0	268	0	0	0	0	0	2792
Heavy Trucks	4	8	0		0	16	12		4	0	4		0	0	0		48
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

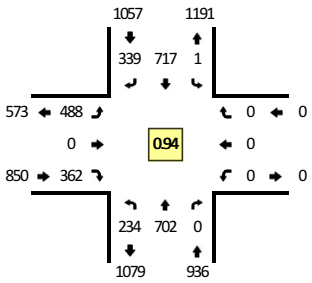
Comments:

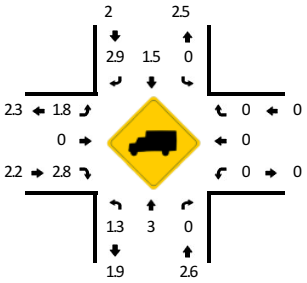
Report generated on 3/11/2024 1:14 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

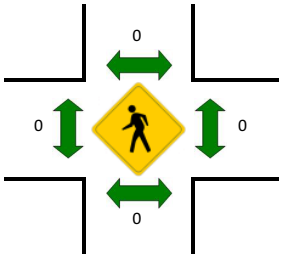
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

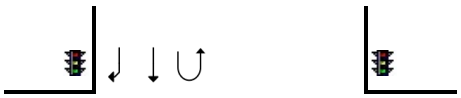
LOCATION: S Providence Rd -- Rea Rd/Marvin School Rd | **QC JOB #:** 16497108
CITY/STATE: Weddington, NC | **DATE:** Thu, Mar 7 2024

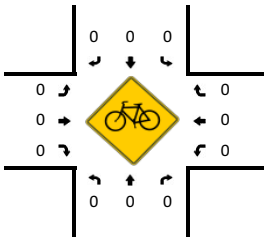
Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:45 PM -- 4:00 PM

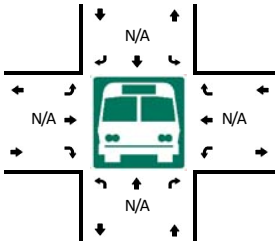


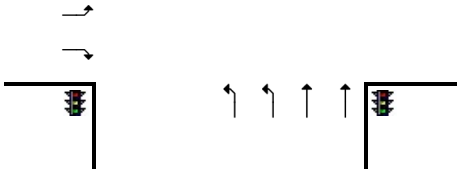


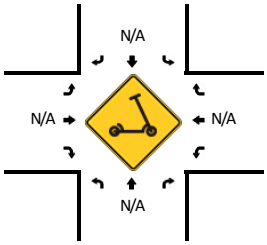












15-Min Count Period Beginning At	S Providence Rd (Northbound)				S Providence Rd (Southbound)				Rea Rd/Marvin School Rd (Eastbound)				Rea Rd/Marvin School Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	51	149	0	0	0	168	89	0	80	0	73	0	0	0	0	0	610	
2:15 PM	45	159	0	0	0	164	71	0	102	0	77	0	0	0	0	0	618	
2:30 PM	40	152	0	0	0	208	86	0	79	0	60	0	0	0	0	0	625	
2:45 PM	50	180	0	0	0	157	95	0	117	0	72	0	0	0	0	0	671	2524
3:00 PM	69	166	0	0	0	176	84	1	122	0	68	0	0	0	0	0	686	2600
3:15 PM	61	185	0	0	0	173	88	0	114	0	96	0	0	0	0	0	717	2699
3:30 PM	57	172	0	0	0	180	74	0	113	0	91	0	0	0	0	0	687	2761
3:45 PM	47	179	0	0	0	188	93	0	139	0	107	0	0	0	0	0	753	2843

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	188	716	0	0	0	752	372	0	556	0	428	0	0	0	0	0	3012
Heavy Trucks	0	24	0		0	4	8		4	0	16		0	0	0		56
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

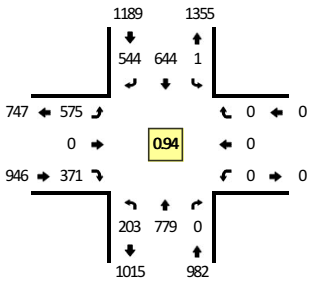
Comments:

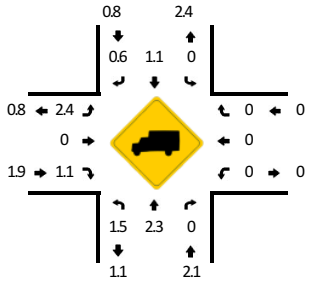
Report generated on 3/11/2024 1:14 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

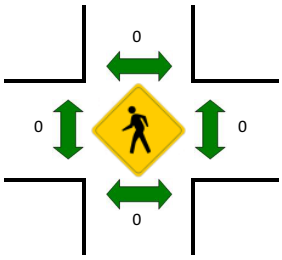
LOCATION: S Providence Rd -- Rea Rd/Marvin School Rd | **QC JOB #:** 16497109
CITY/STATE: Weddington, NC | **DATE:** Thu, Mar 7 2024

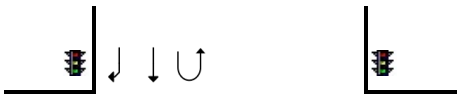
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

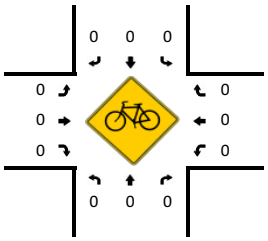


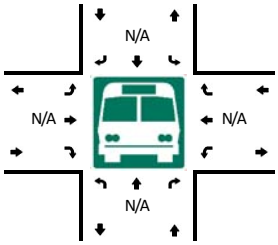


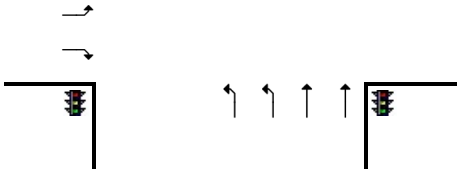
TRUE DATA TO IMPROVE MOBILITY

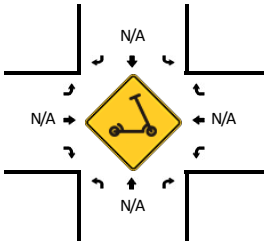












15-Min Count Period Beginning At	S Providence Rd (Northbound)				S Providence Rd (Southbound)				Rea Rd/Marvin School Rd (Eastbound)				Rea Rd/Marvin School Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	40	162	0	0	0	158	100	0	101	0	102	0	0	0	0	0	663	
4:15 PM	37	171	0	0	0	168	118	0	136	0	105	0	0	0	0	0	735	
4:30 PM	49	218	0	0	0	170	111	1	134	0	111	0	0	0	0	0	794	
4:45 PM	47	176	0	0	0	171	139	0	146	0	99	0	0	0	0	0	778	2970
5:00 PM	42	204	0	0	0	153	124	0	130	0	66	0	0	0	0	0	719	3026
5:15 PM	59	196	0	0	0	157	153	0	153	0	107	0	0	0	0	0	825	3116
5:30 PM	55	203	0	0	0	163	128	1	146	0	99	0	0	0	0	0	795	3117
5:45 PM	45	189	0	0	0	152	116	0	133	0	89	0	0	0	0	0	724	3063

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	236	784	0	0	0	628	612	0	612	0	428	0	0	0	0	0	3300
Heavy Trucks	0	36	0		0	0	0		12	0	0		0	0	0		48
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/11/2024 1:14 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

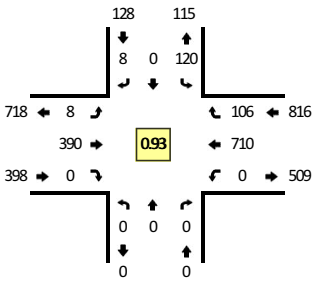
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

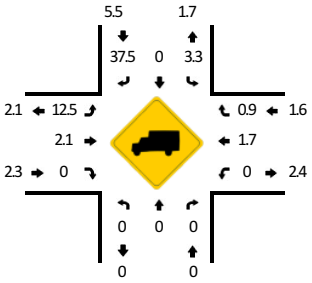
LOCATION: Cox Rd -- Weddington Rd
CITY/STATE: Weddington, NC

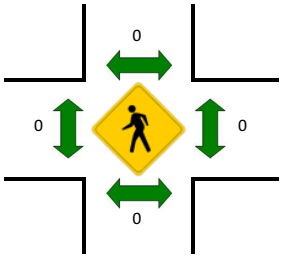
QC JOB #: 16497101
DATE: Thu, Mar 7 2024

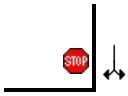
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:15 AM -- 7:30 AM

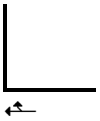


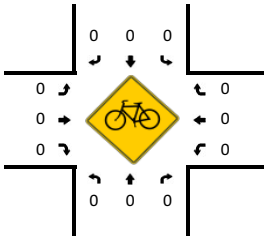
TRUE DATA TO IMPROVE MOBILITY

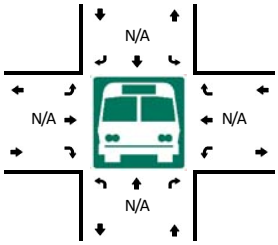


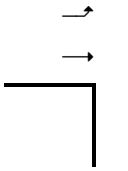


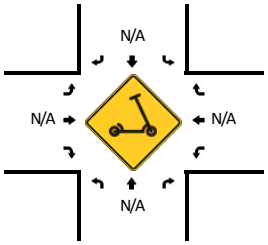












15-Min Count Period Beginning At	Cox Rd (Northbound)				Cox Rd (Southbound)				Weddington Rd (Eastbound)				Weddington Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	20	0	1	1	3	66	0	0	0	220	14	0	325	
7:15 AM	0	0	0	0	30	0	4	0	0	111	0	0	0	192	25	0	362	
7:30 AM	0	0	0	0	31	0	3	0	3	116	0	0	0	173	34	0	360	
7:45 AM	0	0	0	0	38	0	0	0	2	97	0	0	0	125	33	0	295	1342
8:00 AM	0	0	0	0	7	0	3	0	2	106	0	0	0	158	22	0	298	1315
8:15 AM	0	0	0	0	13	0	4	0	4	84	0	0	0	183	13	0	301	1254
8:30 AM	0	0	0	0	5	0	0	1	4	87	0	0	0	189	13	0	299	1193
8:45 AM	0	0	0	0	12	0	2	0	1	130	0	0	0	194	10	0	349	1247

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	120	0	16	0	0	444	0	0	0	768	100	0	1448
Heavy Trucks	0	0	0		4	0	12		0	8	0		0	8	0		32
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

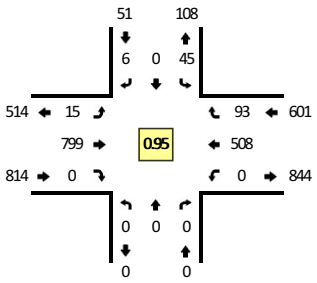
Report generated on 3/11/2024 1:14 PM

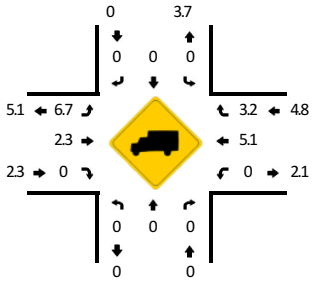
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

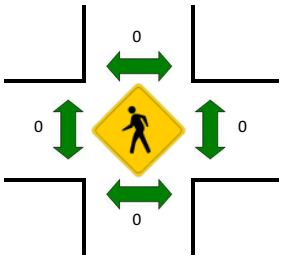
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

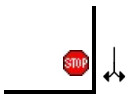
LOCATION: Cox Rd -- Weddington Rd | **QC JOB #:** 16497102
CITY/STATE: Weddington, NC | **DATE:** Thu, Mar 7 2024

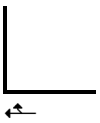
Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:15 PM -- 3:30 PM

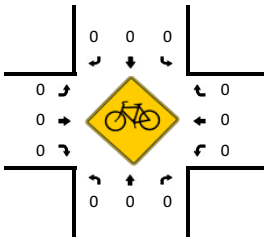


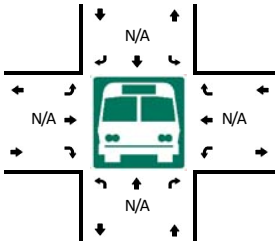


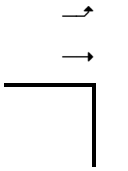


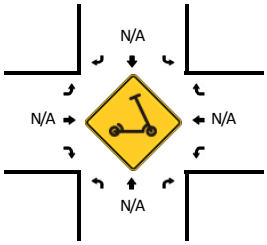












15-Min Count Period Beginning At	Cox Rd (Northbound)				Cox Rd (Southbound)				Weddington Rd (Eastbound)				Weddington Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	0	0	0	0	4	0	0	1	1	133	0	0	0	114	10	0	263	
2:15 PM	0	0	0	0	7	0	5	0	1	137	0	0	0	123	5	0	278	
2:30 PM	0	0	0	0	8	0	4	0	3	171	0	0	0	140	5	0	331	
2:45 PM	0	0	0	0	12	0	0	0	1	173	0	0	0	137	11	0	334	1206
3:00 PM	0	0	0	0	10	0	0	0	4	194	0	0	0	117	27	0	352	1295
3:15 PM	0	0	0	0	7	0	4	0	2	175	0	0	0	156	42	0	386	1403
3:30 PM	0	0	0	0	11	0	0	0	3	219	0	0	0	116	13	0	362	1434
3:45 PM	0	0	0	0	17	0	2	0	6	211	0	0	0	119	11	0	366	1466

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	28	0	16	0	8	700	0	0	0	624	168	0	1544
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	24	12		36
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/11/2024 1:14 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

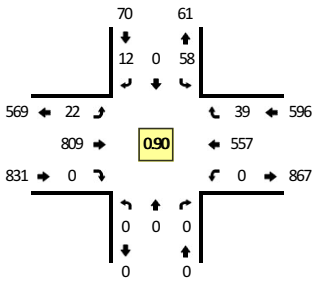
Type of peak hour being reported: Intersection Peak

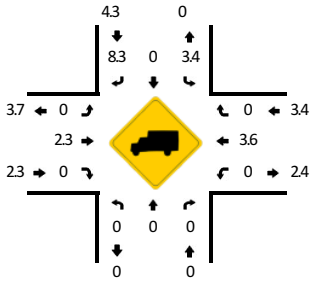
Method for determining peak hour: Total Entering Volume

LOCATION: Cox Rd -- Weddington Rd
CITY/STATE: Weddington, NC

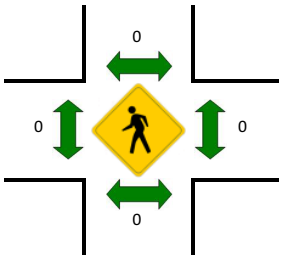
QC JOB #: 16497103
DATE: Thu, Mar 7 2024

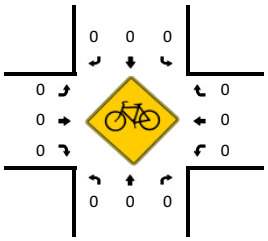
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

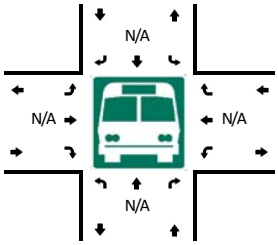


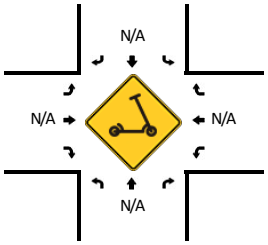


TRUE DATA TO IMPROVE MOBILITY









15-Min Count Period Beginning At	Cox Rd (Northbound)				Cox Rd (Southbound)				Weddington Rd (Eastbound)				Weddington Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	20	0	3	0	5	204	0	0	0	111	6	0	349	
4:15 PM	0	0	0	0	13	0	5	0	8	215	0	0	0	160	13	0	414	
4:30 PM	0	0	0	0	11	0	2	0	6	191	0	0	0	142	12	0	364	
4:45 PM	0	0	0	0	14	0	2	0	3	199	0	0	0	144	8	0	370	1497
5:00 PM	0	0	0	0	7	0	5	0	7	199	0	0	0	114	12	0	344	1492
5:15 PM	0	0	0	0	18	0	2	0	10	217	0	0	0	126	11	0	384	1462
5:30 PM	0	0	0	0	6	0	3	0	6	200	0	0	0	157	17	0	389	1487
5:45 PM	0	0	0	0	9	0	3	2	3	161	0	0	0	161	16	0	355	1472

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	52	0	20	0	32	860	0	0	0	640	52	0	1656
Heavy Trucks	0	0	0		4	0	0		0	8	0		0	28	0		40
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/11/2024 1:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

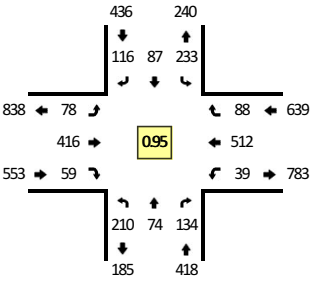
Type of peak hour being reported: Intersection Peak

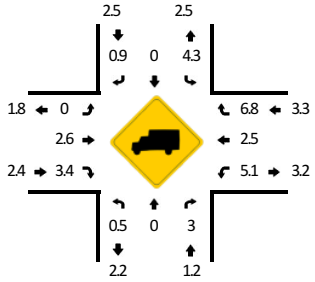
Method for determining peak hour: Total Entering Volume

LOCATION: Twelve Mile Creek Rd -- Weddington Rd
CITY/STATE: Weddington, NC

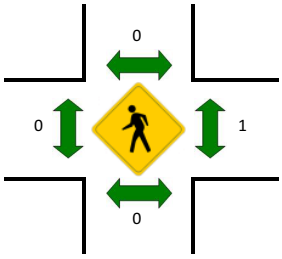
QC JOB #: 16497104
DATE: Thu, Mar 7 2024

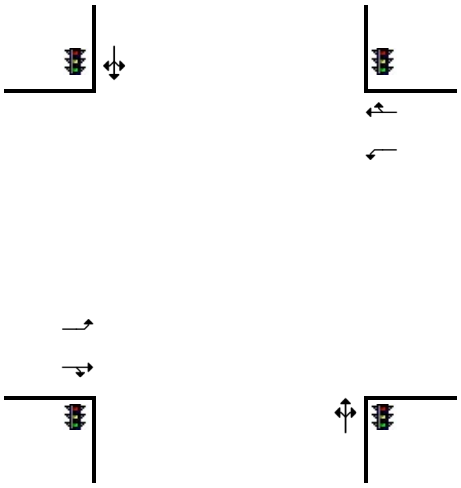
Peak-Hour: 7:00 AM -- 8:00 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

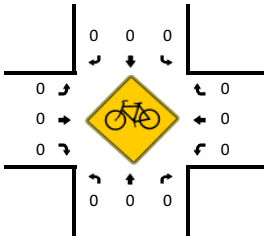


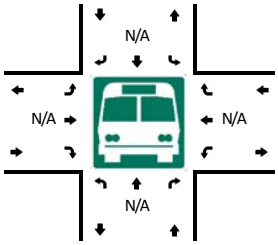


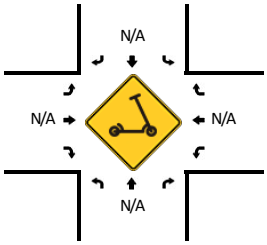
TRUE DATA TO IMPROVE MOBILITY











15-Min Count Period Beginning At	Twelve Mile Creek Rd (Northbound)				Twelve Mile Creek Rd (Southbound)				Weddington Rd (Eastbound)				Weddington Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	49	34	8	0	14	32	45	0	35	58	10	0	8	152	12	0	457	
7:15 AM	45	22	27	0	37	27	52	0	34	92	17	0	9	138	20	0	520	
7:30 AM	60	7	33	0	73	15	16	0	4	141	18	0	9	126	29	0	531	
7:45 AM	56	11	66	0	109	13	3	0	5	125	14	0	13	96	27	0	538	2046
8:00 AM	64	7	40	0	58	12	15	0	3	90	20	0	16	101	27	0	453	2042
8:15 AM	53	12	8	0	11	12	17	0	9	76	18	0	14	121	5	0	356	1878
8:30 AM	53	23	13	0	13	16	22	0	19	67	18	0	12	121	9	0	386	1733
8:45 AM	40	30	16	0	28	26	26	0	29	105	19	0	19	141	22	0	501	1696

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	224	44	264	0	436	52	12	0	20	500	56	0	52	384	108	0	2152
Heavy Trucks	4	0	4		12	0	0		0	12	8		0	8	16		64
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/11/2024 1:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

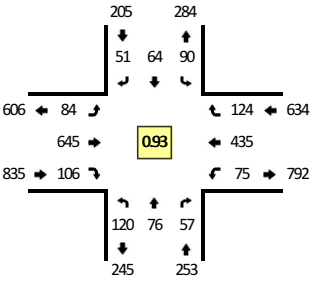
Type of peak hour being reported: Intersection Peak

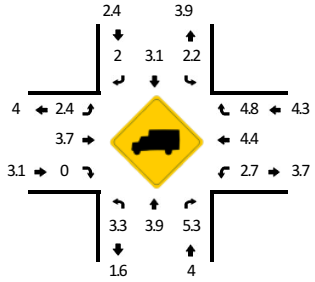
Method for determining peak hour: Total Entering Volume

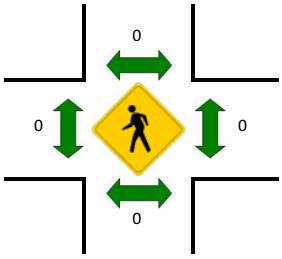
LOCATION: Twelve Mile Creek Rd -- Weddington Rd
CITY/STATE: Weddington, NC

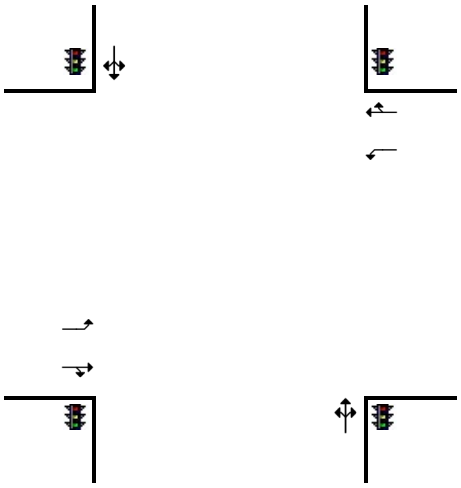
QC JOB #: 16497105
DATE: Thu, Mar 7 2024

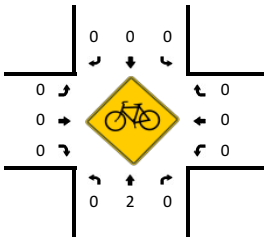
Peak-Hour: 3:00 PM -- 4:00 PM
Peak 15-Min: 3:15 PM -- 3:30 PM

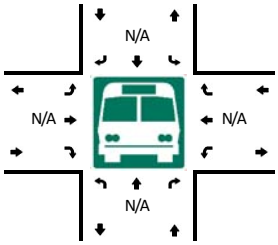


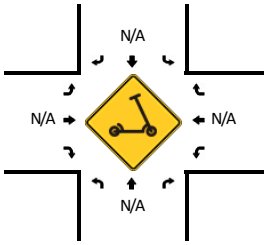












15-Min Count Period Beginning At	Twelve Mile Creek Rd (Northbound)				Twelve Mile Creek Rd (Southbound)				Weddington Rd (Eastbound)				Weddington Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
2:00 PM	18	11	6	0	25	15	20	0	6	124	20	0	12	89	11	0	357	
2:15 PM	27	2	20	0	14	9	6	0	0	115	28	0	16	99	4	0	340	
2:30 PM	26	4	16	0	12	12	5	0	2	140	32	0	12	116	8	0	385	
2:45 PM	28	10	31	0	16	18	8	0	7	148	20	0	15	98	19	0	418	1500
3:00 PM	30	15	11	0	21	8	9	0	24	159	29	0	25	116	42	0	489	1632
3:15 PM	37	17	11	0	29	28	28	0	29	123	29	0	22	128	36	0	517	1809
3:30 PM	31	27	20	0	19	17	12	0	11	175	23	0	17	87	17	0	456	1880
3:45 PM	22	17	15	0	21	11	2	0	20	188	25	0	11	104	29	0	465	1927

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	148	68	44	0	116	112	112	0	116	492	116	0	88	512	144	0	2068
Heavy Trucks	8	0	4		0	0	0		4	16	0		4	24	12		72
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 3/11/2024 1:14 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

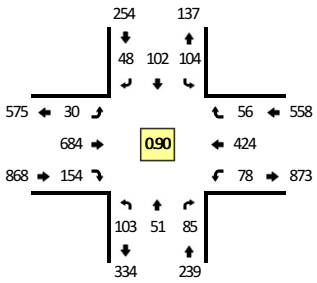
Type of peak hour being reported: Intersection Peak

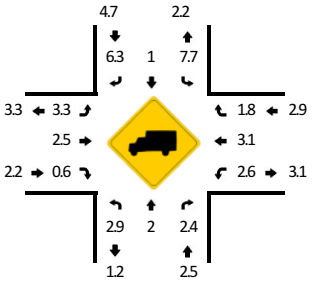
Method for determining peak hour: Total Entering Volume

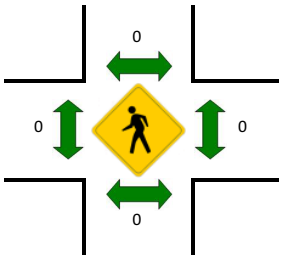
LOCATION: Twelve Mile Creek Rd -- Weddington Rd
CITY/STATE: Weddington, NC

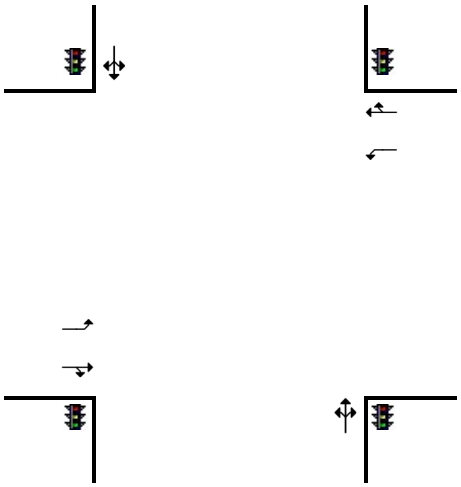
QC JOB #: 16497106
DATE: Thu, Mar 7 2024

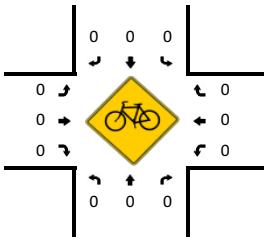
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:15 PM -- 4:30 PM

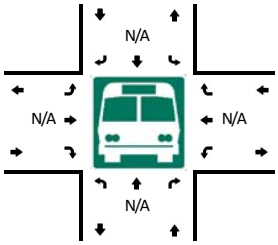


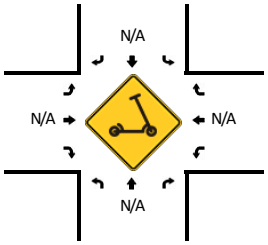












15-Min Count Period Beginning At	Twelve Mile Creek Rd (Northbound)				Twelve Mile Creek Rd (Southbound)				Weddington Rd (Eastbound)				Weddington Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	21	13	23	0	35	18	13	0	13	167	34	0	22	72	18	0	449	
4:15 PM	21	14	18	0	45	39	23	0	10	162	45	0	19	124	15	0	535	
4:30 PM	30	12	16	0	15	17	8	0	4	183	44	0	19	106	13	0	467	
4:45 PM	31	12	28	0	9	28	4	0	3	172	31	0	18	122	10	0	468	1919
5:00 PM	31	12	28	0	13	13	4	0	2	161	33	0	26	94	5	0	422	1892
5:15 PM	30	13	33	0	19	17	9	0	7	157	30	0	18	102	7	0	442	1799
5:30 PM	27	26	25	0	19	38	19	0	5	164	24	0	17	124	15	0	503	1835
5:45 PM	23	18	48	0	29	36	15	0	4	150	27	0	20	123	9	0	502	1869

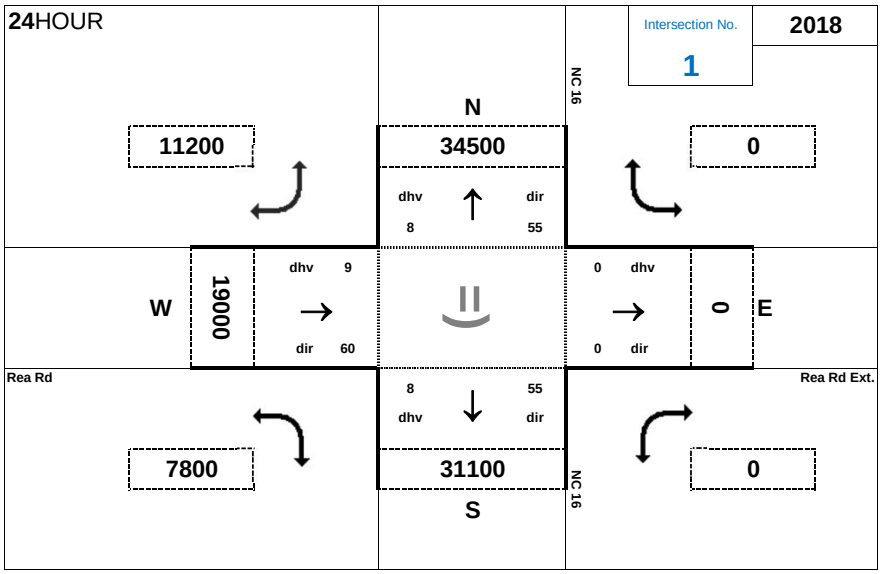
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	84	56	72	0	180	156	92	0	40	648	180	0	76	496	60	0	2140
Heavy Trucks	4	4	8		4	0	4		4	12	0		0	20	4		64
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

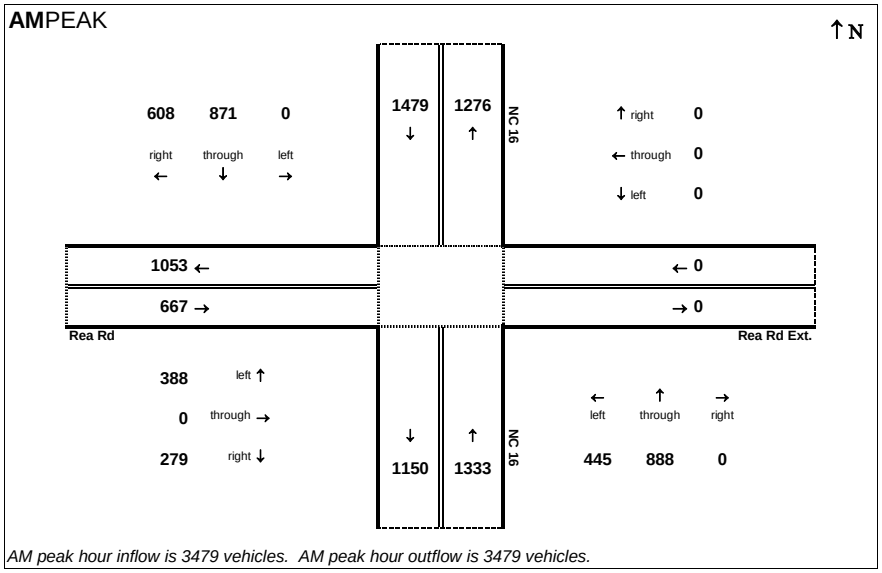
Comments:

Report generated on 3/11/2024 1:14 PM

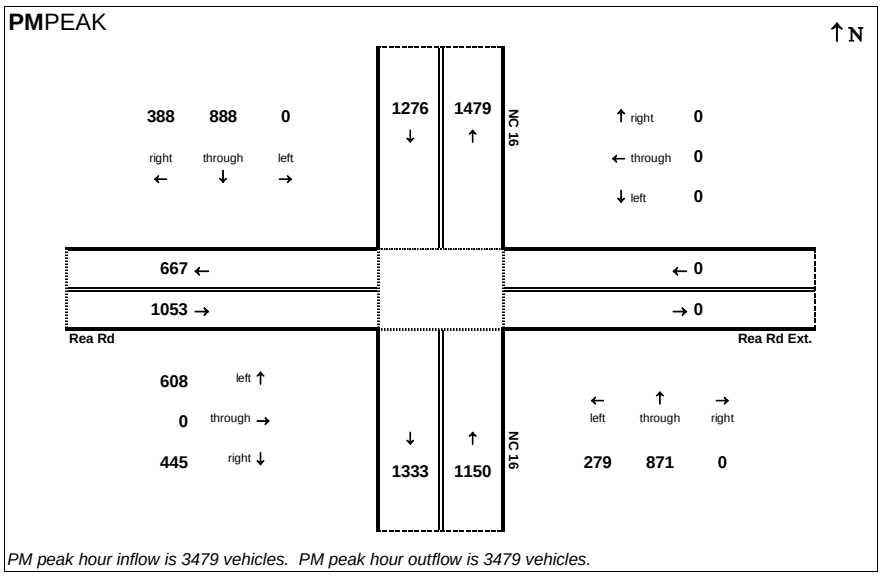
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

IAU Worksheets





AM peak hour inflow is 3479 vehicles. AM peak hour outflow is 3479 vehicles.



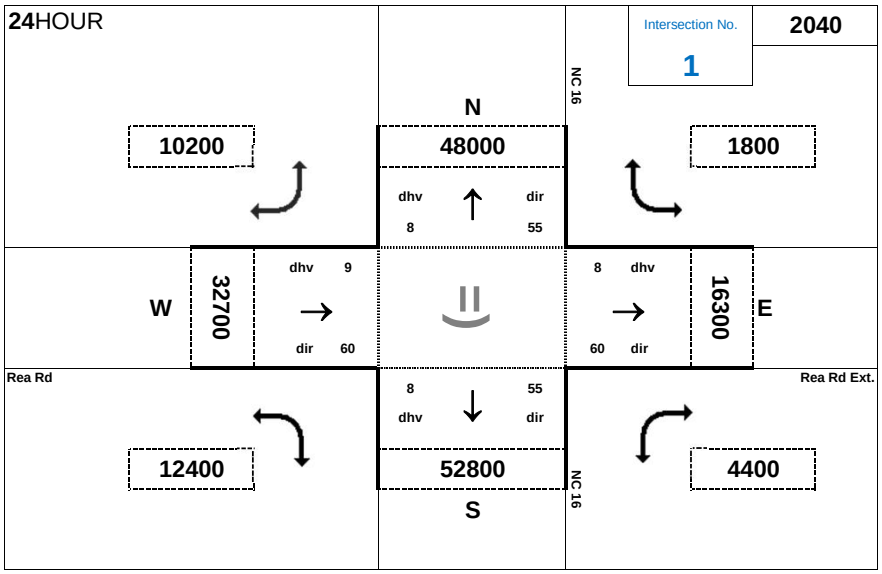
PM peak hour inflow is 3479 vehicles. PM peak hour outflow is 3479 vehicles.

Peak Hour Volume Breakouts Report:
Int #1 Background

Traffic Forecast Release Date:
September-18

Traffic Data Year:
1/1/2018

Project:
Deal Lake TIA

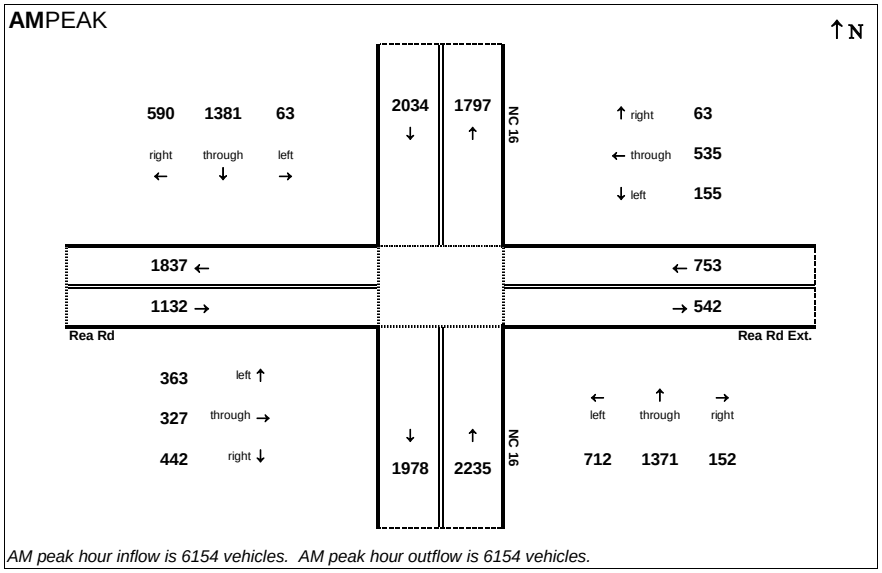


Peak Hour Volume Breakouts Report:
Int #1 Background

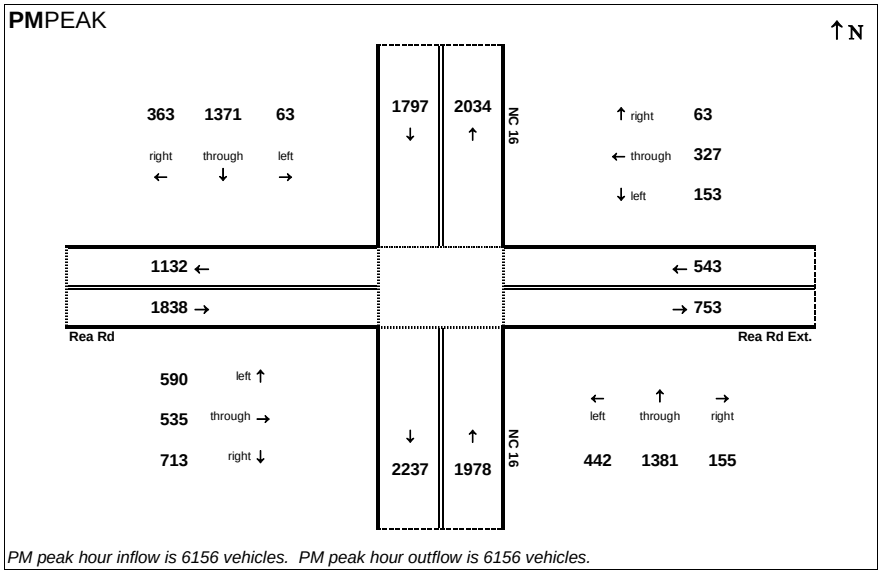
Traffic Forecast Release Date:
September-18

Traffic Data Year:
1/1/2040

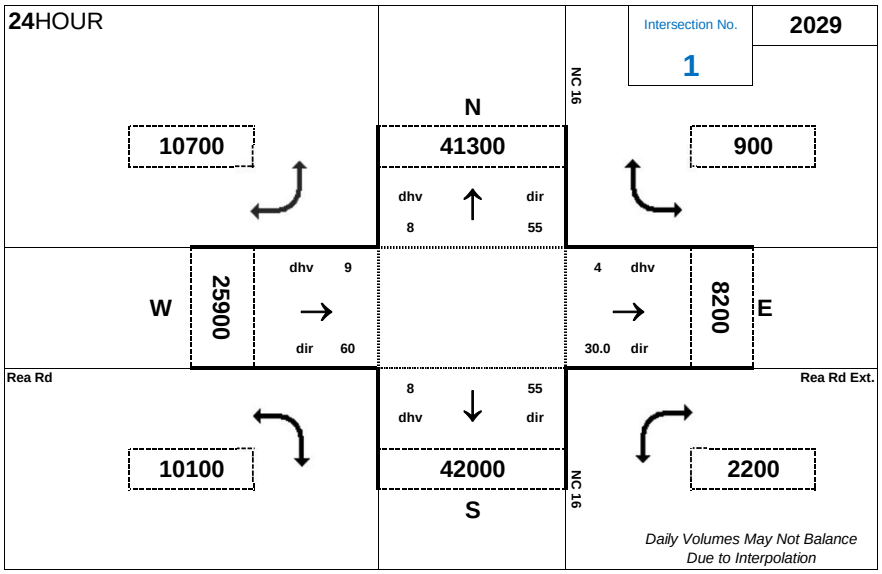
Project:
Deal Lake TIA

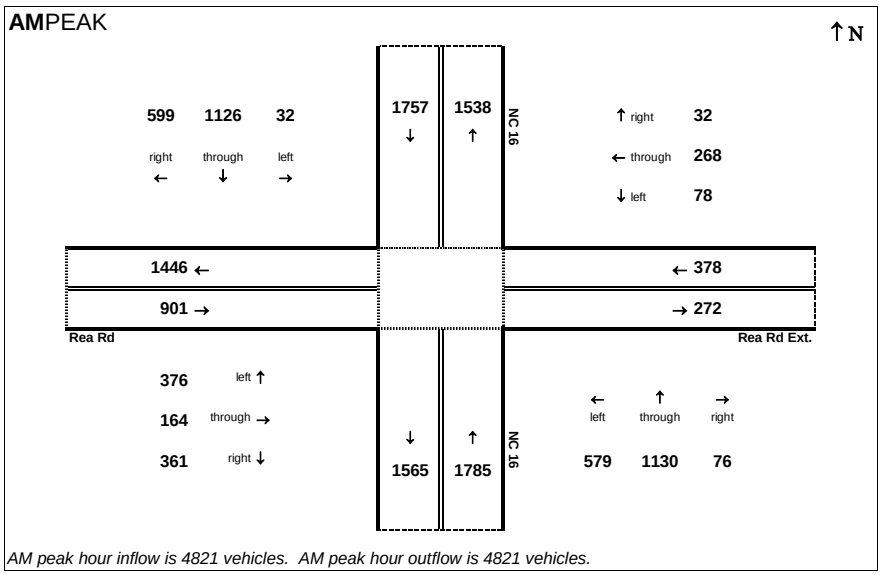


AM peak hour inflow is 6154 vehicles. AM peak hour outflow is 6154 vehicles.

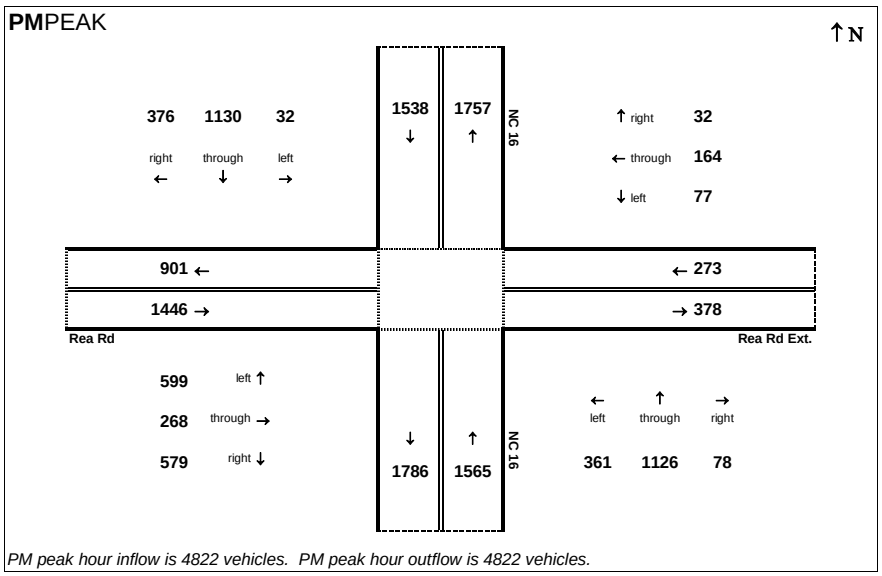


PM peak hour inflow is 6156 vehicles. PM peak hour outflow is 6156 vehicles.





AM peak hour inflow is 4821 vehicles. AM peak hour outflow is 4821 vehicles.



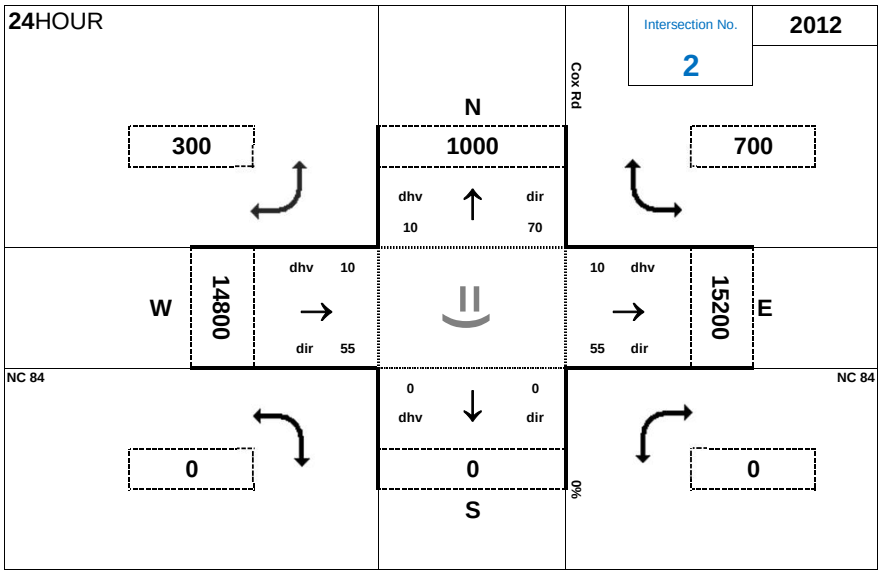
PM peak hour inflow is 4822 vehicles. PM peak hour outflow is 4822 vehicles.

Peak Hour Volume Breakouts Report:
Int #1 Background

Traffic Forecast Release Date:
September-18

Traffic Data Year:
2029 Background

Project:
Deal Lake TIA

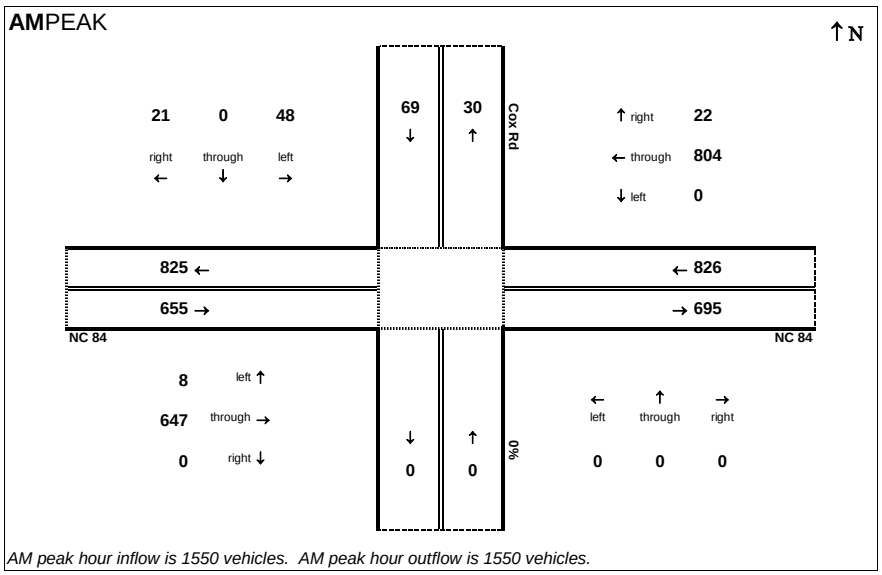


Peak Hour Volume Breakouts Report:
Int #2 Background

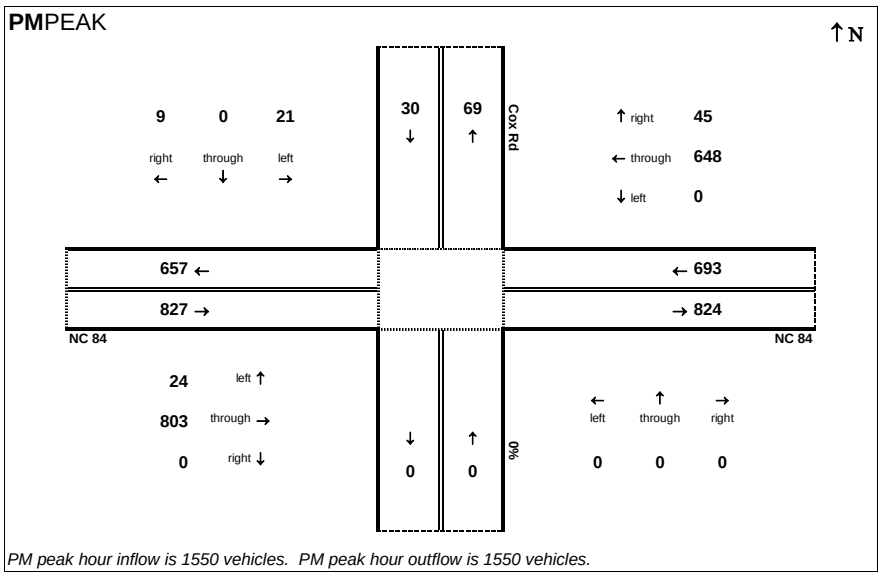
Traffic Forecast Release Date:
May-12

Traffic Data Year:
1/1/2012

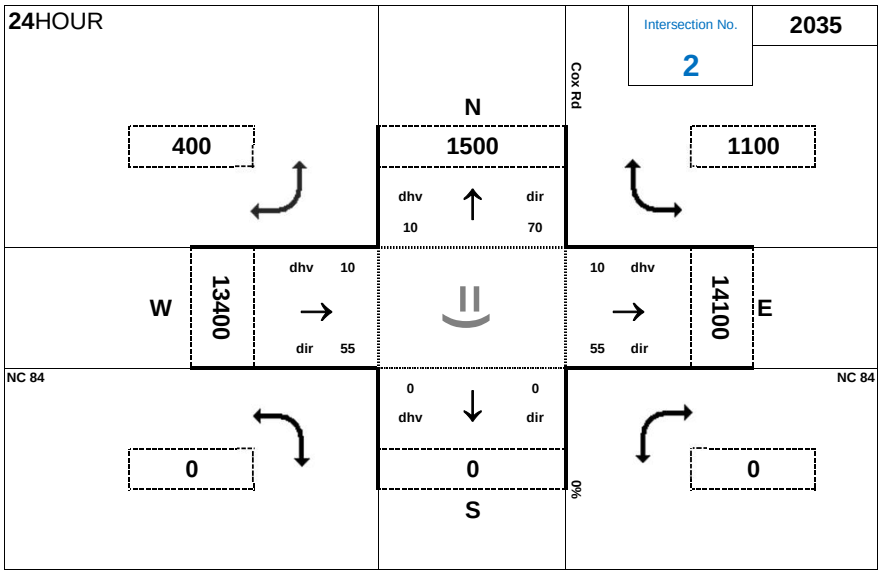
Project:
Deal Lake TIA



AM peak hour inflow is 1550 vehicles. AM peak hour outflow is 1550 vehicles.



PM peak hour inflow is 1550 vehicles. PM peak hour outflow is 1550 vehicles.

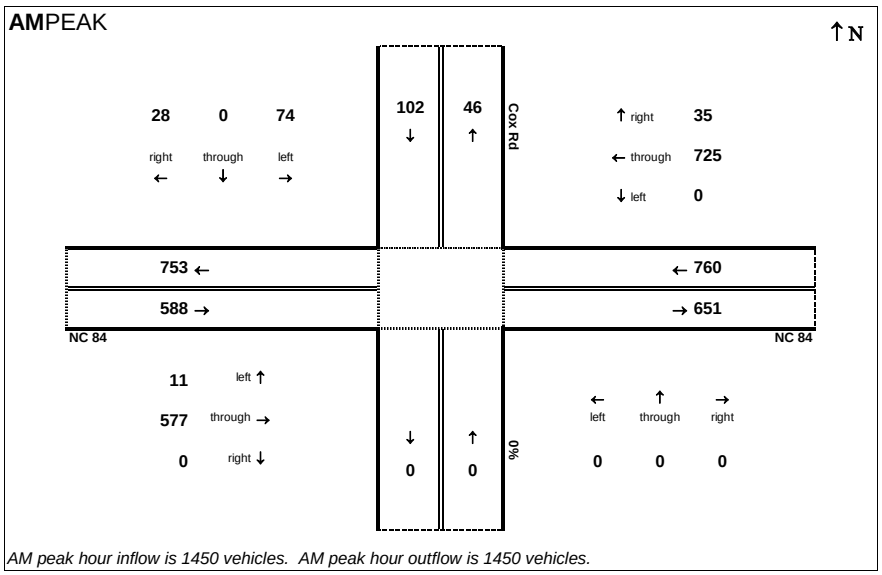


Peak Hour Volume Breakouts Report:
Int #2 Background

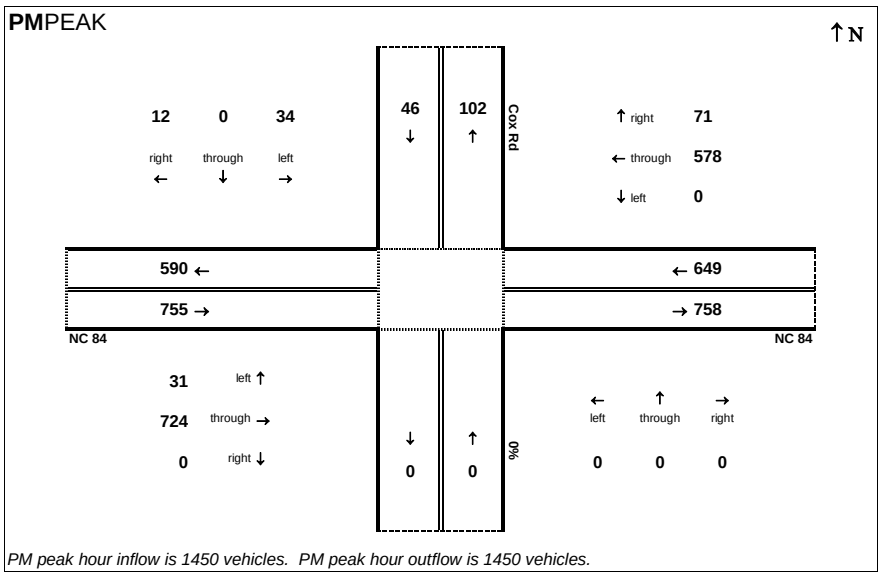
Traffic Forecast Release Date:
May-12

Traffic Data Year:
1/1/2035

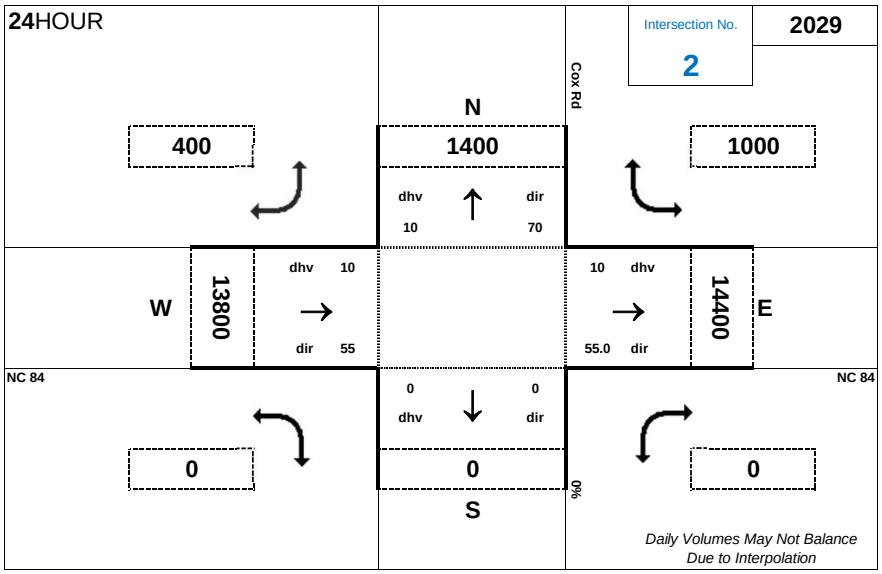
Project:
Deal Lake TIA



AM peak hour inflow is 1450 vehicles. AM peak hour outflow is 1450 vehicles.



PM peak hour inflow is 1450 vehicles. PM peak hour outflow is 1450 vehicles.

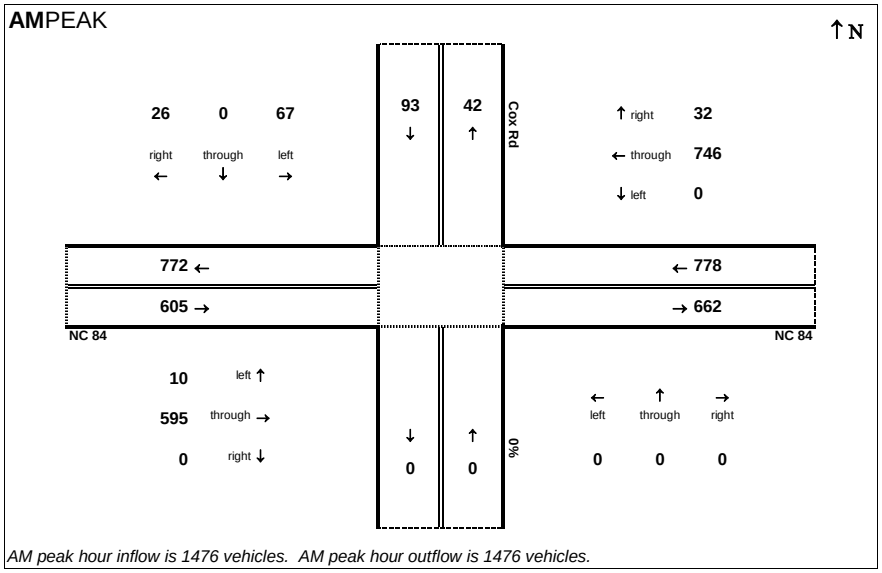


Peak Hour Volume Breakouts Report:
Int #2 Background

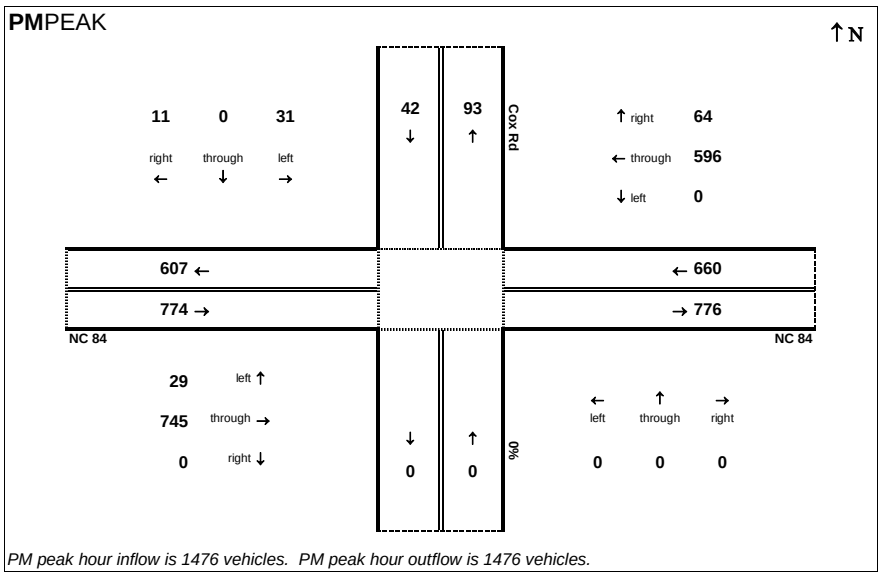
Traffic Forecast Release Date:
May-12

Traffic Data Year:
2029 Background

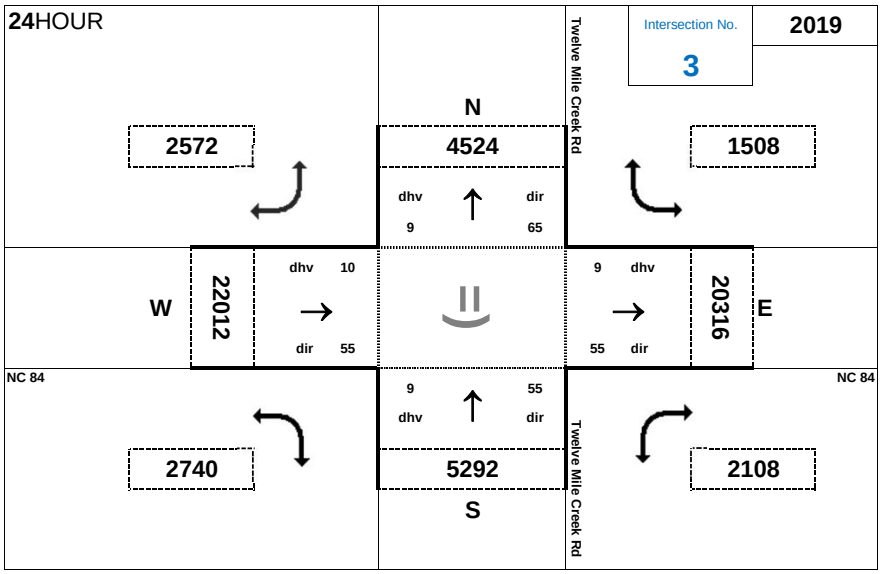
Project:
Deal Lake TIA



AM peak hour inflow is 1476 vehicles. AM peak hour outflow is 1476 vehicles.



PM peak hour inflow is 1476 vehicles. PM peak hour outflow is 1476 vehicles.

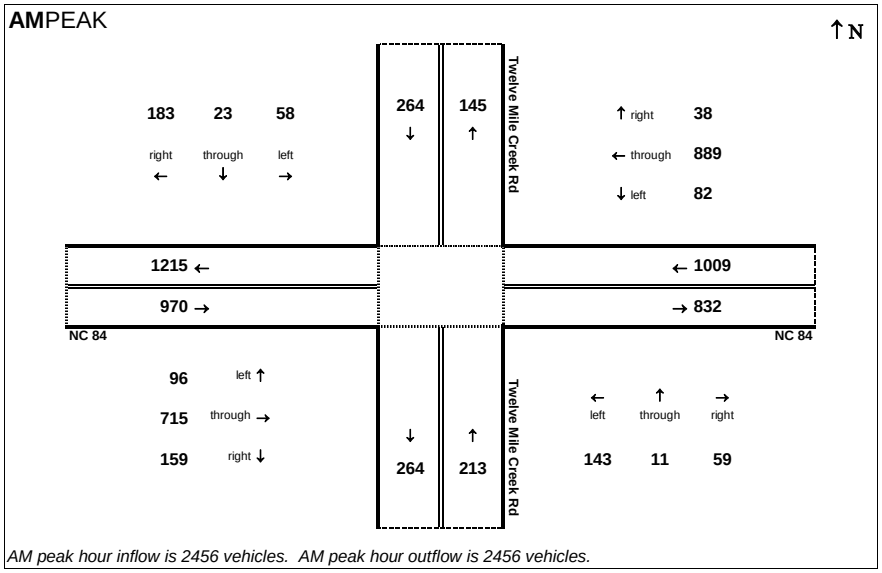


Peak Hour Volume Breakouts Report:
Int #3 Background

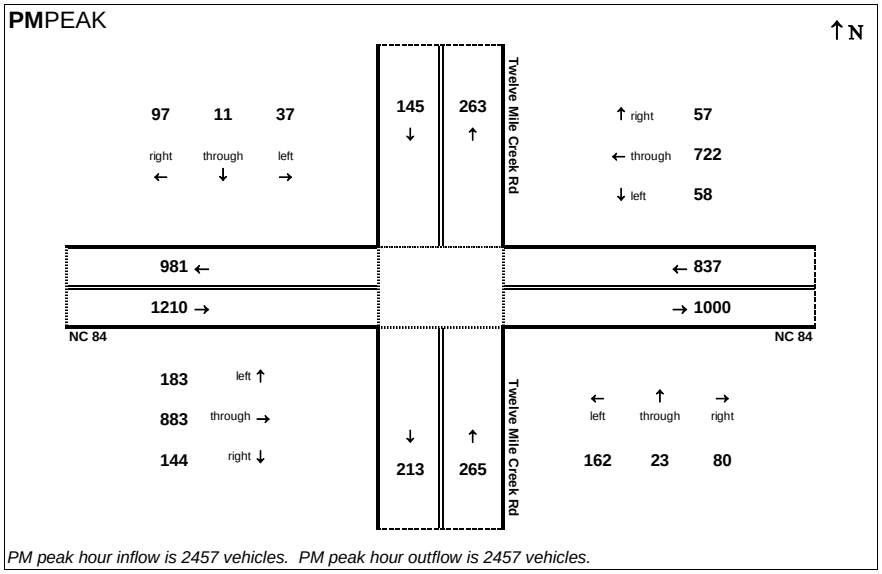
Traffic Forecast Release Date:
October-23

Traffic Data Year:
1/1/2019

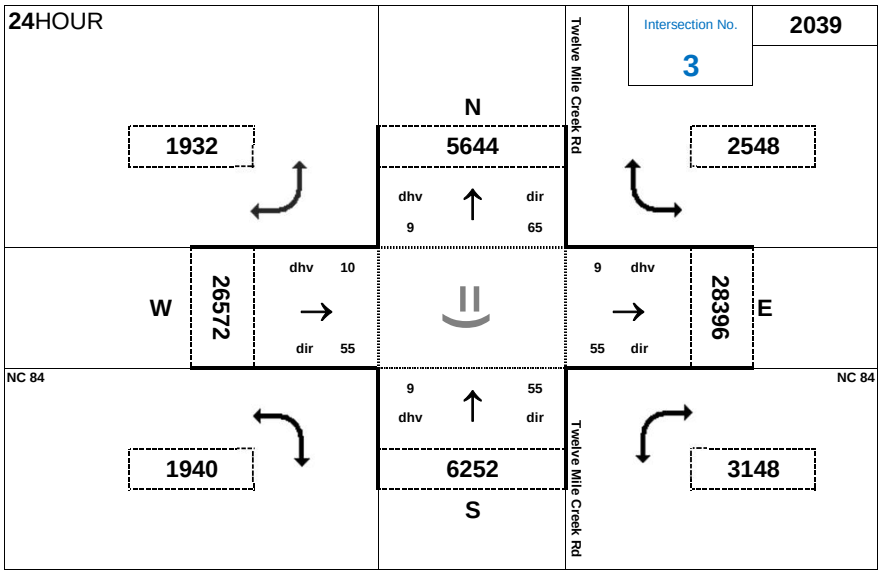
Project:
Deal Lake TIA



AM peak hour inflow is 2456 vehicles. AM peak hour outflow is 2456 vehicles.



PM peak hour inflow is 2457 vehicles. PM peak hour outflow is 2457 vehicles.

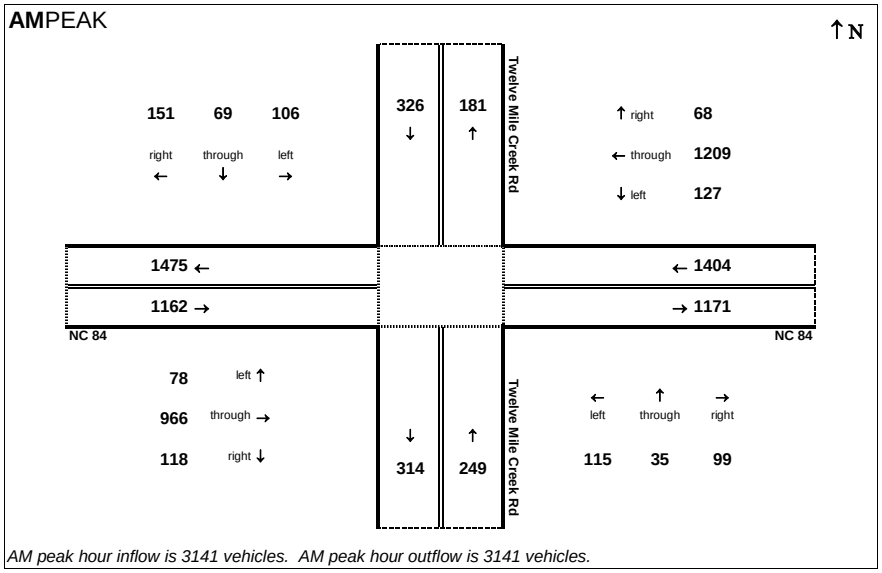


Peak Hour Volume Breakouts Report:
Int #3 Background

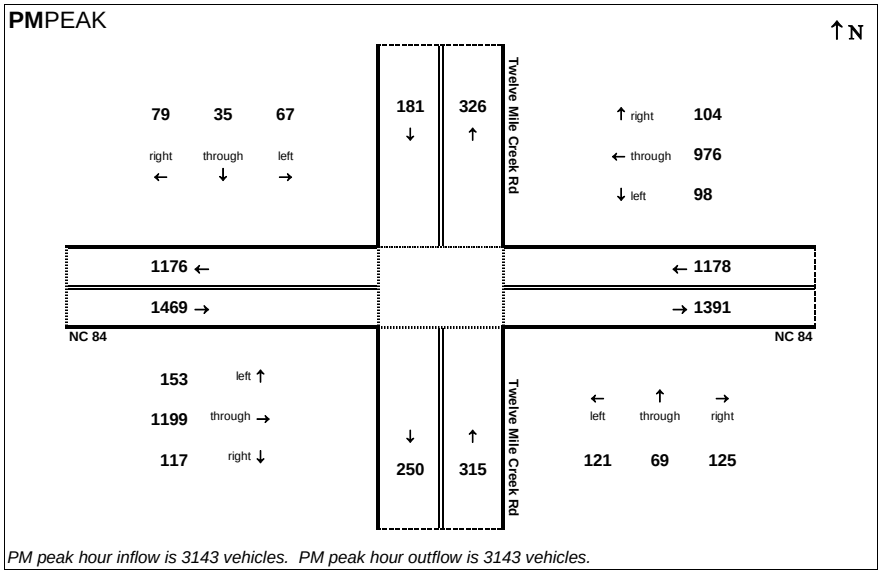
Traffic Forecast Release Date:
October-23

Traffic Data Year:
1/1/2039

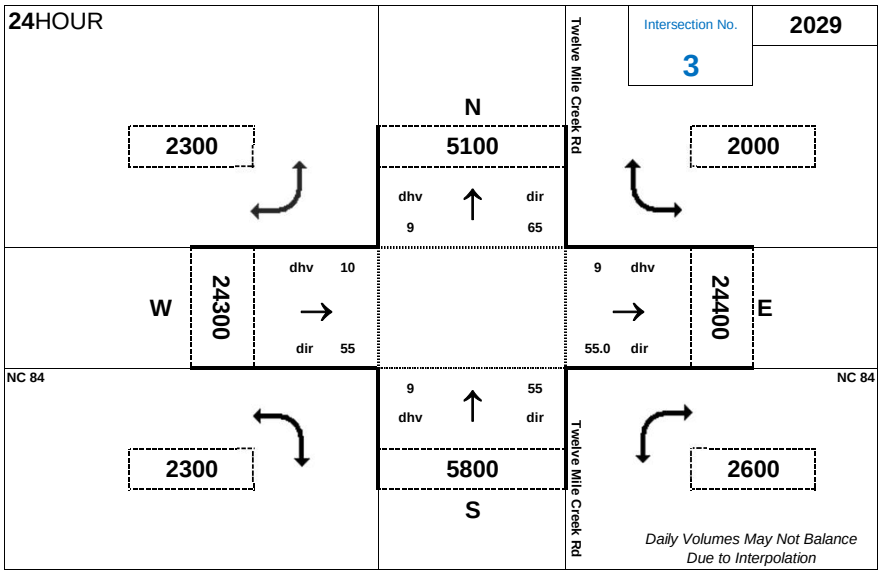
Project:
Deal Lake TIA



AM peak hour inflow is 3141 vehicles. AM peak hour outflow is 3141 vehicles.



PM peak hour inflow is 3143 vehicles. PM peak hour outflow is 3143 vehicles.

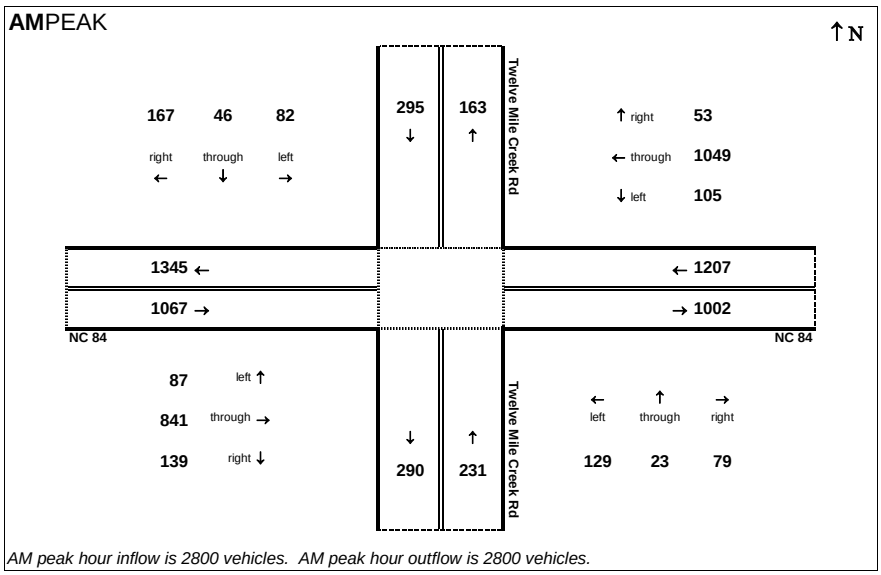


Peak Hour Volume Breakouts Report:
Int #3 Background

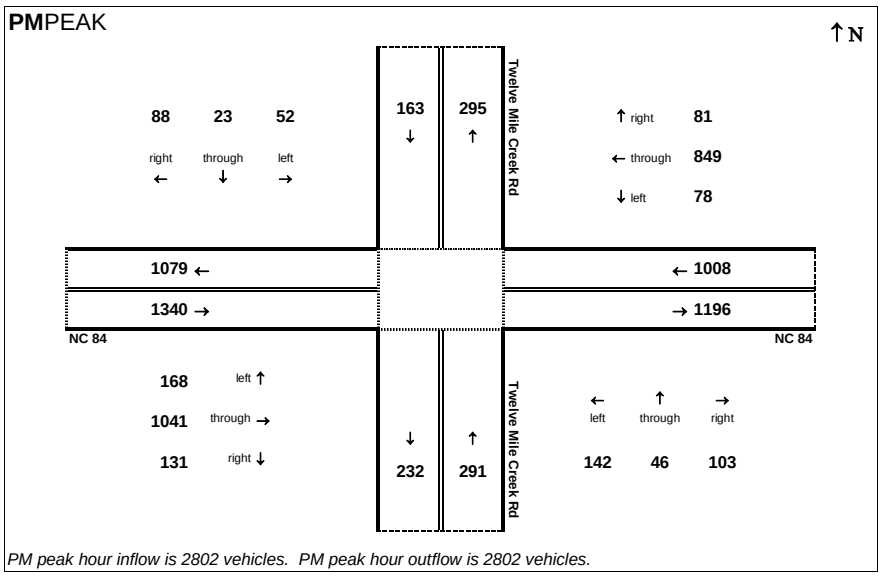
Traffic Forecast Release Date:
October-23

Traffic Data Year:
2029 Background

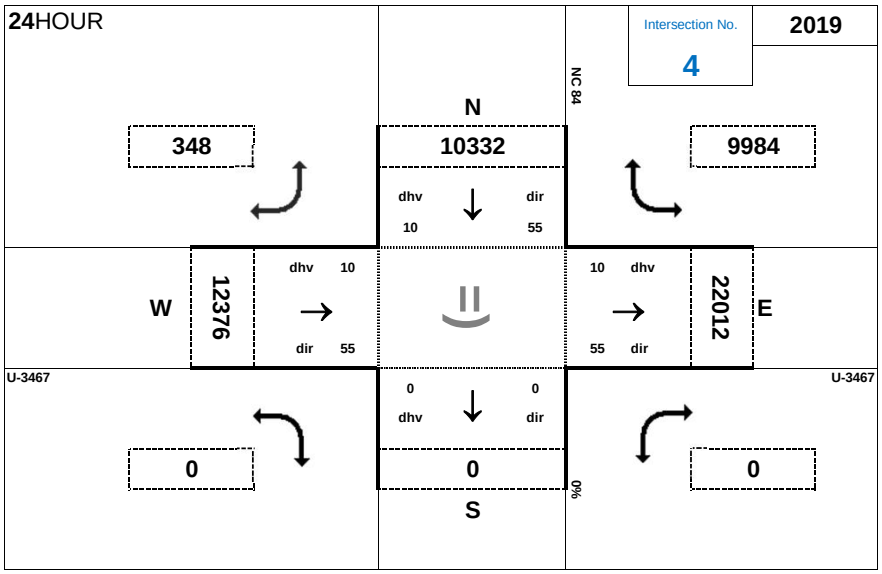
Project:
Deal Lake TIA

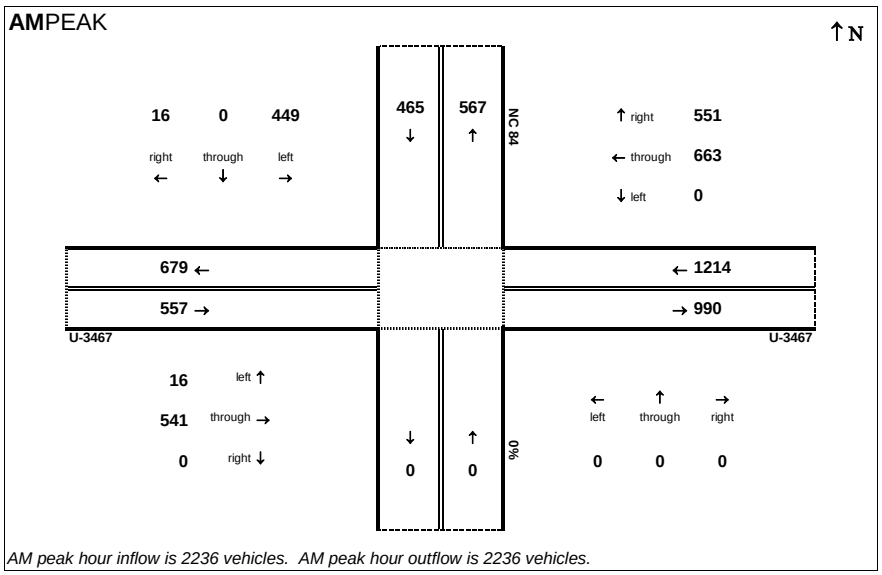


AM peak hour inflow is 2800 vehicles. AM peak hour outflow is 2800 vehicles.

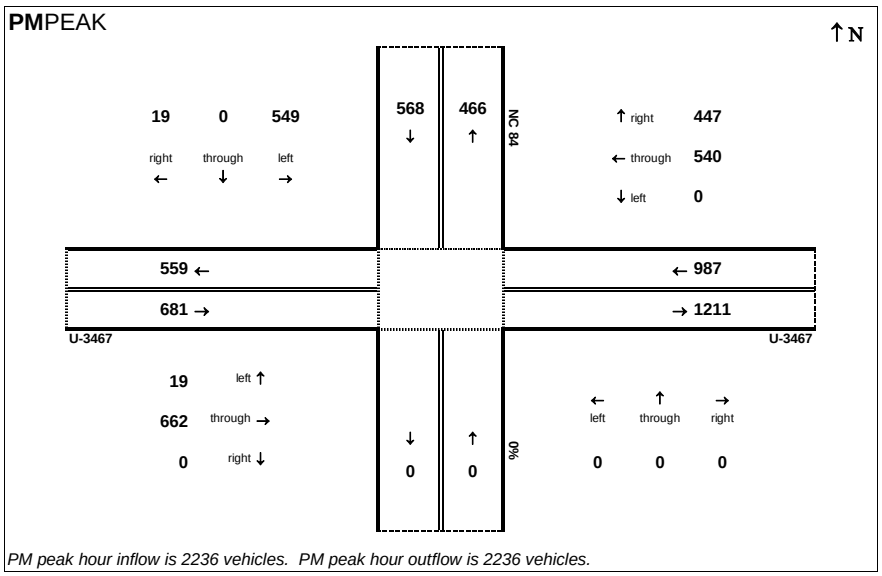


PM peak hour inflow is 2802 vehicles. PM peak hour outflow is 2802 vehicles.





AM peak hour inflow is 2236 vehicles. AM peak hour outflow is 2236 vehicles.



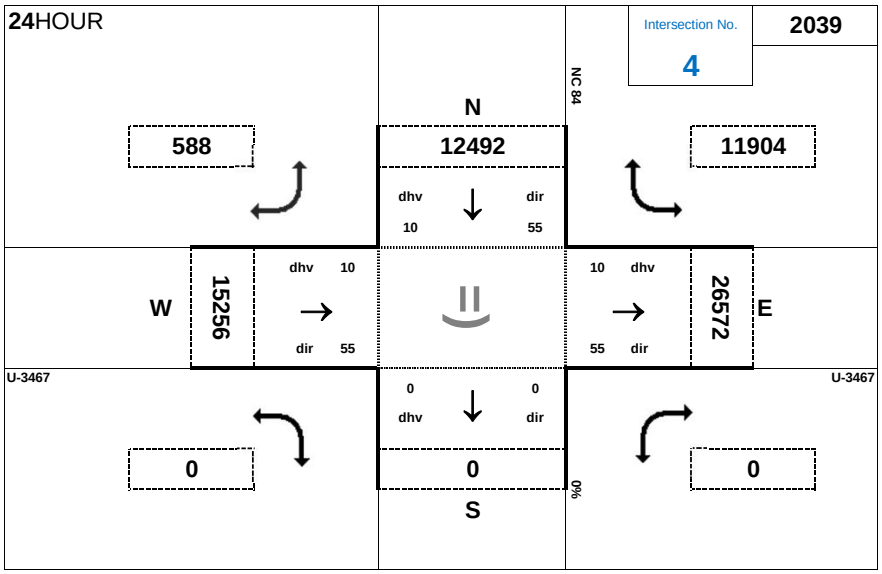
PM peak hour inflow is 2236 vehicles. PM peak hour outflow is 2236 vehicles.

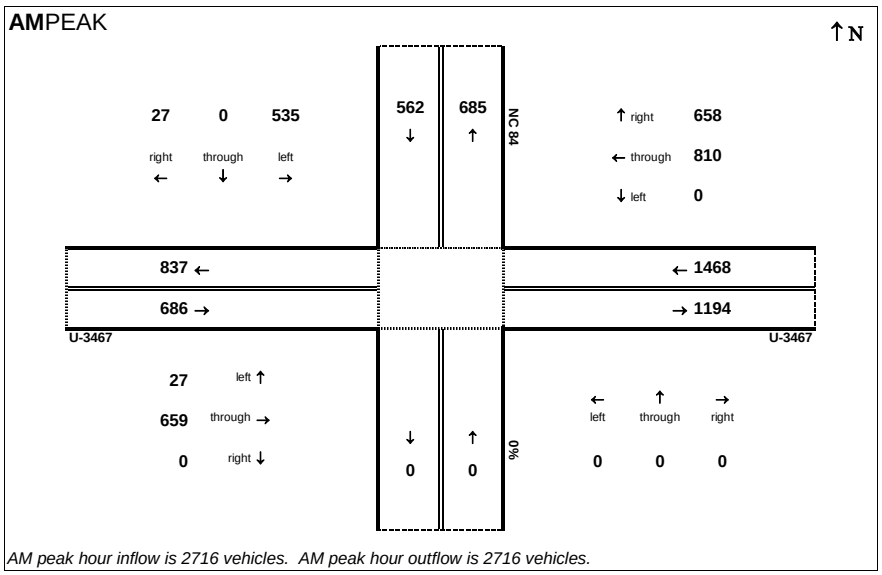
Peak Hour Volume Breakouts Report:
Int #4 2019 FC Volumes

Traffic Forecast Release Date:
October-23

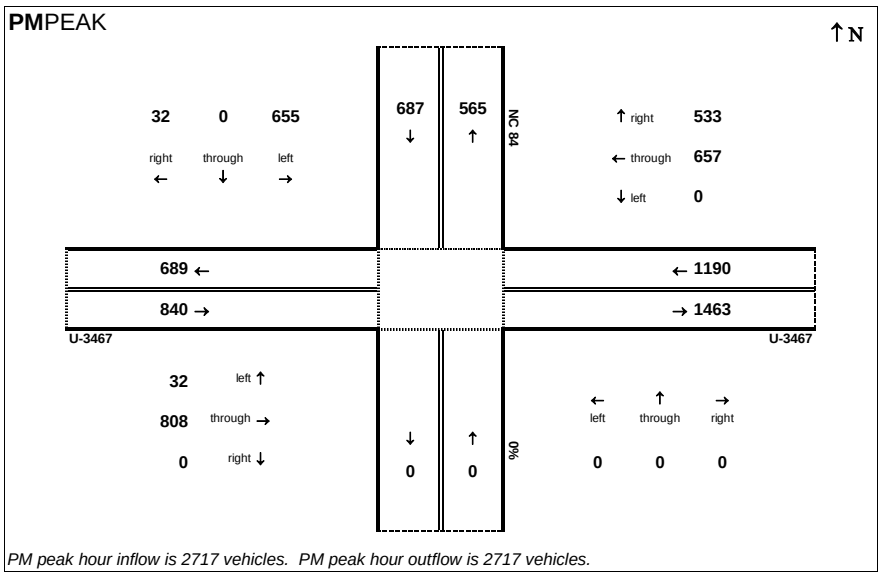
Traffic Data Year:
1/1/2019

Project:
Deal Lake TIA





AM peak hour inflow is 2716 vehicles. AM peak hour outflow is 2716 vehicles.



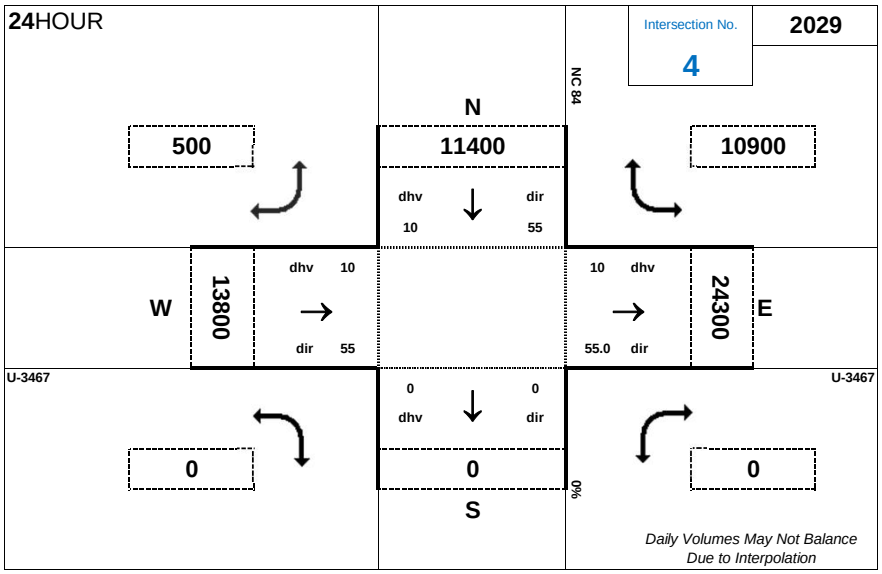
PM peak hour inflow is 2717 vehicles. PM peak hour outflow is 2717 vehicles.

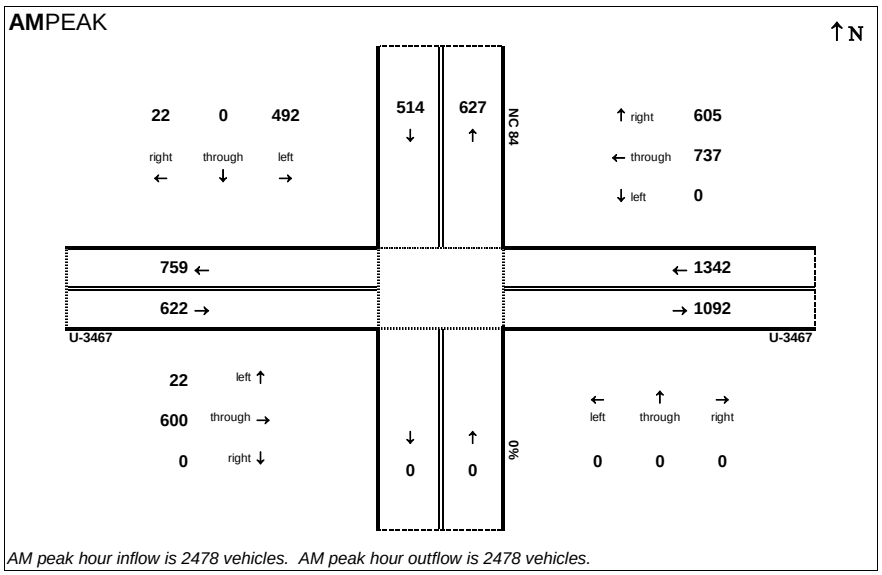
Peak Hour Volume Breakouts Report:
Int #4 2039 FC Volumes

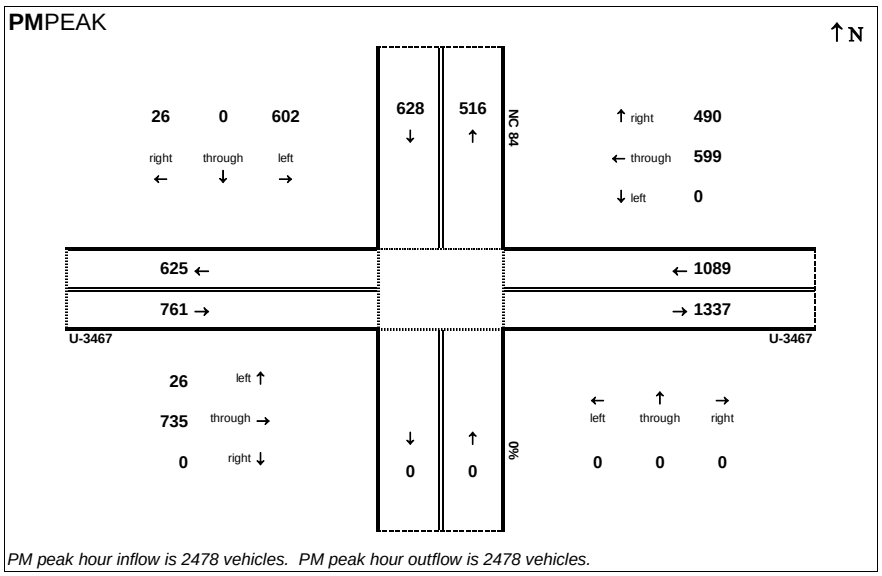
Traffic Forecast Release Date:
October-23

Traffic Data Year:
1/1/2039

Project:
Deal Lake TIA







Peak Hour Volume Breakouts Report:
Int #4 2039 FC Volumes

Traffic Forecast Release Date:
October-23

Traffic Data Year:
2029 Background

Project:
Deal Lake TIA

Traffic Forecast Data

Project Level Traffic Forecast

FS-1810D: NC 16 from SR 1316 (Rea Road) to Mecklenburg County Line

Union County

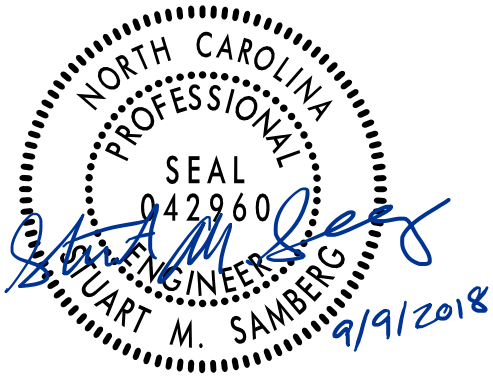
September 2018

Submitted by: RK&K

PROJECT LEVEL TRAFFIC FORECAST TECHNICAL MEMORANDUM

FS-1810D: NC 16 from SR 1316 (Rea Road) to Mecklenburg County Line
Union County
North Carolina

WBS No.: 34263.1.1



Engineers | Construction Managers | Planners | Scientists

Prepared By
Rummel, Klepper & Kahl, LLP
900 Ridgefield Drive – Suite 350
Raleigh, NC 27609
(919) 878-9560
September 2018

900 Ridgefield Drive, Suite 350 | Raleigh, NC 27609 | P 919.878.9560 | T 888.521.4455 | F 919.790.8382 | www.rkk.com

TRAFFIC FORECAST COVER LETTER

September 2018

TO: Shane York, PE
Feasibility Studies Unit
NCDOT

FROM: Stuart M. Samberg, P.E., PTOE, PTP
RK&K, LLP

SUBJECT: Traffic Forecast for NC 16 Widening
FS-1810D: NC 16 from SR 1316 (Rea Road) to the Mecklenburg County Line in Union County

---

Please find attached the 2018 Base Year and 2040 Future Year No-Build and Build traffic forecast for the NC 16 Widening Feasibility Study (FS-1810D) from SR 1316 (Rea Road) to the Mecklenburg County Line in Union County. The total project length is approximately 1.8 miles.

This traffic forecast was approved by NCDOT Transportation Planning Division on September 05,2018

This traffic forecast includes one Build scenario:

- Widen NC 16 to a six-lane divided facility from SR 1316 (Rea Road) to the Mecklenburg County Line

Traffic forecasts for the following scenarios are provided in this memorandum:

- 2018 Base Year No-Build
- 2018 Base Year Build (Widen to six-lane divided)
- 2040 Future Year No-Build
- 2040 Future Year Build (Widen to six-lane divided)

Certain assumptions were made in the development of this forecast:

Fiscal Constraint:
The traffic forecasts for this project assume the construction of projects within the Charlotte Regional Transportation Planning Organization's (CRTPO) Metropolitan Transportation Plan (MTP) and Metrolina Regional Travel Demand Model. Projects in the MTP which directly affect the proposed project area include:

- U-3467: Construct / Widen NC 84 from NC 16 to Waxhaw-Indian Trail Road (SR 1008), part on New Location
- U-5769: Widen NC 16 from Rea Road (SR 1316) to Cuthbertson Road (SR 1321)

The Charlotte Regional Transportation Planning Organization (CRTPO) Comprehensive Transportation Plan (CTP) includes the North Access Road project intersecting NC 16 just north of existing NC 84. However, this project is not included in the CRTPO 2045 MTP, and therefore not included in the forecast.

Development Activity:
Stuart Basham, Division 10 Planning Engineer was contacted to get information on anticipated developments within the study area. Based on the feedback and the information presented in the GIS based application- Virtual Charlotte (http://vc.charmeck.org/), it was observed that there is limited development activity that would be anticipated to alter existing traffic pattern in the Future Year of 2040 within the project study area.

Travel Demand Model:
The Metrolina Regional Model (MRM16) Version 1.0 adopted on October 17, 2017 was used to develop the traffic forecast for the subject project. The model was developed with a Base Year of 2010 using TransCAD Version 5.0 Build 1590.

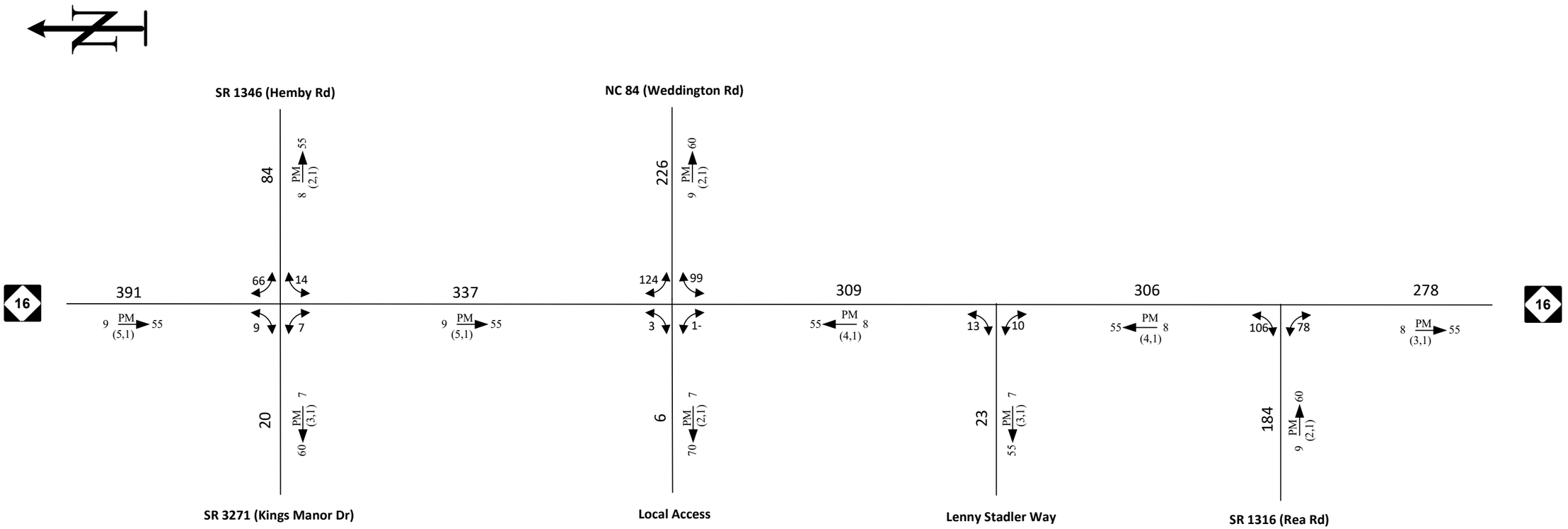
Forecast Methodology:
Traffic volume and design factor estimates for the 2018 Base Year were developed using traffic counts collected on May 8th and 9th of 2018 and historic Annual Average Daily Traffic (AADT) trends projected to 2018. Growth rates derived from the Metrolina Regional Model and historic growth rates extrapolated from AADT trends were used to estimate Future Year 2040 traffic volumes. Engineering judgment was used as necessary to ensure a balanced forecast.

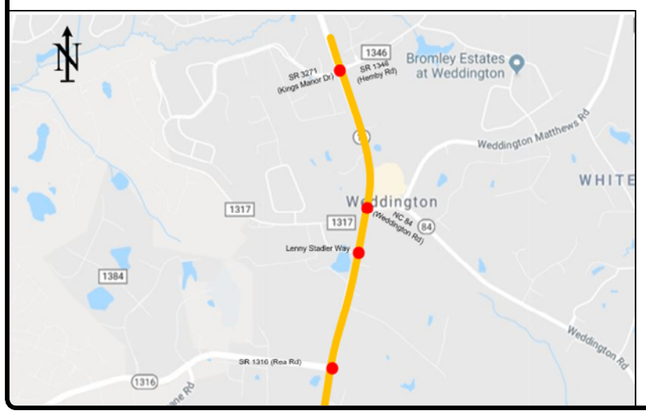
Interpolation:
Straight-line interpolation may be used to estimate AADT for years between 2018 and 2040. Extrapolation may be used to estimate AADT volumes for up to two years following 2040.

CC (with Attachments):

Tim Boland, PE, Highway Division 10 Project Development Engineer
Randy Bowers, Highway Division 10 Roadway Project Engineer
Stuart Basham, Highway Division 10 Planning Engineer
Lee Ainsworth, PE, Anson & Union County District Engineer
Brenda Moore, PE, CPM Roadway Design Unit
Clark Morrison, PhD, PE, State Pavement Design Engineer
Mike Reese, PE, Congestion Management
John A. Baliey, Western Piedmont Group Supervisor
Keith Dixon, State Traffic Forecast Engineer
Traffic Forecasting GIS Support

File Copy: FS-1810D: NC 16 Union County





2018 AVERAGE ANNUAL DAILY TRAFFIC

No-Build

Sheet 1 of 1

LEGEND

###	No. of Vehicles Per Day in 100s
1-	Less than 50 vpd
X	Movement Prohibited
K AM→ D (d, t)	
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split (%)
→	Indicates Direction of D
(d, t)	Duals, TT-STs (%)

TIP: N/A

WBS: 34263.1.1

COUNTY: Union

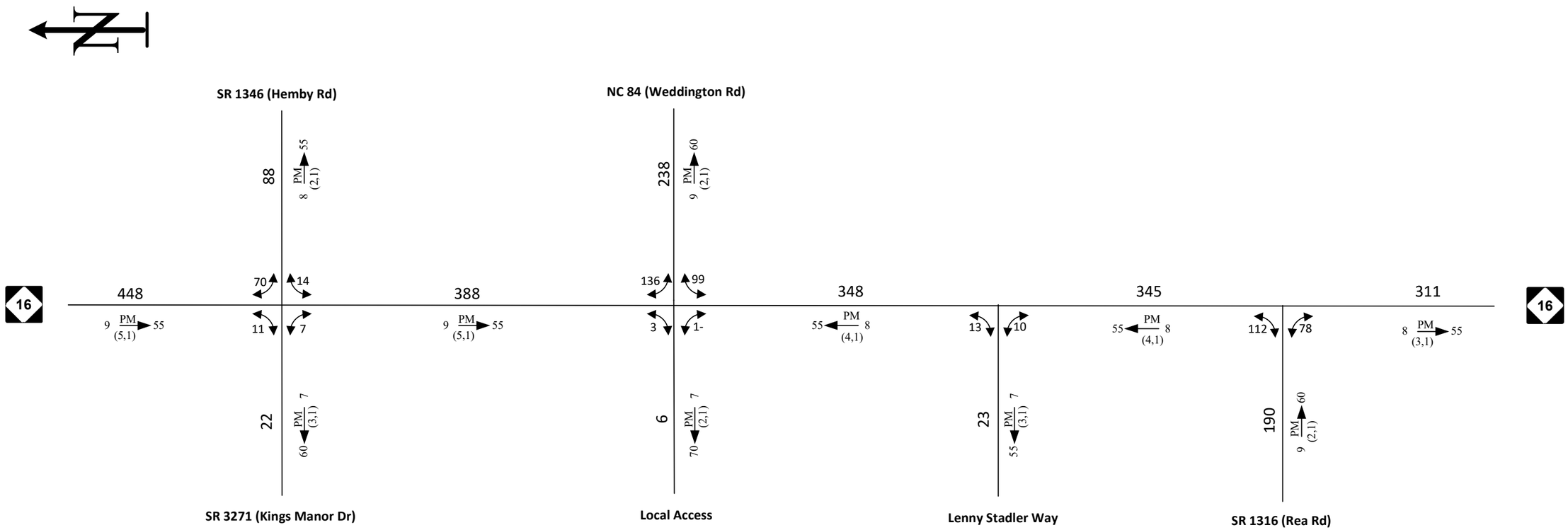
DIVISION: 10

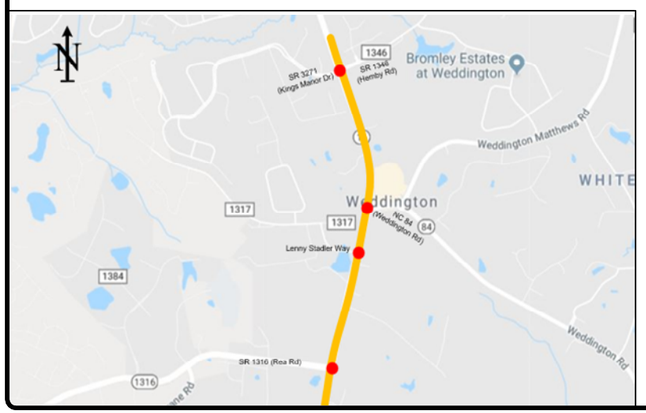
DATE: September 2018

PREPARED BY: RK&K

LOCATION: Weddington, NC

PROJECT: FS-1810D: NC 16 from SR 1316 (Rea Road) to the Mecklenburg County Line





2018 AVERAGE ANNUAL DAILY TRAFFIC

Build

Sheet 1 of 1

LEGEND

###	No. of Vehicles Per Day in 100s
1-	Less than 50 vpd
X	Movement Prohibited
K AM→ D (d, t)	
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split (%)
→	Indicates Direction of D
(d, t)	Duals, TT-STs (%)

TIP: N/A

WBS: 34263.1.1

COUNTY: Union

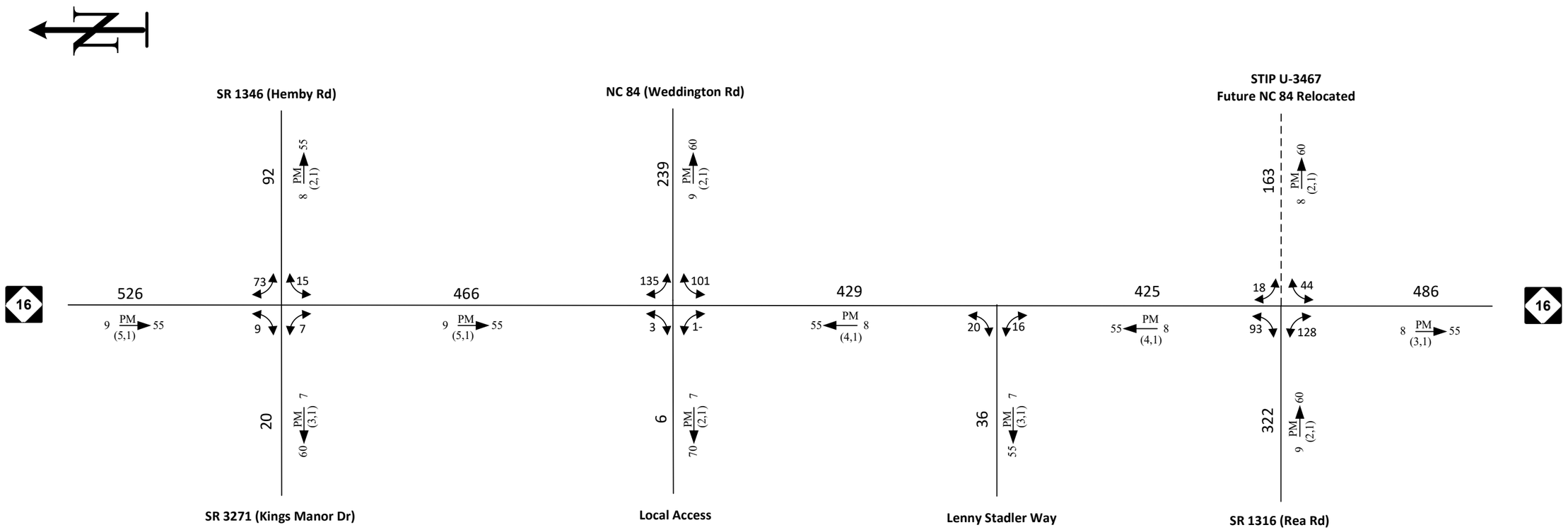
DIVISION: 10

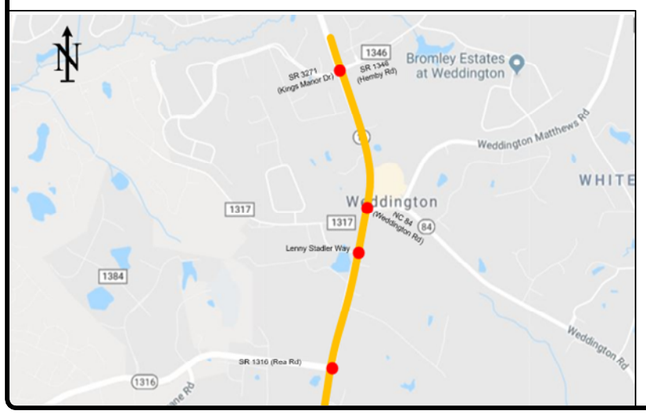
DATE: September 2018

PREPARED BY: RK&K

LOCATION: Weddington, NC

PROJECT: FS-1810D: NC 16 from SR 1316 (Rea Road) to the Mecklenburg County Line





2040 AVERAGE ANNUAL DAILY TRAFFIC

No-Build

Sheet 1 of 1

LEGEND

###	No. of Vehicles Per Day in 100s
1-	Less than 50 vpd
X	Movement Prohibited
K AM→ D (d, t)	
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split (%)
→	Indicates Direction of D
(d, t)	Duals, TT-STs (%)

TIP: N/A

WBS: 34263.1.1

COUNTY: Union

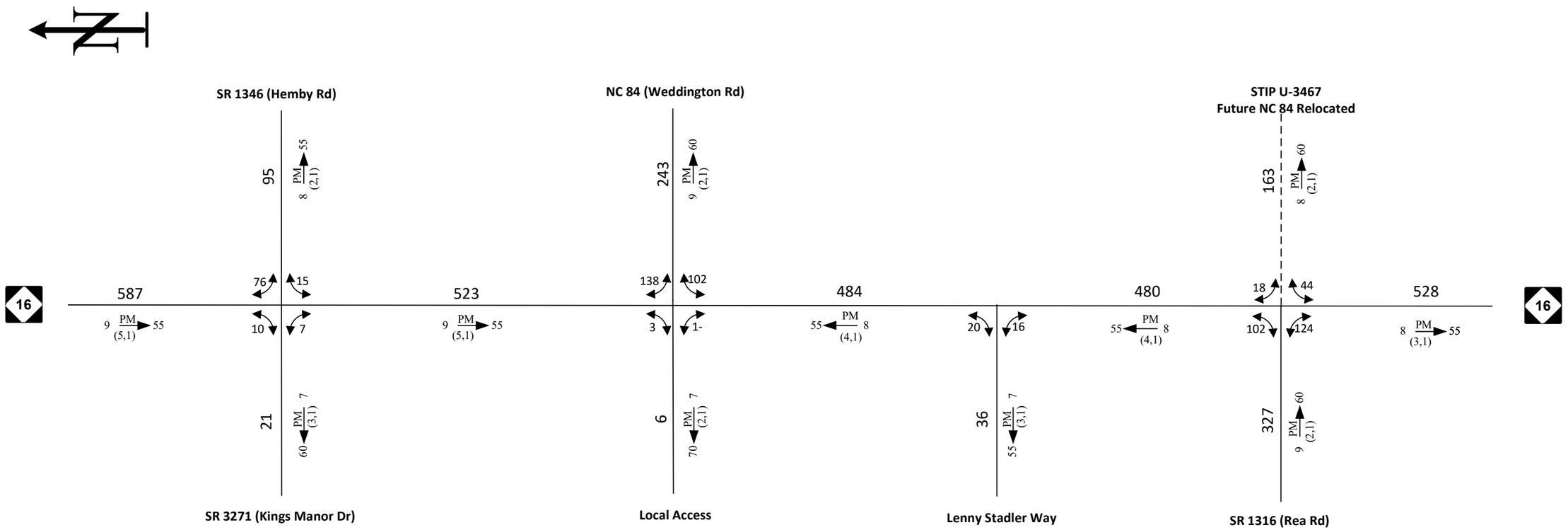
DIVISION: 10

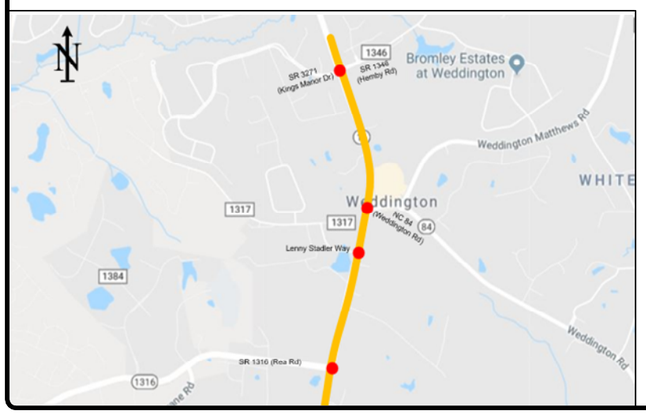
DATE: September 2018

PREPARED BY: RK&K

LOCATION: Weddington, NC

PROJECT: FS-1810D: NC 16 from SR 1316 (Rea Road) to the Mecklenburg County Line





2040 AVERAGE ANNUAL DAILY TRAFFIC

Build

Sheet 1 of 1

LEGEND

###	No. of Vehicles Per Day in 100s
1-	Less than 50 vpd
X	Movement Prohibited
K AM (d, t) D	
K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split (%)
→	Indicates Direction of D
(d, t)	Duals, TT-STs (%)

TIP: N/A

WBS: 34263.1.1

COUNTY: Union

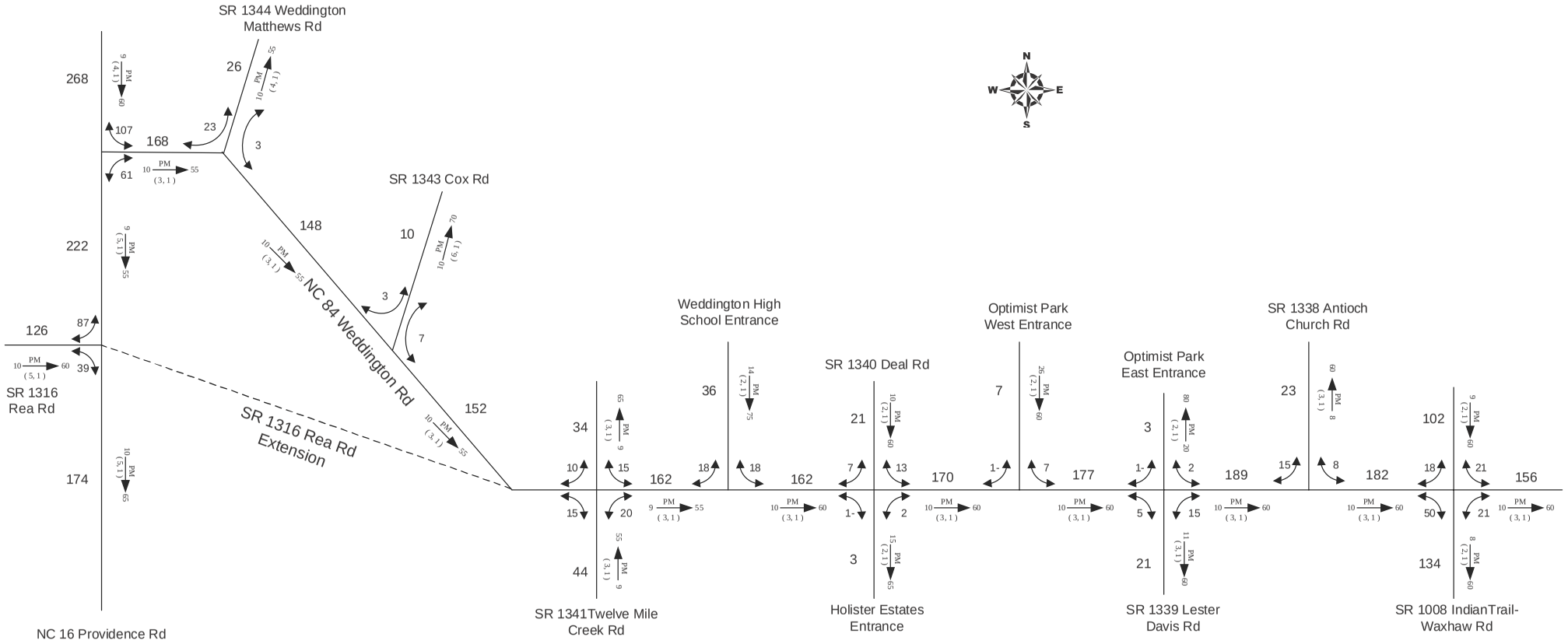
DIVISION: 10

DATE: September 2018

PREPARED BY: RK&K

LOCATION: Weddington, NC

PROJECT: FS-1810D: NC 16 from SR 1316 (Rea Road) to the Mecklenburg County Line



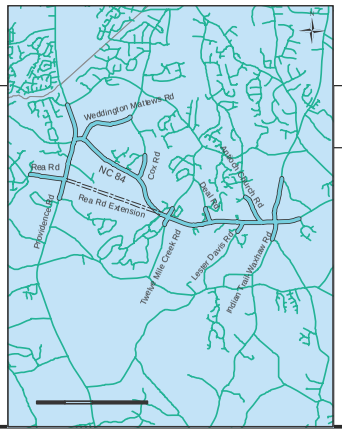


Figure 3

2012

AVERAGE ANNUAL DAILY TRAFFIC

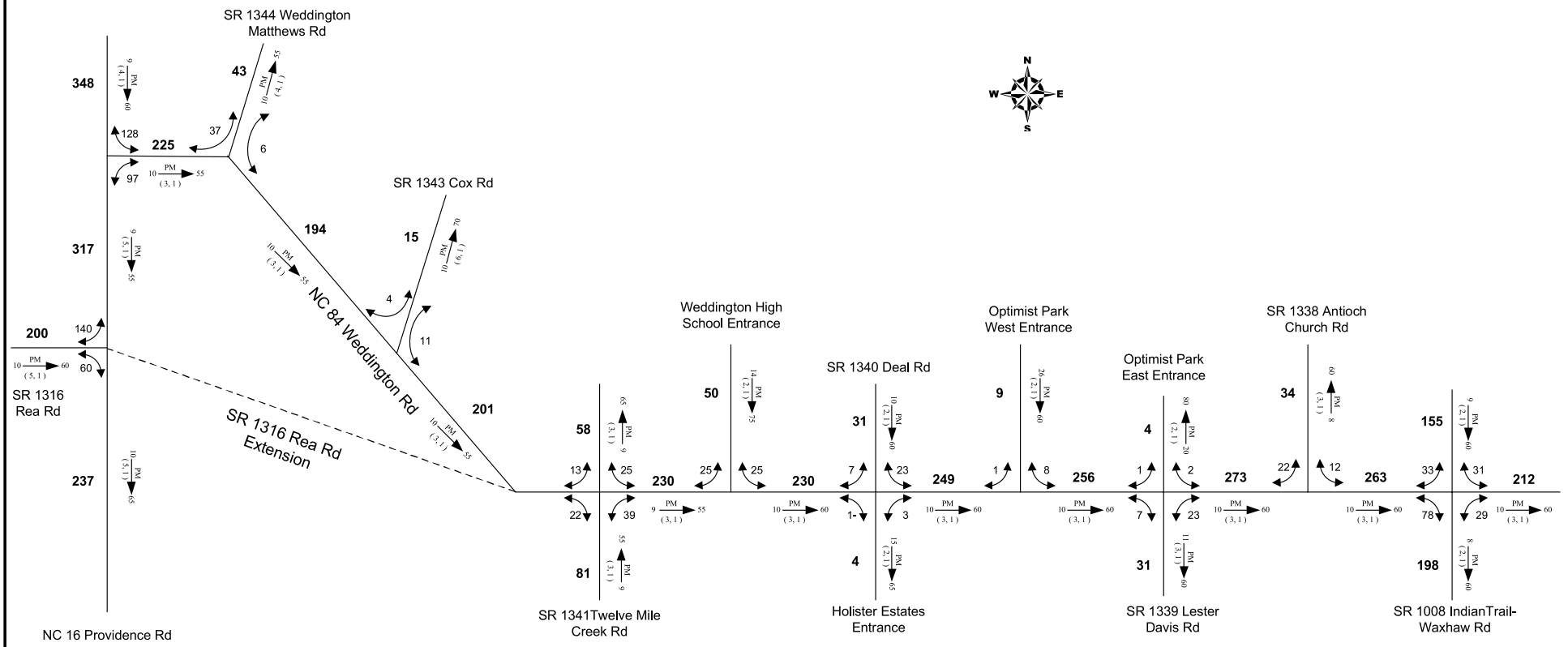
No Build
Sheet 1 - 1

LEGEND

K PM (d, t) D

###	No. of Vehicles Per Day (VPD) in 100s	K	Design Hour Factor (%)
1-	Less than 50 VPD	PM	PM Peak Period
X	Movement Prohibited	D	Peak Hour Directional Split
.....	Proposed Roadway	→	Indicates Direction of D
		(d, t)	Duals, TT-STs (%)

TIP: U-3467	**WBS:** 39019.1.1
COUNTY: Union	**DIVISION:** 10
DATE: May 9, 2012	
PREPARED BY: Paul Schroeder, PhD, PE	
LOCATION: NC 84 Weddington Road southeast of Charlotte	
PROJECT: SR 1316 Rea Road extension from NC 16 to SR 1008 Indian Trail-Waxhaw Road	



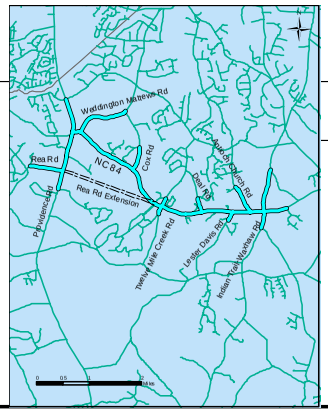


Figure 4

2035

AVERAGE ANNUAL DAILY TRAFFIC

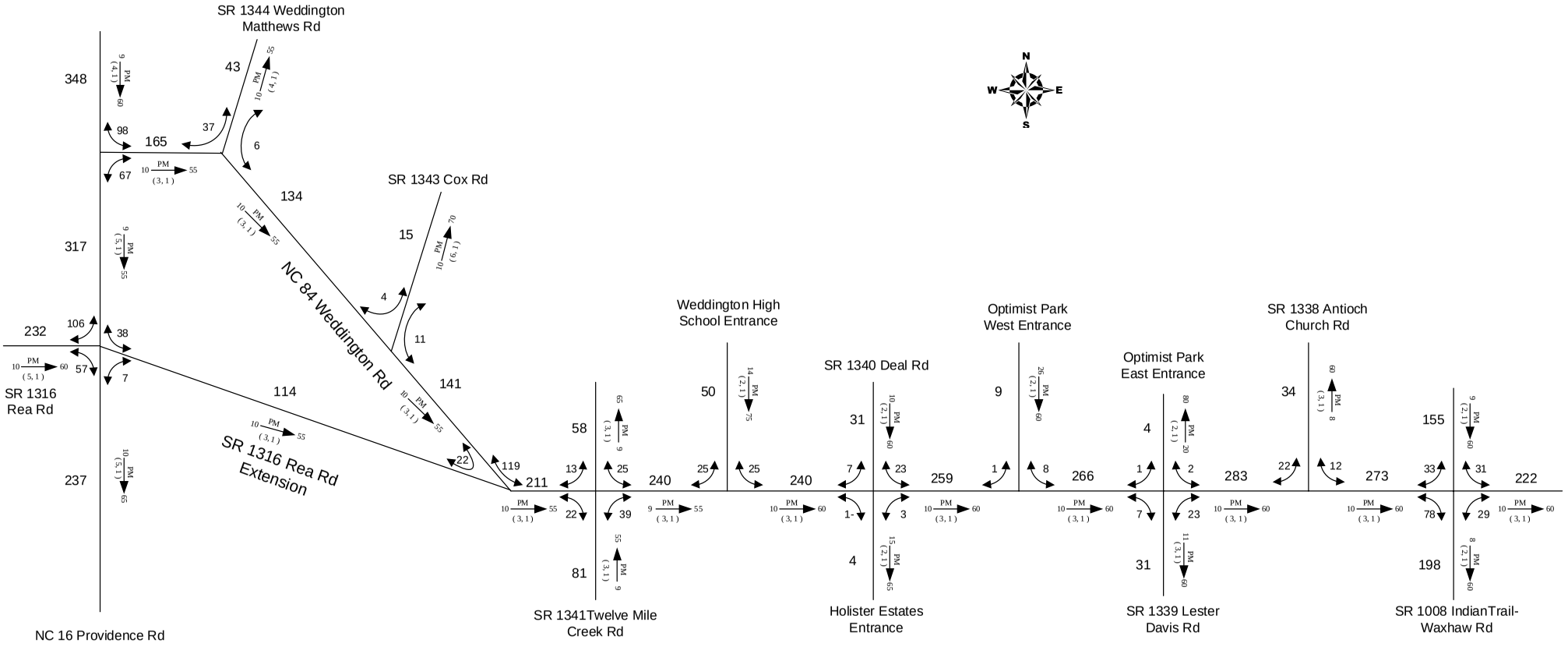
No Build
Sheet 1 - 1

L E G E N D

###	No. of Vehicles Per Day (VPD) in 100s	K	Design Hour Factor (%)
1-	Less than 50 VPD	PM	PM Peak Period
x	Movement Prohibited	D	Peak Hour Directional Split
.....	Proposed Roadway	→	Indicates Direction of D
		(d, t)	Duals, TT-STs (%)

K PM (d, t) D

TIP: U-3467	**WBS:** 39019.1.1
COUNTY: Union	**DIVISION:** 10
DATE: January 23, 2013	
PREPARED BY: Paul Schroeder, PhD, PE	
LOCATION: NC 84 Weddington Road southeast of Charlotte	
PROJECT: SR 1316 Rea Road extension from NC 16 to SR 1008 Indian Trail-Waxhaw Road	



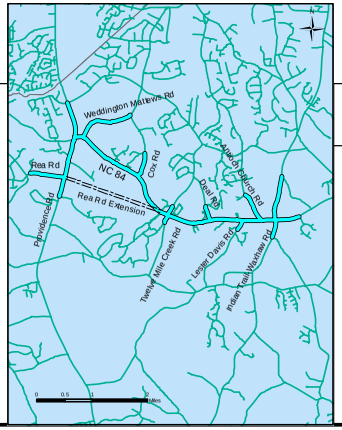


Figure 5

2035

AVERAGE ANNUAL DAILY TRAFFIC

Build
Sheet 1 - 1

L E G E N D

K PM (d, t) D

###	No. of Vehicles Per Day (VPD) in 100s	K	Design Hour Factor (%)
1-	Less than 50 VPD	PM	PM Peak Period
X	Movement Prohibited	D	Peak Hour Directional Split
.....	Proposed Roadway	→	Indicates Direction of D
		(d, t)	Duals, TT-STs (%)

TIP: U-3467	**WBS:** 39019.1.1
COUNTY: Union	**DIVISION:** 10
DATE: May 9, 2012	
PREPARED BY: Paul Schroeder, PhD, PE	
LOCATION: NC 84 Weddington Road southeast of Charlotte	
PROJECT: SR 1316 Rea Road extension from NC 16 to SR 1008 Indian Trail-Waxhaw Road	

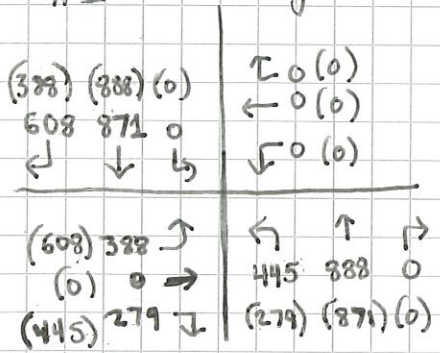
Mid Peak-Hour
Traffic Volume Calculations

Background Forecast volumes / existing forecast volumes × midday traffic Counts

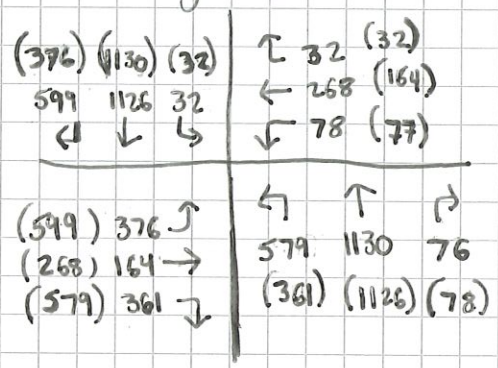
Equation:

= midday forecast Volumes

#1 Existing



#1 Background



NBL: $\frac{579}{445} \times 234 = 305$ $\frac{361}{279} \times 234 = 303 \rightarrow 304$

NBT: $\frac{1130}{888} \times 702 = 893$ $\frac{1126}{871} \times 702 = 908 \rightarrow 901$

NBR: $\frac{76}{0} \times 0 = 0$ $\frac{78}{0} \times 0 = 0 \rightarrow$ solved using different method $\rightarrow 128$

SBL: $\frac{32}{0} \times 0 = 0$ $\frac{32}{0} \times 0 = 0 \rightarrow$ Solved using different method $\rightarrow 54$

SBT: $\frac{1126}{871} \times 718 = 928$ $\frac{1130}{888} \times 718 = 914 \rightarrow 921$

SBR: $\frac{599}{608} \times 339 = 334$ $\frac{376}{388} \times 339 = 329 \rightarrow 332$

EBL: $\frac{376}{388} \times 488 = 473$ $\frac{599}{608} \times 488 = 481 \rightarrow 477$

EBT: $\frac{164}{0} \times 0 = 0$ $\frac{268}{0} \times 0 = 0 \rightarrow$ Solved using different method $\rightarrow 353$

EBR: $\frac{361}{279} \times 362 = 468$ $\frac{579}{445} \times 362 = 471 \rightarrow 470$

* Westbound solved on another sheet WBL: 93 WBT: 256 WBR: 39

•FC = Forecast

Kimley»Horn
Expect More. Experience Better.

Job Deal Lake Subject #2 MD volumes Sheet No. ____ of ____
Designed By ____ Date ____ Checked By ____ Date ____ Job No. ____

EQUATION: $\frac{\text{Background FC}}{\text{Existing FC}} \times$ Midday traffic Counts

#2 Existing FC volumes

(9) (21)
21 48 ← 22 (45)
↓ ↳ ← 804 (648)

(24) 8 ↑
(803) 647 →

#2 Background FC volumes

(11) (31)
26 67 ← 32 (64)
↓ ↳ ← 746 (596)

(29) 10 ↑
(745) 595 →

SBL: $\frac{67}{48} \times 45 = 63$, $\frac{31}{21} \times 45 = 66 \rightarrow 65$

SBR: $\frac{26}{21} \times 6 = 7$, $\frac{11}{9} \times 6 = 7 \rightarrow 7$

EBL: $\frac{10}{8} \times 15 = 19$, $\frac{29}{24} \times 15 = 18 \rightarrow 19$

EBT: $\frac{595}{647} \times 799 = 735$, $\frac{745}{803} \times 799 = 741 \rightarrow 738$

WBT: $\frac{746}{804} \times 508 = 471$, $\frac{596}{648} \times 508 = 467 \rightarrow 469$

WBR: $\frac{32}{22} \times 93 = 135$, $\frac{64}{45} \times 93 = 132 \rightarrow 134$

#3

Kimley»Horn
Expect More. Experience Better.

Job Deal Lake Subject Midday Volumes Sheet No. ____ of ____
Designed By ____ Date ____ Checked By ____ Date ____ Job No. ____

$\frac{129}{143} \times 120 = 108$, $\frac{142}{162} \times 120 = 105 \rightarrow$ NBL: 107

$\frac{23}{11} \times 76 = 159$, $\frac{46}{23} \times 76 = 152 \rightarrow$ NBT: 156

$\frac{79}{59} \times 57 = 76$, $\frac{103}{80} \times 517 = 73 \rightarrow$ NBT: 75

$\frac{82}{58} \times 90 = 127$, $\frac{52}{37} \times 90 = 126 \rightarrow$ SBL: 127

$\frac{46}{23} \times 64 = 128$, $\frac{23}{11} \times 64 = 134 \rightarrow$ SBT: 131

$\frac{167}{183} \times 51 = 47$, $\frac{88}{97} \times 51 = 46 \rightarrow$ SBR: 47

$\frac{87}{96} \times 84 = 76$, $\frac{168}{183} \times 84 = 77 \rightarrow$ EBL: 77

$\frac{841}{715} \times 645 = 759$, $\frac{1041}{883} \times 645 = 760 \rightarrow$ EBT: 760

$\frac{139}{159} \times 106 = 93$, $\frac{131}{144} \times 106 = 96 \rightarrow$ EBR: 95

$\frac{105}{82} \times 75 = 96$, $\frac{78}{58} \times 75 = 101 \rightarrow$ WBL: 99

$\frac{1049}{889} \times 435 = 513$, $\frac{849}{722} \times 435 = 512 \rightarrow$ WBT: 513

$\frac{53}{38} \times 124 = 173$, $\frac{81}{57} \times 124 = 176 \rightarrow$ WBR: 175

Solving for #4 MD volumes and Int #1 : NBR, SBL, EBT ; WB MD volumes using splits

Kimley»Horn
Expect More. Experience Better.

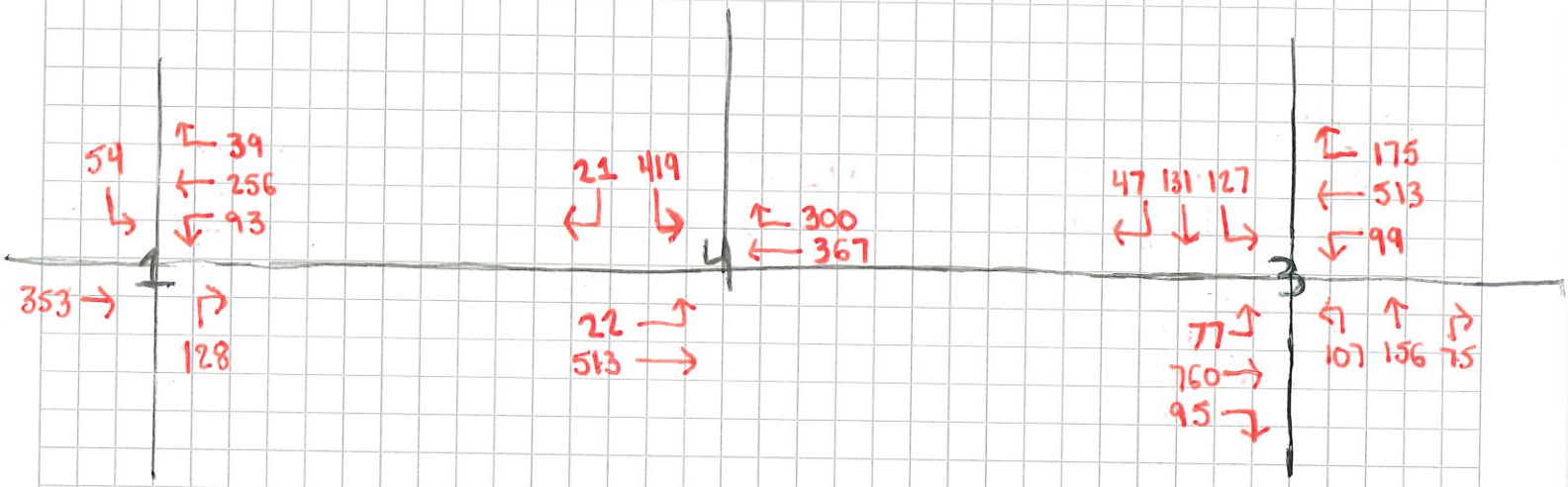
Job Deal Lake Subject MD Volumes Sheet No. ____ of ____
Designed By ____ Date ____ Checked By ____ Date ____ Job No. ____

548 / 1216 = .45 x 667 = 300
668 / 1216 = .55 x 667 = 367

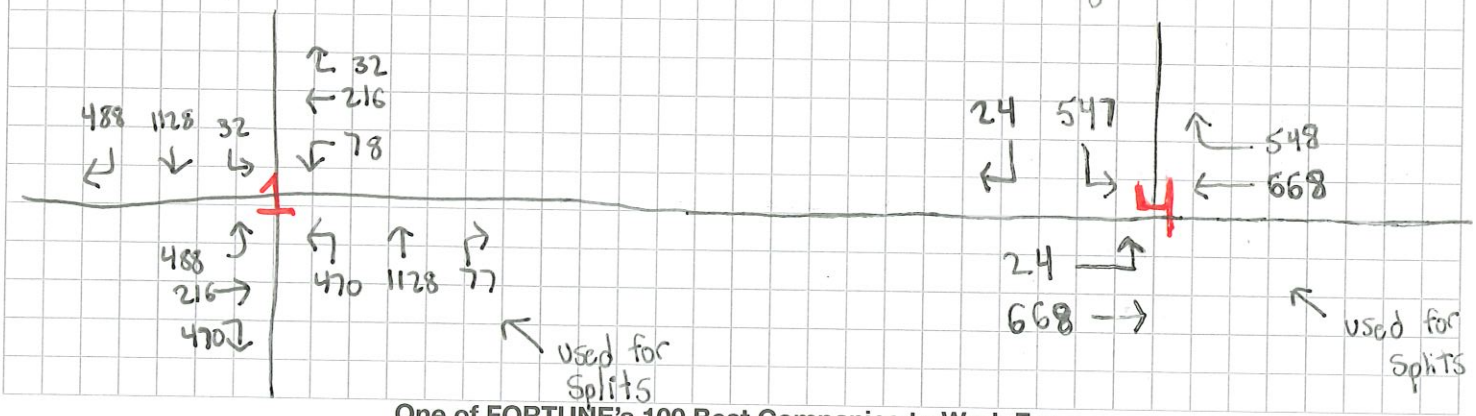
547 / 1215 = .45 x 932 = 419
668 / 1215 = .55 x 932 = 513

32 / 326 = .10 x 388 = 39
216 / 326 = .66 x 388 = 256
78 / 326 = .24 x 388 = 93

32 / 325 = .10 x 535 = 54
216 / 325 = .66 x 535 = 353
77 / 325 = .24 x 535 = 128



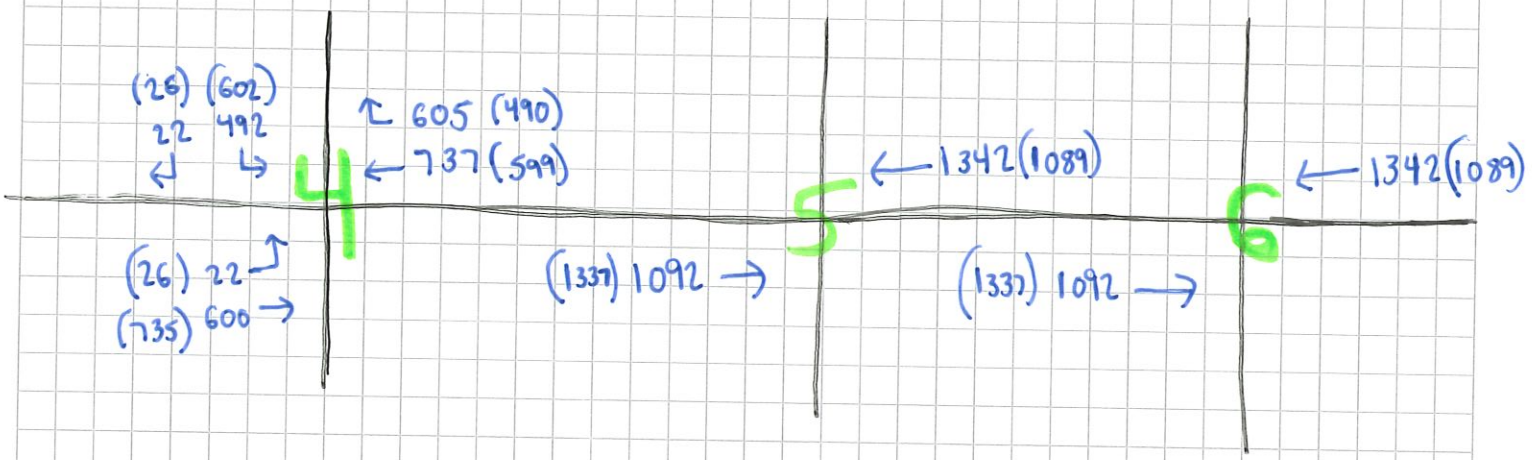
Average Forecast Volumes



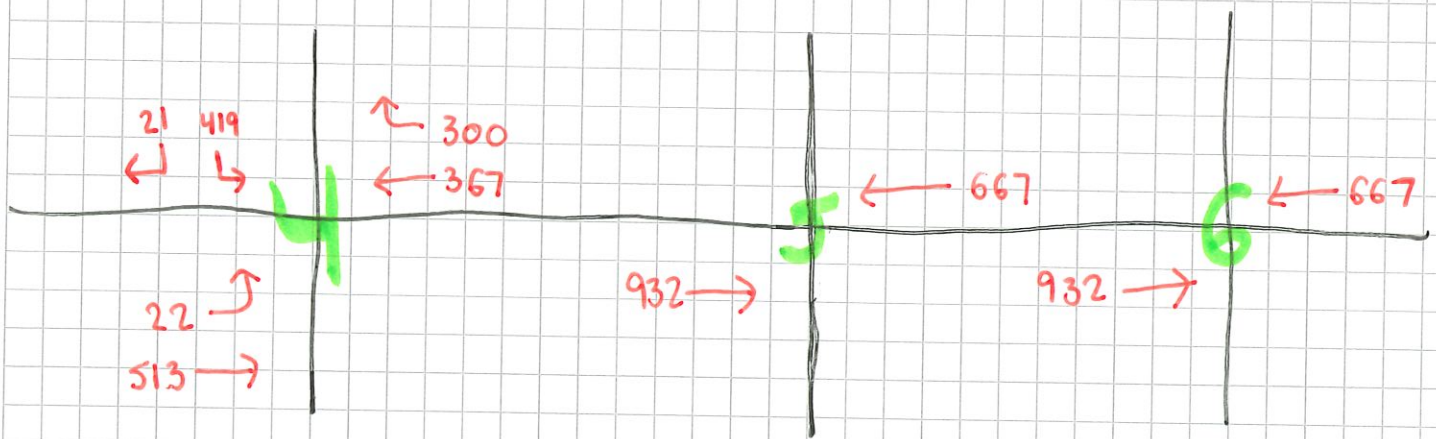
Kimley»Horn
Expect More. Experience Better.

Job Deal Lake Subject Int. #5 & #6 Background volumes Sheet No. ___ of ___
Job No. ___
Designed By ___ Date ___ Checked By ___ Date ___

Am/Pm Volumes



Midday Volumes



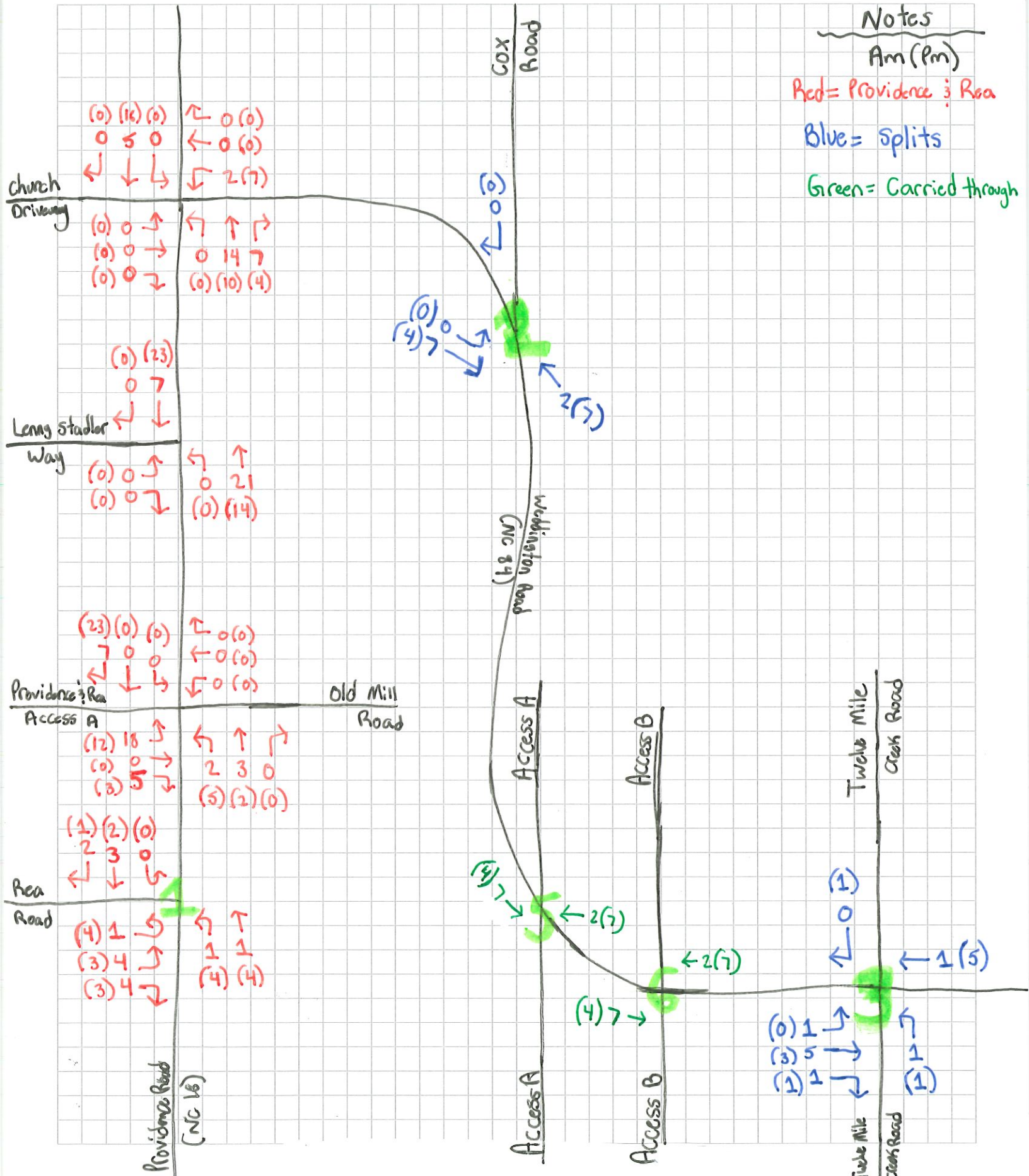
Approved Developments

Kimley»Horn
Expect More. Experience Better.

w/o STIP

Job Deal Lake Subject Providence & Rea AD Sheet No. ____ of ____ Job No. ____

Designed By ____ Date ____ Checked By ____ Date ____



(NO volumes) w/o STIP

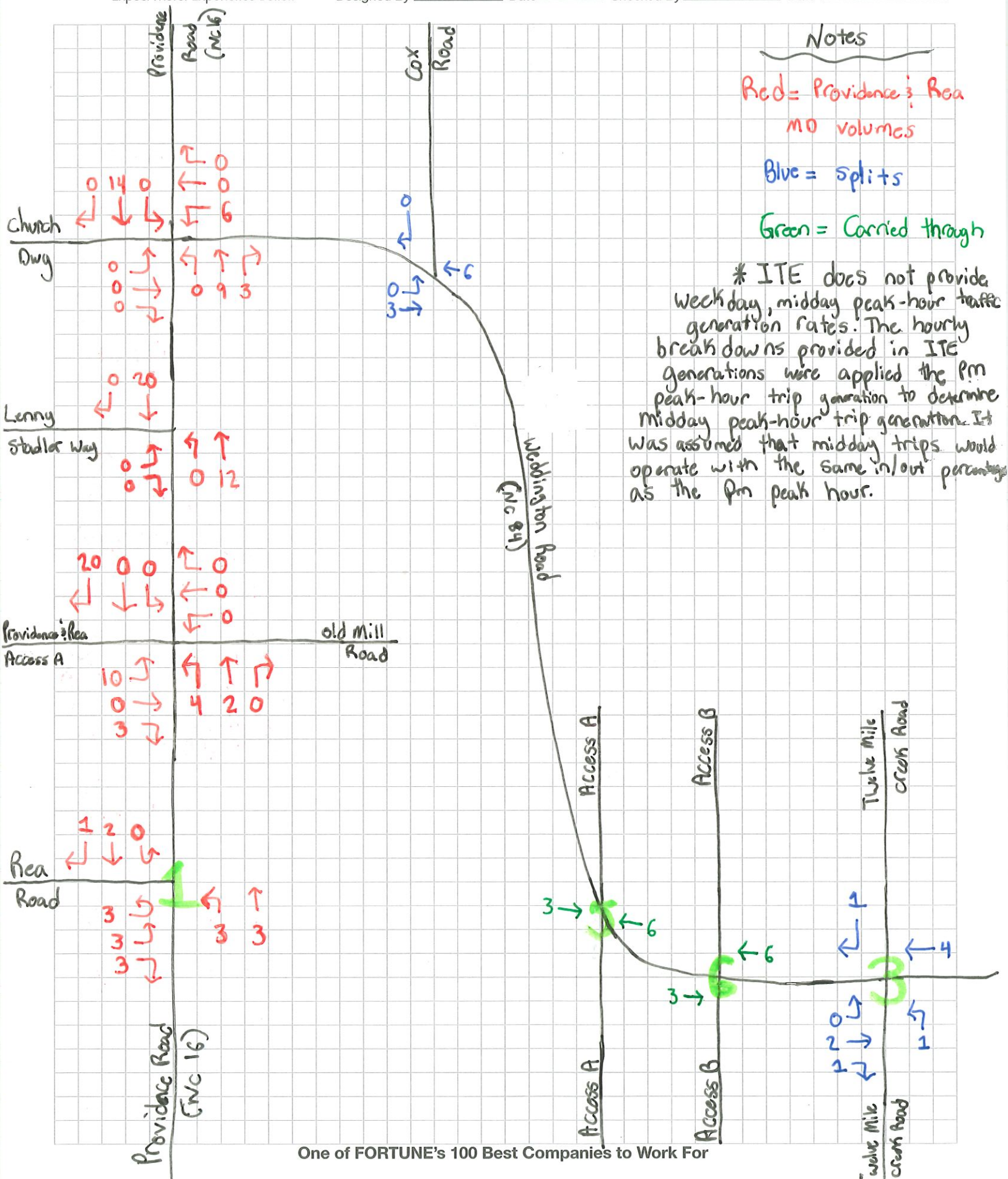
Kimley»Horn

Expect More. Experience Better.

Job Deal Lake Subject Providence & Rea Sheet No. ____ of ____

Job No. ____

Designed By ____ Date ____ Checked By ____ Date ____



Notes

Red = Providence & Rea NO volumes

Blue = splits

Green = Carried through

* ITE does not provide weekday, midday peak-hour traffic generation rates. The hourly breakdowns provided in ITE generations were applied the PM peak-hour trip generation to determine midday peak-hour trip generation. It was assumed that midday trips would operate with the same in/out percentages as the PM peak hour.

Kimley»Horn

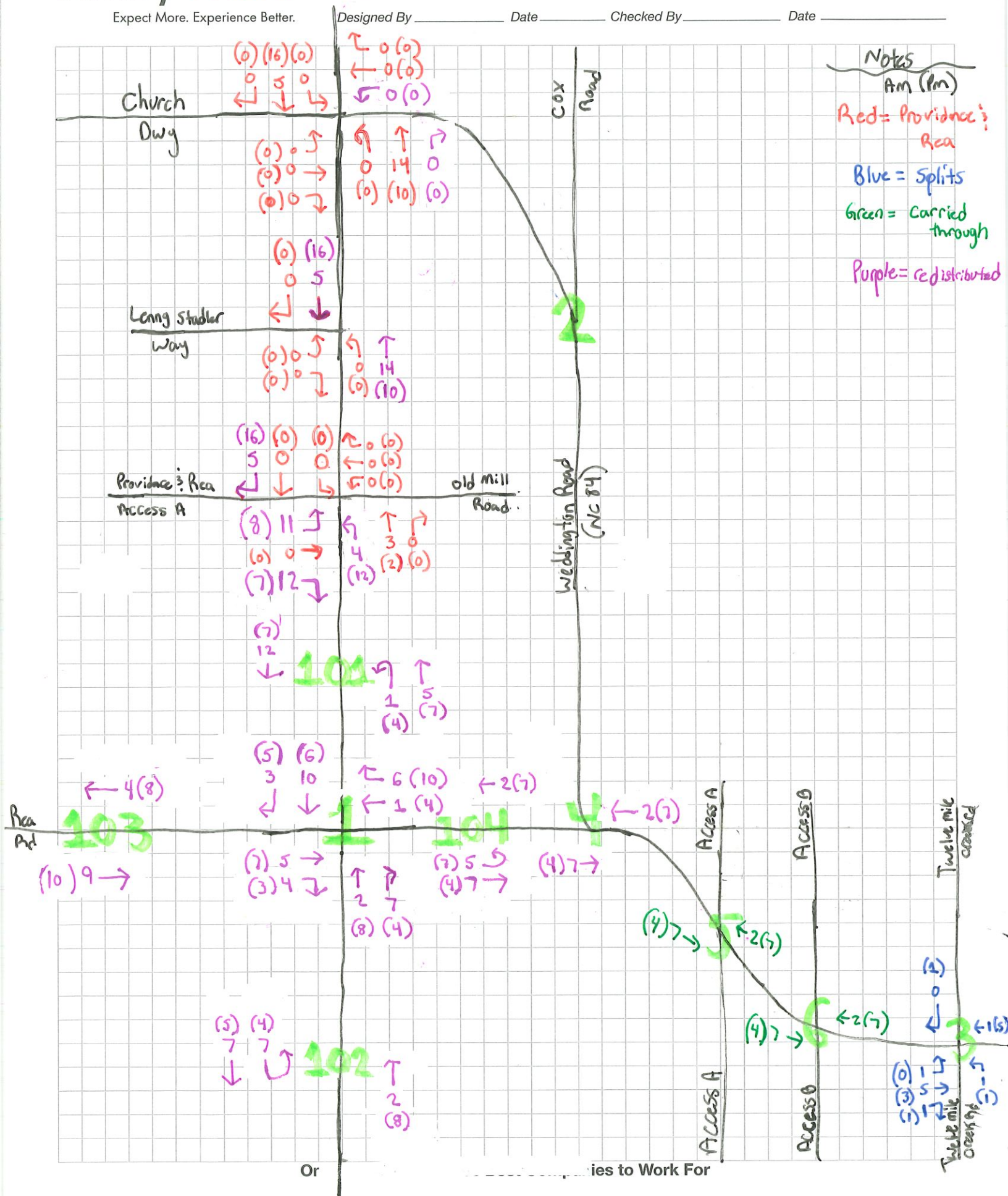
Expect More. Experience Better.

Job Deal Lake Subject Providence & Rea AD (w STIPs)

Sheet No. ____ of ____

Job No. ____

Designed By ____ Date ____ Checked By ____ Date ____

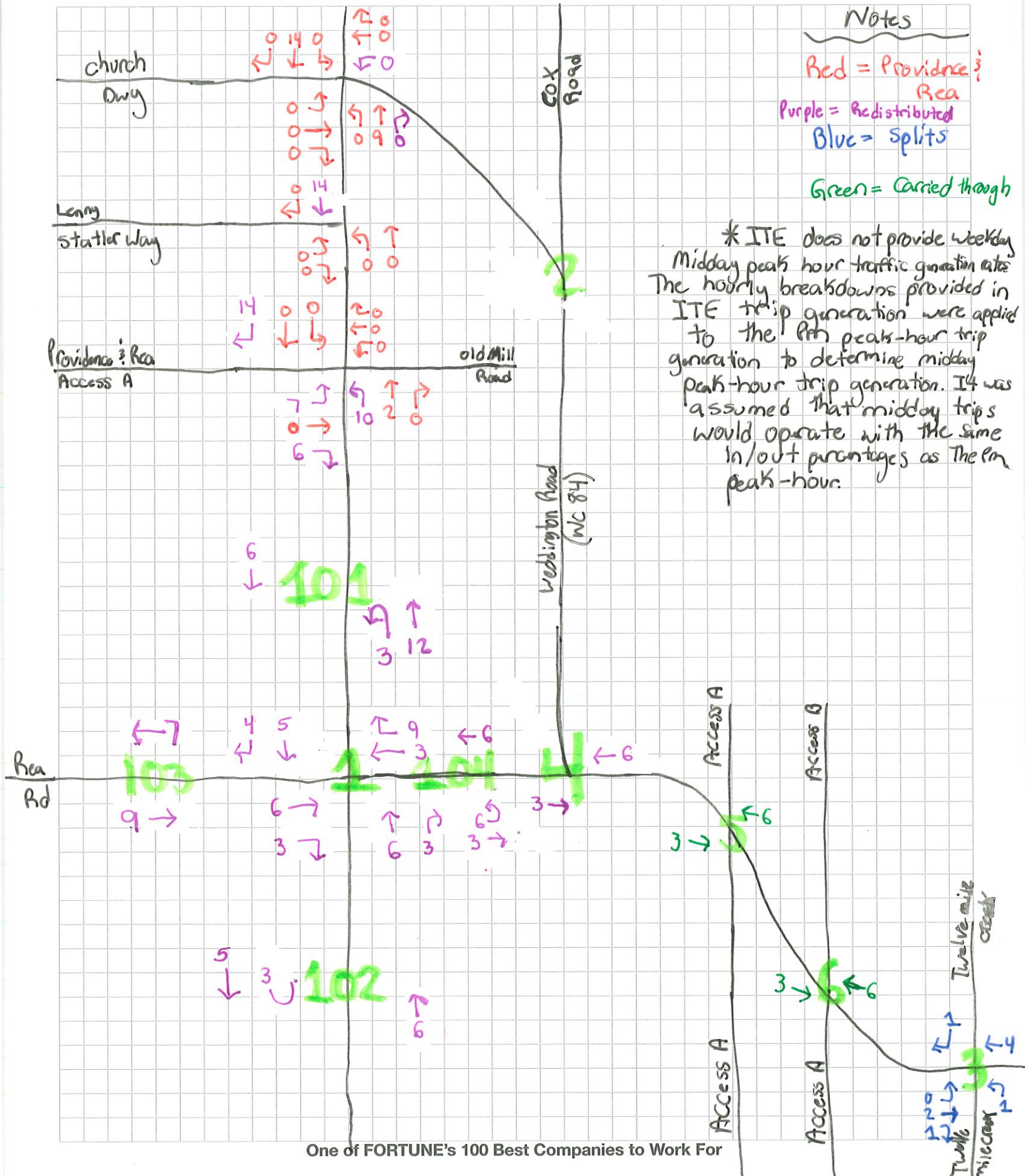


Kimley»Horn
Expect More. Experience Better.

NO w STIPs

Job Deal Lake Subject Providence & Rea AO Sheet No. ___ of ___ Job No. ___

Designed By ___ Date ___ Checked By ___ Date ___



Notes

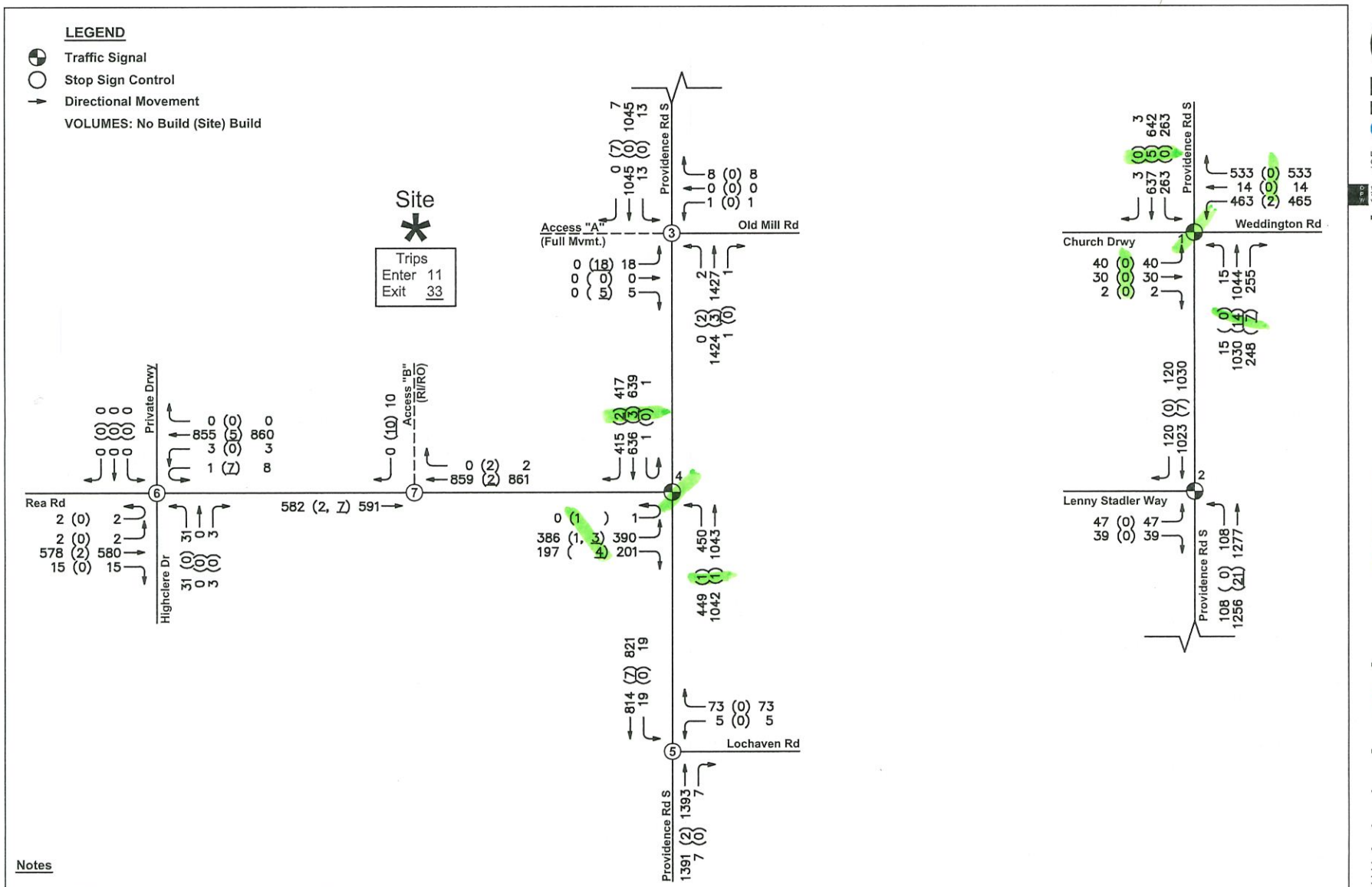
Red = Providence & Rea

Purple = Redistributed

Blue = Splits

Green = Carried through

*ITE does not provide weekday Midday peak hour traffic generation rates. The hourly breakdowns provided in ITE trip generation were applied to the Pm peak-hour trip generation to determine midday peak-hour trip generation. It was assumed that midday trips would operate with the same in/out percentages as the Pm peak-hour.



Notes

Existing AM peak hour volumes were balanced within 5% of the directional volume between intersections and carried through all Synchro files.

DESIGN RESOURCE GROUP
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
TRANSPORTATION PLANNING
1111 Hawthorne Lane, Charlotte, NC 28205
704.343.0608
www.drgrp.com

PROVIDENCE & REA
WEDDINGTON, NC

BEECHWOOD CAROLINAS
7621 LITTLE AVENUE SUITE 111
CHARLOTTE, NC 28226

2027 BUILD
AM PEAK HOUR
TRAFFIC
VOLUMES

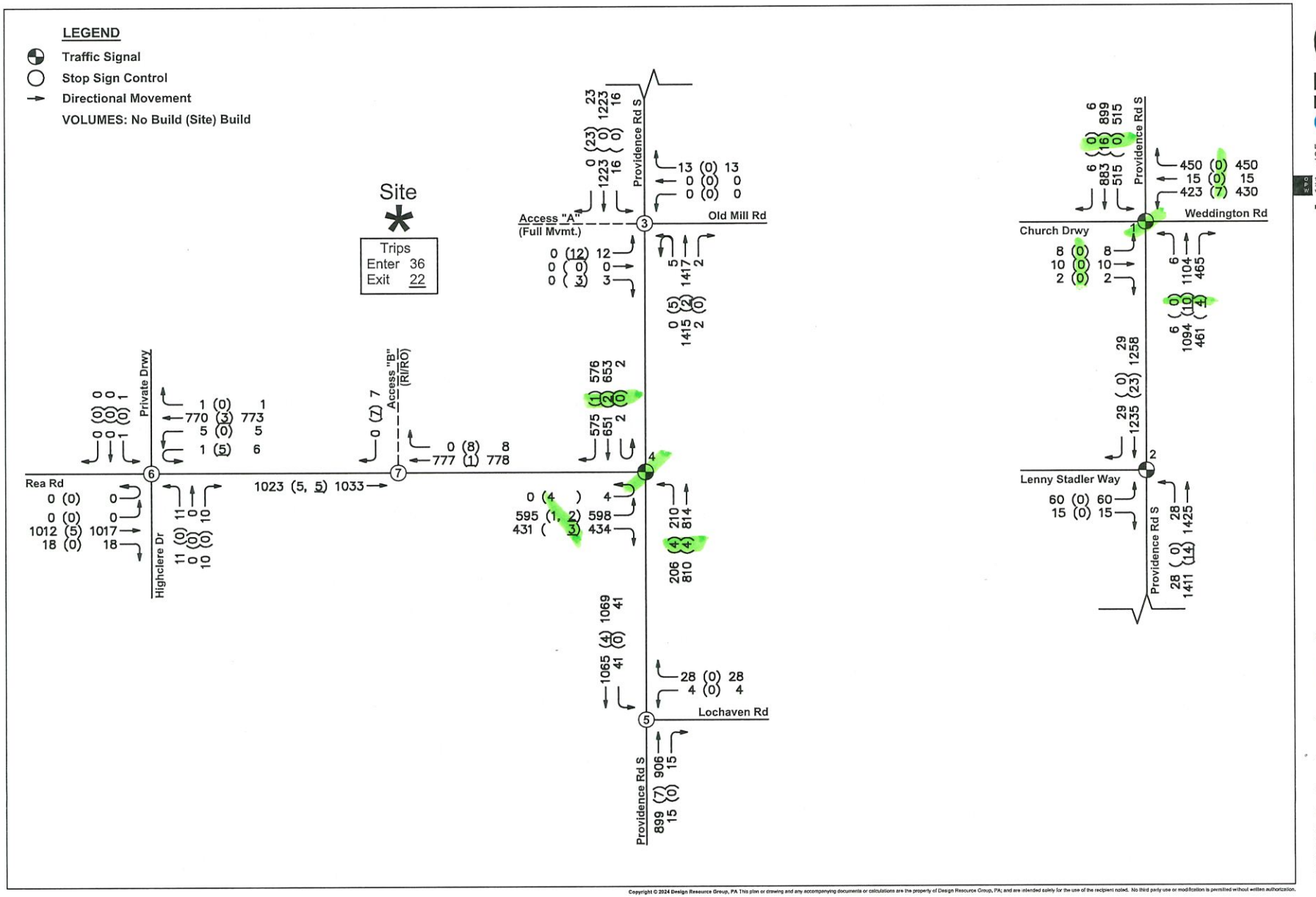
SCALE: NTS

PROJECT #: 1088-001
DRAWN BY: CRB
CHECKED BY: REG

JUNE 2024

REVISIONS:

Figure 5



DESIGN RESOURCE GROUP
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
TRANSPORTATION PLANNING
1111 Hawthorne Lane, Charlotte, NC 28205
704.343.0078
www.drgrp.com

PROVIDENCE & REA
WEDDINGTON, NC

BEECHWOOD CAROLINAS
7621 LITTLE AVENUE SUITE 111
CHARLOTTE, NC 28226

2027 BUILD
PM PEAK HOUR
TRAFFIC
VOLUMES

SCALE: NTS

PROJECT #: 1088-001
DRAWN BY: CRB
CHECKED BY: REG

JUNE 2024

REVISIONS:
1.

Figure 6

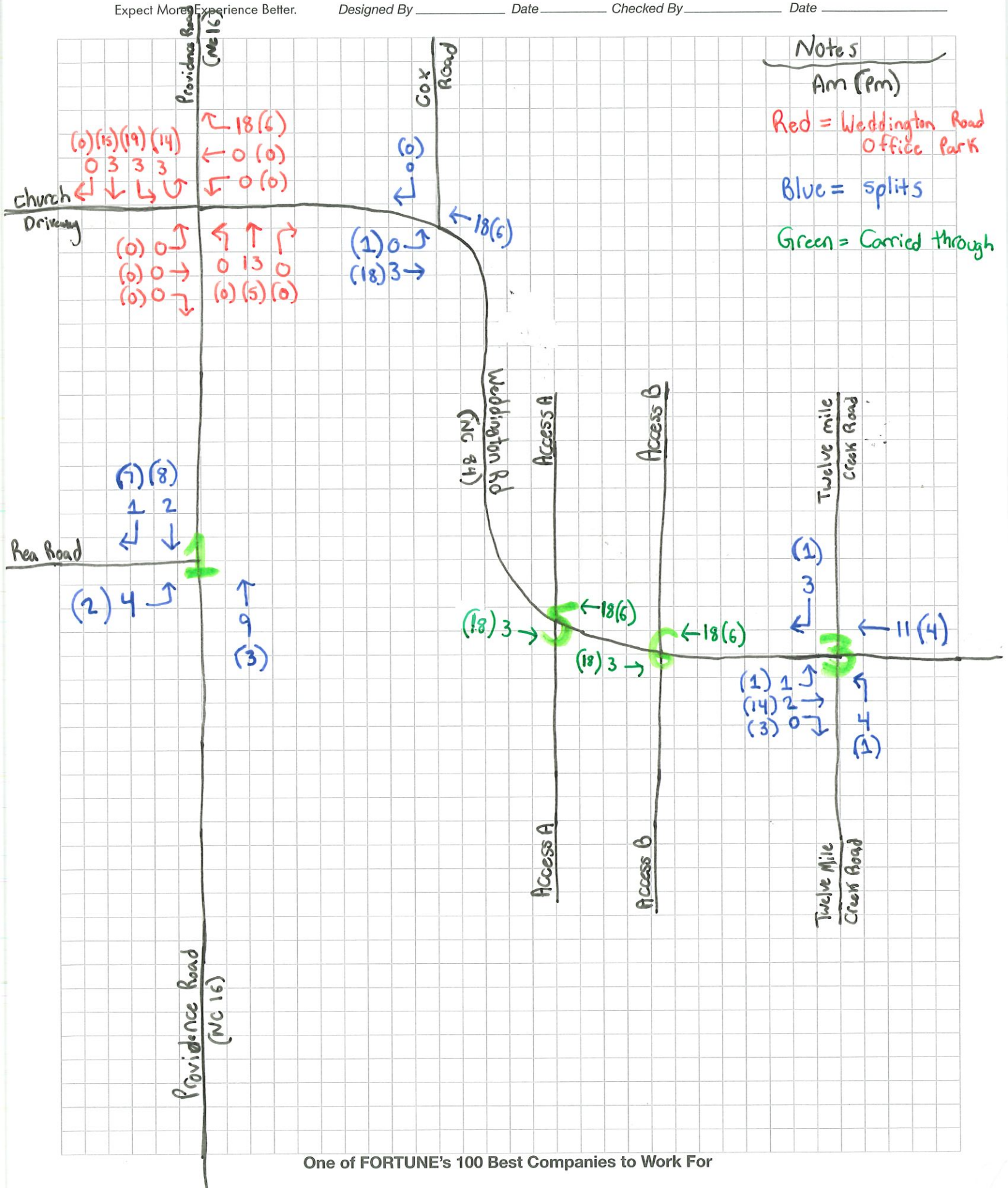
w/o STIP

Kimley»Horn

Expect More. Experience Better.

Job Deal Lake Subject Weddington Road Office Park Sheet No. ___ of ___ Job No. ___

Designed By ___ Date ___ Checked By ___ Date ___

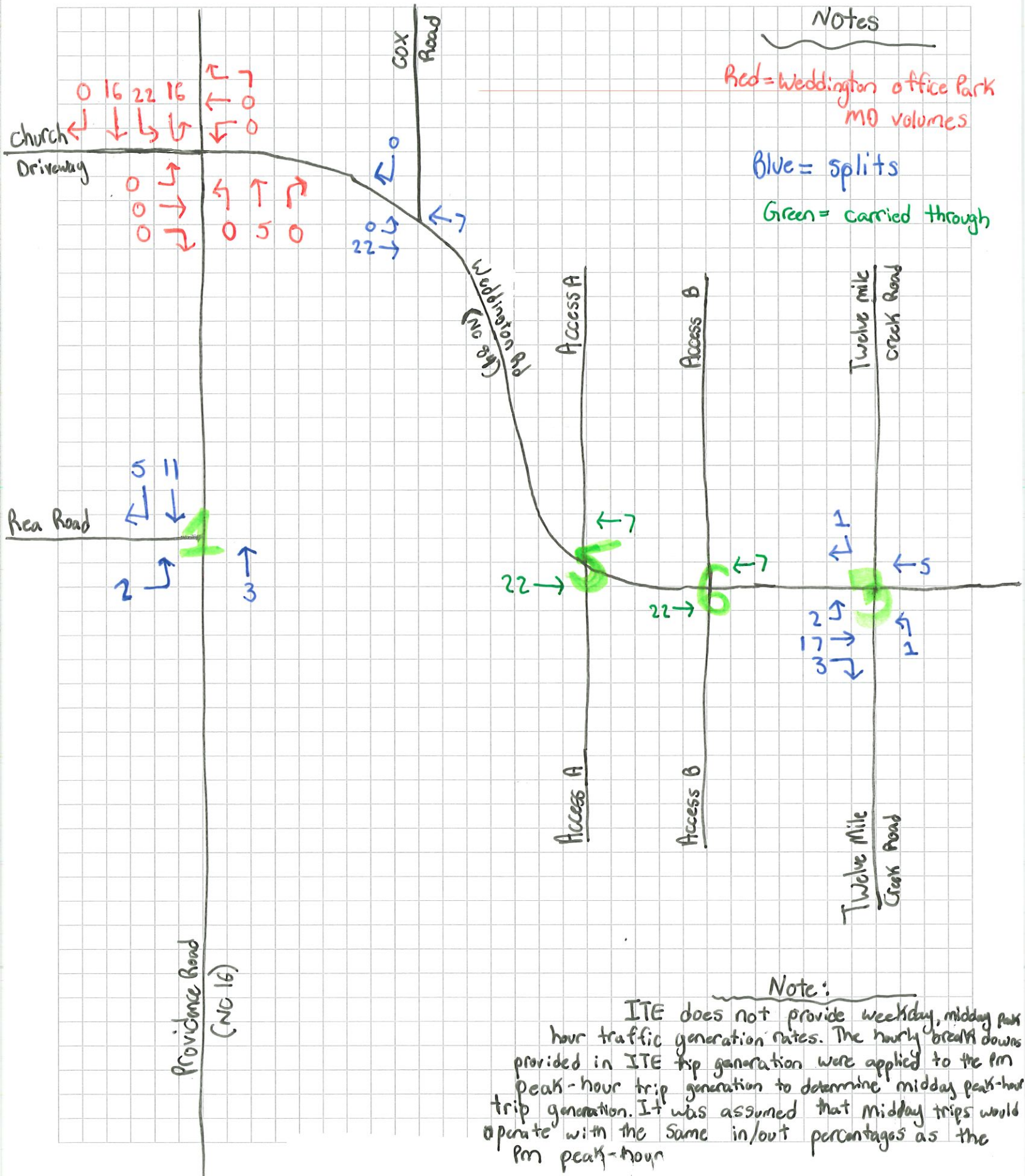


(MD volumes) w/o STIPs

Kimley»Horn
Expect More. Experience Better.

Job Deal Lake Subject Weddington Road office Park Sheet No. ___ of ___ Job No. ___

Designed By ___ Date ___ Checked By ___ Date ___



Note:

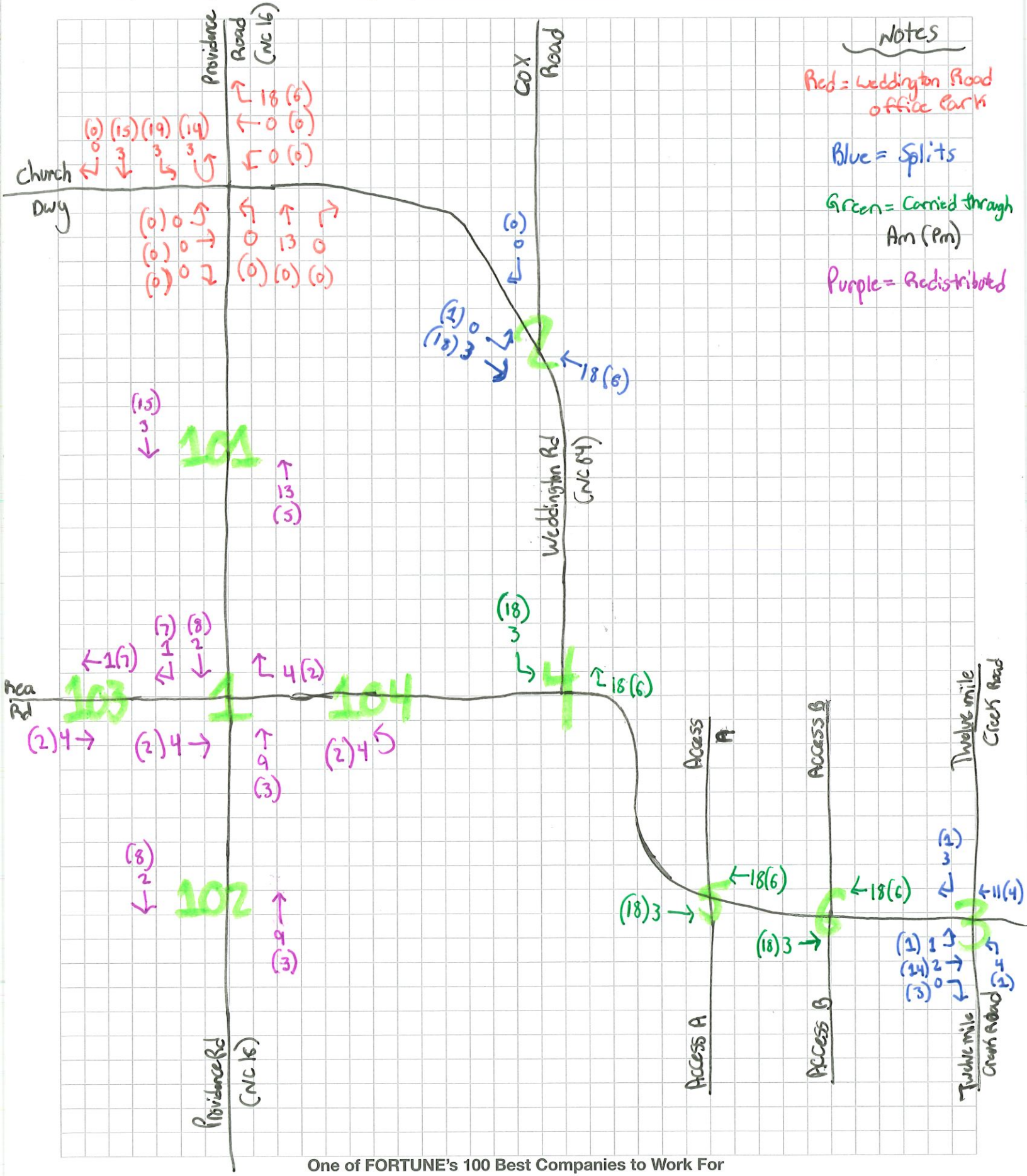
ITE does not provide weekday, midday peak hour traffic generation rates. The hourly breakdowns provided in ITE trip generation were applied to the PM peak-hour trip generation to determine midday peak-hour trip generation. It was assumed that midday trips would operate with the same in/out percentages as the PM peak-hour

Kimley»Horn

Expect More. Experience Better.

Job Deal Lake Subject (W STIPs) Weddington Road office Parks Sheet No. ____ of ____ Job No. ____

Designed By ____ Date ____ Checked By ____ Date ____



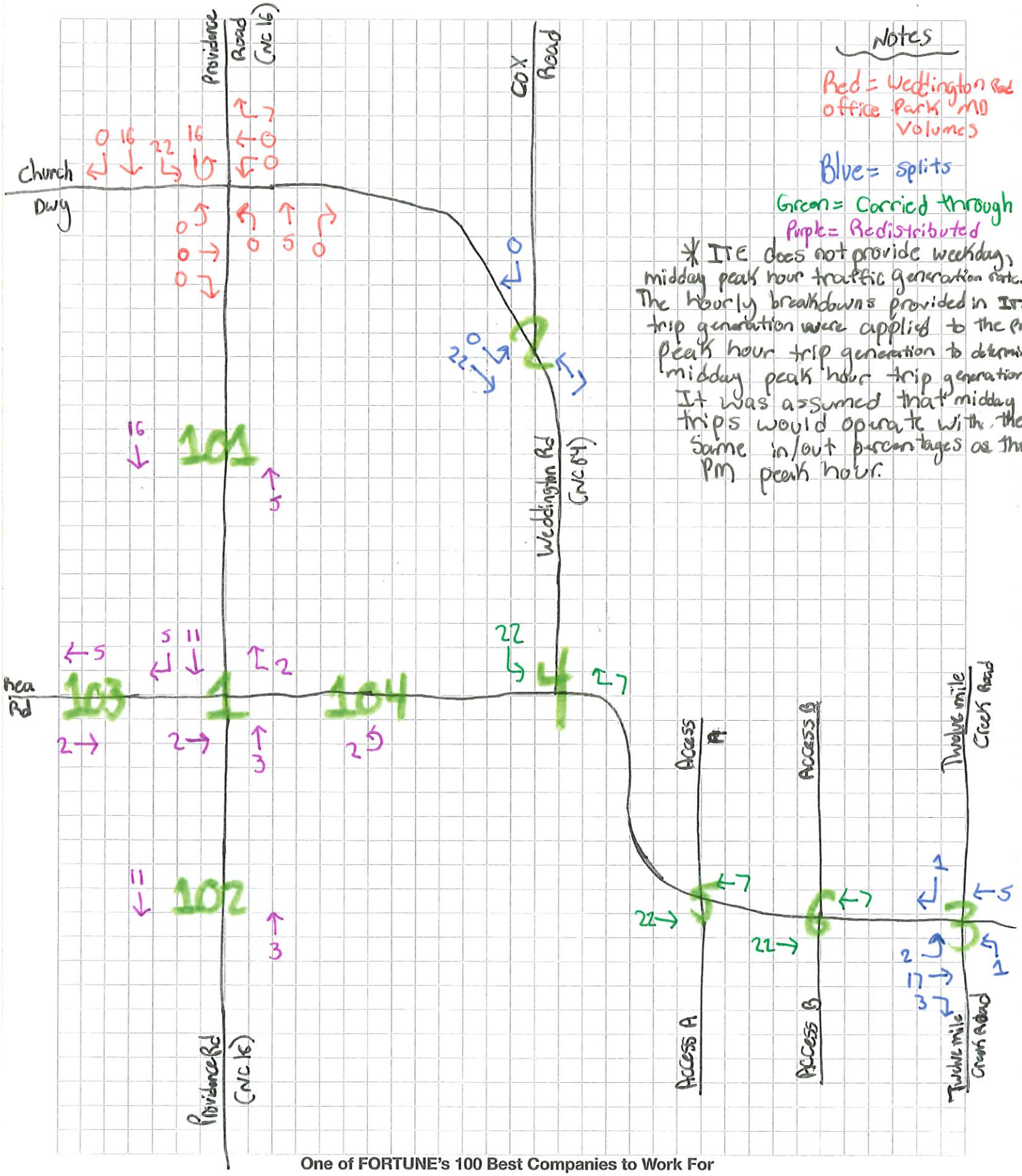
(MD w STIPS)

Kimley»Horn

Expect More. Experience Better.

Job Deal Lake Subject Weddington Road Office Park Sheet No. ____ of ____ Job No. ____

Designed By ____ Date ____ Checked By ____ Date ____



Notes

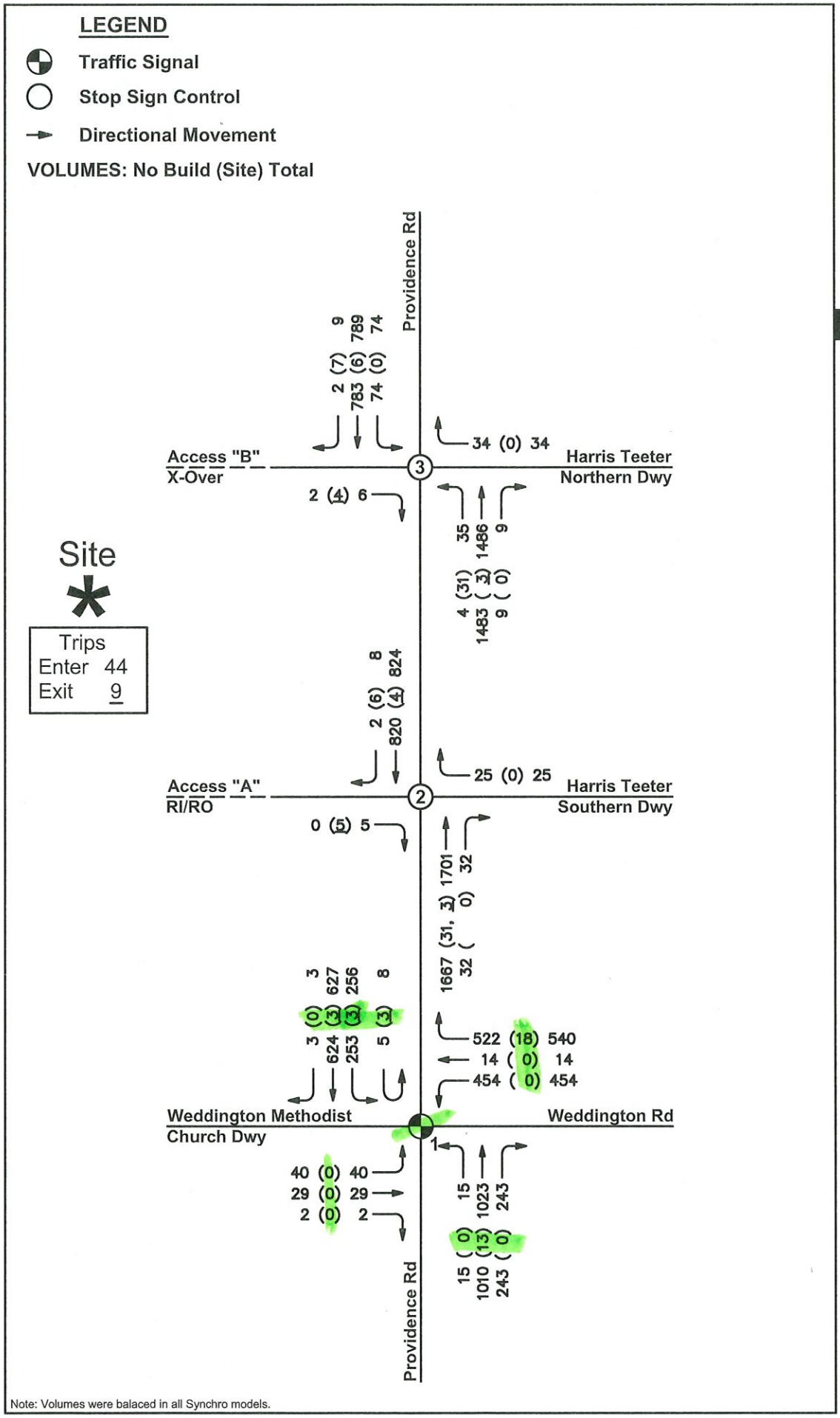
Red = Weddington Rd office Park MD Volumes

Blue = splits

Green = Carried through

Purple = Redistributed

* ITE does not provide weekday, midday peak hour traffic generation rates. The hourly breakdowns provided in ITE trip generation were applied to the PM peak hour trip generation to determine midday peak hour trip generation. It was assumed that midday trips would operate with the same in/out percentages as the PM peak hour.



Note: Volumes were balaced in all Synchro models.

DESIGN RESOURCE GROUP
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
TRANSPORTATION PLANNING
O 2459 Wilkinson Blvd, Ste 200 Charlotte, NC 28208
P 704.343.0608
W www.drgrp.com

WEDDINGTON ROAD OFFICE PARK TIA

WEDDINGTON, NC

POLIVKA INTERNATION
13700 PROVIDENCE ROAD SUITE 200
WEDDINGTON, NC 28104

2025 BUILD AM PEAK HOUR TRAFFIC VOLUMES

0 XX XX N

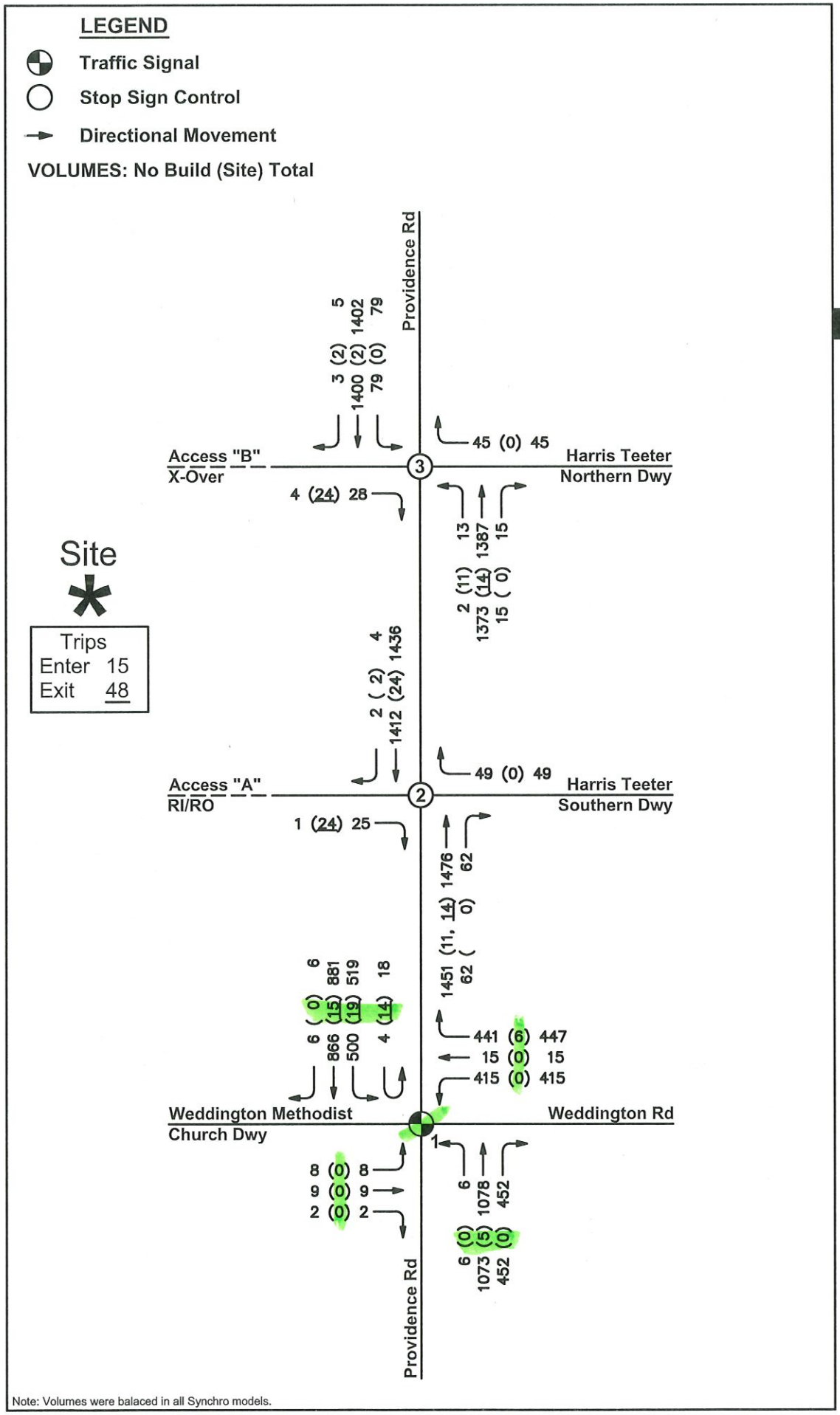
SCALE: NTS

PROJECT #: 1082-001
DRAWN BY: PAH
CHECKED BY: REG

FEBRUARY 2024

REVISIONS:
1. May 2024

Figure 5



Note: Volumes were balaced in all Synchro models.

DESIGN RESOURCE GROUP
LANDSCAPE ARCHITECTURE
CIVIL ENGINEERING
TRANSPORTATION PLANNING
O 2459 Wilkinson Blvd, Ste 200 Charlotte, NC 28208
P 704.343.0608
W www.drgrp.com

WEDDINGTON ROAD OFFICE PARK TIA

WEDDINGTON, NC

POLIVKA INTERNATION
13700 PROVIDENCE ROAD SUITE 200
WEDDINGTON, NC 28104

2025 BUILD PM PEAK HOUR TRAFFIC VOLUMES

0 XX XX N
SCALE: NTS

PROJECT #: 1082-001
DRAWN BY: PAH
CHECKED BY: REG

FEBRUARY 2024

REVISIONS:
1. May 2024

Figure 6

U-5769A Concept Plans

PROJECT REFERENCE NO.	SHEET NO.
U-5769	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
440 S Church St, Suite 1000 Charlotte, NC 28202
N.C.B.E.L.S. License Number: F-0116

NAD 83 NA 2011

2017 ADT / 2040 ADT (ADT IN 100's)	(–Y35–) REA RD SR 3116	
NC 16 (–L–)	240/464	261/465
	65/123	86/121
	xx/56	xx/59
	151/289	
	xxx/160	

NC 16 (–L–)

REVISIONS

PLOT DRIVER: PDF.pltcfg
USER: DATAYLOR
FILE: \

DATE: 8/23/2019
TIME: 12:26:11 PM
PENTABLE: NCDOT_pshpFl.tbl

MATCH LINE –L– STA 314+00 SEE SHEET 27

MATCH LINE –L– STA 328+00 SEE SHEET 29

–L–
PI Sta 312+75.85
Δ = 6° 57' 11.7" (LT)
D = 0° 42' 58.3"
L = 970.86'
T = 486.03'
R = 8,000.00'
e = NC
V = 50 MPH

PT Sta. 317+60.68

–Y34– POT Sta.10+00.00 =
–L– POC Sta. 316+30.90

POT Sta. 11+94.61

S 76° 24' 18.7" E

END CONSTRUCTION
–Y34– STA 10+85.00

–Y34–

UNION ELECTRIC MEMBERSHIP COORPORATION
DB 6696 PG 631
PC N PG 184

WILBERT & BETTY LOVE
DB 209 PG 83

JACQUELINE W. DANNER
DB 4785 PG 136
PC G PG 339

BARBARA & PATRICK D. HARRIGAN
DB 3002 PG 190
PC G PG 339

RAJENDRA & RENUKA PATEL
DB 5302 PG 743
PC G PG 194

GBENGA ALUKO
JOYCE ALUKO
DB 5468 PG 70
DB 4128 PG 273
PC 1PG 839

JOINT VENTURE
PROVIDENCE ROAD MARVIN WEDDINGTON
DB 584 PG 83

CHAMBERLEYNE WAY

PROPOSED PERMANENT UTILITY EASEMENT FOR U-3467 PROJECT

BEGIN PROPOSED RIGHT-OF-WAY FOR U-3467 PROJECT

PLANTED MEDIAN

4' CONC ISLAND

2'-6" CURB & GUTTER

5' SIDEWALK

45' R

100' R

40' R

52' R

5' R

50'

315+00

320+00

325+00

N 11° 35' 48.3" E

N 13° 16' 19.8" E

N 13° 45' 13.3" E

S 81° 39' 24.1" E

–Y35– 15+00

REA RD (SR 1316)

PROPOSED IMPROVEMENTS BY REA RD EXTENSION PROJECT (U-3467)

–L–
PI Sta 326+07.34
Δ = 0° 28' 53.5" (RT)
D = 0° 47' 36.9"
L = 60.68'
T = 30.34'
R = 7,220.00'
e = NC
V = 50 MPH

PT Sta. 326+37.67

END PROPOSED RIGHT-OF-WAY FOR U-3467 PROJECT

PC Sta. 319+39.30

PT Sta. 321+50.43

PC Sta. 325+70.00

END PROPOSED RIGHT-OF-WAY FOR U-3467 PROJECT

PC Sta. 19+93.69

HIGH POINT –L–
STA. 327+95.53 EL. 714.04
e = 0.02

–Y35– POT Sta.18+43.45 =
–L– POT Sta. 324+61.39

–L–
PI Sta 320+44.87
Δ = 1° 40' 31.6" (RT)
D = 0° 47' 36.9"
L = 211.13'
T = 105.57'
R = 7,220.00'
e = NC
V = 50 MPH

–Y35–
PI Sta 21+64.93
Δ = 16° 14' 32.2" (LT)
D = 4° 46' 28.7"
L = 340.18'
T = 171.24'
R = 1,200.00'

PT Sta. 23+33.87

SEE SHEET NO. 44 & 45 FOR –L– PROFILE
SEE SHEET NO. 53 FOR –Y34– PROFILE

PROJECT REFERENCE NO.	SHEET NO.
U-5769	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
440 S Church St, Suite 1000 Charlotte, NC 28202
N.C.B.E.L.S. License Number: F-0116

NAD 83 NA 2011

MATCH LINE –L– STA 328+00 SEE SHEET 28

PROVIDENCE ROAD MARVIN WEDDINGTON JOINT VENTURE DB 584 PG 83

PROPOSED PERMANENT UTILITY EASEMENT FOR U-3467 PROJECT

BEGIN PROPOSED RIGHT-OF-WAY FOR U-3467 PROJECT

END PROPOSED RIGHT-OF-WAY FOR U-3467 PROJECT

LOW POINT –L–
STA. 333+43.74 EL. 710.55
e = 0.02

2'-6" CURB & GUTTER

5' SIDEWALK

TO CHARLOTTE

PLANTED MEDIAN

4' CONC ISLAND

PLANTED MEDIAN

1'-6" CURB & GUTTER

5' SIDEWALK

2'-6" CURB & GUTTER

END PROJECT
U-5769
–L– STA 339+98.09

KENNETH HOWARD HEMBY ET EL
DB 110 PG 256
PC 1 PG 839

THE COPTIC ORTHODOX CHURCH OF ST. MARK, INC.
DB 5668 PG 200

MARK SHEPHERD
DB 5744 PG 640

SEE SHEET NO. 45 FOR –L– PROFILE

REVISIONS

PLOT DRIVER: PDF.pltcfg
USER: DATAYLOR
FILE: \

DATE: 8/23/2019
PENTABLE: NCDOT_pshpFi.tbl
TIME: 12:26:18 PM

U-3467 Concept Plans

NV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
P: 919.851.1912 www.NV5.com
NC License # P-1333
formerly CALYX Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
U-3467	4A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

REVISIONS

RIGHT OF WAY REVISION - 06/21/2019 - ADDED DRAINAGE UTILITY EASEMENT ON PARCELS 2 AND 113,MODIFIED CONSTRUCTION EASEMENT ON PARCEL 2,
ADDED PERMANENT UTILITY EASEMENT ON PARCELS 2,112 AND 113,REMOVED CONSTRUCTION EASEMENT ON PARCELS 112 & 113.
REMOVED PERMANENT DRAINAGE EASEMENT ON PARCEL 113.

DESIGN REVISION - 3/1/2019 - NC 16 INTERSECTION DESIGN REVISED IN COORDINATION WITH U-5769.

-L-
PI Sta 9+14.66
△ = 0° 33' 07.2" (RT)
D = 0° 34' 22.6"
L = 96.34'
T = 48.17'
R = 10,000.00'
SE = NC
V = 50 MPH

POT Sta. 0+00.00

BARBARA HUDSON COURTNEY
DB 5198 PG 37

JOE RICHARDSON & EDITH S HUDSON
DB 4556 PG 200

JOSEPH R HUDSON
DB 349 PG 664

HIGHCLERE COMMUNITY ASSOCIATION INC
DB 7222 PG 593
PB M PG 939

WILBERT & BETTY LOVE
DB 209 PG 83

BEGIN CONSTRUCTION TIP U-3467
-L- POT Sta. 1+70.00

-L- POT Sta. 10+00.00

S 82°12'31.4" E

S 81°39'24.1" E

MATCHLINE -L- STA. 10+50.00
SEE SHEET 4

CONC. SIDEWALK /MEDIAN
PAVED SHOULDER

NOTES:
SEE SHEET 31 FOR -L- PROFILE

REVISIONS		
RIGHT OF WAY REVISION – 07/06/2018 –	ADJUSTED PERMANENT UTILITY EASEMENT ON PARCELS 2,4 AND 5.	
RIGHT OF WAY REVISION – 01/30/2019 –	ADJUSTED CONSTRUCTION EASEMENT ON PARCELS 2,4 AND 5.	
RIGHT OF WAY REVISION – 01/30/2019 –	ADDED PERMANENT DRAINAGE EASEMENT ON PARCEL 2.	
RIGHT OF WAY REVISION – 01/30/2019 –	ADJUSTED CONSTRUCTION EASEMENT ON PARCEL 2.	
RIGHT OF WAY REVISION – 06/21/2019 –	ADDED ADDITIONAL PERMANENT UTILITY EASEMENT ON PARCELS 1,2,4,5 AND 11,4,ADDED DRAINAGE UTILITY EASEMENT ON PARCELS 2 AND 4,MODIFIED CONSTRUCTION EASEMENT ON PARCELS 2,4,AND 5 ADDED PARCEL 11,4,MODIFIED PERMANENT DRAINAGE EASEMENT ON PARCEL 2,ADDED NOTE 'NO CLAIM' ON PARCEL 3.	
DESIGN REVISION – 3/1/2019 –	NC 16 INTERSECTION DESIGN REVISED IN COORDINATION WITH U-5769.	

8/17/99

10/30/2020
R:\Roadway\Proj\U3467_Rdy_psh_04.dgn
brandonadams

NV5
NV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
P: 919.851.1912 www.NV5.com
NC License # P-1333
formerly CALYX Engineers & Consultants

PROJECT REFERENCE NO.	SHEET NO.
U-3467	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

-L-
PI Sta 21+64.93
Δ = 16°14' 32.2" (LT)
D = 4° 46' 28.7"
L = 340.18'
T = 171.24'
R = 1,200.00'
SE = NC
V = 50 MPH

-Y-
PI Sta 24+90.39
Δ = 1° 40' 31.6" (RT)
D = 0° 47' 36.9"
L = 211.13'
T = 105.57'
R = 7,220.00'
SE = NC
V = 50 MPH

-Y-
PI Sta 30+52.85
Δ = 0° 28' 53.5" (RT)
D = 0° 47' 36.9"
L = 60.68'
T = 30.34'
R = 7,220.00'
SE = NC
V = 50 MPH

MATCHLINE -Y- STA. 32+50.00
SEE SHEET 24

MATCHLINE -L- STA. 10+50.00
SEE SHEET 4A

MATCHLINE -L- STA 23+50.00
SEE SHEET 5

MATCHLINE -Y- STA. 23+00.00
SEE SHEET 23

-Y- PROVIDENCE RD
-Y- NC 16
N 13°45'13.3" E
N 13°16'24" E
N 11°35'48.3" E

-L- REA ROAD
S 81°39'24" E

-L- REA ROAD EXTENSION
S 75°54'48" E 320.73'

N 76°29'49" W 312.31'

-Y- PT Sta. 30+83.19
-Y- PC Sta. 30+22.51
-Y- PT Sta. 25+95.94
-Y- PC Sta. 19+93.69
-Y- PC Sta. 23+84.82
-L- PT Sta. 21+33.87
-L- PC Sta. 18+82.06

END CONSTRUCTION
-Y- POT Sta. 31+11.00

BEGIN CONSTRUCTION
-Y- POT Sta. 24+90.00

-Y- POT Sta. 29+06.90
-L- POT Sta. 18+43.45

1 PROVIDENCE ROAD MARVIN WEDDINGTON JOINT VENTURE DB 584 PG 83

2 WILBERT & BETTY LOVE DB 209 PG 83

3 NO CLAIM
UNION ELECTRIC MEMBERSHIP COORPORATION DB 6696 PG 637 PC N PG 184

4 KENNETH HOWARD HEMBY ET EL DB 110 PG 256 PC 1PG 839

5 GBENGA ALUKO JOYCE ALUKO DB 5468 PG 70 PC 1PG 839

6 MATTHEW ALLEN MILFORD DANA JEFFERS MILFORD DB 5478 PG 777 PC 1PG 839

114 GBENGA & JOYCE ALUKO DB 4128 PG 273 PC 1PG 839

RAJENDRA & RENUKA PATEL DB 5302 PG 743 PC G PG 194

TRAFFIC DIAGRAM

	-Y- NC 16	-L- SR 1316	-L-
ADT 2019 / ADT 2039	22,784 / 30,704	7,944 / 8,664	2,780 / 3,180
-L- SR 1316	18,488 / 23,928	5,328 / 9,968	4,380 / 6,780
-L-	21,800 / 35,600	12,376 / 15,256	-Y- NC 16

DETAIL 4-A
LATERAL 2' BASE DITCH W/RIPRAP
(Not to Scale)

Natural Ground, Fill Slope, Filter Fabric, 1½Ft., 2:1, d, D, B, b, W
Min. D=1 Ft.
Max. d=1.5 Ft.
B=2 Ft.
b=5 Ft.
*When B is < 6.0'
Type of Liner= CL-B Rip-Rap

FROM -L- STA. 23+20 TO STA. 24+00 RT
29 TONS CL-B RIP-RAP
W/62 SY GEOTEXTILE

EXISTING TRAFFIC SIGNAL
CONC. SIDEWALK /MEDIAN
PAVED SHOULDER

NOTES:
SEE SHEET 31 FOR -L- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
U-3467	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
P: 919.851.1912 www.NV5.com
NC License # P-1333
formerly CALYX Engineers & Consultants

REVISIONS

RIGHT OF WAY REVISION	-	07/06/2018
RIGHT OF WAY REVISION	-	07/06/2018
RIGHT OF WAY REVISION	-	07/06/2018
RIGHT OF WAY REVISION	-	10/26/2018
RIGHT OF WAY REVISION	-	06/21/2019

ADJUSTED PERMANENT UTILITY EASEMENT ON PARCELS 4,7 AND 8.
ADJUSTED DUAL UTILITY EASEMENT ON PARCEL 8.
ADJUSTED CONSTRUCTION EASEMENT ON PARCELS 6,7 AND 8.
ADJUSTED RIGHT OF WAY ON PARCEL 8.
ADJUSTED PERMANENT EASEMENT ON PARCEL 8, AND 9, MODIFIED CONSTRUCTION EASEMENT ON PARCEL 4,6,7 AND 9.
ADDED PERMANENT DRAINAGE EASEMENT ON PARCEL 8, MODIFIED PERMANENT UTILITY EASEMENT ON PARCEL 4 AND 7.
MODIFIED PERMANENT DRAINAGE EASEMENT ON PARCEL 8, MODIFIED PERMANENT UTILITY EASEMENT ON PARCEL 4 AND 7.

DESIGN REVISION - 3/1/2019 - NC 16 INTERSECTION DESIGN REVISED IN COORDINATION WITH U-5769.

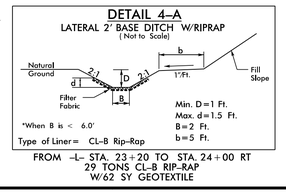
-L-
PI Sta 34+53.08
Δ = 52° 32' 30.4" (RT)
D = 4° 46' 28.7"
L = 1,100.43'
T = 592.32'
R = 1,200.00'
SE = 04
V = 50 MPH

NAD 83 NA 2011

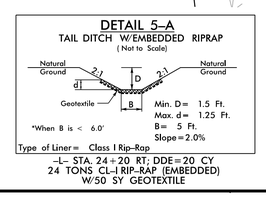
MARK SHEPHERD DB 5744 PG 640
BELLE MAR LLC DB 8226 PG 43
THE COPTIC ORTHODOX CHURCH OF ST. MARK, INC. DB 5668 PG 200
KENNETH HOWARD HEMBY ET EL DB 110 PG 256 PC 1PG 839
MARY N. KRATT ET EL DB 937 PG 388
MATTHEW ALLEN MILFORD DANA JEFFERS MILFORD DB 5478 PG 777 PC 1PG 839
JP MORGAN CHASE ACQUISITION CORP. DB 6525 PG 701 PC 1PG 838-840
BLACK DIAMOND HOMES, LLC. DB 6238 PG 681 PC 1PG 839
EDGE 5 REALTY INC DB 8293 PG 40 PB R PG 194

-L- REA ROAD EXTENSION
MATCHLINE -L- STA. 23+50.00 SEE SHEET 4
MATCHLINE -L- STA. 37+00.00 SEE SHEET 6
-L- PC Sta. 28+60.76

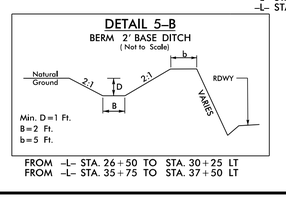
CB – DROP STRUCTURE 6.3' 1'-6" CURB & GUTTER
CB – DROP STRUCTURE 3.0'
CB – DROP STRUCTURE 1.2'
CB – DROP STRUCTURE 0.9'
JB W/MH – DROP STRUCTURE 7.4'
JB W/MH – DROP STRUCTURE 1.0'
2'-6" CURB & GUTTER
1'-6" CURB & GUTTER
5' CONC. SIDEWALK
15" RCP-IV
18" RCP-IV
18" CSP W/ELBOWS
36" TYP.
RETAIN
HEAD DITCH W/RIPRAP SEE DETAIL 5-D
BERM 2' BASE DITCH SEE DETAIL 5-B
TAIL DITCH SEE DETAIL 5-C DDE = 200 CY
LATERAL 2' BASE DITCH W/RIPRAP SEE DETAIL 4-A
TAIL DITCH W/ EMBEDDED RIPRAP SEE DETAIL 5-A
CL I RIP RAP 15 TONS 30 SY GEOTEXTILE
CL I RIP RAP 2 TONS 8 SY GEOTEXTILE
CL I RIP RAP (EMBEDDED) 4 TONS – SEE DETAIL 5-E 10 SY GEOTEXTILE
CL I RIP RAP (EMBEDDED) 33 TONS – SEE DETAIL 5-E 62 SY GEOTEXTILE
CL I RIP RAP (EMBEDDED) 15 TONS – SEE DETAIL 5-E 30 SY GEOTEXTILE
175' LANE SHIFT LT
175' TAPER
185' TAPER
50' TAPER
175' LANE SHIFT LT
175' TAPER
DDE = 200 CY



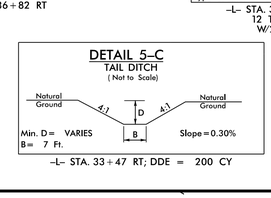
FROM –L– STA. 23+20 TO STA. 24+00 RT
29 TONS CL–B RIP–RAP
W/62 SY GEOTEXTILE



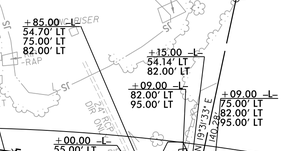
–L– STA. 24+20 RT; DDE=20 CY
24 TONS CL–I RIP–RAP (EMBEDDED)
W/50 SY GEOTEXTILE



FROM –L– STA. 26+50 TO STA. 30+25 LT
FROM –L– STA. 35+75 TO STA. 37+50 LT



–L– STA. 33+47 RT; DDE = 200 CY



–L– STA. 24+00 RT
–L– STA. 36+82 RT

–L– STA. 35+75 LT; DDE =30 CY
12 TONS CL–B RIP–RAP
W/26 SY GEOTEXTILE

CONCRETE SIDEWALK /MEDIAN

NOTES:
SEE SHEET 31 & 32 FOR –L– PROFILE

10/30/2023
R:\Projects\U3467_Rdy_psh_05.dgn
Graham Angsburg

NV5 ENGINEERS & CONSULTANTS, INC.	PROJECT REFERENCE NO.	SHEET NO.
3300 REGENCY PARKWAY, SUITE 100	U-3467	25
CARY, NC 27518	R/W SHEET NO.	
P: 919.851.1912 www.NV5.com	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NC License # P-1333 formerly CALYX Engineers & Consultants		

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

REVISIONS

8/17/99

RIGHT OF WAY REVISION - 07/06/2018 - ADJUSTED CONSTRUCTION EASEMENT ON PARCEL 16.

10/30/2023
K:\Roads\Proj\U3467_Rdy_psh_25.dgn
jrgrubaugh

MATCHLINE -Y1- STA. 15+50.00
SEE SHEET 10

95

15
SUGAR MAGNOLIA WEDDINGTON, LLC.
DB 5890 PG 414
PC L PG 458

N 76°59'40" E
773.33'

-Y1- PT Sta. 18+28.99

-Y1- PC Sta. 18+27.08

-Y1- PC Sta. 18+59.80

-Y1- PT Sta. 18+66.89

-Y1- POT Sta. 19+07.28

400' LANE SHIFT LT & RT

25' TAPER LT & RT

+25.00 -Y1- 45.00' LT 29.70' LT

+74.00 -Y1- 45.00' LT

+40.00 -Y1- 53.00' LT

SPECIAL CUT DITCH SEE DETAIL 10-A

(250) REMOVE

N 10° 17' 54.9" W

-Y1- EXIST NC 84

EXIST

EXISTING R/W

21' TYP.

+41.00

SPECIAL CUT DITCH SEE DETAIL 10-B

+52.00 -Y1- 57.00' RT

+48.00 -Y1- 64.00' RT

+81.00 -Y1- 45.00' RT

+25.00 -Y1- 45.00' RT 30.36' RT

END CONSTRUCTION
-Y1- POT STA. 18+25.00
N 10° 24' 29.9" W

N 10° 41' 09.5" W

-Y1- PT Sta. 18+79.83

-Y1- PC Sta. 18+77.59

N 10° 48' 52.6" W

RETAIN

EXIST TRANSF

SIGHT TRIANGLE

60' WD RAIL

FLAG POLE

STONE WALL W/ 36" HT. WALL

Union Power Cooperative Moncure

UNION COUNTY LINK SIZE/MAT.

UNION COUNTY LINK SIZE/MAT.

Piedmont Natural Gas Company Inc. 8PL

Union Power Cooperative Monroe

Communications Company

16
LAKE FOREST PRESERVE
HOMEOWNERS ASSOCIATION, INC.
DB 5261/PG 692
PC M PG 378

S 28°40'27" E 145.35'

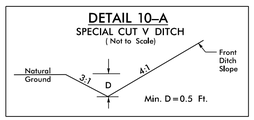
N 74°47'12" E 81.50'

S 84°37'00" E 80.60'

-Y1-

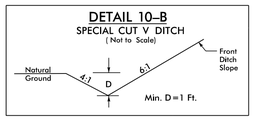
PI Sta 18+28.04	PI Sta 18+63.34	PI Sta 18+78.71
Δ = 0° 06' 35.0" (LT)	Δ = 0° 24' 22.6" (LT)	Δ = 0° 07' 43.1" (RT)
D = 5° 43' 46.5"	D = 5° 43' 46.5"	D = 5° 43' 46.5"
L = 1.92'	L = 7.09'	L = 2.25'
T = 0.96'	T = 3.55'	T = 1.12'
R = 1,000.00'	R = 1,000.00'	R = 1,000.00'
SE = EXIST	SE = EXIST	SE = EXIST
V = EXIST	V = EXIST	V = EXIST

DETAIL 10-A
SPECIAL CUT V DITCH
(Not to Scale)



FROM Y1 STA. 11+60 TO STA. 18+00 LT

DETAIL 10-B
SPECIAL CUT V DITCH
(Not to Scale)



FROM Y1 STA. 15+00 TO STA. 16+50 RT

PAVED SHOULDER

NOTES:
SEE SHEET 41 FOR -Y1- PROFILE

PROJECT REFERENCE NO.	SHEET NO.
U-3467	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
P: 919.851.1912 www.NV5.com
NC License # P-1333
formerly CALYX Engineers & Consultants

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99 DESIGN REVISION - 6-30-23 - REMOVED U-TURN BULB LEFT AT -L- STA.96+05.00 TO 98+98.00.

MATCHLINE -Y1- STA. 15+50.00 SEE SHEET 25

MATCHLINE -L- STA. 92+00.00 SEE SHEET 9

MATCHLINE -L- STA. 106+00.00 SEE SHEET 11

NAD 83/NA 2011

-Y1- PT Sta. 14+31.40

-Y1- PC Sta. 10+47.34
N 30° 59' 10.1" E

-Y1- POT Sta. 10+00.00
-L- POC Sta. 99+40.33

-L- PT Sta. 105+52.96
S 43° 45' 09.1" E

N 10° 17' 54.9" W

S 88°18'03" W 91.36'

S 0°56'23" E 193.47'

S 55°10'15" W 84.64'

S 26°45'55" W 26.82'

S 24°55'55" W 36.75'

-Y1- NC 84 WEDDINGTON ROAD

REA ROAD EXTENSION

EXIST NC 84

EXIST REA ROAD

EXIST ASPHALT DRIVE

EXIST GAZEBO

EXIST POOL AREA

EXIST POOL HOUSE

EXIST ABAND

EXIST W/L

EXIST OHP

EXIST CONCRETE PAD

EXIST COMMUNICATION CONC PADS

EXIST DRIVE

EXIST WOODS

EXIST BAR

RETAIN

HISTORIC PROPERTY

(11) IB DEVELOPMENT, LLC. DB 4358 PG 627

(15) SUGAR MAGNOLIA WEDDINGTON, LLC. DB 5890 PG 414 PC L PG 458

(17) JANICE G. PROPST DB 1484 PG 87 PC K PG 878

(18) ELIZABETH D. & RICHARD G. PROPST FAMILY LIMITED PARTNERSHIP DB 5224 PG 272 PC K PG 878

(19) ELIZABETH D.& RICHARD G. PROPST FAMILY LIMITED PARTNERSHIP DB 5224 PG 270 PC K PG 879

(20) THE DEAL FARM, LLC. DB 5904 PG 721

(21) ELIZABETH D. & RICHARD G. PROPST DB 4631PG 619 PC K PG 879

SPECIAL CUT DITCH SEE DETAIL 10-A
CL B RIP RAP 1 TONS 5 SY GEOTEXTILE
SPECIAL CUT DITCH SEE DETAIL 10-B
CL B RIP RAP 3 TONS 10 SY GEOTEXTILE
STANDARD 'V' DITCH SEE DETAIL 10-C DDE = 180 CY
REMOVE

100' TAPER
150' TAPER
100' MEDIAN TAPER
400' LANE SHIFT LT & RT

5' CONC. SIDEWALK & CURB & GUTTER
2'-6" CURB & GUTTER

-Y1-
PI Sta 12+48.14
Δ = 41° 17' 05.0" (LT)
D = 10° 44' 58.8"
L = 384.06'
T = 200.79'
R = 533.00'
SE = RC
* V = 40 MPH

-L-
PI Sta 98+94.39
Δ = 33° 49' 47.0" (RT)
D = 2° 29' 28.0"
L = 1,358.01'
T = 699.45'
R = 2,300.00'
SE = 03
V = 50 MPH

DETAIL 10-A
SPECIAL CUT V DITCH
(Not to Scale)
Natural Ground, 3:1, D, 4:1, Front Ditch Slope
Min. D=0.5 Ft.
FROM -Y1- STA. 11+60 TO STA. 18+00 LT
FROM -Y1- STA. 11+00 TO STA. 12+50 RT

DETAIL 10-B
SPECIAL CUT V DITCH
(Not to Scale)
Natural Ground, 4:1, D, 6:1, Front Ditch Slope
Min. D=1 Ft.
FROM -Y1- STA. 15+00 TO STA. 16+50 RT

DETAIL 10-C
STANDARD 'V' DITCH
(Not to Scale)
Natural Ground, 2:1, D, 2:1, Natural Ground
Min. D= 1 Ft.
FROM -L- STA. 100+00 TO STA. 101+28 LT

TRAFFIC DIAGRAM

	-L- REA ROAD	-Y1- EXIST NC 84	-L- EXIST 84
ADT 2019	12,376	10,332	22,012
ADT 2039	15,256	12,492	26,572
	348	9,984	
	588	11,904	

PROPOSED TRAFFIC SIGNAL
PAVEMENT REMOVAL
CONCRETE SIDEWALK /MEDIAN
PAVED SHOULDER
-HPB- HISTORIC PROPERTY BOUNDARY

NOTES:
SEE SHEET 34 FOR -L- PROFILE
SEE SHEET 41 FOR -Y1- PROFILE
*HORIZONTAL CURVE RADIUS BELOW DESIGN SPEED

10/30/2023
R:\Roadway\Plans\U3467_Rdy_psh_10.dgn
grandy.asbury

8/17/99

REVISIONS

NV5 ENGINEERS & CONSULTANTS, INC. 3300 REGENCY PARKWAY, SUITE 100 CARY, NC 27518 P: 919.851.1912 www.NV5.com NC License # P-1333 formerly CALYX Engineers & Consultants	PROJECT REFERENCE NO. U-3467	SHEET NO. 11
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

-L-
PI Sta 122+19.72
△ = 25° 49' 52.8" (LT)
D = 2° 30' 07.2"
L = 1,032.43'
T = 525.14'
R = 2,290.00'
SE = 03
V = 50 MPH

MATCHLINE -L- STA. 106+00.00 SEE SHEET 10

MATCHLINE -L- STA. 120+50.00 SEE SHEET 12

-L- PC Sta. 116+94.58

110

115

120

N 38°31'09" W 190.00'

N 49°03'16" E 258.00'

S 43°40'05.09" E

-L- NC 84 WEDDINGTON ROAD

N 63°49'32" W 317.25'

S 23°12'03" W 320.09'

S 23°12'03" W 132.33'

N 63°49'32" W 288.21'

S 63°37'39" E 184.23'

S 22°47'03" E 162.86'

(19) ELIZABETH D. & RICHARD G. PROPST FAMILY LIMITED PARTNERSHIP DB 5224 PG 270 PC K PG 879

(21) ELIZABETH D. & RICHARD G. PROPST DB 4631 PG 619 PC K PG 879

(20) THE DEAL FARM, LLC. DB 5904 PG 721

HISTORIC PROPERTY

(22) MAHMMUD K. & MELANIE KIRDASI DB 3520 PG 465 PC E PG 335

ROBERT SCHMIDT FIORELLA SCHMIDT DB 3520 PG 465 PC E PG 335

(23) STEVE ESPOSITO LESLIE ESPOSITO DB 6217 PG 309 PC G PG 88

+35.00 -L- 95.00' LT 75.00' LT

36' TYP

+85.00 -L- 95.00' LT 75.00' LT

+4.03 26.66'

5' CONC. SIDEWALK 2'-6" CURB & GUTTER

2'-9" CURB & GUTTER

EXISTING R/W

24" RCP-IV

2'-6" CURB & GUTTER

5' CONC. SIDEWALK

1'-6" CURB & GUTTER

1'-6" CURB & GUTTER

15" RCP-IV

24" RCP-IV

1103 1104 1105 1106 1107 1108 1110 1111 1112 1113 1114 1115 1116 1117 1118 1119

1102 15" 24" RCP-III

+50.00 -L- 75.00' LT

+92.00 -L- 63.00' LT

+14.90 -L- 79.00' RT

REMOVE

+74.00 -L- 120.00' RT 97.64' RT

+10.00 -L- 120.00' RT 96.34' RT

+20.00 -L- 110.00' RT 98.57' RT

+40.00 -L- 110.00' RT 98.98' RT

CL B RIP RAP 5 TONS 14 SY GEOTEXTILE

+54.00 -L- 94.00' LT

+36.00 -L- 103.00' LT

+14.87 -L- 63.00' LT

+08.00 -L- 50.00' LT

+44.00 -L- 76.00' LT

+71.24 -L- 62.00' LT

+94.58 -L- 50.00' LT

+55.00 -L- 126.00' RT 101.27' RT

+50.58

+04.00 -L- 126.00' RT 99.04' RT

RETAIN

+14.14 -L- 62.00' LT

+19.00 -L- 50.00' LT

+03.00 -L- 89.00' LT

+23.00 -L- 96.00' LT

+33.00 -L- 70.00' LT

+35.56 26.41'

+31.75 83.80'

+15.00 94.00' RT

+33.55 62.00' RT

+02.00 114.00' RT

+50.00 -L- 120.00' RT 81.00' RT 62.00' RT

+38.00 -L- 96.00' RT 80.82' RT

+70.00 -L- 92.00' RT

+80.00 -L- 122.00' RT

PUE

EIR

ISBKD

2SBKD

2SFD

BRICK

STONE

WINE POST

BRICK WALL

STONE WALL

ARV/ BACKFLOW PREVENTER

SIZE TYP.

UNK

60"WW

ISBW

HPB

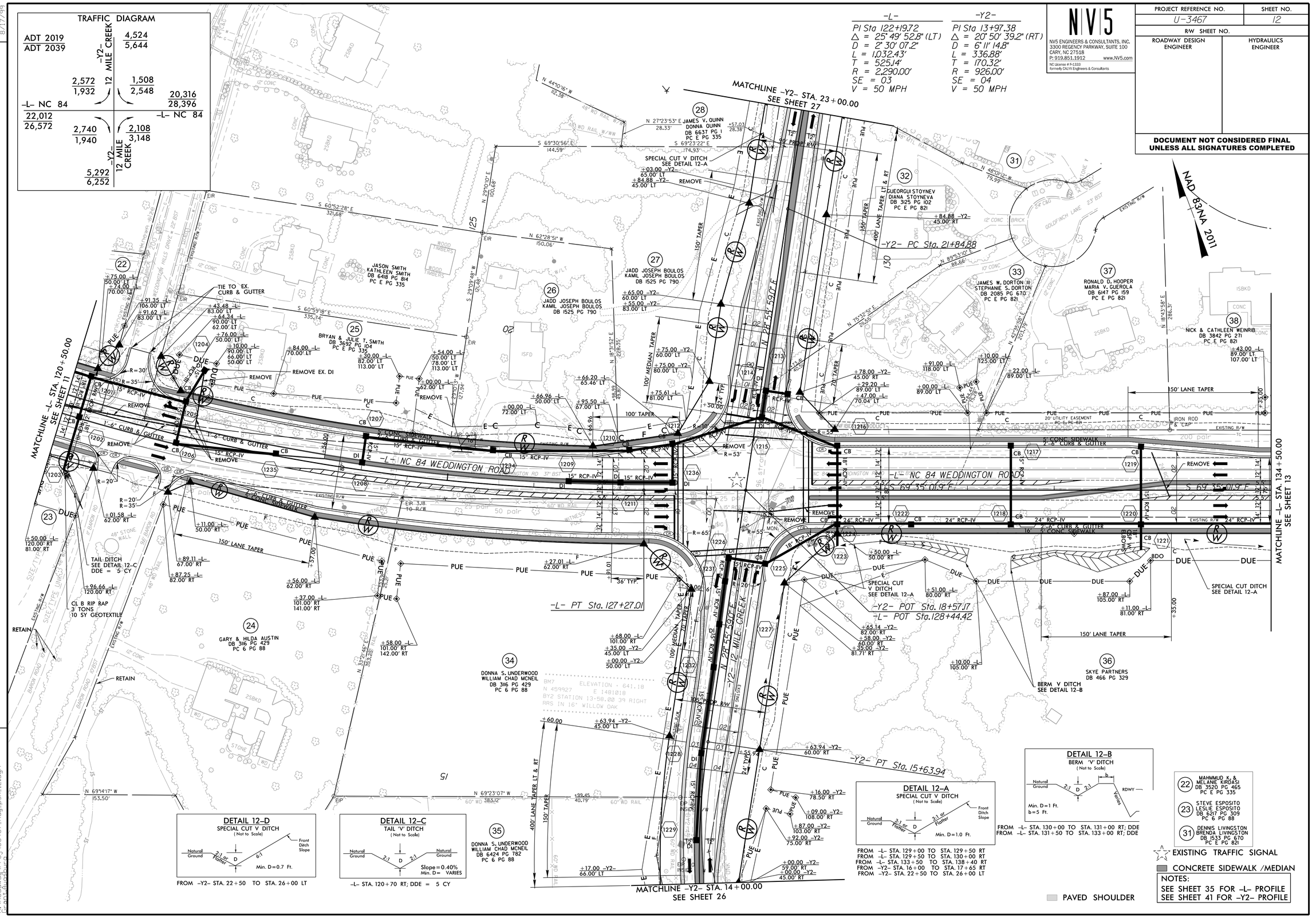
PAVEMENT REMOVAL

-HPB- HISTORIC PROPERTY BOUNDARY

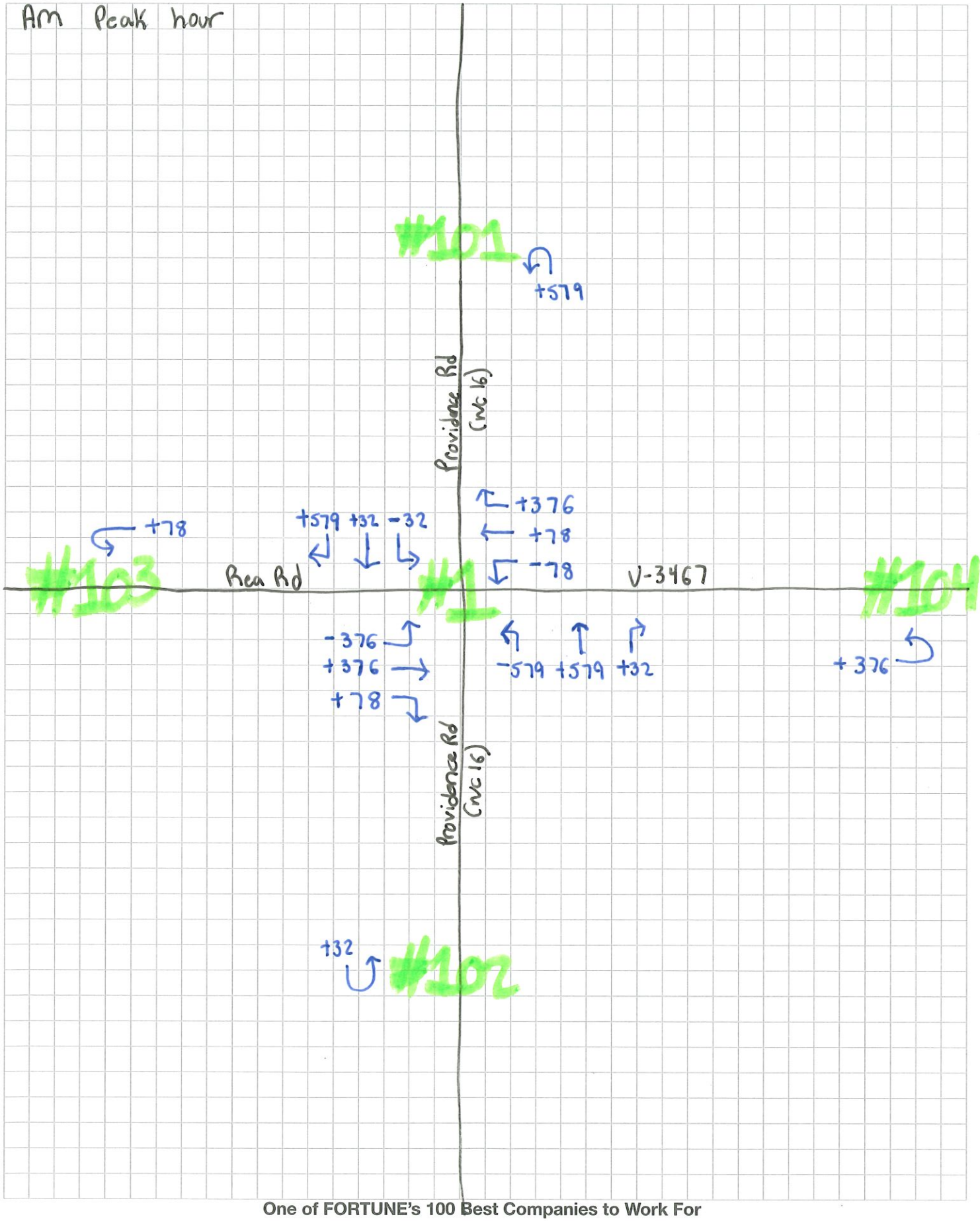
CONCRETE SIDEWALK

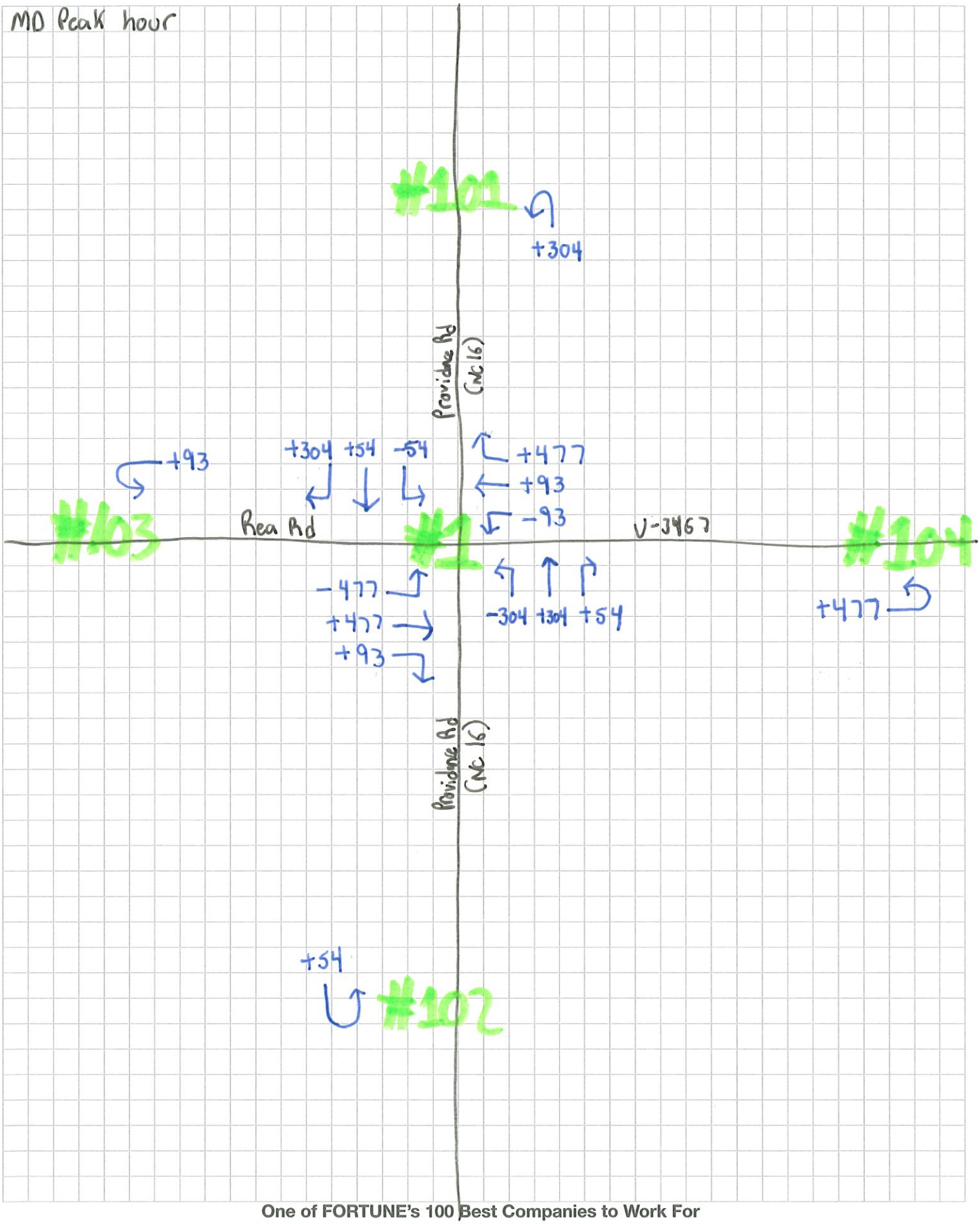
NOTES:
SEE SHEET 34 & 35 FOR -L- PROFILE

10/10/2023
H:\Roadway\Proj\U3467_Rdy.psh_11.dgn
gpatterson


TRAFFIC DIAGRAM
ADT 2019
ADT 2039
-Y2- 12 MILE CREEK
4,524
5,644
2,572
1,932
1,508
2,548
-L- NC 84
20,316
28,396
-L- NC 84
22,012
26,572
2,740
1,940
2,108
3,148
-Y2- 12 MILE CREEK
5,292
6,252
-L-
PI Sta 122+19.72
Δ = 25° 49' 52.8" (LT)
D = 2° 30' 07.2"
L = 1,032.43'
T = 525.14'
R = 2,290.00'
SE = 03
V = 50 MPH
-Y2-
PI Sta 13+97.38
Δ = 20° 50' 39.2" (RT)
D = 6° 11' 14.8"
L = 336.88'
T = 170.32'
R = 926.00'
SE = 04
V = 50 MPH
NV5
NV5 ENGINEERS & CONSULTANTS, INC.
3300 REGENCY PARKWAY, SUITE 100
CARY, NC 27518
P: 919.851.1912 www.NV5.com
NC License # P-1333
formerly CALYX Engineers & Consultants
PROJECT REFERENCE NO.
U-3467
SHEET NO.
12
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83/NA 2011
REVISIONS
DESIGN REVISION - 6-30-23 - REMOVED U-TURN BULBS LEFT AT -L- STA.125+22.00 TO 128+19.00
8/17/99
MATCHLINE -L- STA. 120+50.00 SEE SHEET 11
MATCHLINE -Y2- STA. 23+00.00 SEE SHEET 27
MATCHLINE -L- STA. 134+50.00 SEE SHEET 13
MATCHLINE -Y2- STA. 14+00.00 SEE SHEET 26
-L- NC 84 WEDDINGTON ROAD
-Y2- 12 MILE CREEK
-L- PT Sta. 127+27.01
-Y2- PC Sta. 21+84.88
-Y2- POT Sta. 18+57.17
-L- POT Sta. 128+44.42
-Y2- PT Sta. 15+63.94
JAMES V. QUINN DONNA QUINN DB 6637 PG 1 PC E PG 335
JASON SMITH KATHLEEN SMITH DB 6418 PG 814 PC E PG 335
JADD JOSEPH BOULOS KAMIL JOSEPH BOULOS DB 1525 PG 790
BRYAN & JULIE T. SMITH DB 3693 PG 104 PC E PG 335
GUEORGUI STOYNEV & DIANA STOYNEVA DB 3125 PG 102 PC E PG 821
JAMES W. DORTON III STEPHANIE S. DORTON DB 2085 PG 670 PC E PG 821
RONALD D. HOOPER MARIA V. GUEROLA DB 6147 PG 159 PC E PG 821
NICK & CATHLEEN WEINRIB DB 3842 PG 271 PC E PG 821
GARY & HILDA AUSTIN DB 3116 PG 429 PC 6 PG 88
DONNA S. UNDERWOOD WILLIAM CHAD MCNEIL DB 3116 PG 429 PC 6 PG 88
DONNA S. UNDERWOOD WILLIAM CHAD MCNEIL DB 6424 PG 782 PC 6 PG 88
SKYE PARTNERS DB 466 PG 329
DETAIL 12-A SPECIAL CUT V DITCH (Not to Scale)
DETAIL 12-B BERM "V" DITCH (Not to Scale)
DETAIL 12-C TAIL "V" DITCH (Not to Scale)
DETAIL 12-D SPECIAL CUT V DITCH (Not to Scale)
FROM -L- STA. 130+00 TO STA. 131+00 RT; DDE
FROM -L- STA. 131+50 TO STA. 133+00 RT; DDE
FROM -L- STA. 129+00 TO STA. 129+50 RT
FROM -L- STA. 129+50 TO STA. 130+00 RT
FROM -L- STA. 133+50 TO STA. 138+40 RT
FROM -Y2- STA. 16+00 TO STA. 17+65 RT
FROM -Y2- STA. 22+50 TO STA. 26+00 LT
-L- STA. 120+70 RT; DDE = 5 CY
FROM -Y2- STA. 22+50 TO STA. 26+00 LT
CL B RIP RAP 3 TONS 10 SY GEOTEXTILE
TAIL DITCH SEE DETAIL 12-C DDE = 5 CY
SPECIAL CUT V DITCH SEE DETAIL 12-A
BERM V DITCH SEE DETAIL 12-B
EXISTING TRAFFIC SIGNAL
CONCRETE SIDEWALK /MEDIAN
PAVED SHOULDER
NOTES:
SEE SHEET 35 FOR -L- PROFILE
SEE SHEET 41 FOR -Y2- PROFILE
10/30/2023
R:\Roadway\Projects\U3467_Rdy_psh_12.dgn
Grant.Alsbury

Redistribution Calculations

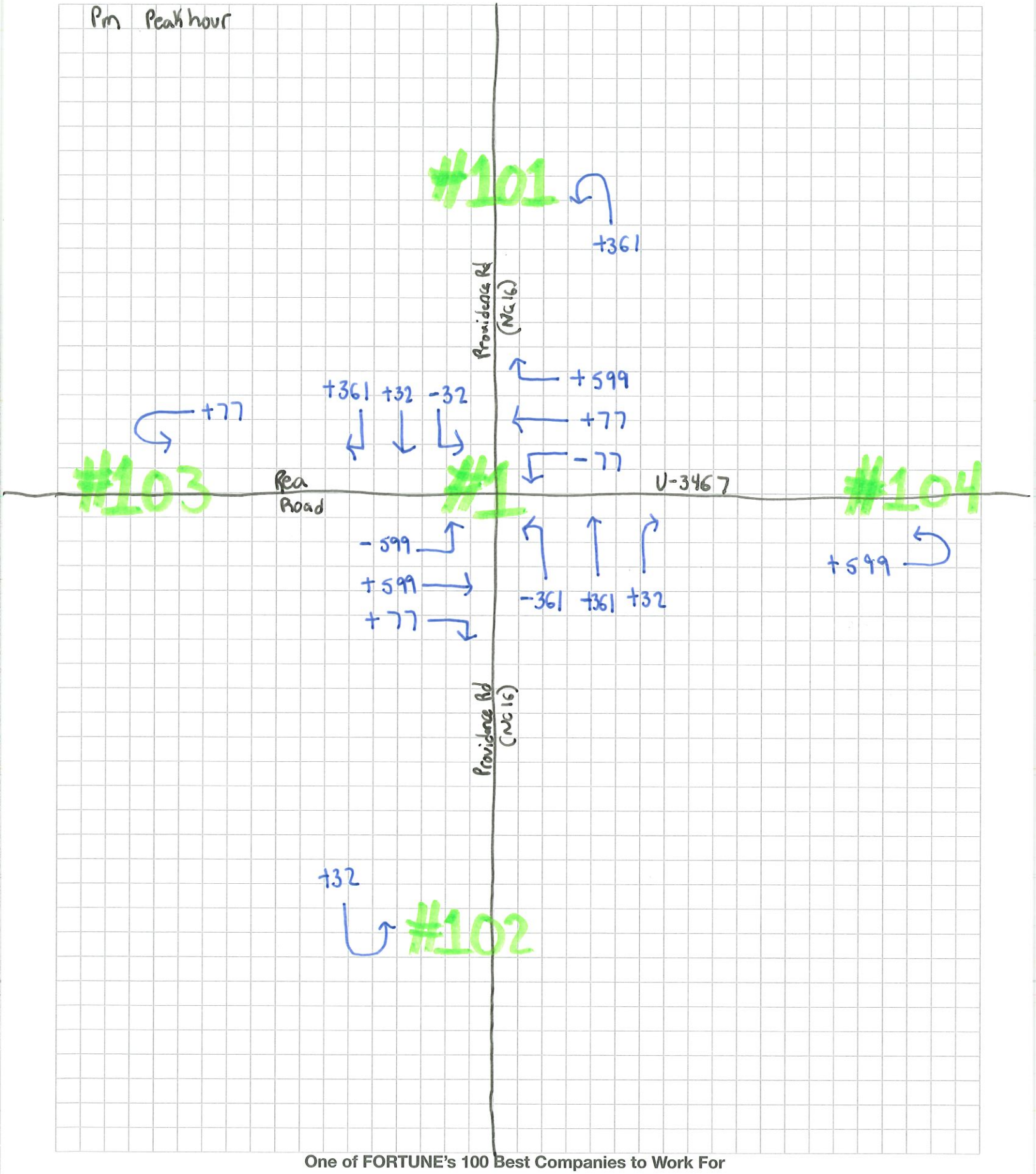

Am Peak hour
#101
+579
Providence Rd (WC 16)
+376
+78
-78
+579 +32 -32
+78
#103
Rea Rd
#1
V-3467
#104
-376
+376
+78
-579 +579 +32
+376
Providence Rd (WC 16)
+32
#102


MD Peak hour
#101
+304
Providence Rd (NC 16)
+304 +54 -54
+477
+93
-93
+93
#103
Rea Rd
#1
US-3467
#104
-477
+477
+93
-304 +304 +54
+477
+54
#102
Providence Rd (NC 16)

Kimley»Horn
Expect More. Experience Better.

Job Deal Lake Subject Redistribution Sheet No. ___ of ___

Designed By ___ Date ___ Checked By ___ Date ___ Job No. ___



Intersection Volume Development

INTERSECTION VOLUME DEVELOPMENT

S Providence Road (NC 16) and Rea Road/U-3467
AM PEAK HOUR

Description	S Providence Road (NC 16) Northbound				S Providence Road (NC 16) Southbound				Rea Road Eastbound				U-3467 Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Observed Volumes	375	947	0	0	0	447	322	0	344	0	199	0	0	0	0	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	375	947	0	0	0	447	322	0	344	0	199	0	0	0	0	0
2024 Existng PHF	0.92	0.91	0.90	0.90	0.90	0.76	0.86	0.90	0.86	0.90	0.74	0.90	0.90	0.90	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Future Heavy Vehicle %	2%	2%	2%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	579	1,130	76	0	32	1,126	599	0	376	164	361	0	78	268	32	0
Redistribution	-579	579	32	0	-32	32	579	0	-376	376	78	0	-78	78	376	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	1,709	108	0	0	1,158	1,178	0	0	540	439	0	0	346	408	0
2029 Background Traffic (No AD) w/o STIP	414	1,046	0	0	0	494	356	0	380	0	220	0	0	0	0	0
Providence and Rea	0	2	7	0	0	10	3	0	0	5	4	0	0	1	6	0
Weddington Road Office Park	0	9	0	0	0	2	1	0	0	4	0	0	0	0	4	0
Approved Development Trips w STIP	0	11	7	0	0	12	4	0	0	9	4	0	0	1	10	0
2029 Background Traffic w Redistribution w STIP	0	1,720	115	0	0	1,170	1,182	0	0	549	443	0	0	347	418	0
Providence and Rea	1	1	0	0	0	3	2	0	4	0	4	1	0	0	0	0
Weddington Road Office Park	0	9	0	0	0	2	1	0	4	0	0	0	0	0	0	0
Approved Development Trips w/o STIP	1	10	0	0	0	5	3	0	8	0	4	1	0	0	0	0
2029 Background Traffic w/o STIP	415	1,056	0	0	0	499	359	0	388	0	224	1	0	0	0	0
Percent Inbound Assignment	0%	0%	20%	0%	0%	10%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	30%	10%	0%
Project Trips w STIP	0	0	4	0	0	2	0	0	0	3	5	0	0	15	5	0
Percent Inbound Assignment	0%	10%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	10%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Project Trips w/o STIP	0	2	0	0	0	5	10	0	3	0	0	0	0	0	0	0
2029 Buildout Total w STIP	0	1,720	119	0	0	1,172	1,182	0	0	552	448	0	0	362	423	0
2029 Buildout Total w/o STIP	415	1,058	0	0	0	504	369	0	391	0	224	1	0	0	0	0

MIDDAY PEAK HOUR

Description	S Providence Road (NC 16) Northbound				S Providence Road (NC 16) Southbound				Rea Road Eastbound				U-3467 Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Observed Volumes	234	702	0	0	0	718	339	0	488	0	362	0	0	0	0	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	234	702	0	0	0	718	339	0	488	0	362	0	0	0	0	0
2024 Existng PHF	0.85	0.95	0.90	0.90	0.90	0.96	0.91	0.90	0.88	0.90	0.85	0.90	0.90	0.90	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	2%	3%	2%	2%	2%	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Future Heavy Vehicle %	2%	3%	2%	2%	2%	2%	3%	2%	2%	2%	3%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	304	901	128	0	54	921	332	0	477	353	470	0	93	256	39	0
Redistribution	-304	304	54	0	-54	54	304	0	-477	477	93	0	-93	93	477	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	1,205	182	0	0	975	636	0	0	830	563	0	0	349	516	0
2029 Background Traffic (No AD) w/o STIP	258	775	0	0	0	793	374	0	539	0	400	0	0	0	0	0
Providence and Rea	0	6	3	0	0	5	4	0	0	6	3	0	0	3	9	0
Weddington Road Office Park	0	3	0	0	0	11	5	0	0	2	0	0	0	0	2	0
Approved Development Trips w STIP	0	9	3	0	0	16	9	0	0	8	3	0	0	3	11	0
2029 Background Traffic w Redistribution w STIP	0	1,214	185	0	0	991	645	0	0	838	566	0	0	352	527	0
Providence and Rea	3	3	0	0	0	2	1	0	3	0	3	3	0	0	0	0
Weddington Road Office Park	0	3	0	0	0	11	5	0	2	0	0	0	0	0	0	0
Approved Development Trips w/o STIP	3	6	0	0	0	13	6	0	5	0	3	3	0	0	0	0
2029 Background Traffic w/o STIP	261	781	0	0	0	806	380	0	544	0	403	3	0	0	0	0
Percent Inbound Assignment	0%	0%	20%	0%	0%	10%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	30%	10%	0%
Project Trips w STIP	0	0	9	0	0	5	0	0	0	9	3	0	0	8	3	0
Percent Inbound Assignment	0%	10%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	10%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Project Trips w/o STIP	0	5	0	0	0	3	5	0	9	0	0	0	0	0	0	0
2029 Buildout Total w STIP	0	1,214	194	0	0	996	645	0	0	847	569	0	0	360	530	0
2029 Buildout Total w/o STIP	261	786	0	0	0	809	385	0	553	0	403	3	0	0	0	0

PM PEAK HOUR

Description	S Providence Road (NC 16) Northbound				S Providence Road (NC 16) Southbound				Rea Road Eastbound				U-3467 Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Observed Volumes	203	779	0	0	0	645	544	0	575	0	371	0	0	0	0	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	203	779	0	0	0	645	544	0	575	0	371	0	0	0	0	0
2024 Existng PHF	0.86	0.96	0.90	0.90	0.90	0.94	0.89	0.90	0.94	0.90	0.87	0.90	0.90	0.90	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	361	1,126	78	0	32	1,130	376	0	599	268	579	0	77	164	32	0
Redistribution	-361	361	32	0	-32	32	361	0	-599	599	77	0	-77	77	599	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	1,487	110	0	0	1,162	737	0	0	867	656	0	0	241	631	0
2029 Background Traffic (No AD) w/o STIP	224	860	0	0	0	712	601	0	635	0	410	0	0	0	0	0
Providence and Rea	0	8	4	0	0	6	5	0	0	7	3	0	0	4	10	0
Weddington Road Office Park	0	3	0	0	0	8	7	0	0	2	0	0	0	0	2	0
Approved Development Trips w STIP	0	11	4	0	0	14	12	0	0	9	3	0	0	4	12	0
2029 Background Traffic w Redistribution w STIP	0	1,498	114	0	0	1,176	749	0	0	876	659	0	0	245	643	0
Providence and Rea	4	4	0	0	0	2	1	0	3	0	3	4	0	0	0	0
Weddington Road Office Park	0	3	0	0	0	8	7	0	2	0	0	0	0	0	0	0
Approved Development Trips w/o STIP	4	7	0	0	0	10	8	0	5	0	3	4	0	0	0	0
2029 Background Traffic w/o STIP	228	867	0	0	0	722	609	0	640	0	413	4	0	0	0	0
Percent Inbound Assignment	0%	0%	20%	0%	0%	10%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	0%	0%	30%	10%	0%
Project Trips w STIP	0	0	10	0	0	5	0	0	0	11	3	0	0	9	3	0
Percent Inbound Assignment	0%	10%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	10%	20%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Project Trips w/o STIP	0	5	0	0	0	3	6	0	11	0	0	0	0	0	0	0
2029 Buildout Total w STIP	0	1,498	124	0	0	1,181	749	0	0	887	662	0	0	254	646	0
2029 Buildout Total w/o STIP	228	872	0	0	0	725	615	0	651	0	413	4	0	0	0	0

INTERSECTION VOLUME DEVELOPMENT

Cox Road and Weddington Road (NC 84)
AM PEAK HOUR

Description	Cox Road Northbound Left	Through	Right	U-turn	Cox Road Southbound Left	Through	Right	U-turn	Weddington Road (NC 84) Eastbound Left	Through	Right	U-turn	Weddington Road (NC 84) Westbound Left	Through	Right	U-turn
Observed Volumes	0	0	0	0	120	0	8	0	8	390	0	0	0	710	106	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	0	0	0	0	120	0	8	0	8	390	0	0	0	710	106	0
2024 Existng PHF	0.90	0.90	0.90	0.90	0.79	0.90	0.50	0.90	0.67	0.84	0.90	0.90	0.90	0.81	0.78	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	2%	2%	2%	2%	3%	2%	38%	2%	13%	2%	2%	2%	2%	2%	2%	2%
Future Heavy Vehicle %	2%	2%	2%	2%	3%	2%	38%	2%	13%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #2	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	67	0	26	0	10	595	0	0	0	746	32	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	67	0	26	0	10	595	0	0	0	746	32	0
2029 Background Traffic (No AD) w/o STIP	0	0	0	0	132	0	9	0	9	431	0	0	0	784	117	0
Providence and Rea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	3	0	0	0	18	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	3	0	0	0	18	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	67	0	26	0	10	598	0	0	0	764	32	0
Providence and Rea	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	3	0	0	0	18	0	0
Approved Development Trips w/o STIP	0	0	0	0	0	0	0	0	0	10	0	0	0	20	0	0
2029 Background Traffic w/o STIP	0	0	0	0	132	0	9	0	9	441	0	0	0	804	117	0
Percent Inbound Assignment	0%	0%	0%	0%	5%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	5%	0%
Project Trips w STIP	0	0	0	0	1	0	0	0	0	3	0	0	0	10	3	0
Percent Inbound Assignment	0%	0%	0%	0%	5%	0%	0%	0%	0%	60%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	60%	5%	0%
Project Trips w/o STIP	0	0	0	0	1	0	0	0	0	10	0	0	0	29	2	0
2029 Buildout Total w STIP	0	0	0	0	68	0	26	0	10	601	0	0	0	774	35	0
2029 Buildout Total w/o STIP	0	0	0	0	133	0	9	0	9	451	0	0	0	833	119	0

MIDDAY PEAK HOUR

Description	Cox Road Northbound Left	Through	Right	U-turn	Cox Road Southbound Left	Through	Right	U-turn	Weddington Road (NC 84) Eastbound Left	Through	Right	U-turn	Weddington Road (NC 84) Westbound Left	Through	Right	U-turn
Observed Volumes	0	0	0	0	45	0	6	0	15	799	0	0	0	508	93	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	0	0	0	0	45	0	6	0	15	799	0	0	0	508	93	0
2024 Existng PHF	0.90	0.90	0.90	0.90	0.66	0.90	0.38	0.90	0.63	0.91	0.90	0.90	0.90	0.81	0.55	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%	2%	5%	3%	2%
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	7%	2%	2%	2%	2%	5%	3%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #2	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	65	0	7	0	19	738	0	0	0	469	134	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	65	0	7	0	19	738	0	0	0	469	134	0
2029 Background Traffic (No AD) w/o STIP	0	0	0	0	50	0	7	0	17	882	0	0	0	561	103	0
Providence and Rea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	22	0	0	0	7	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	22	0	0	0	7	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	65	0	7	0	19	760	0	0	0	476	134	0
Providence and Rea	0	0	0	0	0	0	0	0	0	3	0	0	0	6	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	22	0	0	0	7	0	0
Approved Development Trips w/o STIP	0	0	0	0	0	0	0	0	0	25	0	0	0	13	0	0
2029 Background Traffic w/o STIP	0	0	0	0	50	0	7	0	17	907	0	0	0	574	103	0
Percent Inbound Assignment	0%	0%	0%	0%	5%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	5%	0%
Project Trips w STIP	0	0	0	0	2	0	0	0	0	9	0	0	0	5	2	0
Percent Inbound Assignment	0%	0%	0%	0%	5%	0%	0%	0%	0%	60%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	60%	5%	0%
Project Trips w/o STIP	0	0	0	0	2	0	0	0	0	28	0	0	0	16	1	0
2029 Buildout Total w STIP	0	0	0	0	67	0	7	0	19	769	0	0	0	481	136	0
2029 Buildout Total w/o STIP	0	0	0	0	52	0	7	0	17	935	0	0	0	590	104	0

PM PEAK HOUR

Description	Cox Road Northbound Left	Through	Right	U-turn	Cox Road Southbound Left	Through	Right	U-turn	Weddington Road (NC 84) Eastbound Left	Through	Right	U-turn	Weddington Road (NC 84) Westbound Left	Through	Right	U-turn
Observed Volumes	0	0	0	0	58	0	12	0	22	809	0	0	0	557	39	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	0	0	0	0	58	0	12	0	22	809	0	0	0	557	39	0
2024 Existng PHF	0.90	0.90	0.90	0.90	0.73	0.90	0.60	0.90	0.69	0.94	0.90	0.90	0.90	0.87	0.75	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	2%	2%	2%	2%	3%	2%	8%	2%	2%	2%	2%	2%	2%	4%	2%	2%
Future Heavy Vehicle %	2%	2%	2%	2%	3%	2%	8%	2%	2%	2%	2%	2%	2%	4%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #2	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	31	0	11	0	29	745	0	0	0	596	64	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	31	0	11	0	29	745	0	0	0	596	64	0
2029 Background Traffic (No AD) w/o STIP	0	0	0	0	64	0	13	0	24	893	0	0	0	615	43	0
Providence and Rea	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	1	18	0	0	0	6	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	1	18	0	0	0	6	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	31	0	11	0	30	763	0	0	0	602	64	0
Providence and Rea	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	1	18	0	0	0	6	0	0
Approved Development Trips w/o STIP	0	0	0	0	0	0	0	0	1	22	0	0	0	13	0	0
2029 Background Traffic w/o STIP	0	0	0	0	64	0	13	0	25	915	0	0	0	628	43	0
Percent Inbound Assignment	0%	0%	0%	0%	5%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	5%	0%
Project Trips w STIP	0	0	0	0	2	0	0	0	0	11	0	0	0	6	3	0
Percent Inbound Assignment	0%	0%	0%	0%	5%	0%	0%	0%	0%	60%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	60%	5%	0%
Project Trips w/o STIP	0	0	0	0	3	0	0	0	0	33	0	0	0	18	2	0
2029 Buildout Total w STIP	0	0	0	0	33	0	11	0	30	774	0	0	0	608	67	0
2029 Buildout Total w/o STIP	0	0	0	0	67	0	13	0	25	948	0	0	0	646	45	0

INTERSECTION VOLUME DEVELOPMENT

Twelve Mile Creek Road and Weddington Road (NC 84)
AM PEAK HOUR

Description	Twelve Mile Creek Road Northbound Left	Through	Right	U-turn	Twelve Mile Creek Road Southbound Left	Through	Right	U-turn	Weddington Road (NC 84) Eastbound Left	Through	Right	U-turn	Weddington Road (NC 84) Westbound Left	Through	Right	U-turn
Observed Volumes	210	74	134	0	233	87	116	0	78	416	59	0	39	512	88	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	210	74	134	0	233	87	116	0	78	416	59	0	39	512	88	0
2024 Existng PHF	0.88	0.54	0.51	0.90	0.53	0.68	0.56	0.90	0.56	0.74	0.82	0.90	0.75	0.84	0.76	0.90
2029 Background PHF	0.88	0.54	0.51	0.90	0.53	0.68	0.57	0.90	0.57	0.74	0.82	0.90	0.75	0.84	0.76	0.90
2029 Build PHF	0.88	0.54	0.51	0.90	0.53	0.68	0.57	0.90	0.57	0.74	0.82	0.90	0.75	0.84	0.76	0.90
2024 Existng Heavy Vehicle%	2%	2%	3%	2%	4%	2%	2%	2%	2%	3%	3%	2%	5%	3%	7%	2%
Future Heavy Vehicle %	2%	2%	3%	2%	4%	2%	2%	2%	2%	3%	3%	2%	5%	3%	7%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #3	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	129	23	79	0	82	46	167	0	87	841	139	0	105	1,049	53	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	129	23	79	0	82	46	167	0	87	841	139	0	105	1,049	53	0
2029 Background Traffic (No AD) w/o STIP	232	82	148	0	257	96	128	0	86	459	65	0	43	565	97	0
Providence and Rea	1	0	0	0	0	0	0	0	1	5	1	0	0	1	0	0
Weddington Road Office Park	4	0	0	0	0	0	3	0	1	2	0	0	0	11	0	0
Approved Development Trips w STIP	5	0	0	0	0	0	3	0	2	7	1	0	0	12	0	0
2029 Background Traffic w Redistribution w STIP	134	23	79	0	82	46	170	0	89	848	140	0	105	1,061	53	0
Providence and Rea	1	0	0	0	0	0	0	0	1	5	1	0	0	1	0	0
Weddington Road Office Park	4	0	0	0	0	0	3	0	1	2	0	0	0	11	0	0
Approved Development Trips w/o STIP	5	0	0	0	0	0	3	0	2	7	1	0	0	12	0	0
2029 Background Traffic w/o STIP	237	82	148	0	257	96	131	0	88	466	66	0	43	577	97	0
Percent Inbound Assignment	10%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	10%	0%	20%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	5%	20%	10%	55%	0%	0%	0%	0%
Project Trips w STIP	2	0	0	0	0	0	1	0	2	9	4	29	0	3	0	0
Percent Inbound Assignment	10%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	20%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	5%	20%	10%	0%	0%	0%	0%	0%
Project Trips w/o STIP	2	0	0	0	0	0	1	0	2	10	5	0	0	3	0	0
2029 Buildout Total w STIP	136	23	79	0	82	46	171	0	91	857	144	29	105	1,064	53	0
2029 Buildout Total w/o STIP	239	82	148	0	257	96	132	0	90	476	71	0	43	580	97	0

MIDDAY PEAK HOUR

Description	Twelve Mile Creek Road Northbound Left	Through	Right	U-turn	Twelve Mile Creek Road Southbound Left	Through	Right	U-turn	Weddington Road (NC 84) Eastbound Left	Through	Right	U-turn	Weddington Road (NC 84) Westbound Left	Through	Right	U-turn
Observed Volumes	120	76	57	0	90	64	51	0	84	645	106	0	75	435	124	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	120	76	57	0	90	64	51	0	84	645	106	0	75	435	124	0
2024 Existng PHF	0.81	0.70	0.71	0.90	0.78	0.57	0.46	0.90	0.72	0.86	0.91	0.90	0.75	0.85	0.74	0.90
2029 Background PHF	0.81	0.70	0.71	0.90	0.78	0.57	0.48	0.90	0.72	0.86	0.91	0.90	0.75	0.85	0.74	0.90
2029 Build PHF	0.82	0.70	0.71	0.90	0.78	0.57	0.49	0.90	0.73	0.86	0.91	0.90	0.75	0.85	0.74	0.90
2024 Existng Heavy Vehicle%	3%	4%	5%	2%	2%	3%	2%	2%	2%	4%	2%	2%	3%	4%	5%	2%
Future Heavy Vehicle %	3%	4%	5%	2%	2%	3%	2%	2%	2%	4%	2%	2%	3%	4%	5%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #3	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	107	156	75	0	127	131	47	0	77	760	95	0	99	513	175	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	107	156	75	0	127	131	47	0	77	760	95	0	99	513	175	0
2029 Background Traffic (No AD) w/o STIP	132	84	63	0	99	71	56	0	93	712	117	0	83	480	137	0
Providence and Rea	1	0	0	0	0	0	1	0	0	2	1	0	0	4	0	0
Weddington Road Office Park	1	0	0	0	0	0	1	0	2	17	3	0	0	5	0	0
Approved Development Trips w STIP	2	0	0	0	0	0	2	0	2	19	4	0	0	9	0	0
2029 Background Traffic w Redistribution w STIP	109	156	75	0	127	131	49	0	79	779	99	0	99	522	175	0
Providence and Rea	1	0	0	0	0	0	1	0	0	2	1	0	0	4	0	0
Weddington Road Office Park	1	0	0	0	0	0	1	0	2	17	3	0	0	5	0	0
Approved Development Trips w/o STIP	2	0	0	0	0	0	2	0	2	19	4	0	0	9	0	0
2029 Background Traffic w/o STIP	134	84	63	0	99	71	58	0	95	731	121	0	83	489	137	0
Percent Inbound Assignment	10%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	10%	0%	20%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	5%	20%	10%	55%	0%	0%	0%	0%
Project Trips w STIP	5	0	0	0	0	0	2	0	1	5	3	20	0	9	0	0
Percent Inbound Assignment	10%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	20%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	5%	20%	10%	0%	0%	0%	0%	0%
Project Trips w/o STIP	5	0	0	0	0	0	2	0	1	6	3	0	0	8	0	0
2029 Buildout Total w STIP	114	156	75	0	127	131	51	0	80	784	102	20	99	531	175	0
2029 Buildout Total w/o STIP	139	84	63	0	99	71	60	0	96	737	124	0	83	497	137	0

PM PEAK HOUR

Description	Twelve Mile Creek Road Northbound Left	Through	Right	U-turn	Twelve Mile Creek Road Southbound Left	Through	Right	U-turn	Weddington Road (NC 84) Eastbound Left	Through	Right	U-turn	Weddington Road (NC 84) Westbound Left	Through	Right	U-turn
Observed Volumes	103	51	85	0	104	102	48	0	30	684	154	0	78	424	56	0
Balanced Volumes	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2024 Existing Traffic	103	51	85	0	104	102	48	0	30	684	154	0	78	424	56	0
2024 Existng PHF	0.83	0.91	0.76	0.90	0.58	0.65	0.52	0.90	0.58	0.93	0.86	0.90	0.89	0.86	0.78	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	3%	2%	2%	2%	8%	2%	6%	2%	3%	2%	2%	2%	3%	3%	2%	2%
Future Heavy Vehicle %	3%	2%	2%	2%	8%	2%	6%	2%	3%	2%	2%	2%	3%	3%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #3	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	142	46	103	0	52	23	88	0	168	1,041	131	0	78	849	81	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	142	46	103	0	52	23	88	0	168	1,041	131	0	78	849	81	0
2029 Background Traffic (No AD) w/o STIP	114	56	94	0	115	113	53	0	33	755	170	0	86	468	62	0
Providence and Rea	1	0	0	0	0	0	1	0	0	3	1	0	0	5	0	0
Weddington Road Office Park	1	0	0	0	0	0	1	0	1	14	3	0	0	4	0	0
Approved Development Trips w STIP	2	0	0	0	0	0	2	0	1	17	4	0	0	9	0	0
2029 Background Traffic w Redistribution w STIP	144	46	103	0	52	23	90	0	169	1,058	135	0	78	858	81	0
Providence and Rea	1	0	0	0	0	0	1	0	0	3	1	0	0	5	0	0
Weddington Road Office Park	1	0	0	0	0	0	1	0	1	14	3	0	0	4	0	0
Approved Development Trips w/o STIP	2	0	0	0	0	0	2	0	1	17	4	0	0	9	0	0
2029 Background Traffic w/o STIP	116	56	94	0	115	113	55	0	34	772	174	0	86	477	62	0
Percent Inbound Assignment	10%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	10%	0%	20%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	5%	20%	10%	55%	0%	0%	0%	0%
Project Trips w STIP	5	0	0	0	0	0	3	0	2	5	3	23	0	12	0	0
Percent Inbound Assignment	10%	0%	0%	0%	0%	0%	5%	0%	0%	0%	0%	0%	0%	20%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	5%	20%	10%	0%	0%	0%	0%	0%
Project Trips w/o STIP	5	0	0	0	0	0	3	0	2	6	3	0	0	10	0	0
2029 Buildout Total w STIP	149	46	103	0	52	23	93	0	171	1,063	138	23	78	870	81	0
2029 Buildout Total w/o STIP	121	56	94	0	115	113	58	0	36	778	177	0	86	487	62	0

INTERSECTION VOLUME DEVELOPMENT

Weddington Road (NC 84) and U-3467 (Future)
AM PEAK HOUR

Description	- Northbound				Weddington Road (NC 84) Southbound				U-3467 (Future) Eastbound				Weddington Road (NC 84) Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	492	0	22	0	22	600	0	0	0	737	605	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	492	0	22	0	22	600	0	0	0	737	605	0
Providence and Rea	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	0
Weddington Road Office Park	0	0	0	0	3	0	0	0	0	0	0	0	0	0	18	0
Approved Development Trips w STIP	0	0	0	0	3	0	0	0	0	7	0	0	0	2	18	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	495	0	22	0	22	607	0	0	0	739	623	0
Percent Inbound Assignment	0%	0%	0%	0%	25%	0%	0%	0%	0%	40%	0%	0%	0%	0%	0%	25%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	25%	10%
Project Trips w STIP	0	0	0	0	4	0	0	0	0	7	0	0	0	20	13	9
2029 Buildout Total w STIP	0	0	0	0	499	0	22	0	22	614	0	0	0	759	636	9

MIDDAY PEAK HOUR

Description	- Northbound				Weddington Road (NC 84) Southbound				U-3467 (Future) Eastbound				Weddington Road (NC 84) Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	419	0	21	0	22	513	0	0	0	367	300	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	419	0	21	0	22	513	0	0	0	367	300	0
Providence and Rea	0	0	0	0	0	0	0	0	0	3	0	0	0	6	0	0
Weddington Road Office Park	0	0	0	0	22	0	0	0	0	0	0	0	0	0	7	0
Approved Development Trips w STIP	0	0	0	0	22	0	0	0	0	3	0	0	0	6	7	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	441	0	21	0	22	516	0	0	0	373	307	0
Percent Inbound Assignment	0%	0%	0%	0%	25%	0%	0%	0%	0%	40%	0%	0%	0%	0%	0%	25%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	25%	10%
Project Trips w STIP	0	0	0	0	11	0	0	0	0	18	0	0	0	11	7	14
2029 Buildout Total w STIP	0	0	0	0	452	0	21	0	22	534	0	0	0	384	314	14

PM PEAK HOUR

Description	- Northbound				Weddington Road (NC 84) Southbound				U-3467 (Future) Eastbound				Weddington Road (NC 84) Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	602	0	26	0	26	735	0	0	0	599	490	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	602	0	26	0	26	735	0	0	0	599	490	0
Providence and Rea	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	0
Weddington Road Office Park	0	0	0	0	18	0	0	0	0	0	0	0	0	0	6	0
Approved Development Trips w STIP	0	0	0	0	18	0	0	0	0	4	0	0	0	7	6	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	620	0	26	0	26	739	0	0	0	606	496	0
Percent Inbound Assignment	0%	0%	0%	0%	25%	0%	0%	0%	0%	40%	0%	0%	0%	0%	0%	25%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	25%	10%
Project Trips w STIP	0	0	0	0	13	0	0	0	0	21	0	0	0	12	9	17
2029 Buildout Total w STIP	0	0	0	0	633	0	26	0	26	760	0	0	0	618	505	17

INTERSECTION VOLUME DEVELOPMENT

Weddington Road (NC 84) and Access A (RIRO)
AM PEAK HOUR

Description	Access A (RIRO) Northbound				Access A (RIRO) Southbound				Weddington Road (NC 84) Eastbound				Weddington Road (NC 84) Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
2024 Existing Traffic	0	0	0	0	0	0	0	0	0	553	0	0	0	838	0	0
2024 Existng PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.72	0.90	0.90	0.90	0.81	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	3%	2%	2%
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	3%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	0	0	0	0	0	1,092	0	0	0	1,342	0	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	0	0	0	0	0	1,092	0	0	0	1,342	0	0
2029 Background Traffic (No AD) w/o STIP	0	0	0	0	0	0	0	0	0	611	0	0	0	925	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	3	0	0	0	18	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	10	0	0	0	20	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	0	0	0	0	0	1,102	0	0	0	1,362	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	3	0	0	0	18	0	0
Approved Development Trips w/o STIP	0	0	0	0	0	0	0	0	0	10	0	0	0	20	0	0
2029 Background Traffic w/o STIP	0	0	0	0	0	0	0	0	0	621	0	0	0	945	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	70%	0%	0%	25%	5%	0%
Percent Outbound Assignment	0%	0%	70%	0%	0%	0%	15%	0%	0%	10%	0%	0%	0%	65%	0%	0%
Project Trips w STIP	0	0	33	0	0	0	8	0	0	9	11	0	0	34	1	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	10%	7%	48%	0%	22%	0%	2%	0%
Percent Outbound Assignment	48%	0%	22%	0%	2%	0%	10%	0%	0%	0%	0%	0%	0%	7%	0%	0%
Project Trips w/o STIP	22	0	11	0	1	0	6	0	2	1	8	0	4	3	0	0
2029 Buildout Total w STIP	0	0	33	0	0	0	8	0	0	1,111	11	0	0	1,396	1	0
2029 Buildout Total w/o STIP	22	0	11	0	1	0	6	0	2	622	8	0	4	948	0	0

MIDDAY PEAK HOUR

Description	Access A (RIRO) Northbound				Access A (RIRO) Southbound				Weddington Road (NC 84) Eastbound				Weddington Road (NC 84) Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
2024 Existing Traffic	0	0	0	0	0	0	0	0	0	835	0	0	0	606	0	0
2024 Existng PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.85	0.90	0.90	0.90	0.81	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%	4%	2%	2%
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%	4%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	0	0	0	0	0	932	0	0	0	667	0	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	0	0	0	0	0	932	0	0	0	667	0	0
2029 Background Traffic (No AD) w/o STIP	0	0	0	0	0	0	0	0	0	922	0	0	0	669	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	3	0	0	0	6	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	22	0	0	0	7	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	25	0	0	0	13	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	0	0	0	0	0	957	0	0	0	680	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	3	0	0	0	6	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	22	0	0	0	7	0	0
Approved Development Trips w/o STIP	0	0	0	0	0	0	0	0	0	25	0	0	0	13	0	0
2029 Background Traffic w/o STIP	0	0	0	0	0	0	0	0	0	947	0	0	0	682	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	70%	0%	0%	25%	5%	0%
Percent Outbound Assignment	0%	0%	70%	0%	0%	0%	15%	0%	0%	10%	0%	0%	0%	65%	0%	0%
Project Trips w STIP	0	0	19	0	0	0	4	0	0	12	31	0	0	29	2	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	10%	7%	48%	0%	22%	0%	2%	0%
Percent Outbound Assignment	48%	0%	22%	0%	2%	0%	10%	0%	0%	0%	0%	0%	0%	7%	0%	0%
Project Trips w/o STIP	12	0	6	0	1	0	3	0	5	4	21	0	10	2	1	0
2029 Buildout Total w STIP	0	0	19	0	0	0	4	0	0	969	31	0	0	709	2	0
2029 Buildout Total w/o STIP	12	0	6	0	1	0	3	0	5	951	21	0	10	684	1	0

PM PEAK HOUR

Description	Access A (RIRO) Northbound				Access A (RIRO) Southbound				Weddington Road (NC 84) Eastbound				Weddington Road (NC 84) Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
2024 Existing Traffic	0	0	0	0	0	0	0	0	0	868	0	0	0	575	0	0
2024 Existng PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.91	0.90	0.90	0.90	0.83	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	0	0	0	0	0	1,337	0	0	0	1,089	0	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	0	0	0	0	0	1,337	0	0	0	1,089	0	0
2029 Background Traffic (No AD) w/o STIP	0	0	0	0	0	0	0	0	0	958	0	0	0	635	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	18	0	0	0	6	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	22	0	0	0	13	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	0	0	0	0	0	1,359	0	0	0	1,102	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	18	0	0	0	6	0	0
Approved Development Trips w/o STIP	0	0	0	0	0	0	0	0	0	22	0	0	0	13	0	0
2029 Background Traffic w/o STIP	0	0	0	0	0	0	0	0	0	980	0	0	0	648	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	70%	0%	0%	25%	5%	0%
Percent Outbound Assignment	0%	0%	70%	0%	0%	0%	15%	0%	0%	10%	0%	0%	0%	65%	0%	0%
Project Trips w STIP	0	0	21	0	0	0	5	0	0	14	37	0	0	33	3	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	10%	7%	48%	0%	22%	0%	2%	0%
Percent Outbound Assignment	48%	0%	22%	0%	2%	0%	10%	0%	0%	0%	0%	0%	0%	7%	0%	0%
Project Trips w/o STIP	15	0	6	0	1	0	3	0	6	4	26	0	12	2	1	0
2029 Buildout Total w STIP	0	0	21	0	0	0	5	0	0	1,373	37	0	0	1,135	3	0
2029 Buildout Total w/o STIP	15	0	6	0	1	0	3	0	6	984	26	0	12	650	1	0

INTERSECTION VOLUME DEVELOPMENT

Weddington Road (NC 84) and Access B (RIRO)
AM PEAK HOUR

Description	Access B (RIRO) Northbound				Access B (RIRO) Southbound				Weddington Road (NC 84) Eastbound				Weddington Road (NC 84) Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
2024 Existing Traffic	0	0	0	0	0	0	0	0	0	553	0	0	0	838	0	0
2024 Existng PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.72	0.90	0.90	0.90	0.81	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	3%	2%	2%
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%	2%	3%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	0	0	0	0	0	1,092	0	0	0	1,342	0	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	0	0	0	0	0	1,092	0	0	0	1,342	0	0
2029 Background Traffic (No AD) w/o STIP	0	0	0	0	0	0	0	0	0	611	0	0	0	925	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	3	0	0	0	18	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	10	0	0	0	20	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	0	0	0	0	0	1,102	0	0	0	1,362	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	7	0	0	0	2	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	3	0	0	0	18	0	0
Approved Development Trips w/o STIP	0	0	0	0	0	0	0	0	0	10	0	0	0	20	0	0
2029 Background Traffic w/o STIP	0	0	0	0	0	0	0	0	0	621	0	0	0	945	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	10%	0%	0%	30%	15%	0%
Percent Outbound Assignment	0%	0%	10%	0%	0%	0%	5%	0%	0%	80%	0%	0%	0%	55%	0%	0%
Project Trips w STIP	0	0	4	0	0	0	3	0	0	40	2	0	0	32	3	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	4%	0%	6%	24%	5%	0%
Percent Outbound Assignment	4%	0%	6%	0%	5%	0%	3%	0%	0%	24%	0%	0%	0%	0%	0%	0%
Project Trips w/o STIP	2	0	2	0	3	0	1	0	1	12	0	0	1	4	1	0
2029 Buildout Total w STIP	0	0	4	0	0	0	3	0	0	1,142	2	0	0	1,394	3	0
2029 Buildout Total w/o STIP	2	0	2	0	3	0	1	0	1	633	0	0	1	949	1	0

MIDDAY PEAK HOUR

Description	Access B (RIRO) Northbound				Access B (RIRO) Southbound				Weddington Road (NC 84) Eastbound				Weddington Road (NC 84) Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
2024 Existing Traffic	0	0	0	0	0	0	0	0	0	835	0	0	0	606	0	0
2024 Existng PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.85	0.90	0.90	0.90	0.81	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%	4%	2%	2%
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%	2%	2%	4%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	0	0	0	0	0	932	0	0	0	667	0	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	0	0	0	0	0	932	0	0	0	667	0	0
2029 Background Traffic (No AD) w/o STIP	0	0	0	0	0	0	0	0	0	922	0	0	0	669	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	3	0	0	0	6	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	22	0	0	0	7	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	25	0	0	0	13	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	0	0	0	0	0	957	0	0	0	680	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	3	0	0	0	6	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	22	0	0	0	7	0	0
Approved Development Trips w/o STIP	0	0	0	0	0	0	0	0	0	25	0	0	0	13	0	0
2029 Background Traffic w/o STIP	0	0	0	0	0	0	0	0	0	947	0	0	0	682	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	10%	0%	0%	30%	15%	0%
Percent Outbound Assignment	0%	0%	10%	0%	0%	0%	5%	0%	0%	80%	0%	0%	0%	55%	0%	0%
Project Trips w STIP	0	0	2	0	0	0	2	0	0	27	4	0	0	28	8	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	4%	0%	6%	24%	5%	0%
Percent Outbound Assignment	4%	0%	6%	0%	5%	0%	3%	0%	0%	24%	0%	0%	0%	0%	0%	0%
Project Trips w/o STIP	1	0	2	0	1	0	1	0	2	7	2	0	2	11	2	0
2029 Buildout Total w STIP	0	0	2	0	0	0	2	0	0	984	4	0	0	708	8	0
2029 Buildout Total w/o STIP	1	0	2	0	1	0	1	0	2	954	2	0	2	693	2	0

PM PEAK HOUR

Description	Access B (RIRO) Northbound				Access B (RIRO) Southbound				Weddington Road (NC 84) Eastbound				Weddington Road (NC 84) Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
2024 Existing Traffic	0	0	0	0	0	0	0	0	0	868	0	0	0	575	0	0
2024 Existng PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.91	0.90	0.90	0.90	0.83	0.90	0.90
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
2024 Existng Heavy Vehicle%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	3%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	0	0	0	0	0	1,337	0	0	0	1,089	0	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	0	0	0	0	0	1,337	0	0	0	1,089	0	0
2029 Background Traffic (No AD) w/o STIP	0	0	0	0	0	0	0	0	0	958	0	0	0	635	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	18	0	0	0	6	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	22	0	0	0	13	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	0	0	0	0	0	1,359	0	0	0	1,102	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	4	0	0	0	7	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	18	0	0	0	6	0	0
Approved Development Trips w/o STIP	0	0	0	0	0	0	0	0	0	22	0	0	0	13	0	0
2029 Background Traffic w/o STIP	0	0	0	0	0	0	0	0	0	980	0	0	0	648	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	10%	10%	0%	0%	30%	15%	0%
Percent Outbound Assignment	0%	0%	10%	0%	0%	0%	5%	0%	0%	80%	0%	0%	0%	55%	0%	0%
Project Trips w STIP	0	0	3	0	0	0	2	0	0	30	5	0	0	34	9	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	3%	0%	4%	0%	6%	24%	5%	0%
Percent Outbound Assignment	4%	0%	6%	0%	5%	0%	3%	0%	0%	24%	0%	0%	0%	0%	0%	0%
Project Trips w/o STIP	1	0	2	0	2	0	1	0	2	7	2	0	2	13	3	0
2029 Buildout Total w STIP	0	0	3	0	0	0	2	0	0	1,389	5	0	0	1,136	9	0
2029 Buildout Total w/o STIP	1	0	2	0	2	0	1	0	2	987	2	0	2	661	3	0

INTERSECTION VOLUME DEVELOPMENT

S Providence Road (NC 16) and Northern U-turn bulb
AM PEAK HOUR

Description	S Providence Road (NC 16) Northbound				S Providence Road (NC 16) Southbound				- Eastbound				- Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	1,538	0	0	0	1,757	0	0	0	0	0	0	0	0	0	0
Redistribution	0	0	0	579	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	1,538	0	579	0	1,757	0	0	0	0	0	0	0	0	0	0
Providence and Rea	0	5	0	1	0	12	0	0	0	0	0	0	0	0	0	0
Weddington Road Office Park	0	13	0	0	0	3	0	0	0	0	0	0	0	0	0	0
Approved Development Trips w STIP	0	18	0	1	0	15	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic w Redistribution w STIP	0	1,556	0	580	0	1,772	0	0	0	0	0	0	0	0	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Project Trips w STIP	0	5	0	0	0	2	0	0	0	0	0	0	0	0	0	0
2029 Buildout Total w STIP	0	1,561	0	580	0	1,774	0	0	0	0	0	0	0	0	0	0

MIDDAY PEAK HOUR

Description	S Providence Road (NC 16) Northbound				S Providence Road (NC 16) Southbound				- Eastbound				- Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	1,417	0	0	0	1,307	0	0	0	0	0	0	0	0	0	0
Redistribution	0	0	0	304	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	1,417	0	304	0	1,307	0	0	0	0	0	0	0	0	0	0
Providence and Rea	0	12	0	3	0	6	0	0	0	0	0	0	0	0	0	0
Weddington Road Office Park	0	5	0	0	0	16	0	0	0	0	0	0	0	0	0	0
Approved Development Trips w STIP	0	17	0	3	0	22	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic w Redistribution w STIP	0	1,434	0	307	0	1,329	0	0	0	0	0	0	0	0	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Project Trips w STIP	0	3	0	0	0	5	0	0	0	0	0	0	0	0	0	0
2029 Buildout Total w STIP	0	1,437	0	307	0	1,334	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR

Description	S Providence Road (NC 16) Northbound				S Providence Road (NC 16) Southbound				- Eastbound				- Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	1,757	0	0	0	1,538	0	0	0	0	0	0	0	0	0	0
Redistribution	0	0	0	361	0	0	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	1,757	0	361	0	1,538	0	0	0	0	0	0	0	0	0	0
Providence and Rea	0	7	0	4	0	7	0	0	0	0	0	0	0	0	0	0
Weddington Road Office Park	0	5	0	0	0	15	0	0	0	0	0	0	0	0	0	0
Approved Development Trips w STIP	0	12	0	4	0	22	0	0	0	0	0	0	0	0	0	0
2029 Background Traffic w Redistribution w STIP	0	1,769	0	365	0	1,560	0	0	0	0	0	0	0	0	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Project Trips w STIP	0	3	0	0	0	5	0	0	0	0	0	0	0	0	0	0
2029 Buildout Total w STIP	0	1,772	0	365	0	1,565	0	0	0	0	0	0	0	0	0	0

INTERSECTION VOLUME DEVELOPMENT

S Providence Road (NC 16) and Southern U-turn bulb
AM PEAK HOUR

Description	S Providence Road (NC 16) Northbound				S Providence Road (NC 16) Southbound				- Eastbound				- Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	1,785	0	0	0	1,565	0	0	0	0	0	0	0	0	0	0
Redistribution	0	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	1,785	0	0	0	1,565	0	32	0	0	0	0	0	0	0	0
Providence and Rea	0	2	0	0	0	7	0	7	0	0	0	0	0	0	0	0
Weddington Road Office Park	0	9	0	0	0	2	0	0	0	0	0	0	0	0	0	0
Approved Development Trips w STIP	0	11	0	0	0	9	0	7	0	0	0	0	0	0	0	0
2029 Background Traffic w Redistribution w STIP	0	1,796	0	0	0	1,574	0	39	0	0	0	0	0	0	0	0
Percent Inbound Assignment	0%	10%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Project Trips w STIP	0	2	0	0	0	5	0	2	0	0	0	0	0	0	0	0
2029 Buildout Total w STIP	0	1,798	0	0	0	1,579	0	41	0	0	0	0	0	0	0	0

MIDDAY PEAK HOUR

Description	S Providence Road (NC 16) Northbound				S Providence Road (NC 16) Southbound				- Eastbound				- Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	1,333	0	0	0	1,484	0	0	0	0	0	0	0	0	0	0
Redistribution	0	0	0	0	0	0	0	54	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	1,333	0	0	0	1,484	0	54	0	0	0	0	0	0	0	0
Providence and Rea	0	6	0	0	0	5	0	3	0	0	0	0	0	0	0	0
Weddington Road Office Park	0	3	0	0	0	11	0	0	0	0	0	0	0	0	0	0
Approved Development Trips w STIP	0	9	0	0	0	16	0	3	0	0	0	0	0	0	0	0
2029 Background Traffic w Redistribution w STIP	0	1,342	0	0	0	1,500	0	57	0	0	0	0	0	0	0	0
Percent Inbound Assignment	0%	10%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Project Trips w STIP	0	4	0	0	0	3	0	5	0	0	0	0	0	0	0	0
2029 Buildout Total w STIP	0	1,346	0	0	0	1,503	0	62	0	0	0	0	0	0	0	0

PM PEAK HOUR

Description	S Providence Road (NC 16) Northbound				S Providence Road (NC 16) Southbound				- Eastbound				- Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	1,565	0	0	0	1,786	0	0	0	0	0	0	0	0	0	0
Redistribution	0	0	0	0	0	0	0	32	0	0	0	0	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	1,565	0	0	0	1,786	0	32	0	0	0	0	0	0	0	0
Providence and Rea	0	8	0	0	0	5	0	4	0	0	0	0	0	0	0	0
Weddington Road Office Park	0	3	0	0	0	8	0	0	0	0	0	0	0	0	0	0
Approved Development Trips w STIP	0	11	0	0	0	13	0	4	0	0	0	0	0	0	0	0
2029 Background Traffic w Redistribution w STIP	0	1,576	0	0	0	1,799	0	36	0	0	0	0	0	0	0	0
Percent Inbound Assignment	0%	10%	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	10%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Project Trips w STIP	0	5	0	0	0	3	0	5	0	0	0	0	0	0	0	0
2029 Buildout Total w STIP	0	1,581	0	0	0	1,802	0	41	0	0	0	0	0	0	0	0

INTERSECTION VOLUME DEVELOPMENT

Rea Road and Western U-turn Bulb
AM PEAK HOUR

Description	- Northbound				- Southbound				Rea Road Eastbound				Rea Road Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	0	0	0	0	0	901	0	0	0	1,446	0	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	78
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	0	0	0	0	0	901	0	0	0	1,446	0	78
Providence and Rea	0	0	0	0	0	0	0	0	0	9	0	0	0	4	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	4	0	0	0	1	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	13	0	0	0	5	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	0	0	0	0	0	914	0	0	0	1,451	0	78
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	10%
Project Trips w STIP	0	0	0	0	0	0	0	0	0	3	0	0	0	10	0	5
2029 Buildout Total w STIP	0	0	0	0	0	0	0	0	0	917	0	0	0	1,461	0	83

MIDDAY PEAK HOUR

Description	- Northbound				- Southbound				Rea Road Eastbound				Rea Road Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	0	0	0	0	0	1,300	0	0	0	892	0	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	93
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	0	0	0	0	0	1,300	0	0	0	892	0	93
Providence and Rea	0	0	0	0	0	0	0	0	0	9	0	0	0	7	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	2	0	0	0	5	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	11	0	0	0	12	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	0	0	0	0	0	1,311	0	0	0	904	0	93
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	10%
Project Trips w STIP	0	0	0	0	0	0	0	0	0	9	0	0	0	5	0	3
2029 Buildout Total w STIP	0	0	0	0	0	0	0	0	0	1,320	0	0	0	909	0	96

PM PEAK HOUR

Description	- Northbound				- Southbound				Rea Road Eastbound				Rea Road Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	0	0	0	0	0	1,446	0	0	0	901	0	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	0	0	0	0	0	1,446	0	0	0	901	0	77
Providence and Rea	0	0	0	0	0	0	0	0	0	10	0	0	0	8	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	2	0	0	0	7	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	12	0	0	0	15	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	0	0	0	0	0	1,458	0	0	0	916	0	77
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	20%	0%	10%
Project Trips w STIP	0	0	0	0	0	0	0	0	0	11	0	0	0	6	0	3
2029 Buildout Total w STIP	0	0	0	0	0	0	0	0	0	1,469	0	0	0	922	0	80

INTERSECTION VOLUME DEVELOPMENT

Rea Road Extension and Eastern U-turn Bulb
AM PEAK HOUR

Description	- Northbound				- Southbound				Rea Road Extension Eastbound				Rea Road Extension Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	0	0	0	0	0	272	0	0	0	378	0	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	376	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	0	0	0	0	0	272	0	376	0	378	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	7	0	5	0	2	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	7	0	9	0	2	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	0	0	0	0	0	279	0	385	0	380	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	0%	0%
Project Trips w STIP	0	0	0	0	0	0	0	0	0	7	0	0	0	20	0	0
2029 Buildout Total w STIP	0	0	0	0	0	0	0	0	0	286	0	385	0	400	0	0

MIDDAY PEAK HOUR

Description	- Northbound				- Southbound				Rea Road Extension Eastbound				Rea Road Extension Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	0	0	0	0	0	535	0	0	0	388	0	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	477	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	0	0	0	0	0	535	0	477	0	388	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	3	0	6	0	6	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	3	0	8	0	6	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	0	0	0	0	0	538	0	485	0	394	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	0%	0%
Project Trips w STIP	0	0	0	0	0	0	0	0	0	18	0	0	0	11	0	0
2029 Buildout Total w STIP	0	0	0	0	0	0	0	0	0	556	0	485	0	405	0	0

PM PEAK HOUR

Description	- Northbound				- Southbound				Rea Road Extension Eastbound				Rea Road Extension Westbound			
	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn	Left	Through	Right	U-turn
Future PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Future Heavy Vehicle %	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Annual Growth Rate	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Growth Factor #1	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104	1.104
2029 Background Traffic (No AD) w STIP	0	0	0	0	0	0	0	0	0	378	0	0	0	273	0	0
Redistribution	0	0	0	0	0	0	0	0	0	0	0	599	0	0	0	0
2029 Background Traffic (No AD) w Redistribution w STIP	0	0	0	0	0	0	0	0	0	378	0	599	0	273	0	0
Providence and Rea	0	0	0	0	0	0	0	0	0	4	0	7	0	7	0	0
Weddington Road Office Park	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0
Approved Development Trips w STIP	0	0	0	0	0	0	0	0	0	4	0	9	0	7	0	0
2029 Background Traffic w Redistribution w STIP	0	0	0	0	0	0	0	0	0	382	0	608	0	280	0	0
Percent Inbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	0%	0%	0%	0%	0%	0%
Percent Outbound Assignment	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	40%	0%	0%
Project Trips w STIP	0	0	0	0	0	0	0	0	0	21	0	0	0	12	0	0
2029 Buildout Total w STIP	0	0	0	0	0	0	0	0	0	403	0	608	0	292	0	0

Signal Plans

PROJECT REFERENCE NO.	SHEET NO.
U-2510A	Sig. 8

3 Phase
Fully Actuated
(NC 16 - Providence Rd CLS)

PHASING DIAGRAM

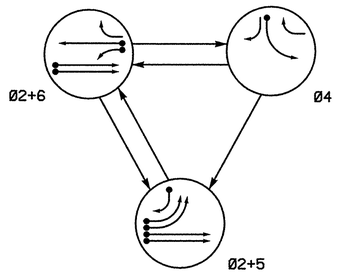
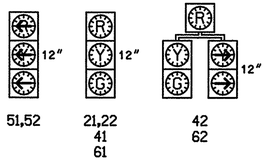


TABLE OF OPERATION				
SIGNAL FACE	PHASE Ø2+5	Ø2+6	Ø4	FLASH
21,22	G	G	R	Y
41	R	R	G	R
42	R/G	R	G	R
51,52	~~—~~	~~R~~	~~R~~	~~R~~
61	R	G	R	Y
62	R	G	R/G	Y

Signal Face I.D.

Denotes L.E.D.



2070L LOOP & DETECTOR INSTALLATION

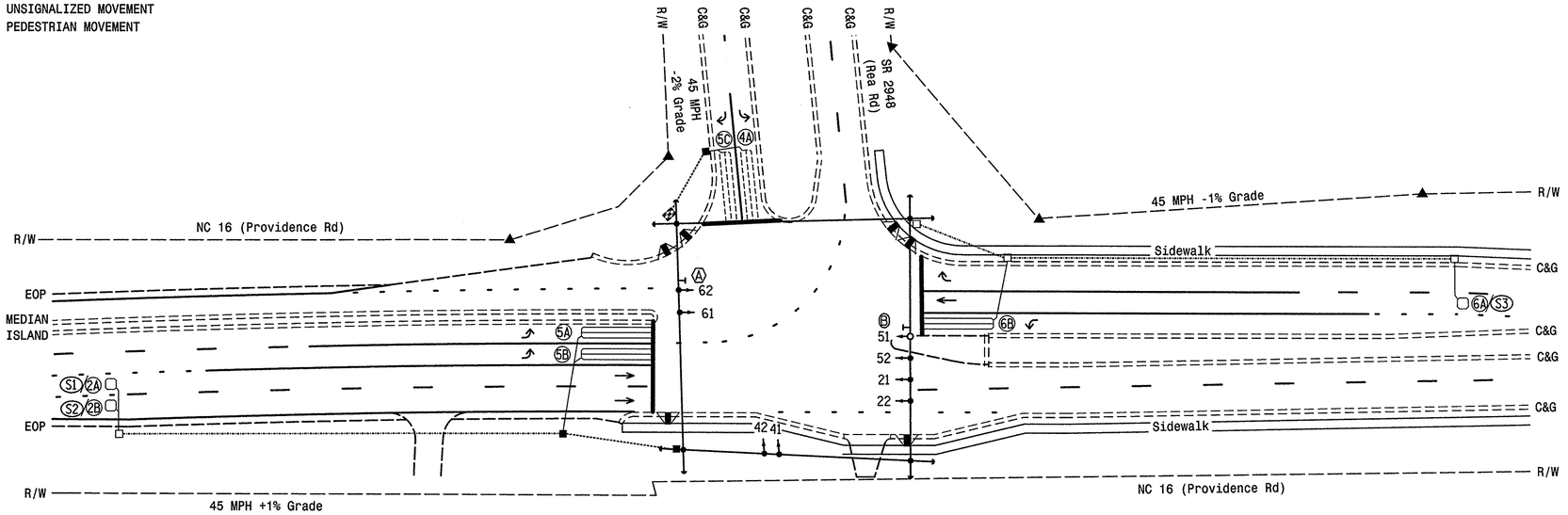
INDUCTIVE LOOPS					DETECTOR PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	PHASE	CALLING	EXTENSION	FULL TIME DELAY	STRETCH TIME	DELAY TIME	SYSTEM LOOP	NEW CARD
2A/S1	6X6	300	5	Y	2	Y	Y	-	-	-	Y	-
2B/S2	6X6	300	5	Y	2	Y	Y	-	-	-	Y	-
4A	6X40	0	2-4-2	-	4	Y	Y	-	-	-	-	-
5A	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	-
5B	6X40	0	2-4-2	Y	5	Y	Y	-	-	-	-	-
5C	6X40	0	2-4-2	-	5	Y	Y	-	-	10	-	-
6A/S3	6X6	300	5	Y	6	Y	Y	-	-	-	Y	-
6B	6X40	0	2-4-2	Y	6	Y	Y	Y	-	3	-	Y

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated July 2006 and "Standard Specifications for Roads and Structures" dated July 2006.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Enable Backup Protect for phase 2 to allow the controller to clear from phase 2+6 to phase 2+5 by progressing through an all red display.
4. Reposition existing signal heads numbered 21, 22, 52, 61 and 62.
5. Set all detector units to presence mode.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Closed loop system data: Controller Asset #1694.

PHASING DIAGRAM DETECTION LEGEND

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



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	
N/A	Wheelchair Ramp	
Ⓐ	Right Arrow "ONLY" Sign (R3-5R)	N/A
N/A	"U-TURN YIELD TO RIGHT TURN" Sign (R10-16)	Ⓑ

2070L TIMING CHART

FEATURE	PHASE 2	4	5	6
Min Green 1 *	12	7	7	12
Extension 1 *	6.0	2.0	2.0	6.0
Max Green 1 *	60	20	20	60
Yellow Clearance	4.4	4.7	3.0	4.6
Red Clearance	2.0	1.7	3.6	1.9
Red Revert	5.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-
Don't Walk 1	-	-	-	-
Seconds Per Actuation *	1.5	-	-	2.5
Max Variable Initial *	34	-	-	34
Time Before Reduction *	15	-	-	15
Time To Reduce *	30	-	-	30
Minimum Gap	3.0	-	-	3.0
Recall Mode	MIN RECALL	-	-	MIN RECALL
Vehicle Call Memory	YELLOW	-	-	YELLOW
Dual Entry	-	-	-	-
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.

Final Signal

Traffic Engineering and Safety Systems Branch
Signals and Geometrics Section
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
750 Greenfield Parkway
Garner, NC 27529

NC 16 (Providence Rd)
at
SR 2948 (Rea Rd)

Division 10 Union County Weddington

PLAN DATE:	July 2007	REVIEWED BY:	N.W. Rodevick
PREPARED BY:	T.R. Terrell	REVIEWED BY:	S.T. Franklin

REVISIONS	INIT.	DATE

SCALE 0 40 1"=40'

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028657 ENGINEER SPENCER T. FRANKLIN

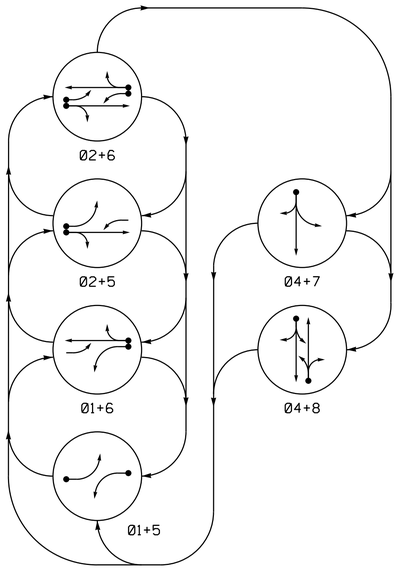
SIGNATURE 7.27.07 DATE

SIG. INVENTORY NO. 10-1694

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609

PROJECT REFERENCE NO.	SHEET NO.
Div.	Sig.1.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

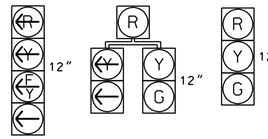
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION

SIGNAL FACE	PHASE 01+05	01+06	02+05	02+06	04+07	04+08	FLASH
11	←	←	F Y	F Y	~~R~~	~~R~~	~~Y~~
21, 22	R	R	G	G	R	R	Y
41	R	R	R	R	G ↓	G	R
42	R	R	R	R	G	G	R
51	←	F Y	←	F Y	~~R~~	~~R~~	~~Y~~
61, 62	R	G	R	G	R	R	Y
81, 82	R	R	R	R	R	G	R

SIGNAL FACE I.D.

All Heads L.E.D.



11
51

41

21, 22
42
61, 62
81, 82

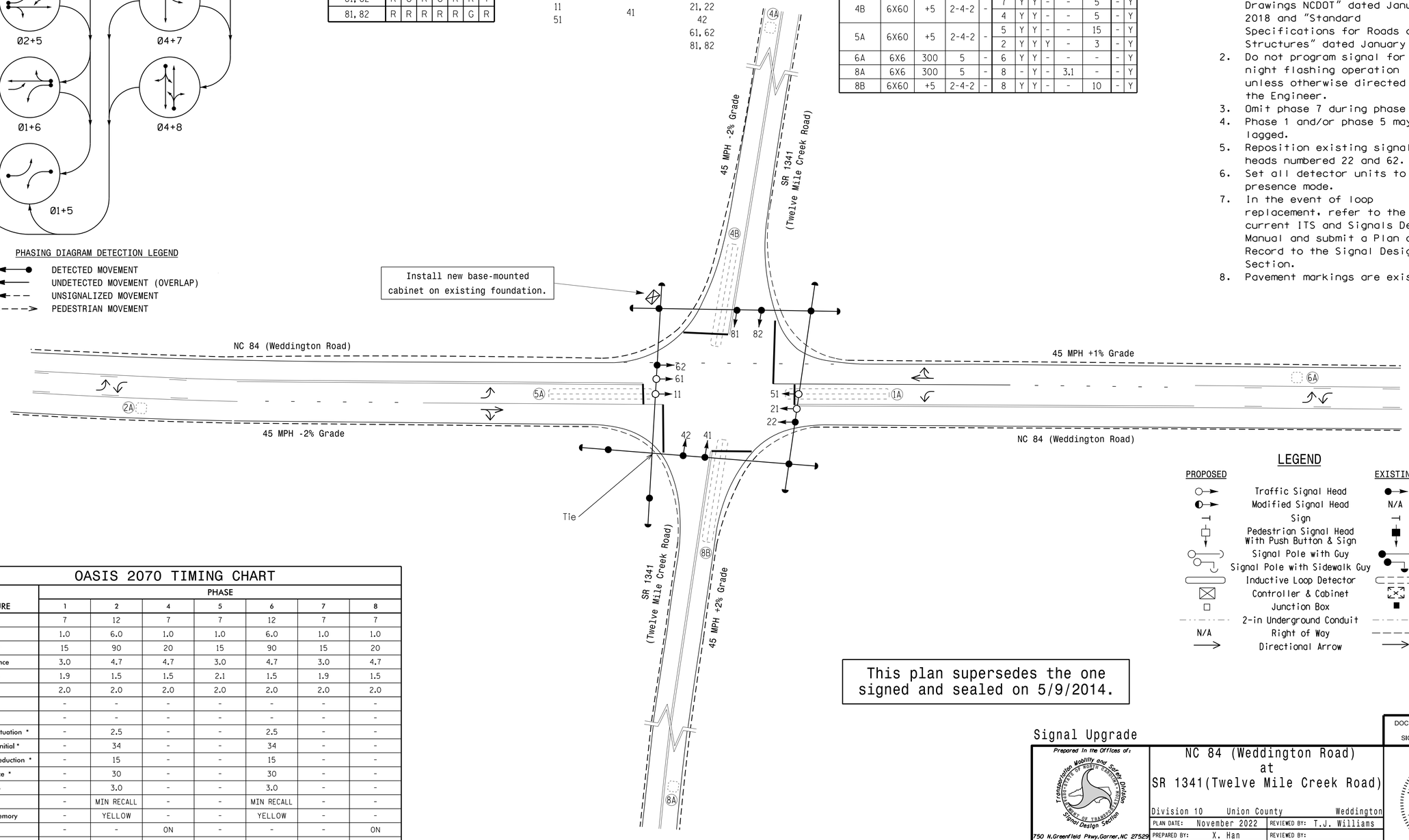
OASIS 2070 LOOP & DETECTOR INSTALLATION CHART

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
1A	6X60	+5	2-4-2	-	1	Y	Y	-	-	15	-	Y
					6	Y	Y	Y	-	3	-	Y
2A	6X6	300	5	-	2	Y	Y	-	-	-	-	Y
4A	6X6	300	5	-	4	-	Y	-	3.1	-	-	Y
4B	6X60	+5	2-4-2	-	7	Y	Y	-	-	5	-	Y
					4	Y	Y	-	-	5	-	Y
5A	6X60	+5	2-4-2	-	5	Y	Y	-	-	15	-	Y
					2	Y	Y	Y	-	3	-	Y
6A	6X6	300	5	-	6	Y	Y	-	-	-	-	Y
8A	6X6	300	5	-	8	-	Y	-	3.1	-	-	Y
8B	6X60	+5	2-4-2	-	8	Y	Y	-	-	10	-	Y

6 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Omit phase 7 during phase 8 on.
4. Phase 1 and/or phase 5 may be lagged.
5. Reposition existing signal heads numbered 22 and 62.
6. Set all detector units to presence mode.
7. In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
8. Pavement markings are existing.



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	→

OASIS 2070 TIMING CHART

FEATURE	PHASE 1	2	4	5	6	7	8
Min Green 1 *	7	12	7	7	12	7	7
Extension 1 *	1.0	6.0	1.0	1.0	6.0	1.0	1.0
Max Green 1 *	15	90	20	15	90	15	20
Yellow Clearance	3.0	4.7	4.7	3.0	4.7	3.0	4.7
Red Clearance	1.9	1.5	1.5	2.1	1.5	1.9	1.5
Red Revert	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Walk 1 *	-	-	-	-	-	-	-
Don't Walk 1	-	-	-	-	-	-	-
Seconds Per Actuation *	-	2.5	-	-	2.5	-	-
Max Variable Initial *	-	34	-	-	34	-	-
Time Before Reduction *	-	15	-	-	15	-	-
Time To Reduce *	-	30	-	-	30	-	-
Minimum Gap	-	3.0	-	-	3.0	-	-
Recall Mode	-	MIN RECALL	-	-	MIN RECALL	-	-
Vehicle Call Memory	-	YELLOW	-	-	YELLOW	-	-
Dual Entry	-	-	ON	-	-	-	ON
Simultaneous Gap	ON	ON	ON	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.

This plan supersedes the one signed and sealed on 5/9/2014.

Signal Upgrade

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

NC 84 (Weddington Road) at SR 1341(Twelve Mile Creek Road)

Division 10 Union County Weddington

PLAN DATE:	November 2022	REVIEWED BY:	T.J. Williams
PREPARED BY:	X. Han	REVIEWED BY:	

SCALE 0 30 1"=30'

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 024393 ENGINEER TIMOTHY J. WILLIAMS

DocuSigned by: T J Williams 11/02/2022 DATE

SIG. INVENTORY NO. 10-1818

02-NOV-2022 15:15
M:\Signal Design\10 Maps and Plans-TECC\TS&SI\ITS Signals\Signal Design Section\Western Region\Div-10\10-1818\2022-10\101818_sig_dsn_2021mds.dgn
xghan

Intersection Capacity Analysis

2024 Existing Conditions

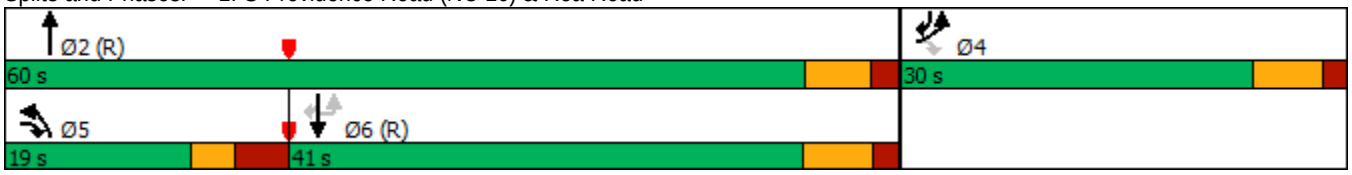
Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	344	199	375	947	4	447	322
Future Volume (vph)	344	199	375	947	4	447	322
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	11	12	12
Grade (%)	-2%			1%		-1%	
Storage Length (ft)	0	0	425		325		0
Storage Lanes	1	1	2		1		1
Taper Length (ft)	0		100		75		
Lane Util. Factor	1.00	1.00	0.97	0.95	1.00	1.00	1.00
Frt		0.850					0.850
Flt Protected	0.950		0.950		0.950		
Satd. Flow (prot)	1728	1546	3302	3522	1719	1836	1591
Flt Permitted	0.950		0.950		0.275		
Satd. Flow (perm)	1728	1546	3302	3522	498	1836	1591
Right Turn on Red		No					No
Satd. Flow (RTOR)							
Link Speed (mph)	45			45		45	
Link Distance (ft)	1527			1308		1378	
Travel Time (s)	23.1			19.8		20.9	
Peak Hour Factor	0.86	0.74	0.92	0.91	0.90	0.76	0.86
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	2%
Adj. Flow (vph)	400	269	408	1041	4	588	374
Shared Lane Traffic (%)							
Lane Group Flow (vph)	400	269	408	1041	4	588	374
Turn Type	Prot	pm+ov	Prot	NA	Perm	NA	pm+ov
Protected Phases	4	5	5	2		6	4
Permitted Phases		4			6		6
Detector Phase	4	5	5	2	6	6	4
Switch Phase							
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	12.0	7.0
Minimum Split (s)	13.4	13.6	13.6	18.4	18.5	18.5	13.4
Total Split (s)	30.0	19.0	19.0	60.0	41.0	41.0	30.0
Total Split (%)	33.3%	21.1%	21.1%	66.7%	45.6%	45.6%	33.3%
Maximum Green (s)	23.6	12.4	12.4	53.6	34.5	34.5	23.6
Yellow Time (s)	4.7	3.0	3.0	4.4	4.6	4.6	4.7
All-Red Time (s)	1.7	3.6	3.6	2.0	1.9	1.9	1.7
Lost Time Adjust (s)	-1.4	-1.6	-1.6	-1.4	-1.5	-1.5	-1.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.0	3.0	3.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	30.0	30.0	30.0	0.0
Recall Mode	None	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	23.7	42.7	14.0	56.3	37.3	37.3	66.0
Actuated g/C Ratio	0.26	0.47	0.16	0.63	0.41	0.41	0.73
v/c Ratio	0.88	0.37	0.80	0.47	0.02	0.77	0.32

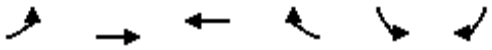
Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Control Delay	53.6	16.5	49.6	10.1	16.8	31.8	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	16.5	49.6	10.1	16.8	31.8	5.1
LOS	D	B	D	B	B	C	A
Approach Delay	38.7			21.2		21.4	
Approach LOS	D			C		C	
Queue Length 50th (ft)	213	90	117	156	1	289	61
Queue Length 95th (ft)	#338	115	#184	202	8	326	90
Internal Link Dist (ft)	1447			1228		1298	
Turn Bay Length (ft)			425		325		
Base Capacity (vph)	480	735	520	2204	206	761	1190
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.83	0.37	0.78	0.47	0.02	0.77	0.31

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 29 (32%), Referenced to phase 2:NBT and 6:SBTU, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.88			
Intersection Signal Delay: 25.0		Intersection LOS: C	
Intersection Capacity Utilization 67.7%		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: 1: S Providence Road (NC 16) & Rea Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	390	710	106	120	8
Future Volume (vph)	8	390	710	106	120	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.982		0.987	
Flt Protected	0.950				0.957	
Satd. Flow (prot)	1491	1801	1707	0	1575	0
Flt Permitted	0.950				0.957	
Satd. Flow (perm)	1491	1801	1707	0	1575	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1025		1160	
Travel Time (s)		18.2	15.5		17.6	
Peak Hour Factor	0.67	0.84	0.81	0.78	0.79	0.50
Heavy Vehicles (%)	13%	2%	2%	2%	3%	38%
Adj. Flow (vph)	12	464	877	136	152	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	12	464	1013	0	168	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.6%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	8	390	710	106	120	8
Future Vol, veh/h	8	390	710	106	120	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	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	67	84	81	78	79	50
Heavy Vehicles, %	13	2	2	2	3	38
Mvmt Flow	12	464	877	136	152	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1013	0	-	0	1433	945
Stage 1	-	-	-	-	945	-
Stage 2	-	-	-	-	488	-
Critical Hdwy	4.23	-	-	-	6.43	6.58
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.317	-	-	-	3.527	3.642
Pot Cap-1 Maneuver	643	-	-	-	~ 147	273
Stage 1	-	-	-	-	376	-
Stage 2	-	-	-	-	615	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	643	-	-	-	~ 144	273
Mov Cap-2 Maneuver	-	-	-	-	270	-
Stage 1	-	-	-	-	369	-
Stage 2	-	-	-	-	615	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	38
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	643	-	-	-	270
HCM Lane V/C Ratio	0.019	-	-	-	0.622
HCM Control Delay (s)	10.7	-	-	-	38
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q(veh)	0.1	-	-	-	3.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	78	416	59	39	512	88	210	74	134	233	87	116
Future Volume (vph)	78	416	59	39	512	88	210	74	134	233	87	116
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	11	12	12	10	12	12	10	12
Grade (%)		-2%			1%			2%			-2%	
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			0			0		
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			0.976			0.944			0.964	
Flt Protected	0.950			0.950				0.982			0.972	
Satd. Flow (prot)	1728	1770	0	1653	1721	0	0	1589	0	0	1627	0
Flt Permitted	0.122			0.114				0.589			0.515	
Satd. Flow (perm)	222	1770	0	198	1721	0	0	953	0	0	862	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1035			1019			1122			1136	
Travel Time (s)		15.7			15.4			17.0			17.2	
Peak Hour Factor	0.56	0.74	0.82	0.75	0.84	0.76	0.88	0.54	0.51	0.53	0.68	0.56
Heavy Vehicles (%)	2%	3%	3%	5%	3%	7%	2%	2%	3%	4%	2%	2%
Adj. Flow (vph)	139	562	72	52	610	116	239	137	263	440	128	207
Shared Lane Traffic (%)												
Lane Group Flow (vph)	139	634	0	52	726	0	0	639	0	0	775	0
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	6			2			8			4		
Detector Phase	5	2		1	6		8	8		7	7	
Switch Phase										4	4	
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.1	18.2		11.9	18.2		13.2	13.2		11.9	13.2	
Total Split (s)	13.0	39.0		12.0	38.0		49.0	49.0		20.0	69.0	
Total Split (%)	10.8%	32.5%		10.0%	31.7%		40.8%	40.8%		16.7%	57.5%	
Maximum Green (s)	7.9	32.8		7.1	31.8		42.8	42.8		15.1	62.8	
Yellow Time (s)	3.0	4.7		3.0	4.7		4.7	4.7		3.0	4.7	
All-Red Time (s)	2.1	1.5		1.9	1.5		1.5	1.5		1.9	1.5	
Lost Time Adjust (s)	-0.1	-1.2		0.1	-1.2			-1.2			-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	1.0		1.0	1.0	
Minimum Gap (s)	1.0	3.0		1.0	3.0		1.0	1.0		1.0	1.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0		0.0	0.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	40.8	36.3		41.8	33.0			44.0			64.0	
Actuated g/C Ratio	0.34	0.30		0.35	0.28			0.37			0.53	
v/c Ratio	0.80	1.19		0.34	1.53			1.83			1.39	

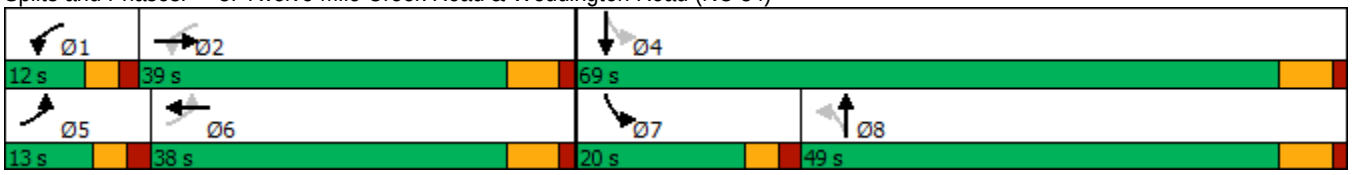
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	58.9	138.7		30.1	282.4			409.8			212.6	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	58.9	138.7		30.1	282.4			409.8			212.6	
LOS	E	F		C	F			F			F	
Approach Delay		124.3			265.5			409.8			212.6	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	71	~617		25	~789			~748			~802	
Queue Length 95th (ft)	70	#623		44	#931			#473			#611	
Internal Link Dist (ft)		955			939			1042			1056	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	176	535		154	474			350			556	
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	0.79	1.19		0.34	1.53			1.83			1.39	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 119.8			
Natural Cycle: 240			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.83			
Intersection Signal Delay: 246.0		Intersection LOS: F	
Intersection Capacity Utilization 82.0%		ICU Level of Service E	
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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)



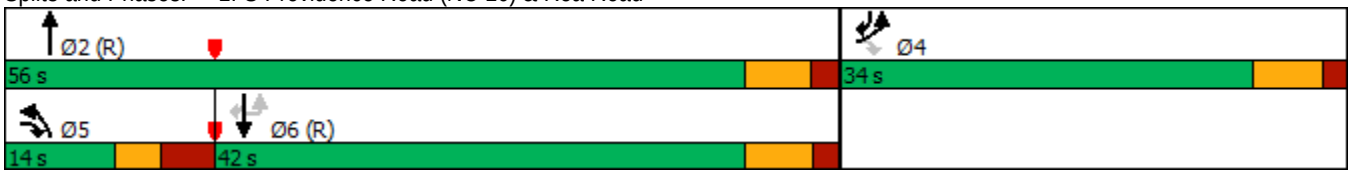
Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	488	362	234	702	4	718	339
Future Volume (vph)	488	362	234	702	4	718	339
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	11	12	12
Grade (%)	-2%			1%		-1%	
Storage Length (ft)	0	0	425		325		0
Storage Lanes	1	1	2		1		1
Taper Length (ft)	0		100		75		
Lane Util. Factor	1.00	1.00	0.97	0.95	1.00	1.00	1.00
Frt		0.850					0.850
Flt Protected	0.950		0.950		0.950		
Satd. Flow (prot)	1728	1531	3302	3487	1719	1872	1576
Flt Permitted	0.950		0.950		0.371		
Satd. Flow (perm)	1728	1531	3302	3487	671	1872	1576
Right Turn on Red		No					No
Satd. Flow (RTOR)							
Link Speed (mph)	45			45		45	
Link Distance (ft)	1527			1308		1378	
Travel Time (s)	23.1			19.8		20.9	
Peak Hour Factor	0.88	0.85	0.85	0.95	0.90	0.96	0.91
Heavy Vehicles (%)	2%	3%	2%	3%	2%	2%	3%
Adj. Flow (vph)	555	426	275	739	4	748	373
Shared Lane Traffic (%)							
Lane Group Flow (vph)	555	426	275	739	4	748	373
Turn Type	Prot	pm+ov	Prot	NA	Perm	NA	pm+ov
Protected Phases	4	5	5	2		6	4
Permitted Phases		4			6		6
Detector Phase	4	5	5	2	6	6	4
Switch Phase							
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	12.0	7.0
Minimum Split (s)	13.4	13.6	13.6	18.4	18.5	18.5	13.4
Total Split (s)	34.0	14.0	14.0	56.0	42.0	42.0	34.0
Total Split (%)	37.8%	15.6%	15.6%	62.2%	46.7%	46.7%	37.8%
Maximum Green (s)	27.6	7.4	7.4	49.6	35.5	35.5	27.6
Yellow Time (s)	4.7	3.0	3.0	4.4	4.6	4.6	4.7
All-Red Time (s)	1.7	3.6	3.6	2.0	1.9	1.9	1.7
Lost Time Adjust (s)	-1.4	-1.6	-1.6	-1.4	-1.5	-1.5	-1.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.0	3.0	3.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	30.0	30.0	30.0	0.0
Recall Mode	None	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	29.0	43.0	9.0	51.0	37.0	37.0	71.0
Actuated g/C Ratio	0.32	0.48	0.10	0.57	0.41	0.41	0.79
v/c Ratio	1.00	0.58	0.83	0.37	0.01	0.97	0.30

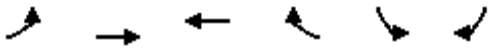
Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Control Delay	70.1	21.0	62.2	11.4	16.0	54.1	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	70.1	21.0	62.2	11.4	16.0	54.1	3.3
LOS	E	C	E	B	B	D	A
Approach Delay	48.8			25.2		37.2	
Approach LOS	D			C		D	
Queue Length 50th (ft)	312	168	80	113	1	407	44
Queue Length 95th (ft)	#509	241	#132	151	8	#652	70
Internal Link Dist (ft)	1447			1228		1298	
Turn Bay Length (ft)			425		325		
Base Capacity (vph)	556	731	330	1975	275	769	1243
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.58	0.83	0.37	0.01	0.97	0.30

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 29 (32%), Referenced to phase 2:NBT and 6:SBTU, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 36.9 Intersection LOS: D
Intersection Capacity Utilization 84.0% 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: S Providence Road (NC 16) & Rea Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	15	799	508	93	45	6
Future Volume (vph)	15	799	508	93	45	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.971		0.974	
Flt Protected	0.950				0.961	
Satd. Flow (prot)	1574	1801	1647	0	1627	0
Flt Permitted	0.950				0.961	
Satd. Flow (perm)	1574	1801	1647	0	1627	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1025		1160	
Travel Time (s)		18.2	15.5		17.6	
Peak Hour Factor	0.63	0.91	0.81	0.55	0.66	0.38
Heavy Vehicles (%)	7%	2%	5%	3%	2%	2%
Adj. Flow (vph)	24	878	627	169	68	16
Shared Lane Traffic (%)						
Lane Group Flow (vph)	24	878	796	0	84	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.1%		ICU Level of Service A	
Analysis Period (min) 15			

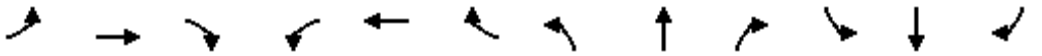
Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	15	799	508	93	45	6
Future Vol, veh/h	15	799	508	93	45	6
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	63	91	81	55	66	38
Heavy Vehicles, %	7	2	5	3	2	2
Mvmt Flow	24	878	627	169	68	16

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	796	0	-	0	1638	712
Stage 1	-	-	-	-	712	-
Stage 2	-	-	-	-	926	-
Critical Hdwy	4.17	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.263	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	804	-	-	-	111	432
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	386	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	804	-	-	-	108	432
Mov Cap-2 Maneuver	-	-	-	-	242	-
Stage 1	-	-	-	-	471	-
Stage 2	-	-	-	-	386	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	24.9
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	804	-	-	-	264
HCM Lane V/C Ratio	0.03	-	-	-	0.318
HCM Control Delay (s)	9.6	-	-	-	24.9
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0.1	-	-	-	1.3



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	84	645	106	75	435	124	120	76	57	90	64	51
Future Volume (vph)	84	645	106	75	435	124	120	76	57	90	64	51
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	11	12	12	10	12	12	10	12
Grade (%)		-2%			1%			2%			-2%	
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			0			0		
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		0.980			0.963			0.968			0.956	
Flt Protected	0.950			0.950				0.979			0.983	
Satd. Flow (prot)	1728	1753	0	1686	1688	0	0	1603	0	0	1645	0
Flt Permitted	0.159			0.061				0.718			0.725	
Satd. Flow (perm)	289	1753	0	108	1688	0	0	1176	0	0	1213	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1035			1019			1122			1136	
Travel Time (s)		15.7			15.4			17.0			17.2	
Peak Hour Factor	0.72	0.86	0.91	0.75	0.85	0.74	0.81	0.70	0.71	0.78	0.57	0.46
Heavy Vehicles (%)	2%	4%	2%	3%	4%	5%	3%	4%	5%	2%	3%	2%
Adj. Flow (vph)	117	750	116	100	512	168	148	109	80	115	112	111
Shared Lane Traffic (%)												
Lane Group Flow (vph)	117	866	0	100	680	0	0	337	0	0	338	0
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	6			2			8			4		
Detector Phase	5	2		1	6		8	8		7	7	
Switch Phase										4	4	
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.1	18.2		11.9	18.2		13.2	13.2		11.9	13.2	
Total Split (s)	13.0	72.0		12.0	71.0		42.0	42.0		14.0	56.0	
Total Split (%)	9.3%	51.4%		8.6%	50.7%		30.0%	30.0%		10.0%	40.0%	
Maximum Green (s)	7.9	65.8		7.1	64.8		35.8	35.8		9.1	49.8	
Yellow Time (s)	3.0	4.7		3.0	4.7		4.7	4.7		3.0	4.7	
All-Red Time (s)	2.1	1.5		1.9	1.5		1.5	1.5		1.9	1.5	
Lost Time Adjust (s)	-0.1	-1.2		0.1	-1.2			-1.2			-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	1.0		1.0	1.0	
Minimum Gap (s)	1.0	3.0		1.0	3.0		1.0	1.0		1.0	1.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0		0.0	0.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	74.0	67.0		74.0	66.3			37.0			51.0	
Actuated g/C Ratio	0.53	0.48		0.53	0.47			0.26			0.36	
v/c Ratio	0.51	1.03		0.74	0.85			1.09			0.72	

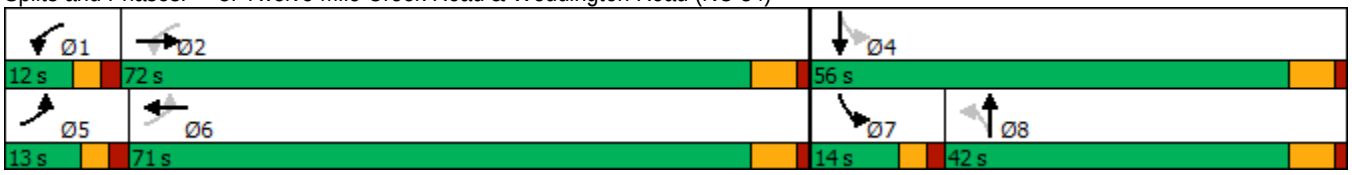
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	22.4	75.8		54.8	44.4			123.6			47.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	22.4	75.8		54.8	44.4			123.6			47.3	
LOS	C	E		D	D			F			D	
Approach Delay		69.5			45.8			123.6			47.3	
Approach LOS		E			D			F			D	
Queue Length 50th (ft)	48	~844		41	538			~343			245	
Queue Length 95th (ft)	62	#1012		#78	658			#354			195	
Internal Link Dist (ft)		955			939			1042			1056	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	235	838		135	799			310			469	
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	0.50	1.03		0.74	0.85			1.09			0.72	

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Natural Cycle: 140			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.09			
Intersection Signal Delay: 66.3		Intersection LOS: E	
Intersection Capacity Utilization 77.3%		ICU Level of Service D	
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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)



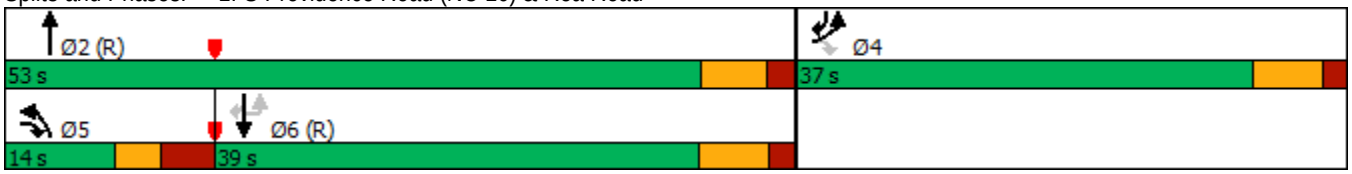
Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	575	371	203	779	4	645	544
Future Volume (vph)	575	371	203	779	4	645	544
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	11	12	11	12	12
Grade (%)	-2%			1%		-1%	
Storage Length (ft)	0	0	425		325		0
Storage Lanes	1	1	2		1		1
Taper Length (ft)	0		100		75		
Lane Util. Factor	1.00	1.00	0.97	0.95	1.00	1.00	1.00
Frt		0.850					0.850
Flt Protected	0.950		0.950		0.950		
Satd. Flow (prot)	1728	1546	3302	3522	1719	1872	1591
Flt Permitted	0.950		0.950		0.346		
Satd. Flow (perm)	1728	1546	3302	3522	626	1872	1591
Right Turn on Red		No					No
Satd. Flow (RTOR)							
Link Speed (mph)	45			45		45	
Link Distance (ft)	1527			1308		1378	
Travel Time (s)	23.1			19.8		20.9	
Peak Hour Factor	0.94	0.87	0.86	0.96	0.90	0.94	0.89
Adj. Flow (vph)	612	426	236	811	4	686	611
Shared Lane Traffic (%)							
Lane Group Flow (vph)	612	426	236	811	4	686	611
Turn Type	Prot	pm+ov	Prot	NA	Perm	NA	pm+ov
Protected Phases	4	5	5	2		6	4
Permitted Phases		4			6		6
Detector Phase	4	5	5	2	6	6	4
Switch Phase							
Minimum Initial (s)	7.0	7.0	7.0	12.0	12.0	12.0	7.0
Minimum Split (s)	13.4	13.6	13.6	18.4	18.5	18.5	13.4
Total Split (s)	37.0	14.0	14.0	53.0	39.0	39.0	37.0
Total Split (%)	41.1%	15.6%	15.6%	58.9%	43.3%	43.3%	41.1%
Maximum Green (s)	30.6	7.4	7.4	46.6	32.5	32.5	30.6
Yellow Time (s)	4.7	3.0	3.0	4.4	4.6	4.6	4.7
All-Red Time (s)	1.7	3.6	3.6	2.0	1.9	1.9	1.7
Lost Time Adjust (s)	-1.4	-1.6	-1.6	-1.4	-1.5	-1.5	-1.4
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag		Lead	Lead		Lag	Lag	
Lead-Lag Optimize?							
Vehicle Extension (s)	2.0	2.0	2.0	6.0	6.0	6.0	2.0
Minimum Gap (s)	2.0	2.0	2.0	3.0	3.0	3.0	2.0
Time Before Reduce (s)	0.0	0.0	0.0	15.0	15.0	15.0	0.0
Time To Reduce (s)	0.0	0.0	0.0	30.0	30.0	30.0	0.0
Recall Mode	None	None	None	C-Max	C-Max	C-Max	None
Act Effct Green (s)	32.0	46.0	9.0	48.0	34.0	34.0	71.0
Actuated g/C Ratio	0.36	0.51	0.10	0.53	0.38	0.38	0.79
v/c Ratio	1.00	0.54	0.72	0.43	0.02	0.97	0.49
Control Delay	66.4	18.0	52.5	13.6	18.0	56.5	4.8

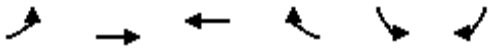
Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	66.4	18.0	52.5	13.6	18.0	56.5	4.8
LOS	E	B	D	B	B	E	A
Approach Delay	46.5			22.4		32.1	
Approach LOS	D			C		C	
Queue Length 50th (ft)	343	155	68	138	1	376	90
Queue Length 95th (ft)	#567	230	#108	183	8	#608	136
Internal Link Dist (ft)	1447			1228		1298	
Turn Bay Length (ft)			425		325		
Base Capacity (vph)	614	790	330	1878	236	707	1255
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	1.00	0.54	0.72	0.43	0.02	0.97	0.49

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 29 (32%), Referenced to phase 2:NBT and 6:SBTU, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.00
Intersection Signal Delay: 33.5 Intersection LOS: C
Intersection Capacity Utilization 84.1% 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: S Providence Road (NC 16) & Rea Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	22	809	557	39	58	12
Future Volume (vph)	22	809	557	39	58	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.990		0.973	
Flt Protected	0.950				0.962	
Satd. Flow (prot)	1652	1801	1691	0	1596	0
Flt Permitted	0.950				0.962	
Satd. Flow (perm)	1652	1801	1691	0	1596	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1025		1160	
Travel Time (s)		18.2	15.5		17.6	
Peak Hour Factor	0.69	0.94	0.87	0.75	0.73	0.60
Heavy Vehicles (%)	2%	2%	4%	2%	3%	8%
Adj. Flow (vph)	32	861	640	52	79	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	861	692	0	99	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.2%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	22	809	557	39	58	12
Future Vol, veh/h	22	809	557	39	58	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	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	69	94	87	75	73	60
Heavy Vehicles, %	2	2	4	2	3	8
Mvmt Flow	32	861	640	52	79	20

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	692	0	-	0	1591	666
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	925	-
Critical Hdwy	4.12	-	-	-	6.43	6.28
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.372
Pot Cap-1 Maneuver	903	-	-	-	118	449
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	385	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	903	-	-	-	114	449
Mov Cap-2 Maneuver	-	-	-	-	248	-
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	385	-

Approach	EB	WB	SB
HCM Control Delay, s	0.3	0	25.6
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	903	-	-	-	273
HCM Lane V/C Ratio	0.035	-	-	-	0.364
HCM Control Delay (s)	9.1	-	-	-	25.6
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q(veh)	0.1	-	-	-	1.6

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	30	684	154	78	424	56	103	51	85	104	102	48
Future Volume (vph)	30	684	154	78	424	56	103	51	85	104	102	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	11	12	12	10	12	12	10	12
Grade (%)		-2%			1%			2%			-2%	
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			0			0		
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			0.981			0.948			0.971	
Flt Protected	0.950			0.950				0.979			0.980	
Satd. Flow (prot)	1711	1766	0	1686	1743	0	0	1591	0	0	1617	0
Flt Permitted	0.277			0.047				0.690			0.677	
Satd. Flow (perm)	499	1766	0	83	1743	0	0	1121	0	0	1117	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1035			1019			1122			1136	
Travel Time (s)		15.7			15.4			17.0			17.2	
Peak Hour Factor	0.58	0.93	0.86	0.89	0.86	0.78	0.83	0.91	0.76	0.58	0.65	0.52
Heavy Vehicles (%)	3%	2%	2%	3%	3%	2%	3%	2%	2%	8%	2%	6%
Adj. Flow (vph)	52	735	179	88	493	72	124	56	112	179	157	92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	52	914	0	88	565	0	0	292	0	0	428	0
Turn Type	D.P+P	NA		D.P+P	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases	6			2			8			4		
Detector Phase	5	2		1	6		8	8		7	7	
Switch Phase										4	4	
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.1	18.2		11.9	18.2		13.2	13.2		11.9	13.2	
Total Split (s)	13.0	90.0		12.0	89.0		45.0	45.0		23.0	68.0	
Total Split (%)	7.6%	52.9%		7.1%	52.4%		26.5%	26.5%		13.5%	40.0%	
Maximum Green (s)	7.9	83.8		7.1	82.8		38.8	38.8		18.1	61.8	
Yellow Time (s)	3.0	4.7		3.0	4.7		4.7	4.7		3.0	4.7	
All-Red Time (s)	2.1	1.5		1.9	1.5		1.5	1.5		1.9	1.5	
Lost Time Adjust (s)	-0.1	-1.2		0.1	-1.2			-1.2			-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	1.0		1.0	1.0	
Minimum Gap (s)	1.0	3.0		1.0	3.0		1.0	1.0		1.0	1.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0		0.0	0.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	93.0	85.0		92.0	87.2			40.0			63.0	
Actuated g/C Ratio	0.55	0.50		0.54	0.51			0.24			0.37	
v/c Ratio	0.16	1.04		0.80	0.63			1.11			0.92	

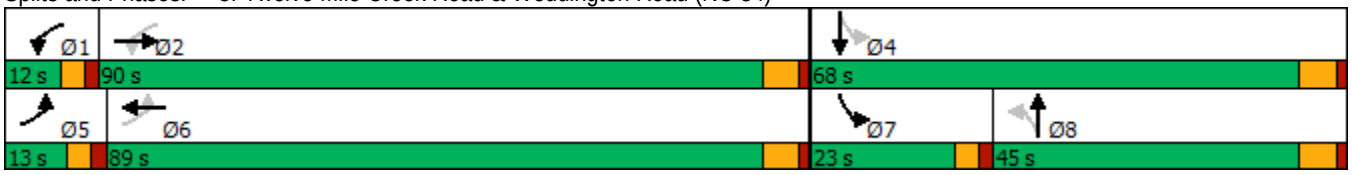
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay	17.5	80.7		75.8	34.6			145.4			74.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay	17.5	80.7		75.8	34.6			145.4			74.1	
LOS	B	F		E	C			F			E	
Approach Delay		77.3			40.2			145.4			74.1	
Approach LOS		E			D			F			E	
Queue Length 50th (ft)	25	~1090		50	459			~369			409	
Queue Length 95th (ft)	30	#1355		#151	563			#570			348	
Internal Link Dist (ft)		955			939			1042			1056	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	331	883		110	893			263			466	
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	0.16	1.04		0.80	0.63			1.11			0.92	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Natural Cycle: 180			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 74.8		Intersection LOS: E	
Intersection Capacity Utilization 81.5%		ICU Level of Service D	
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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)



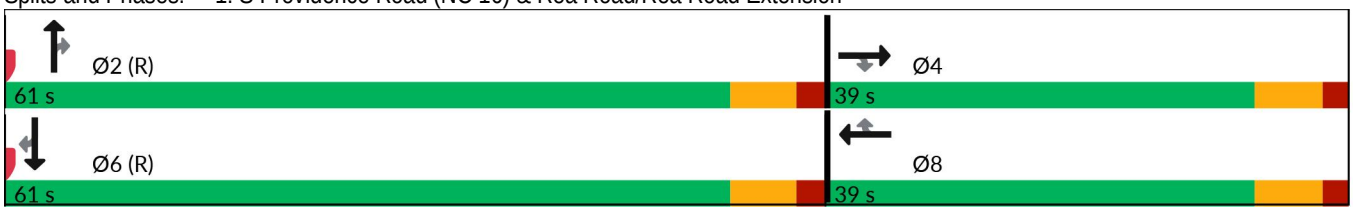
2029 Background Conditions w/ STIPs

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	549	443	0	347	418	0	1720	115	0	1170	1182
Future Volume (vph)	0	549	443	0	347	418	0	1720	115	0	1170	1182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	11	11	11	12	11	12
Grade (%)		-2%			0%			1%			-1%	
Storage Length (ft)	0		750	0		425	0		375	0		500
Storage Lanes	0		2	0		2	0		2	0		2
Taper Length (ft)	0			25			0			0		
Lane Util. Factor	1.00	0.95	0.88	1.00	0.95	0.88	1.00	0.95	0.88	1.00	0.95	0.88
Frt			0.850			0.850			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	3575	2815	0	3539	2787	0	3404	2680	0	3372	2801
Flt Permitted												
Satd. Flow (perm)	0	3575	2815	0	3539	2787	0	3404	2680	0	3372	2801
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		910			646			587			716	
Travel Time (s)		13.8			9.8			8.9			10.8	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%
Adj. Flow (vph)	0	610	492	0	386	464	0	1911	128	0	1300	1313
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	610	492	0	386	464	0	1911	128	0	1300	1313
Turn Type		NA	Perm		NA	Perm		NA	Perm		NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases			4			8			2			6
Detector Phase		4	4		8	8		2	2		6	6
Switch Phase												
Minimum Initial (s)		7.0	7.0		7.0	7.0		12.0	12.0		12.0	12.0
Minimum Split (s)		38.0	38.0		39.0	39.0		40.0	40.0		40.0	40.0
Total Split (s)		39.0	39.0		39.0	39.0		61.0	61.0		61.0	61.0
Total Split (%)		39.0%	39.0%		39.0%	39.0%		61.0%	61.0%		61.0%	61.0%
Maximum Green (s)		32.0	32.0		32.0	32.0		54.0	54.0		54.0	54.0
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		-2.0	-2.0
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
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		C-Max	C-Max		C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		24.0	24.0		25.0	25.0		26.0	26.0		26.0	26.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)		27.6	27.6		27.6	27.6		62.4	62.4		62.4	62.4
Actuated g/C Ratio		0.28	0.28		0.28	0.28		0.62	0.62		0.62	0.62
v/c Ratio		0.62	0.63		0.40	0.60		0.90	0.08		0.62	0.75

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)		34.0	35.1		29.9	34.3		20.6	8.4		10.4	13.1
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Delay (s/veh)		34.0	35.1		29.9	34.3		20.6	8.4		10.4	13.1
LOS		C	D		C	C		C	A		B	B
Approach Delay (s/veh)		34.5			32.3			19.8			11.7	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)		177	155		104	144		314	16		164	201
Queue Length 95th (ft)		214	196		134	184		#800	m31		316	445
Internal Link Dist (ft)		830			566			507			636	
Turn Bay Length (ft)			750			425			375			500
Base Capacity (vph)		1215	957		1203	947		2125	1673		2105	1748
Starvation Cap Reductn		0	0		0	0		0	0		0	0
Spillback Cap Reductn		0	0		0	0		0	0		0	0
Storage Cap Reductn		0	0		0	0		0	0		0	0
Reduced v/c Ratio		0.50	0.51		0.32	0.49		0.90	0.08		0.62	0.75

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 19 (19%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay (s/veh): 20.7		Intersection LOS: C	
Intersection Capacity Utilization 71.1%		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.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	598	764	32	67	26
Future Volume (vph)	10	598	764	32	67	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.995		0.962	
Flt Protected	0.950				0.965	
Satd. Flow (prot)	1491	1801	1730	0	1459	0
Flt Permitted	0.950				0.965	
Satd. Flow (perm)	1491	1801	1730	0	1459	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1162		1160	
Travel Time (s)		18.2	17.6		17.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	13%	2%	2%	2%	3%	38%
Adj. Flow (vph)	11	664	849	36	74	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	664	885	0	103	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.1%		ICU Level of Service A	
Analysis Period (min) 15			

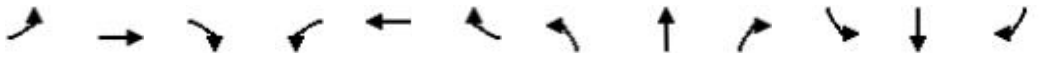
Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	598	764	32	67	26
Future Vol, veh/h	10	598	764	32	67	26
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, %	13	2	2	2	3	38
Mvmt Flow	11	664	849	36	74	29

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	885	0	-	0	1553	867
Stage 1	-	-	-	-	867	-
Stage 2	-	-	-	-	686	-
Critical Hdwy	4.23	-	-	-	6.43	6.58
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.317	-	-	-	3.527	3.642
Pot Cap-1 Maneuver	720	-	-	-	124	304
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	498	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	720	-	-	-	122	304
Mov Cap-2 Maneuver	-	-	-	-	258	-
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	498	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.2	0	26.5
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	720	-	-	-	269
HCM Lane V/C Ratio	0.015	-	-	-	0.384
HCM Control Delay (s/veh)	10.1	-	-	-	26.5
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q (veh)	0	-	-	-	1.7

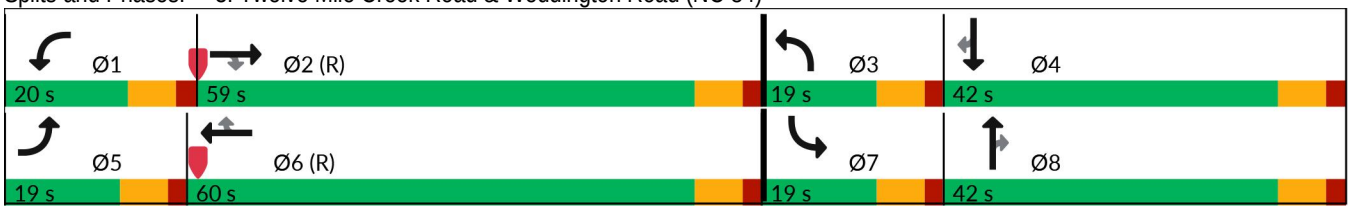


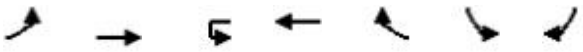
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	848	140	105	1061	53	134	23	79	82	46	170
Future Volume (vph)	89	848	140	105	1061	53	134	23	79	82	46	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			1%			2%			-2%	
Storage Length (ft)	450		400	300		375	225		225	175		125
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	100			100			150			150		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3540	1584	1710	3487	1502	1752	1844	1552	1753	1881	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	3540	1584	1710	3487	1502	1752	1844	1552	1753	1881	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1035			1019			1122			1136	
Travel Time (s)		15.7			15.4			17.0			17.2	
Peak Hour Factor	0.57	0.74	0.82	0.75	0.84	0.76	0.88	0.54	0.51	0.53	0.68	0.57
Heavy Vehicles (%)	2%	3%	3%	5%	3%	7%	2%	2%	3%	4%	2%	2%
Adj. Flow (vph)	156	1146	171	140	1263	70	152	43	155	155	68	298
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	1146	171	140	1263	70	152	43	155	155	68	298
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	39.0	39.0	14.0	37.0	37.0	14.0	42.0	42.0	14.0	42.0	42.0
Total Split (s)	19.0	59.0	59.0	20.0	60.0	60.0	19.0	42.0	42.0	19.0	42.0	42.0
Total Split (%)	13.6%	42.1%	42.1%	14.3%	42.9%	42.9%	13.6%	30.0%	30.0%	13.6%	30.0%	30.0%
Maximum Green (s)	12.0	52.0	52.0	13.0	53.0	53.0	12.0	35.0	35.0	12.0	35.0	35.0
Yellow Time (s)	5.0	5.0	5.0	5.0	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	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-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	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		25.0	25.0		23.0	23.0		28.0	28.0		28.0	28.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	15.8	58.1	58.1	15.7	58.0	58.0	14.0	32.2	32.2	14.0	32.2	32.2
Actuated g/C Ratio	0.11	0.42	0.42	0.11	0.41	0.41	0.10	0.23	0.23	0.10	0.23	0.23
v/c Ratio	0.78	0.78	0.26	0.73	0.88	0.11	0.87	0.10	0.43	0.89	0.16	0.81
Control Delay (s/veh)	86.7	34.0	26.3	82.3	46.4	27.2	102.2	40.9	49.1	105.1	42.2	68.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	86.7	34.0	26.3	82.3	46.4	27.2	102.2	40.9	49.1	105.1	42.2	68.1
LOS	F	C	C	F	D	C	F	D	D	F	D	E
Approach Delay (s/veh)		38.7			48.9			71.1			75.7	
Approach LOS		D			D			E			E	
Queue Length 50th (ft)	144	348	84	123	571	40	139	31	120	142	49	254
Queue Length 95th (ft)	138	354	131	165	605	63	#258	37	97	124	66	202
Internal Link Dist (ft)		955			939			1042			1056	
Turn Bay Length (ft)	450		400	300		375	225		225	175		125
Base Capacity (vph)	201	1469	657	195	1443	622	175	487	410	175	497	422
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.78	0.26	0.72	0.88	0.11	0.87	0.09	0.38	0.89	0.14	0.71

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 91 (65%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay (s/veh): 50.7		Intersection LOS: D	
Intersection Capacity Utilization 61.8%		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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)





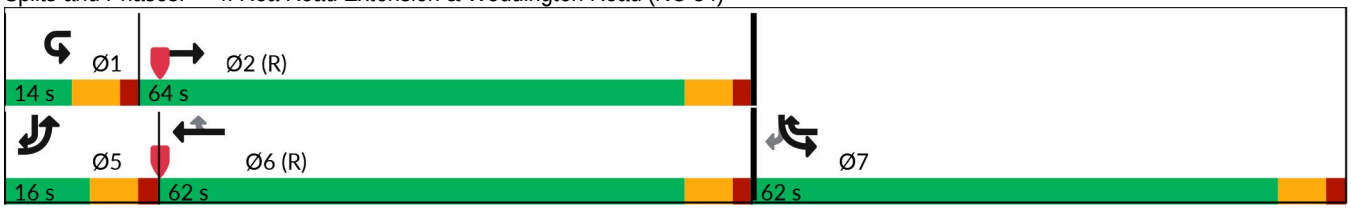
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	22	607	4	739	623	495	22
Future Volume (vph)	22	607	4	739	623	495	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	425		425		400	325	125
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.97	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1770	3539	1770	3539	1583	3433	1583
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1770	3539	1770	3539	1583	3433	1583
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		6405		2171		725	
Travel Time (s)		97.0		32.9		11.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	24	674	4	821	692	550	24
Shared Lane Traffic (%)							
Lane Group Flow (vph)	24	674	4	821	692	550	24
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	1	6	7	7	5
Permitted Phases					6		7
Detector Phase	5	2	1	6	7	7	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	41.0	36.0	36.0	14.0
Total Split (s)	16.0	64.0	14.0	62.0	62.0	62.0	16.0
Total Split (%)	11.4%	45.7%	10.0%	44.3%	44.3%	44.3%	11.4%
Maximum Green (s)	9.0	57.0	7.0	55.0	55.0	55.0	9.0
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-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	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	C-Max	None	None	None
Walk Time (s)				7.0	7.0	7.0	
Flash Don't Walk (s)				27.0	22.0	22.0	
Pedestrian Calls (#/hr)				0	0	0	
Act Effct Green (s)	9.9	94.9	9.0	85.6	123.9	32.3	47.2
Actuated g/C Ratio	0.07	0.68	0.06	0.61	0.89	0.23	0.34
v/c Ratio	0.19	0.28	0.04	0.38	0.49	0.69	0.05
Control Delay (s/veh)	64.5	10.6	63.8	8.7	1.9	53.8	28.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	64.5	10.6	63.8	8.7	1.9	53.8	28.7

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
LOS	E	B	E	A	A	D	C
Approach Delay (s/veh)		12.5		5.8		52.7	
Approach LOS		B		A		D	
Queue Length 50th (ft)	21	109	4	111	59	239	15
Queue Length 95th (ft)	52	219	m4	m130	m59	280	33
Internal Link Dist (ft)		6325		2091		645	
Turn Bay Length (ft)	425		425		400	325	125
Base Capacity (vph)	141	2399	113	2164	1572	1397	548
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.28	0.04	0.38	0.44	0.39	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 136 (97%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay (s/veh): 17.1		Intersection LOS: B	
Intersection Capacity Utilization 52.7%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Rea Road Extension & Weddington Road (NC 84)



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	2136	0	2352
Future Volume (vph)	0	0	0	2136	0	2352
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	0	2787	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	2787	0	3539
Link Speed (mph)	35		45			45
Link Distance (ft)	233		716			681
Travel Time (s)	4.5		10.8			10.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	2373	0	2613
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2373	0	2613
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.1%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	580	1556	0	0
Future Volume (vph)	0	0	580	1556	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3539	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	0	3539	2787	0	0
Link Speed (mph)	35		45			45
Link Distance (ft)	1544		233			454
Travel Time (s)	30.1		3.5			6.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	644	1729	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	644	1729	0	0
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1556	0	1772
Future Volume (vph)	0	0	0	1556	0	1772
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	2787
Link Speed (mph)	35			45	45	
Link Distance (ft)	1094			1544	1022	
Travel Time (s)	21.3			23.4	15.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1729	0	1969
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1729	0	1969
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.3%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1835	0	1613
Future Volume (vph)	0	0	0	1835	0	1613
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	2787
Link Speed (mph)	35			45	45	
Link Distance (ft)	153			579	587	
Travel Time (s)	3.0			8.8	8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	2039	0	1792
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2039	0	1792
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	39	1574
Future Volume (vph)	0	0	0	0	39	1574
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	0	1863	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	0	1863	2787
Link Speed (mph)	45			35	45	
Link Distance (ft)	1018			449	153	
Travel Time (s)	15.4			8.7	2.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	43	1749
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	43	1749
Sign Control	Free			Free	Free	

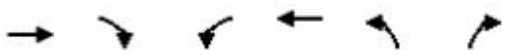
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	1796	0	1574
Future Volume (vph)	0	0	0	1796	0	1574
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	0	2787	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	2787	0	3539
Link Speed (mph)	35		45			45
Link Distance (ft)	580		1041			1018
Travel Time (s)	11.3		15.8			15.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1996	0	1749
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1996	0	1749
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			

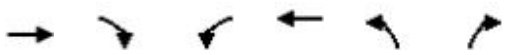
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	992	0	1529	0	0
Future Volume (vph)	0	992	0	1529	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	3539	0	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	0	2787	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		406	910		187	
Travel Time (s)		6.2	13.8		2.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1102	0	1699	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1102	0	1699	0	0
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 56.8%		ICU Level of Service B	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	78	1451	0	0
Future Volume (vph)	0	0	78	1451	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	0	0	1770	3539	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1770	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	462			187	223	
Travel Time (s)	7.0			2.8	3.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	87	1612	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	87	1612	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.3%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	914	0	1451	0	0
Future Volume (vph)	0	914	0	1451	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	0	2787	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	0	2787	0	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	1324			462	242	
Travel Time (s)	20.1			7.0	3.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1016	0	1612	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1016	0	1612	0	0
Sign Control	Free			Free	Free	

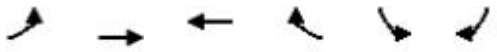
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.4%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	664	0	765	0	0
Future Volume (vph)	0	664	0	765	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	0	2787	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	0	2787	0	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	646			423	164	
Travel Time (s)	9.8			6.4	2.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	738	0	850	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	738	0	850	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.5%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	385	279	0	0	0	0
Future Volume (vph)	385	279	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	1863	2787	0	0	0	0
Flt Permitted						
Satd. Flow (perm)	1863	2787	0	0	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	164			264	460	
Travel Time (s)	2.5			4.0	7.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	428	310	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	428	310	0	0	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.4%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	279	0	380	0	0
Future Volume (vph)	0	279	0	380	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	3539	0	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	0	2787	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		460	6405		203	
Travel Time (s)		7.0	97.0		3.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	310	0	422	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	310	0	422	0	0
Sign Control		Free	Free		Free	

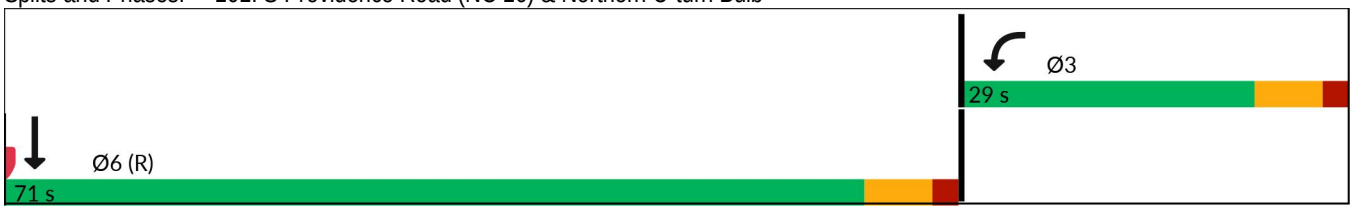
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 16.6%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	580	0	0	0	0	1772
Future Volume (vph)	580	0	0	0	0	1772
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450	0		0	0	
Storage Lanes	0	0		0	0	
Taper Length (ft)	100				25	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	3433	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	35		45			45
Link Distance (ft)	454		681			1094
Travel Time (s)	8.8		10.3			16.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	644	0	0	0	0	1969
Shared Lane Traffic (%)						
Lane Group Flow (vph)	644	0	0	0	0	1969
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					12.0
Minimum Split (s)	14.0					19.0
Total Split (s)	29.0					71.0
Total Split (%)	29.0%					71.0%
Maximum Green (s)	22.0					64.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	23.2					66.8
Actuated g/C Ratio	0.23					0.67
v/c Ratio	0.81					0.83
Control Delay (s/veh)	34.9					16.7
Queue Delay	0.0					0.0
Total Delay (s/veh)	34.9					16.7
LOS	C					B
Approach Delay (s/veh)	34.9					16.7
Approach LOS	C					B

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Length 50th (ft)	202					454
Queue Length 95th (ft)	m215					572
Internal Link Dist (ft)	374		601			1014
Turn Bay Length (ft)	450					
Base Capacity (vph)	823					2365
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.78					0.83

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 1 (1%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 21.2		Intersection LOS: C	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 101: S Providence Road (NC 16) & Northern U-turn Bulb

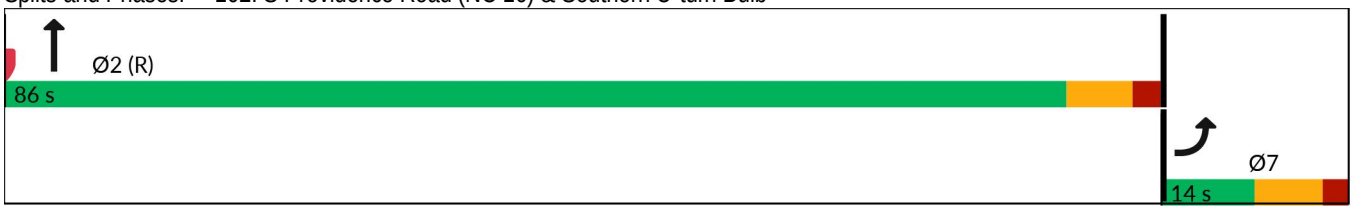


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	0	0	1796	0	0
Future Volume (vph)	39	0	0	1796	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	425	0	0			0
Storage Lanes	0	0	0			0
Taper Length (ft)	100		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	3539	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	3539	0	0
Right Turn on Red	No	No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	449			580	579	
Travel Time (s)	8.7			8.8	8.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	43	0	0	1996	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	43	0	0	1996	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			12.0		
Minimum Split (s)	14.0			19.0		
Total Split (s)	14.0			86.0		
Total Split (%)	14.0%			86.0%		
Maximum Green (s)	7.0			79.0		
Yellow Time (s)	5.0			5.0		
All-Red Time (s)	2.0			2.0		
Lost Time Adjust (s)	-2.0			-2.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0		
Recall Mode	None			C-Max		
Act Effct Green (s)	9.0			88.6		
Actuated g/C Ratio	0.09			0.89		
v/c Ratio	0.27			0.64		
Control Delay (s/veh)	44.4			4.0		
Queue Delay	0.0			0.0		
Total Delay (s/veh)	44.4			4.0		
LOS	D			A		
Approach Delay (s/veh)	44.4			4.0		
Approach LOS	D			A		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 50th (ft)	24			217		
Queue Length 95th (ft)	m44			274		
Internal Link Dist (ft)	369			500	499	
Turn Bay Length (ft)	425					
Base Capacity (vph)	159			3135		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.27			0.64		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 20 (20%), Referenced to phase 2:NBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay (s/veh): 4.9		Intersection LOS: A	
Intersection Capacity Utilization 63.8%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 102: S Providence Road (NC 16) & Southern U-turn Bulb



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	914	0	0	78	0
Future Volume (vph)	0	914	0	0	78	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	0	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	0	0	1770	0
Link Speed (mph)		45	45		35	
Link Distance (ft)		242	406		223	
Travel Time (s)		3.7	6.2		4.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1016	0	0	87	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1016	0	0	87	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.0%		ICU Level of Service C	
Analysis Period (min) 15			

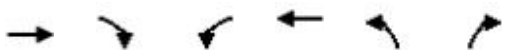
Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	914	0	0	78	0
Future Vol, veh/h	0	914	0	0	78	0
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	0	1016	0	0	87	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	-	0	508	-
Stage 1	-	-	0	-
Stage 2	-	-	508	-
Critical Hdwy	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.84	-
Follow-up Hdwy	-	-	3.52	-
Pot Cap-1 Maneuver	0	-	494	0
Stage 1	0	-	-	0
Stage 2	0	-	569	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	494	-
Mov Cap-2 Maneuver	-	-	494	-
Stage 1	-	-	-	-
Stage 2	-	-	569	-

Approach	EB	SB
HCM Control Delay, s/v	0	13.8
HCM LOS		B

Minor Lane/Major Mvmt	EBT	SBLn1
Capacity (veh/h)	-	494
HCM Lane V/C Ratio	-	0.175
HCM Control Delay (s/veh)	-	13.8
HCM Lane LOS	-	B
HCM 95th %tile Q (veh)	-	0.6



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	380	385	0
Future Volume (vph)	0	0	0	380	385	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0		500	0
Storage Lanes		0	0		0	0
Taper Length (ft)			25		100	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	3539	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	3539	1770	0
Link Speed (mph)	45			45	35	
Link Distance (ft)	423			203	264	
Travel Time (s)	6.4			3.1	5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	422	428	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	422	428	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	7.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↰	
Traffic Vol, veh/h	0	0	0	380	385	0
Future Vol, veh/h	0	0	0	380	385	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
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	0	0	0	422	428	0

Major/Minor	Major2		Minor1	
Conflicting Flow All	-	-	211	-
Stage 1	-	-	0	-
Stage 2	-	-	211	-
Critical Hdwy	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.84	-
Follow-up Hdwy	-	-	3.52	-
Pot Cap-1 Maneuver	0	-	758	0
Stage 1	0	-	-	0
Stage 2	0	-	804	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	758	-
Mov Cap-2 Maneuver	-	-	758	-
Stage 1	-	-	-	-
Stage 2	-	-	804	-

Approach	WB	NB
HCM Control Delay, s/v	0	15.7
HCM LOS		C

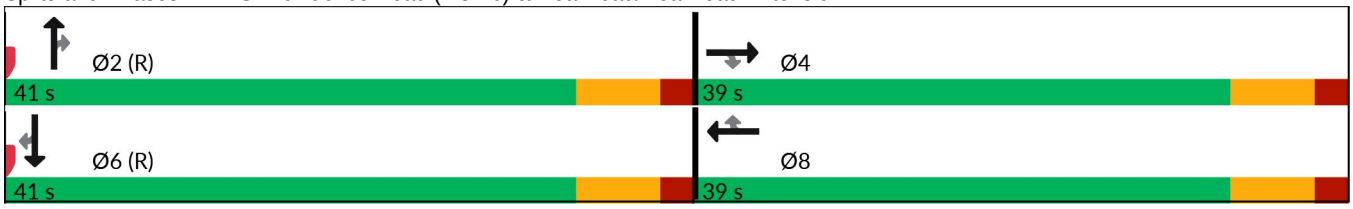
Minor Lane/Major Mvmt	NBLn1	WBT
Capacity (veh/h)	758	-
HCM Lane V/C Ratio	0.564	-
HCM Control Delay (s/veh)	15.7	-
HCM Lane LOS	C	-
HCM 95th %tile Q (veh)	3.6	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	838	566	0	352	527	0	1214	185	0	991	645
Future Volume (vph)	0	838	566	0	352	527	0	1214	185	0	991	645
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	11	11	11	12	11	12
Grade (%)		-2%			0%			1%			-1%	
Storage Length (ft)	0		750	0		425	0		375	0		500
Storage Lanes	0		2	0		2	0		2	0		2
Taper Length (ft)	0			25			0			0		
Lane Util. Factor	1.00	0.95	0.88	1.00	0.95	0.88	1.00	0.95	0.88	1.00	0.95	0.88
Frt			0.850			0.850			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	3575	2787	0	3539	2787	0	3371	2680	0	3438	2773
Flt Permitted												
Satd. Flow (perm)	0	3575	2787	0	3539	2787	0	3371	2680	0	3438	2773
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		910			646			587			716	
Travel Time (s)		13.8			9.8			8.9			10.8	
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
Heavy Vehicles (%)	2%	2%	3%	2%	2%	2%	2%	3%	2%	2%	2%	3%
Adj. Flow (vph)	0	931	629	0	391	586	0	1349	206	0	1101	717
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	931	629	0	391	586	0	1349	206	0	1101	717
Turn Type		NA	Perm		NA	Perm		NA	Perm		NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases			4			8			2			6
Detector Phase		4	4		8	8		2	2		6	6
Switch Phase												
Minimum Initial (s)		7.0	7.0		7.0	7.0		12.0	12.0		12.0	12.0
Minimum Split (s)		38.0	38.0		39.0	39.0		40.0	40.0		40.0	40.0
Total Split (s)		39.0	39.0		39.0	39.0		41.0	41.0		41.0	41.0
Total Split (%)		48.8%	48.8%		48.8%	48.8%		51.3%	51.3%		51.3%	51.3%
Maximum Green (s)		32.0	32.0		32.0	32.0		34.0	34.0		34.0	34.0
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		-2.0	-2.0
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
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		C-Max	C-Max		C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		24.0	24.0		25.0	25.0		26.0	26.0		26.0	26.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)		31.5	31.5		31.5	31.5		38.5	38.5		38.5	38.5
Actuated g/C Ratio		0.39	0.39		0.39	0.39		0.48	0.48		0.48	0.48
v/c Ratio		0.66	0.57		0.28	0.53		0.83	0.16		0.66	0.54

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)		22.2	21.0		16.6	20.3		20.2	11.8		14.1	12.6
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Delay (s/veh)		22.2	21.0		16.6	20.3		20.2	11.8		14.1	12.6
LOS		C	C		B	C		C	B		B	B
Approach Delay (s/veh)		21.7			18.8			19.1			13.5	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)		186	130		65	118		189	28		139	96
Queue Length 95th (ft)		245	181		94	167		#240	46		200	121
Internal Link Dist (ft)		830			566			507			636	
Turn Bay Length (ft)			750			425			375			500
Base Capacity (vph)		1519	1184		1504	1184		1623	1291		1656	1335
Starvation Cap Reductn		0	0		0	0		0	0		0	0
Spillback Cap Reductn		0	0		0	0		0	0		0	0
Storage Cap Reductn		0	0		0	0		0	0		0	0
Reduced v/c Ratio		0.61	0.53		0.26	0.49		0.83	0.16		0.66	0.54

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 16 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 18.0		Intersection LOS: B	
Intersection Capacity Utilization 65.1%		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: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	760	476	134	65	7
Future Volume (vph)	19	760	476	134	65	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.970		0.986	
Flt Protected	0.950				0.957	
Satd. Flow (prot)	1574	1801	1645	0	1641	0
Flt Permitted	0.950				0.957	
Satd. Flow (perm)	1574	1801	1645	0	1641	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1162		1160	
Travel Time (s)		18.2	17.6		17.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	2%	5%	3%	2%	2%
Adj. Flow (vph)	21	844	529	149	72	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	844	678	0	80	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.7%		ICU Level of Service A	
Analysis Period (min) 15			

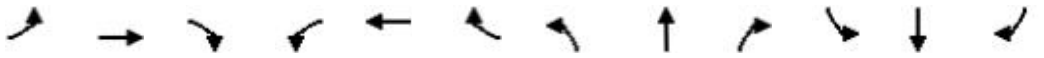
Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	760	476	134	65	7
Future Vol, veh/h	19	760	476	134	65	7
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, %	7	2	5	3	2	2
Mvmt Flow	21	844	529	149	72	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	678	0	-	0	1490	604
Stage 1	-	-	-	-	604	-
Stage 2	-	-	-	-	886	-
Critical Hdwy	4.17	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.263	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	891	-	-	-	136	498
Stage 1	-	-	-	-	546	-
Stage 2	-	-	-	-	403	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	891	-	-	-	133	498
Mov Cap-2 Maneuver	-	-	-	-	269	-
Stage 1	-	-	-	-	533	-
Stage 2	-	-	-	-	403	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.2	0	22.7
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	891	-	-	-	282
HCM Lane V/C Ratio	0.024	-	-	-	0.284
HCM Control Delay (s/veh)	9.1	-	-	-	22.7
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q (veh)	0.1	-	-	-	1.1

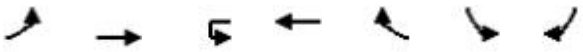


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	779	99	99	522	175	109	156	75	127	131	49
Future Volume (vph)	79	779	99	99	522	175	109	156	75	127	131	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			1%			2%			-2%	
Storage Length (ft)	450		400	300		375	225		225	175		125
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	100			100			150			150		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1787	3506	1599	1744	3454	1530	1735	1809	1523	1787	1863	1599
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1787	3506	1599	1744	3454	1530	1735	1809	1523	1787	1863	1599
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1035			1019			1122			1136	
Travel Time (s)		15.7			15.4			17.0			17.2	
Peak Hour Factor	0.72	0.86	0.91	0.75	0.85	0.74	0.81	0.70	0.71	0.78	0.57	0.48
Heavy Vehicles (%)	2%	4%	2%	3%	4%	5%	3%	4%	5%	2%	3%	2%
Adj. Flow (vph)	110	906	109	132	614	236	135	223	106	163	230	102
Shared Lane Traffic (%)												
Lane Group Flow (vph)	110	906	109	132	614	236	135	223	106	163	230	102
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	39.0	39.0	14.0	37.0	37.0	14.0	42.0	42.0	14.0	42.0	42.0
Total Split (s)	19.0	42.0	42.0	17.0	40.0	40.0	18.0	42.0	42.0	19.0	43.0	43.0
Total Split (%)	15.8%	35.0%	35.0%	14.2%	33.3%	33.3%	15.0%	35.0%	35.0%	15.8%	35.8%	35.8%
Maximum Green (s)	12.0	35.0	35.0	10.0	33.0	33.0	11.0	35.0	35.0	12.0	36.0	36.0
Yellow Time (s)	5.0	5.0	5.0	5.0	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	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-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	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		25.0	25.0		23.0	23.0		28.0	28.0		28.0	28.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	14.7	47.1	47.1	16.2	48.6	48.6	12.7	22.9	22.9	13.8	24.0	24.0
Actuated g/C Ratio	0.12	0.39	0.39	0.14	0.41	0.41	0.11	0.19	0.19	0.12	0.20	0.20
v/c Ratio	0.50	0.66	0.17	0.56	0.44	0.38	0.74	0.65	0.37	0.80	0.62	0.32
Control Delay (s/veh)	60.3	27.3	22.9	57.6	29.0	30.1	75.8	53.0	44.3	78.6	50.4	42.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	60.3	27.3	22.9	57.6	29.0	30.1	75.8	53.0	44.3	78.6	50.4	42.2
LOS	E	C	C	E	C	C	E	D	D	E	D	D
Approach Delay (s/veh)		30.1			33.1			57.6			58.0	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	86	207	42	96	179	127	103	161	72	125	164	68
Queue Length 95th (ft)	113	276	87	131	256	184	#161	169	90	#182	135	56
Internal Link Dist (ft)		955			939			1042			1056	
Turn Bay Length (ft)	450		400	300		375	225		225	175		125
Base Capacity (vph)	234	1375	627	236	1398	619	187	557	469	208	589	506
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.66	0.17	0.56	0.44	0.38	0.72	0.40	0.23	0.78	0.39	0.20

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 101 (84%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay (s/veh): 39.7		Intersection LOS: D	
Intersection Capacity Utilization 59.3%		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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)



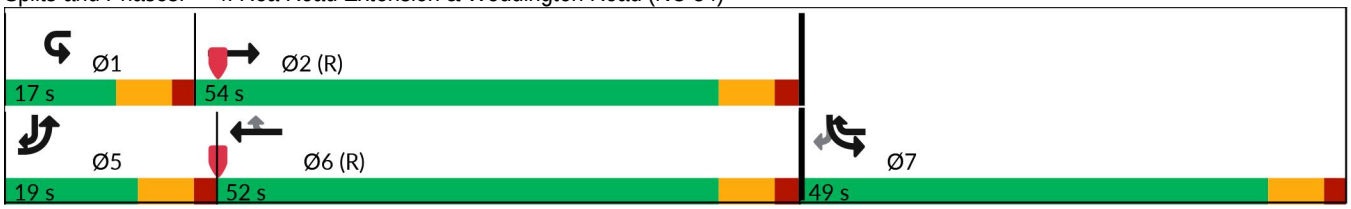
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	22	516	4	373	307	441	21
Future Volume (vph)	22	516	4	373	307	441	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	425		425		400	325	125
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.97	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1770	3539	1770	3539	1583	3433	1583
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1770	3539	1770	3539	1583	3433	1583
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		6405		2171		725	
Travel Time (s)		97.0		32.9		11.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	24	573	4	414	341	490	23
Shared Lane Traffic (%)							
Lane Group Flow (vph)	24	573	4	414	341	490	23
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	1	6	7	7	5
Permitted Phases					6		7
Detector Phase	5	2	1	6	7	7	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	41.0	36.0	36.0	14.0
Total Split (s)	19.0	54.0	17.0	52.0	49.0	49.0	19.0
Total Split (%)	15.8%	45.0%	14.2%	43.3%	40.8%	40.8%	15.8%
Maximum Green (s)	12.0	47.0	10.0	45.0	42.0	42.0	12.0
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-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	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	C-Max	None	None	None
Walk Time (s)				7.0	7.0	7.0	
Flash Don't Walk (s)				27.0	22.0	22.0	
Pedestrian Calls (#/hr)				0	0	0	
Act Effct Green (s)	9.7	81.9	9.0	75.6	107.9	25.3	40.0
Actuated g/C Ratio	0.08	0.68	0.08	0.63	0.90	0.21	0.33
v/c Ratio	0.17	0.24	0.03	0.19	0.24	0.68	0.04
Control Delay (s/veh)	53.9	8.8	44.3	11.2	1.3	48.0	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	53.9	8.8	44.3	11.2	1.3	48.0	24.8

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
LOS	D	A	D	B	A	D	C
Approach Delay (s/veh)		10.6		6.9		47.0	
Approach LOS		B		A		D	
Queue Length 50th (ft)	18	73	3	67	34	180	12
Queue Length 95th (ft)	45	161	m8	120	40	222	28
Internal Link Dist (ft)		6325		2091		645	
Turn Bay Length (ft)	425		425		400	325	125
Base Capacity (vph)	206	2414	177	2229	1547	1258	585
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.24	0.02	0.19	0.22	0.39	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay (s/veh): 19.1		Intersection LOS: B	
Intersection Capacity Utilization 39.2%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Rea Road Extension & Weddington Road (NC 84)



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	1741	0	1636
Future Volume (vph)	0	0	0	1741	0	1636
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	0	2787	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	2787	0	3539
Link Speed (mph)	35		45			45
Link Distance (ft)	233		716			681
Travel Time (s)	4.5		10.8			10.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1934	0	1818
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1934	0	1818
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.2%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	307	1434	0	0
Future Volume (vph)	0	0	307	1434	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3539	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	0	3539	2787	0	0
Link Speed (mph)	35		45			45
Link Distance (ft)	1544		233			454
Travel Time (s)	30.1		3.5			6.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	341	1593	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	341	1593	0	0
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.8%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1434	0	1329
Future Volume (vph)	0	0	0	1434	0	1329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	2787
Link Speed (mph)	35			45	45	
Link Distance (ft)	1094			1544	1022	
Travel Time (s)	21.3			23.4	15.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1593	0	1477
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1593	0	1477
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.8%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1399	0	1557
Future Volume (vph)	0	0	0	1399	0	1557
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	2787
Link Speed (mph)	35			45	45	
Link Distance (ft)	153			579	587	
Travel Time (s)	3.0			8.8	8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1554	0	1730
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1554	0	1730
Sign Control	Free			Free	Free	

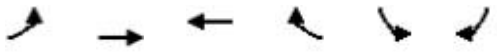
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.8%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	57	1500
Future Volume (vph)	0	0	0	0	57	1500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	0	1863	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	0	1863	2787
Link Speed (mph)	45			35	45	
Link Distance (ft)	1018			449	153	
Travel Time (s)	15.4			8.7	2.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	63	1667
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	63	1667
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.8%		ICU Level of Service B	
Analysis Period (min) 15			

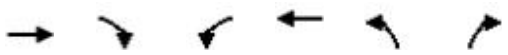
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	1342	0	1500
Future Volume (vph)	0	0	0	1342	0	1500
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	0	2787	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	2787	0	3539
Link Speed (mph)	35		45			45
Link Distance (ft)	580		1041			1018
Travel Time (s)	11.3		15.8			15.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1491	0	1667
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1491	0	1667
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.3%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1404	0	997	0	0
Future Volume (vph)	0	1404	0	997	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	3539	0	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	0	2787	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		406	910		187	
Travel Time (s)		6.2	13.8		2.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1560	0	1108	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1560	0	1108	0	0
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.1%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	93	904	0	0
Future Volume (vph)	0	0	93	904	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	0	0	1770	3539	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1770	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	462			187	223	
Travel Time (s)	7.0			2.8	3.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	103	1004	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	103	1004	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.2%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	1311	0	904	0	0
Future Volume (vph)	0	1311	0	904	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	0	2787	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	0	2787	0	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	1324			462	242	
Travel Time (s)	20.1			7.0	3.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1457	0	1004	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1457	0	1004	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.2%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	1023	0	879	0	0
Future Volume (vph)	0	1023	0	879	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	0	2787	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	0	2787	0	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	646			423	164	
Travel Time (s)	9.8			6.4	2.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1137	0	977	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1137	0	977	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.4%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	485	538	0	0	0	0
Future Volume (vph)	485	538	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	1863	2787	0	0	0	0
Flt Permitted						
Satd. Flow (perm)	1863	2787	0	0	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	164			264	460	
Travel Time (s)	2.5			4.0	7.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	539	598	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	539	598	0	0	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.1%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	538	0	394	0	0
Future Volume (vph)	0	538	0	394	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	3539	0	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	0	2787	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		460	6405		203	
Travel Time (s)		7.0	97.0		3.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	598	0	438	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	598	0	438	0	0
Sign Control		Free	Free		Free	

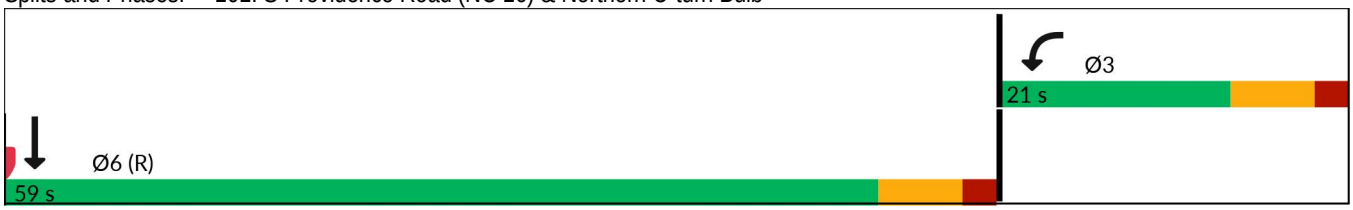
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.2%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	307	0	0	0	0	1329
Future Volume (vph)	307	0	0	0	0	1329
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450	0		0	0	
Storage Lanes	0	0		0	0	
Taper Length (ft)	100				25	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	3433	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	35		45			45
Link Distance (ft)	454		681			1094
Travel Time (s)	8.8		10.3			16.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	341	0	0	0	0	1477
Shared Lane Traffic (%)						
Lane Group Flow (vph)	341	0	0	0	0	1477
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					12.0
Minimum Split (s)	14.0					19.0
Total Split (s)	21.0					59.0
Total Split (%)	26.3%					73.8%
Maximum Green (s)	14.0					52.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	14.5					55.5
Actuated g/C Ratio	0.18					0.69
v/c Ratio	0.55					0.60
Control Delay (s/veh)	25.5					7.9
Queue Delay	0.0					0.0
Total Delay (s/veh)	25.5					7.9
LOS	C					A
Approach Delay (s/veh)	25.5					7.9
Approach LOS	C					A

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Length 50th (ft)	74					177
Queue Length 95th (ft)	m89					243
Internal Link Dist (ft)	374		601			1014
Turn Bay Length (ft)	450					
Base Capacity (vph)	686					2456
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.50					0.60

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay (s/veh): 11.2		Intersection LOS: B	
Intersection Capacity Utilization 53.8%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 101: S Providence Road (NC 16) & Northern U-turn Bulb

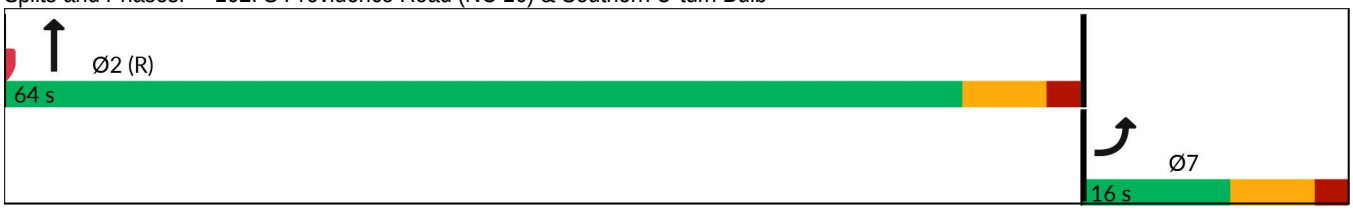


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	57	0	0	1342	0	0
Future Volume (vph)	57	0	0	1342	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	425	0	0			0
Storage Lanes	0	0	0			0
Taper Length (ft)	100		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	3539	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	3539	0	0
Right Turn on Red	No	No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	449			580	579	
Travel Time (s)	8.7			8.8	8.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	63	0	0	1491	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	63	0	0	1491	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			12.0		
Minimum Split (s)	14.0			19.0		
Total Split (s)	16.0			64.0		
Total Split (%)	20.0%			80.0%		
Maximum Green (s)	9.0			57.0		
Yellow Time (s)	5.0			5.0		
All-Red Time (s)	2.0			2.0		
Lost Time Adjust (s)	-2.0			-2.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0		
Recall Mode	None			C-Max		
Act Effct Green (s)	10.0			63.8		
Actuated g/C Ratio	0.13			0.80		
v/c Ratio	0.28			0.53		
Control Delay (s/veh)	32.3			4.8		
Queue Delay	0.0			0.0		
Total Delay (s/veh)	32.3			4.8		
LOS	C			A		
Approach Delay (s/veh)	32.3			4.8		
Approach LOS	C			A		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 50th (ft)	28			133		
Queue Length 95th (ft)	m49			185		
Internal Link Dist (ft)	369			500	499	
Turn Bay Length (ft)	425					
Base Capacity (vph)	243			2820		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.26			0.53		

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 12 (15%), Referenced to phase 2:NBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay (s/veh): 5.9		Intersection LOS: A	
Intersection Capacity Utilization 57.8%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 102: S Providence Road (NC 16) & Southern U-turn Bulb



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1311	0	0	93	0
Future Volume (vph)	0	1311	0	0	93	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	0	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	0	0	1770	0
Link Speed (mph)		45	45		35	
Link Distance (ft)		242	406		223	
Travel Time (s)		3.7	6.2		4.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1457	0	0	103	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1457	0	0	103	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.9%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1311	0	0	93	0
Future Vol, veh/h	0	1311	0	0	93	0
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	0	1457	0	0	103	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	-	0	729	-
Stage 1	-	-	0	-
Stage 2	-	-	729	-
Critical Hdwy	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.84	-
Follow-up Hdwy	-	-	3.52	-
Pot Cap-1 Maneuver	0	-	358	0
Stage 1	0	-	-	0
Stage 2	0	-	438	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	358	-
Mov Cap-2 Maneuver	-	-	358	-
Stage 1	-	-	-	-
Stage 2	-	-	438	-

Approach	EB	SB
HCM Control Delay, s/v	0	19.1
HCM LOS		C

Minor Lane/Major Mvmt	EBT	SBLn1
Capacity (veh/h)	-	358
HCM Lane V/C Ratio	-	0.289
HCM Control Delay (s/veh)	-	19.1
HCM Lane LOS	-	C
HCM 95th %tile Q (veh)	-	1.2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	394	485	0
Future Volume (vph)	0	0	0	394	485	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0		500	0
Storage Lanes		0	0		0	0
Taper Length (ft)			25		100	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	3539	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	3539	1770	0
Link Speed (mph)	45			45	35	
Link Distance (ft)	423			203	264	
Travel Time (s)	6.4			3.1	5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	438	539	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	438	539	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.4%		ICU Level of Service A	
Analysis Period (min) 15			

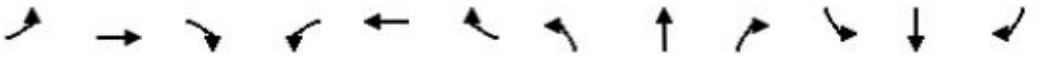
Intersection	
Int Delay, s/veh	11.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↰	
Traffic Vol, veh/h	0	0	0	394	485	0
Future Vol, veh/h	0	0	0	394	485	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
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	0	0	0	438	539	0

Major/Minor	Major2		Minor1	
Conflicting Flow All	-	-	219	-
Stage 1	-	-	0	-
Stage 2	-	-	219	-
Critical Hdwy	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.84	-
Follow-up Hdwy	-	-	3.52	-
Pot Cap-1 Maneuver	0	-	749	0
Stage 1	0	-	-	0
Stage 2	0	-	796	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	749	-
Mov Cap-2 Maneuver	-	-	749	-
Stage 1	-	-	-	-
Stage 2	-	-	796	-

Approach	WB	NB
HCM Control Delay, s/v	0	21.1
HCM LOS		C

Minor Lane/Major Mvmt	NBLn1	WBT
Capacity (veh/h)	749	-
HCM Lane V/C Ratio	0.719	-
HCM Control Delay (s/veh)	21.1	-
HCM Lane LOS	C	-
HCM 95th %tile Q (veh)	6.2	-



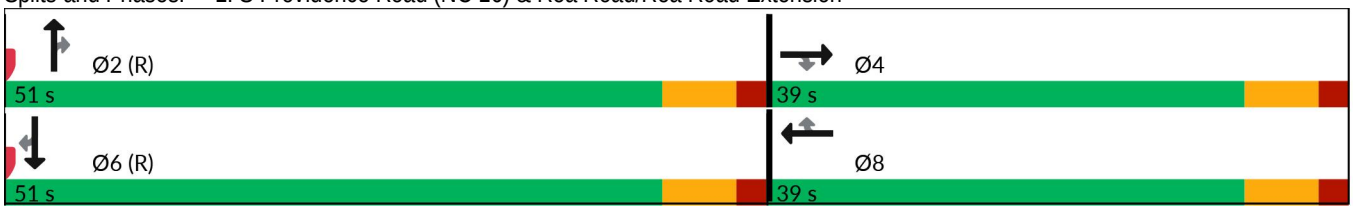
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	876	659	0	245	643	0	1498	114	0	1176	749
Future Volume (vph)	0	876	659	0	245	643	0	1498	114	0	1176	749
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	11	11	11	12	11	12
Grade (%)		-2%			0%			1%			-1%	
Storage Length (ft)	0		750	0		425	0		375	0		500
Storage Lanes	0		2	0		2	0		2	0		2
Taper Length (ft)	0			25			0			0		
Lane Util. Factor	1.00	0.95	0.88	1.00	0.95	0.88	1.00	0.95	0.88	1.00	0.95	0.88
Frt			0.850			0.850			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	3575	2815	0	3539	2787	0	3404	2680	0	3438	2801
Flt Permitted												
Satd. Flow (perm)	0	3575	2815	0	3539	2787	0	3404	2680	0	3438	2801
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		910			646			587			716	
Travel Time (s)		13.8			9.8			8.9			10.8	
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)	0	973	732	0	272	714	0	1664	127	0	1307	832
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	973	732	0	272	714	0	1664	127	0	1307	832
Turn Type		NA	Perm		NA	Perm		NA	Perm		NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases			4			8			2			6
Detector Phase		4	4		8	8		2	2		6	6
Switch Phase												
Minimum Initial (s)		7.0	7.0		7.0	7.0		12.0	12.0		12.0	12.0
Minimum Split (s)		38.0	38.0		39.0	39.0		40.0	40.0		40.0	40.0
Total Split (s)		39.0	39.0		39.0	39.0		51.0	51.0		51.0	51.0
Total Split (%)		43.3%	43.3%		43.3%	43.3%		56.7%	56.7%		56.7%	56.7%
Maximum Green (s)		32.0	32.0		32.0	32.0		44.0	44.0		44.0	44.0
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		-2.0	-2.0
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
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		C-Max	C-Max		C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		24.0	24.0		25.0	25.0		26.0	26.0		26.0	26.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)		33.1	33.1		33.1	33.1		46.9	46.9		46.9	46.9
Actuated g/C Ratio		0.37	0.37		0.37	0.37		0.52	0.52		0.52	0.52
v/c Ratio		0.74	0.71		0.21	0.70		0.94	0.09		0.73	0.57
Control Delay (s/veh)		28.7	28.6		19.7	28.3		28.3	8.7		14.6	12.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Delay (s/veh)		28.7	28.6		19.7	28.3		28.3	8.7		14.6	12.1
LOS		C	C		B	C		C	A		B	B
Approach Delay (s/veh)		28.7			26.0			26.9			13.6	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)		244	194		53	189		456	11		220	110
Queue Length 95th (ft)		316	266		82	259		#637	17		257	146
Internal Link Dist (ft)		830			566			507			636	
Turn Bay Length (ft)			750			425			375			500
Base Capacity (vph)		1350	1063		1336	1052		1775	1397		1793	1460
Starvation Cap Reductn		0	0		0	0		0	0		0	0
Spillback Cap Reductn		0	0		0	0		0	0		0	0
Storage Cap Reductn		0	0		0	0		0	0		0	0
Reduced v/c Ratio		0.72	0.69		0.20	0.68		0.94	0.09		0.73	0.57

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 16 (18%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay (s/veh): 22.9 Intersection LOS: C
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: S Providence Road (NC 16) & Rea Road/Rea Road Extension



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	763	602	64	31	11
Future Volume (vph)	30	763	602	64	31	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.987		0.965	
Flt Protected	0.950				0.964	
Satd. Flow (prot)	1652	1801	1686	0	1582	0
Flt Permitted	0.950				0.964	
Satd. Flow (perm)	1652	1801	1686	0	1582	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1162		1160	
Travel Time (s)		18.2	17.6		17.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	2%	3%	8%
Adj. Flow (vph)	33	848	669	71	34	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	848	740	0	46	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.2%		ICU Level of Service A	
Analysis Period (min) 15			

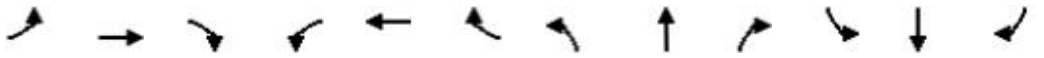
Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	763	602	64	31	11
Future Vol, veh/h	30	763	602	64	31	11
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	4	2	3	8
Mvmt Flow	33	848	669	71	34	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	740	0	-	0	1619	705
Stage 1	-	-	-	-	705	-
Stage 2	-	-	-	-	914	-
Critical Hdwy	4.12	-	-	-	6.43	6.28
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.372
Pot Cap-1 Maneuver	867	-	-	-	113	426
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	389	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	867	-	-	-	109	426
Mov Cap-2 Maneuver	-	-	-	-	243	-
Stage 1	-	-	-	-	469	-
Stage 2	-	-	-	-	389	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.4	0	20.8
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	867	-	-	-	274
HCM Lane V/C Ratio	0.038	-	-	-	0.17
HCM Control Delay (s/veh)	9.3	-	-	-	20.8
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q (veh)	0.1	-	-	-	0.6



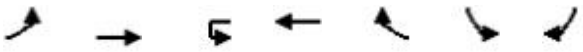
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	169	1058	135	78	858	81	144	46	103	52	23	90
Future Volume (vph)	169	1058	135	78	858	81	144	46	103	52	23	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)		-2%			1%			2%			-2%	
Storage Length (ft)	450		400	300		375	225		225	175		125
Storage Lanes	1		1	1		1	1		1	1		1
Taper Length (ft)	100			100			150			150		
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850			0.850			0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	3575	1599	1744	3487	1575	1735	1844	1568	1688	1881	1539
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	1770	3575	1599	1744	3487	1575	1735	1844	1568	1688	1881	1539
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1035			1019			1122			1136	
Travel Time (s)		15.7			15.4			17.0			17.2	
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
Heavy Vehicles (%)	3%	2%	2%	3%	3%	2%	3%	2%	2%	8%	2%	6%
Adj. Flow (vph)	188	1176	150	87	953	90	160	51	114	58	26	100
Shared Lane Traffic (%)												
Lane Group Flow (vph)	188	1176	150	87	953	90	160	51	114	58	26	100
Turn Type	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2			6			8			4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	7.0	12.0	12.0	7.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	39.0	39.0	14.0	37.0	37.0	14.0	42.0	42.0	14.0	42.0	42.0
Total Split (s)	18.0	47.0	47.0	14.0	43.0	43.0	17.0	45.0	45.0	14.0	42.0	42.0
Total Split (%)	15.0%	39.2%	39.2%	11.7%	35.8%	35.8%	14.2%	37.5%	37.5%	11.7%	35.0%	35.0%
Maximum Green (s)	11.0	40.0	40.0	7.0	36.0	36.0	10.0	38.0	38.0	7.0	35.0	35.0
Yellow Time (s)	5.0	5.0	5.0	5.0	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	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	-2.0	-2.0	-2.0	-2.0	-2.0	-2.0	-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	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None	None
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		25.0	25.0		23.0	23.0		28.0	28.0		28.0	28.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)	22.7	59.1	59.1	13.7	50.1	50.1	12.0	21.1	21.1	9.0	15.3	15.3
Actuated g/C Ratio	0.19	0.49	0.49	0.11	0.42	0.42	0.10	0.18	0.18	0.08	0.13	0.13
v/c Ratio	0.56	0.67	0.19	0.44	0.65	0.14	0.92	0.16	0.41	0.46	0.11	0.51
Control Delay (s/veh)	49.6	22.4	17.6	55.8	31.9	24.5	105.1	43.7	49.4	65.5	45.2	57.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	49.6	22.4	17.6	55.8	31.9	24.5	105.1	43.7	49.4	65.5	45.2	57.3
LOS	D	C	B	E	C	C	F	D	D	E	D	E
Approach Delay (s/veh)		25.3			33.2			75.9			58.2	
Approach LOS		C			C			E			E	
Queue Length 50th (ft)	144	261	55	64	306	42	125	35	82	44	18	73
Queue Length 95th (ft)	204	393	115	113	430	88	#258	69	135	89	44	125
Internal Link Dist (ft)		955			939			1042			1056	
Turn Bay Length (ft)	450		400	300		375	225		225	175		125
Base Capacity (vph)	334	1759	786	198	1455	657	173	614	522	126	579	474
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.67	0.19	0.44	0.65	0.14	0.92	0.08	0.22	0.46	0.04	0.21

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 104 (87%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 110
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay (s/veh): 35.3 Intersection LOS: D
Intersection Capacity Utilization 62.2% 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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)



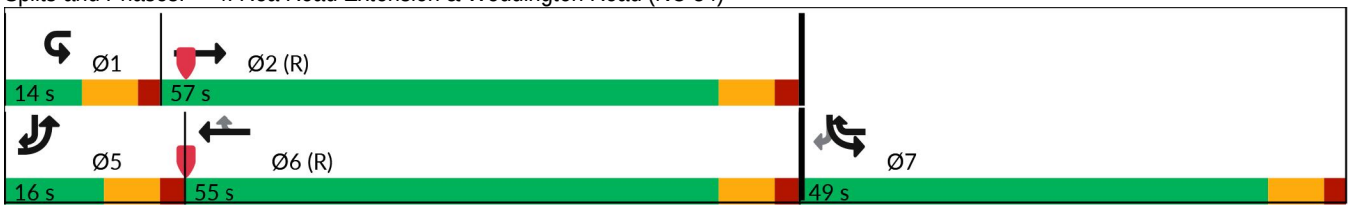
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	26	739	4	606	496	620	26
Future Volume (vph)	26	739	4	606	496	620	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	425		425		400	325	125
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.97	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1770	3539	1770	3539	1583	3433	1583
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1770	3539	1770	3539	1583	3433	1583
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		6405		2171		725	
Travel Time (s)		97.0		32.9		11.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	29	821	4	673	551	689	29
Shared Lane Traffic (%)							
Lane Group Flow (vph)	29	821	4	673	551	689	29
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	1	6	7	7	5
Permitted Phases					6		7
Detector Phase	5	2	1	6	7	7	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	41.0	36.0	36.0	14.0
Total Split (s)	16.0	57.0	14.0	55.0	49.0	49.0	16.0
Total Split (%)	13.3%	47.5%	11.7%	45.8%	40.8%	40.8%	13.3%
Maximum Green (s)	9.0	50.0	7.0	48.0	42.0	42.0	9.0
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-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	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	C-Max	None	None	None
Walk Time (s)				7.0	7.0	7.0	
Flash Don't Walk (s)				27.0	22.0	22.0	
Pedestrian Calls (#/hr)				0	0	0	
Act Effct Green (s)	9.9	73.8	9.0	64.4	103.9	33.4	48.4
Actuated g/C Ratio	0.08	0.62	0.08	0.54	0.87	0.28	0.40
v/c Ratio	0.20	0.38	0.03	0.35	0.40	0.72	0.05
Control Delay (s/veh)	54.2	13.8	48.8	18.3	1.9	43.2	19.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	54.2	13.8	48.8	18.3	1.9	43.2	19.5

Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
LOS	D	B	D	B	A	D	B
Approach Delay (s/veh)		15.2		11.0		42.3	
Approach LOS		B		B		D	
Queue Length 50th (ft)	21	145	3	103	37	248	14
Queue Length 95th (ft)	52	286	m6	m209	m37	289	29
Internal Link Dist (ft)		6325		2091		645	
Turn Bay Length (ft)	425		425		400	325	125
Base Capacity (vph)	165	2175	132	1899	1462	1258	654
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.38	0.03	0.35	0.38	0.55	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.72			
Intersection Signal Delay (s/veh): 20.3		Intersection LOS: C	
Intersection Capacity Utilization 47.6%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Rea Road Extension & Weddington Road (NC 84)



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	2134	0	1925
Future Volume (vph)	0	0	0	2134	0	1925
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	0	2787	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	2787	0	3539
Link Speed (mph)	35		45			45
Link Distance (ft)	233		716			681
Travel Time (s)	4.5		10.8			10.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	2371	0	2139
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2371	0	2139
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.0%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	365	1769	0	0
Future Volume (vph)	0	0	365	1769	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3539	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	0	3539	2787	0	0
Link Speed (mph)	35		45			45
Link Distance (ft)	1544		233			454
Travel Time (s)	30.1		3.5			6.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	406	1966	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	406	1966	0	0
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.2%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1769	0	1560
Future Volume (vph)	0	0	0	1769	0	1560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	2787
Link Speed (mph)	35			45	45	
Link Distance (ft)	1094			1544	1022	
Travel Time (s)	21.3			23.4	15.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1966	0	1733
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1966	0	1733
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.9%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1612	0	1835
Future Volume (vph)	0	0	0	1612	0	1835
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	2787
Link Speed (mph)	35			45	45	
Link Distance (ft)	153			579	587	
Travel Time (s)	3.0			8.8	8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1791	0	2039
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1791	0	2039
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	36	1799
Future Volume (vph)	0	0	0	0	36	1799
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	0	1863	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	0	1863	2787
Link Speed (mph)	45			35	45	
Link Distance (ft)	1018			449	153	
Travel Time (s)	15.4			8.7	2.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	40	1999
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	40	1999
Sign Control	Free			Free	Free	

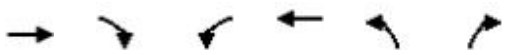
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.3%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	1576	0	1799
Future Volume (vph)	0	0	0	1576	0	1799
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	0	2787	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	2787	0	3539
Link Speed (mph)	35		45			45
Link Distance (ft)	580		1041			1018
Travel Time (s)	11.3		15.8			15.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1751	0	1999
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1751	0	1999
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			

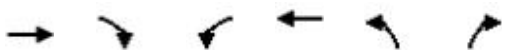
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1535	0	993	0	0
Future Volume (vph)	0	1535	0	993	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	3539	0	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	0	2787	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		406	910		187	
Travel Time (s)		6.2	13.8		2.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1706	0	1103	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1706	0	1103	0	0
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.2%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	77	916	0	0
Future Volume (vph)	0	0	77	916	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	0	0	1770	3539	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1770	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	462			187	223	
Travel Time (s)	7.0			2.8	3.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	86	1018	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	86	1018	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.3%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	1458	0	916	0	0
Future Volume (vph)	0	1458	0	916	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	0	2787	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	0	2787	0	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	1324			462	242	
Travel Time (s)	20.1			7.0	3.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1620	0	1018	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1620	0	1018	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.3%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	990	0	888	0	0
Future Volume (vph)	0	990	0	888	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	0	2787	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	0	2787	0	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	646			423	164	
Travel Time (s)	9.8			6.4	2.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1100	0	987	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1100	0	987	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.1%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	608	382	0	0	0	0
Future Volume (vph)	608	382	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	1863	2787	0	0	0	0
Flt Permitted						
Satd. Flow (perm)	1863	2787	0	0	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	164			264	460	
Travel Time (s)	2.5			4.0	7.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	676	424	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	676	424	0	0	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.4%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	382	0	280	0	0
Future Volume (vph)	0	382	0	280	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	3539	0	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	0	2787	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		460	6405		203	
Travel Time (s)		7.0	97.0		3.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	424	0	311	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	424	0	311	0	0
Sign Control		Free	Free		Free	

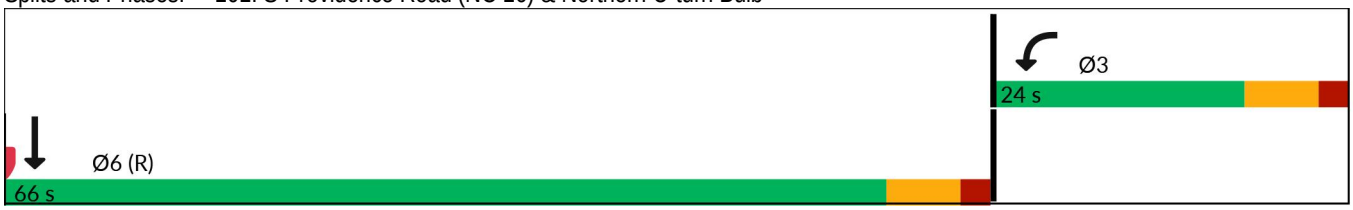
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 13.9%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	365	0	0	0	0	1560
Future Volume (vph)	365	0	0	0	0	1560
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450	0		0	0	
Storage Lanes	0	0		0	0	
Taper Length (ft)	100				25	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	3433	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	35		45			45
Link Distance (ft)	454		681			1094
Travel Time (s)	8.8		10.3			16.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	406	0	0	0	0	1733
Shared Lane Traffic (%)						
Lane Group Flow (vph)	406	0	0	0	0	1733
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					12.0
Minimum Split (s)	14.0					19.0
Total Split (s)	24.0					66.0
Total Split (%)	26.7%					73.3%
Maximum Green (s)	17.0					59.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	17.1					62.9
Actuated g/C Ratio	0.19					0.70
v/c Ratio	0.62					0.70
Control Delay (s/veh)	29.0					10.3
Queue Delay	0.0					0.0
Total Delay (s/veh)	29.0					10.3
LOS	C					B
Approach Delay (s/veh)	29.0					10.3
Approach LOS	C					B

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Length 50th (ft)	101					271
Queue Length 95th (ft)	m114					365
Internal Link Dist (ft)	374		601			1014
Turn Bay Length (ft)	450					
Base Capacity (vph)	724					2473
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.56					0.70

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay (s/veh): 13.8		Intersection LOS: B	
Intersection Capacity Utilization 65.2%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 101: S Providence Road (NC 16) & Northern U-turn Bulb

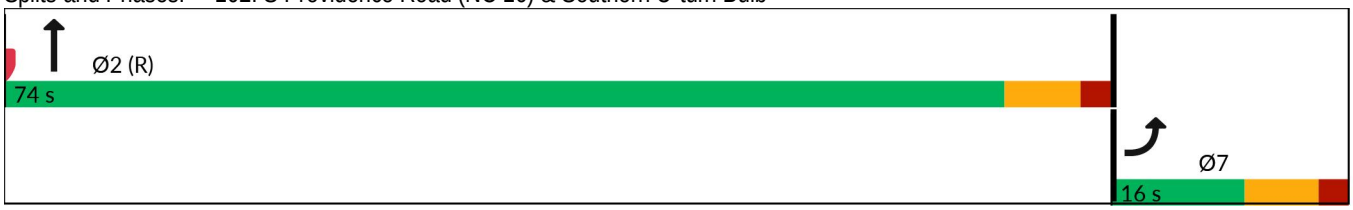


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	36	0	0	1576	0	0
Future Volume (vph)	36	0	0	1576	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	425	0	0			0
Storage Lanes	0	0	0			0
Taper Length (ft)	100		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	3539	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	3539	0	0
Right Turn on Red	No	No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	449			580	579	
Travel Time (s)	8.7			8.8	8.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	40	0	0	1751	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	40	0	0	1751	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			12.0		
Minimum Split (s)	14.0			19.0		
Total Split (s)	16.0			74.0		
Total Split (%)	17.8%			82.2%		
Maximum Green (s)	9.0			67.0		
Yellow Time (s)	5.0			5.0		
All-Red Time (s)	2.0			2.0		
Lost Time Adjust (s)	-2.0			-2.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0		
Recall Mode	None			C-Max		
Act Effct Green (s)	9.8			77.8		
Actuated g/C Ratio	0.11			0.86		
v/c Ratio	0.21			0.57		
Control Delay (s/veh)	34.9			4.1		
Queue Delay	0.0			0.0		
Total Delay (s/veh)	34.9			4.1		
LOS	C			A		
Approach Delay (s/veh)	34.9			4.1		
Approach LOS	C			A		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 50th (ft)	22			170		
Queue Length 95th (ft)	m29			242		
Internal Link Dist (ft)	369			500	499	
Turn Bay Length (ft)	425					
Base Capacity (vph)	216			3060		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.19			0.57		

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 84 (93%), Referenced to phase 2:NBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay (s/veh): 4.8		Intersection LOS: A	
Intersection Capacity Utilization 67.5%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 102: S Providence Road (NC 16) & Southern U-turn Bulb



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1458	0	0	77	0
Future Volume (vph)	0	1458	0	0	77	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	0	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	0	0	1770	0
Link Speed (mph)		45	45		35	
Link Distance (ft)		242	406		223	
Travel Time (s)		3.7	6.2		4.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1620	0	0	86	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1620	0	0	86	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.3%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1458	0	0	77	0
Future Vol, veh/h	0	1458	0	0	77	0
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	0	1620	0	0	86	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	-	0	810	-
Stage 1	-	-	0	-
Stage 2	-	-	810	-
Critical Hdwy	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.84	-
Follow-up Hdwy	-	-	3.52	-
Pot Cap-1 Maneuver	0	-	318	0
Stage 1	0	-	-	0
Stage 2	0	-	398	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	318	-
Mov Cap-2 Maneuver	-	-	318	-
Stage 1	-	-	-	-
Stage 2	-	-	398	-

Approach	EB	SB
HCM Control Delay, s/v	0	20.4
HCM LOS		C

Minor Lane/Major Mvmt	EBT	SBLn1
Capacity (veh/h)	-	318
HCM Lane V/C Ratio	-	0.269
HCM Control Delay (s/veh)	-	20.4
HCM Lane LOS	-	C
HCM 95th %tile Q (veh)	-	1.1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	280	608	0
Future Volume (vph)	0	0	0	280	608	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0		500	0
Storage Lanes		0	0		0	0
Taper Length (ft)			25		100	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	3539	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	3539	1770	0
Link Speed (mph)	45			45	35	
Link Distance (ft)	423			203	264	
Travel Time (s)	6.4			3.1	5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	311	676	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	311	676	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	18

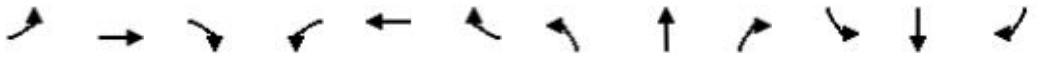
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↰	
Traffic Vol, veh/h	0	0	0	280	608	0
Future Vol, veh/h	0	0	0	280	608	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
Veh in Median Storage, #	0	-	-	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	0	0	0	311	676	0

Major/Minor	Major2		Minor1	
Conflicting Flow All	-	-	156	-
Stage 1	-	-	0	-
Stage 2	-	-	156	-
Critical Hdwy	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.84	-
Follow-up Hdwy	-	-	3.52	-
Pot Cap-1 Maneuver	0	-	820	0
Stage 1	0	-	-	0
Stage 2	0	-	856	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	820	-
Mov Cap-2 Maneuver	-	-	820	-
Stage 1	-	-	-	-
Stage 2	-	-	856	-

Approach	WB	NB
HCM Control Delay, s/v	0	26.3
HCM LOS		D

Minor Lane/Major Mvmt	NBLn1	WBT
Capacity (veh/h)	820	-
HCM Lane V/C Ratio	0.824	-
HCM Control Delay (s/veh)	26.3	-
HCM Lane LOS	D	-
HCM 95th %tile Q (veh)	9.3	-

2029 Build-out Conditions
w/ STIPs

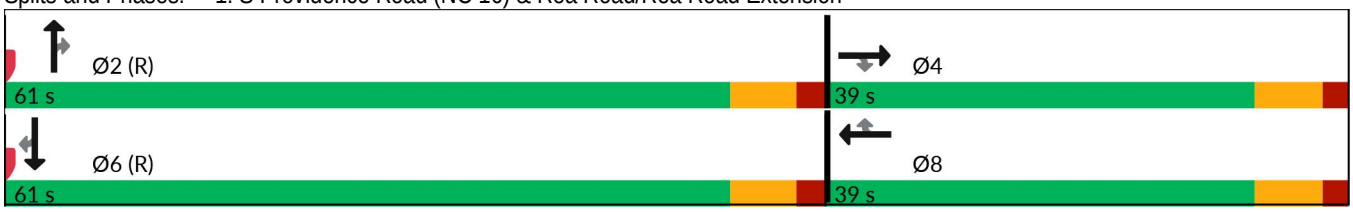


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	552	448	0	362	423	0	1720	119	0	1172	1182
Future Volume (vph)	0	552	448	0	362	423	0	1720	119	0	1172	1182
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	11	11	11	12	11	12
Grade (%)		-2%			0%			1%			-1%	
Storage Length (ft)	0		750	0		425	0		375	0		500
Storage Lanes	0		2	0		2	0		2	0		2
Taper Length (ft)	0			25			0			0		
Lane Util. Factor	1.00	0.95	0.88	1.00	0.95	0.88	1.00	0.95	0.88	1.00	0.95	0.88
Frt			0.850			0.850			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	3575	2815	0	3539	2787	0	3404	2680	0	3372	2801
Flt Permitted												
Satd. Flow (perm)	0	3575	2815	0	3539	2787	0	3404	2680	0	3372	2801
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		910			646			587			716	
Travel Time (s)		13.8			9.8			8.9			10.8	
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
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	4%	2%
Adj. Flow (vph)	0	613	498	0	402	470	0	1911	132	0	1302	1313
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	613	498	0	402	470	0	1911	132	0	1302	1313
Turn Type		NA	Perm		NA	Perm		NA	Perm		NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases			4			8			2			6
Detector Phase		4	4		8	8		2	2		6	6
Switch Phase												
Minimum Initial (s)		7.0	7.0		7.0	7.0		12.0	12.0		12.0	12.0
Minimum Split (s)		38.0	38.0		39.0	39.0		40.0	40.0		40.0	40.0
Total Split (s)		39.0	39.0		39.0	39.0		61.0	61.0		61.0	61.0
Total Split (%)		39.0%	39.0%		39.0%	39.0%		61.0%	61.0%		61.0%	61.0%
Maximum Green (s)		32.0	32.0		32.0	32.0		54.0	54.0		54.0	54.0
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		-2.0	-2.0
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
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		C-Max	C-Max		C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		24.0	24.0		25.0	25.0		26.0	26.0		26.0	26.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)		27.7	27.7		27.7	27.7		62.3	62.3		62.3	62.3
Actuated g/C Ratio		0.28	0.28		0.28	0.28		0.62	0.62		0.62	0.62
v/c Ratio		0.62	0.64		0.41	0.61		0.90	0.08		0.62	0.75

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)		33.9	35.1		30.0	34.4		20.8	8.5		10.4	13.2
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Delay (s/veh)		33.9	35.1		30.0	34.4		20.8	8.5		10.4	13.2
LOS		C	D		C	C		C	A		B	B
Approach Delay (s/veh)		34.4			32.4			20.0			11.8	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)		177	156		108	146		314	17		164	204
Queue Length 95th (ft)		215	198		139	187		#800	m32		317	446
Internal Link Dist (ft)		830			566			507			636	
Turn Bay Length (ft)			750			425			375			500
Base Capacity (vph)		1215	957		1203	947		2120	1669		2100	1744
Starvation Cap Reductn		0	0		0	0		0	0		0	0
Spillback Cap Reductn		0	0		0	0		0	0		0	0
Storage Cap Reductn		0	0		0	0		0	0		0	0
Reduced v/c Ratio		0.50	0.52		0.33	0.50		0.90	0.08		0.62	0.75

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 17 (17%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.90			
Intersection Signal Delay (s/veh): 20.8		Intersection LOS: C	
Intersection Capacity Utilization 71.1%		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.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	10	601	774	35	68	26
Future Volume (vph)	10	601	774	35	68	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.994		0.963	
Flt Protected	0.950				0.965	
Satd. Flow (prot)	1491	1801	1728	0	1463	0
Flt Permitted	0.950				0.965	
Satd. Flow (perm)	1491	1801	1728	0	1463	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1162		1160	
Travel Time (s)		18.2	17.6		17.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	13%	2%	2%	2%	3%	38%
Adj. Flow (vph)	11	668	860	39	76	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	11	668	899	0	105	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	10	601	774	35	68	26
Future Vol, veh/h	10	601	774	35	68	26
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, %	13	2	2	2	3	38
Mvmt Flow	11	668	860	39	76	29

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	899	0	-	0	1570	880
Stage 1	-	-	-	-	880	-
Stage 2	-	-	-	-	690	-
Critical Hdwy	4.23	-	-	-	6.43	6.58
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.317	-	-	-	3.527	3.642
Pot Cap-1 Maneuver	712	-	-	-	121	299
Stage 1	-	-	-	-	404	-
Stage 2	-	-	-	-	496	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	712	-	-	-	119	299
Mov Cap-2 Maneuver	-	-	-	-	255	-
Stage 1	-	-	-	-	398	-
Stage 2	-	-	-	-	496	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.2	0	27
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	712	-	-	-	266
HCM Lane V/C Ratio	0.016	-	-	-	0.393
HCM Control Delay (s/veh)	10.1	-	-	-	27
HCM Lane LOS	B	-	-	-	D
HCM 95th %tile Q (veh)	0	-	-	-	1.8

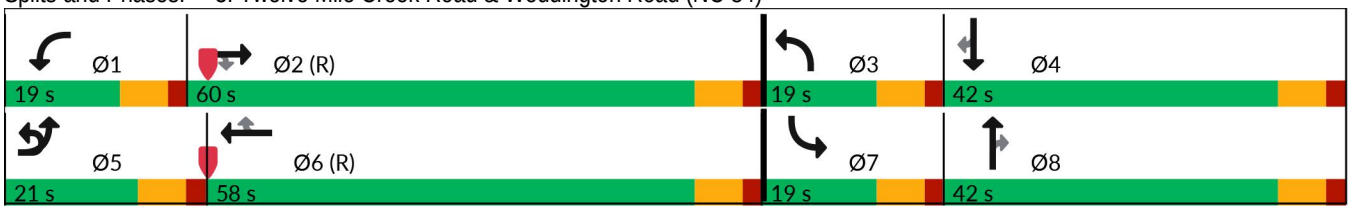
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	29	91	857	144	105	1064	53	136	23	79	82	46
Future Volume (vph)	29	91	857	144	105	1064	53	136	23	79	82	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-2%			1%			2%			-2%
Storage Length (ft)		450		400	300		375	225		225	175	
Storage Lanes		1		1	1		1	1		1	1	
Taper Length (ft)		100			100			150			150	
Lane Util. Factor	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850			0.850			0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	1787	3540	1584	1710	3487	1502	1752	1844	1552	1753	1881
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	1787	3540	1584	1710	3487	1502	1752	1844	1552	1753	1881
Right Turn on Red				No			No			No		
Satd. Flow (RTOR)												
Link Speed (mph)			45			45			45			45
Link Distance (ft)			1488			1019			1122			1136
Travel Time (s)			22.5			15.4			17.0			17.2
Peak Hour Factor	0.90	0.57	0.74	0.82	0.75	0.84	0.76	0.88	0.54	0.51	0.53	0.68
Heavy Vehicles (%)	2%	2%	3%	3%	5%	3%	7%	2%	2%	3%	4%	2%
Adj. Flow (vph)	32	160	1158	176	140	1267	70	155	43	155	155	68
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	192	1158	176	140	1267	70	155	43	155	155	68
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6			8		
Detector Phase	5	5	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	7.0	7.0	12.0	12.0	7.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	14.0	39.0	39.0	14.0	37.0	37.0	14.0	42.0	42.0	14.0	42.0
Total Split (s)	21.0	21.0	60.0	60.0	19.0	58.0	58.0	19.0	42.0	42.0	19.0	42.0
Total Split (%)	15.0%	15.0%	42.9%	42.9%	13.6%	41.4%	41.4%	13.6%	30.0%	30.0%	13.6%	30.0%
Maximum Green (s)	14.0	14.0	53.0	53.0	12.0	51.0	51.0	12.0	35.0	35.0	12.0	35.0
Yellow Time (s)	5.0	5.0	5.0	5.0	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	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0	-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	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Walk Time (s)			7.0	7.0		7.0	7.0		7.0	7.0		7.0
Flash Don't Walk (s)			25.0	25.0		23.0	23.0		28.0	28.0		28.0
Pedestrian Calls (#/hr)			0	0		0	0		0	0		0
Act Effct Green (s)		18.5	58.4	58.4	15.2	55.2	55.2	14.0	32.3	32.3	14.0	32.3
Actuated g/C Ratio		0.13	0.42	0.42	0.11	0.39	0.39	0.10	0.23	0.23	0.10	0.23
v/c Ratio		0.81	0.78	0.27	0.75	0.92	0.12	0.89	0.10	0.43	0.89	0.16
Control Delay (s/veh)		87.5	33.7	25.7	85.0	52.7	28.8	105.1	40.8	49.0	105.1	42.2

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	171
Future Volume (vph)	171
Ideal Flow (vphpl)	1900
Grade (%)	
Storage Length (ft)	125
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1599
Flt Permitted	
Satd. Flow (perm)	1599
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.57
Heavy Vehicles (%)	2%
Adj. Flow (vph)	300
Shared Lane Traffic (%)	
Lane Group Flow (vph)	300
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	42.0
Total Split (s)	42.0
Total Split (%)	30.0%
Maximum Green (s)	35.0
Yellow Time (s)	5.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	-2.0
Total Lost Time (s)	5.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	28.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	32.3
Actuated g/C Ratio	0.23
v/c Ratio	0.81
Control Delay (s/veh)	68.3

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		87.5	33.7	25.7	85.0	52.7	28.8	105.1	40.8	49.0	105.1	42.2
LOS		F	C	C	F	D	C	F	D	D	F	D
Approach Delay (s/veh)			39.6			54.6			72.6			75.8
Approach LOS			D			D			E			E
Queue Length 50th (ft)		178	356	87	124	589	41	142	31	119	142	49
Queue Length 95th (ft)		164	343	128	#177	624	64	#265	37	97	124	66
Internal Link Dist (ft)			1408			939			1042			1056
Turn Bay Length (ft)		450		400	300		375	225		225	175	
Base Capacity (vph)		236	1477	661	186	1374	591	175	487	410	175	497
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.81	0.78	0.27	0.75	0.92	0.12	0.89	0.09	0.38	0.89	0.14

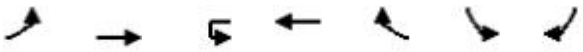
Intersection Summary			
Area Type:	Other		
Cycle Length: 140			
Actuated Cycle Length: 140			
Offset: 83 (59%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.92			
Intersection Signal Delay (s/veh): 53.2		Intersection LOS: D	
Intersection Capacity Utilization 70.8%		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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)



Lane Group	SBR
Queue Delay	0.0
Total Delay (s/veh)	68.3
LOS	E
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	256
Queue Length 95th (ft)	203
Internal Link Dist (ft)	
Turn Bay Length (ft)	125
Base Capacity (vph)	422
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.71

Intersection Summary



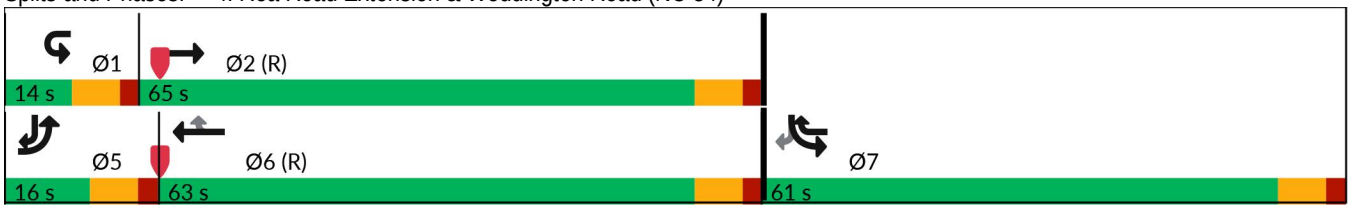
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	22	614	9	759	636	499	22
Future Volume (vph)	22	614	9	759	636	499	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	425		425		400	325	125
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.97	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1770	3539	1770	3539	1583	3433	1583
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1770	3539	1770	3539	1583	3433	1583
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		6405		877		725	
Travel Time (s)		97.0		13.3		11.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	24	682	10	843	707	554	24
Shared Lane Traffic (%)							
Lane Group Flow (vph)	24	682	10	843	707	554	24
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	1	6	7	7	5
Permitted Phases					6		7
Detector Phase	5	2	1	6	7	7	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	41.0	36.0	36.0	14.0
Total Split (s)	16.0	65.0	14.0	63.0	61.0	61.0	16.0
Total Split (%)	11.4%	46.4%	10.0%	45.0%	43.6%	43.6%	11.4%
Maximum Green (s)	9.0	58.0	7.0	56.0	54.0	54.0	9.0
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-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	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	C-Max	None	None	None
Walk Time (s)				7.0	7.0	7.0	
Flash Don't Walk (s)				27.0	22.0	22.0	
Pedestrian Calls (#/hr)				0	0	0	
Act Effct Green (s)	9.9	94.6	9.2	85.5	123.9	32.4	47.3
Actuated g/C Ratio	0.07	0.68	0.07	0.61	0.89	0.23	0.34
v/c Ratio	0.19	0.29	0.09	0.39	0.50	0.70	0.04
Control Delay (s/veh)	64.5	10.9	77.4	8.0	1.1	53.7	28.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	64.5	10.9	77.4	8.0	1.1	53.7	28.6

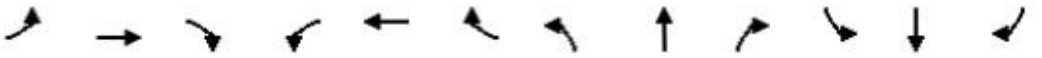
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
LOS	E	B	E	A	A	D	C
Approach Delay (s/veh)		12.7		5.3		52.7	
Approach LOS		B		A		D	
Queue Length 50th (ft)	21	111	10	90	8	240	15
Queue Length 95th (ft)	52	226	m10	m107	m15	282	33
Internal Link Dist (ft)		6325		797		645	
Turn Bay Length (ft)	425		425		400	325	125
Base Capacity (vph)	141	2391	115	2160	1570	1373	549
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.29	0.09	0.39	0.45	0.40	0.04

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay (s/veh): 16.8 Intersection LOS: B
Intersection Capacity Utilization 53.5% ICU Level of Service A
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Rea Road Extension & Weddington Road (NC 84)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1111	11	0	1396	1	0	0	33	0	0	8
Future Volume (vph)	0	1111	11	0	1396	1	0	0	33	0	0	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999							0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3502	0	0	3505	0	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3502	0	0	3505	0	0	0	1611	0	0	1611
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		877			829			1095			1030	
Travel Time (s)		13.3			12.6			29.9			28.1	
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
Heavy Vehicles (%)	2%	3%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	1234	12	0	1551	1	0	0	37	0	0	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1246	0	0	1552	0	0	0	37	0	0	9
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

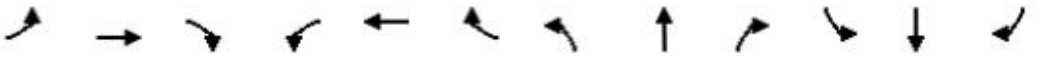
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1111	11	0	1396	1	0	0	33	0	0	8
Future Vol, veh/h	0	1111	11	0	1396	1	0	0	33	0	0	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
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	3	2	2	3	2	2	2	2	2	2	2
Mvmt Flow	0	1234	12	0	1551	1	0	0	37	0	0	9

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	623	-	-	776
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	*641	0	0	*510
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-			1			1
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	*641	-	-	*510
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	11	12.2
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	641	-	-	-	-	510
HCM Lane V/C Ratio	0.057	-	-	-	-	0.017
HCM Control Delay (s/veh)	11	-	-	-	-	12.2
HCM Lane LOS	B	-	-	-	-	B
HCM 95th %tile Q (veh)	0.2	-	-	-	-	0.1

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1142	2	0	1394	3	0	0	4	0	0	3
Future Volume (vph)	0	1142	2	0	1394	3	0	0	4	0	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt									0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3505	0	0	3505	0	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3505	0	0	3505	0	0	0	1611	0	0	1611
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		829			1488			1046			1028	
Travel Time (s)		12.6			22.5			28.5			28.0	
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
Heavy Vehicles (%)	2%	3%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	1269	2	0	1549	3	0	0	4	0	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1271	0	0	1552	0	0	0	4	0	0	3
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1142	2	0	1394	3	0	0	4	0	0	3
Future Vol, veh/h	0	1142	2	0	1394	3	0	0	4	0	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
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	3	2	2	3	2	2	2	2	2	2	2
Mvmt Flow	0	1269	2	0	1549	3	0	0	4	0	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	636	-	-	776
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	*619	0	0	*510
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-			1			1
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	*619	-	-	*510
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	10.9	12.1
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	619	-	-	-	-	510
HCM Lane V/C Ratio	0.007	-	-	-	-	0.007
HCM Control Delay (s/veh)	10.9	-	-	-	-	12.1
HCM Lane LOS	B	-	-	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	-	0

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	2141	0	2354
Future Volume (vph)	0	0	0	2141	0	2354
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	0	2787	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	2787	0	3539
Link Speed (mph)	35		45			45
Link Distance (ft)	233		716			681
Travel Time (s)	4.5		10.8			10.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	2379	0	2616
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2379	0	2616
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.2%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	580	1561	0	0
Future Volume (vph)	0	0	580	1561	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3539	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	0	3539	2787	0	0
Link Speed (mph)	35		45			45
Link Distance (ft)	1544		233			454
Travel Time (s)	30.1		3.5			6.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	644	1734	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	644	1734	0	0
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1561	0	1774
Future Volume (vph)	0	0	0	1561	0	1774
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	2787
Link Speed (mph)	35			45	45	
Link Distance (ft)	1094			1544	1022	
Travel Time (s)	21.3			23.4	15.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1734	0	1971
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1734	0	1971
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.4%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1839	0	1620
Future Volume (vph)	0	0	0	1839	0	1620
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	2787
Link Speed (mph)	35			45	45	
Link Distance (ft)	153			579	587	
Travel Time (s)	3.0			8.8	8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	2043	0	1800
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2043	0	1800
Sign Control	Free			Free	Free	

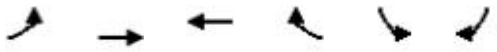
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.9%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	41	1579
Future Volume (vph)	0	0	0	0	41	1579
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	0	1863	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	0	1863	2787
Link Speed (mph)	45			35	45	
Link Distance (ft)	1018			449	153	
Travel Time (s)	15.4			8.7	2.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	46	1754
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	46	1754
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.9%		ICU Level of Service B	
Analysis Period (min) 15			

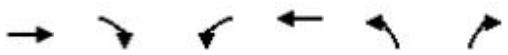
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	1798	0	1579
Future Volume (vph)	0	0	0	1798	0	1579
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	0	2787	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	2787	0	3539
Link Speed (mph)	35		45			45
Link Distance (ft)	580		1041			1018
Travel Time (s)	11.3		15.8			15.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1998	0	1754
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1998	0	1754
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.2%		ICU Level of Service C	
Analysis Period (min) 15			



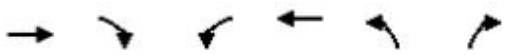
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1000	0	1544	0	0
Future Volume (vph)	0	1000	0	1544	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	3539	0	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	0	2787	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		406	910		187	
Travel Time (s)		6.2	13.8		2.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1111	0	1716	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1111	0	1716	0	0
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.3%		ICU Level of Service B	
Analysis Period (min) 15			



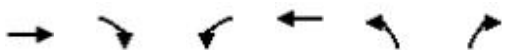
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	83	1461	0	0
Future Volume (vph)	0	0	83	1461	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	0	0	1770	3539	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1770	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	462			187	223	
Travel Time (s)	7.0			2.8	3.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	92	1623	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	92	1623	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 33.3%		ICU Level of Service A	
Analysis Period (min) 15			



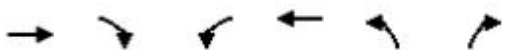
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	917	0	1461	0	0
Future Volume (vph)	0	917	0	1461	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	0	2787	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	0	2787	0	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	1324			462	242	
Travel Time (s)	20.1			7.0	3.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1019	0	1623	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1019	0	1623	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.7%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	671	0	785	0	0
Future Volume (vph)	0	671	0	785	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	0	2787	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	0	2787	0	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	646			423	164	
Travel Time (s)	9.8			6.4	2.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	746	0	872	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	746	0	872	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.1%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	385	286	0	0	0	0
Future Volume (vph)	385	286	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	1863	2787	0	0	0	0
Flt Permitted						
Satd. Flow (perm)	1863	2787	0	0	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	164			264	460	
Travel Time (s)	2.5			4.0	7.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	428	318	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	428	318	0	0	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 38.0%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	286	0	400	0	0
Future Volume (vph)	0	286	0	400	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	3539	0	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	0	2787	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		460	6405		203	
Travel Time (s)		7.0	97.0		3.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	318	0	444	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	318	0	444	0	0
Sign Control		Free	Free		Free	

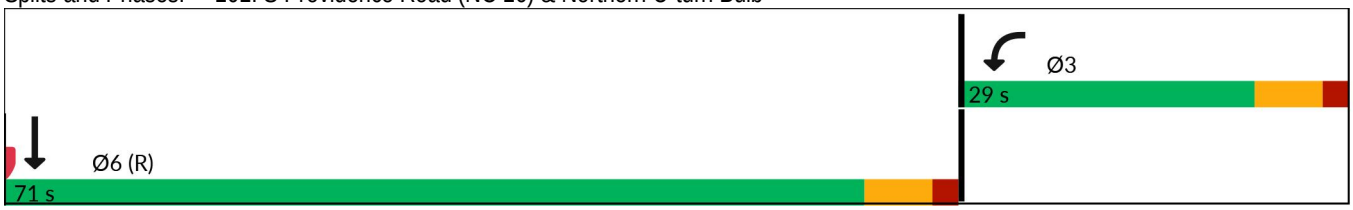
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 17.3%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	580	0	0	0	0	1774
Future Volume (vph)	580	0	0	0	0	1774
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450	0		0	0	
Storage Lanes	0	0		0	0	
Taper Length (ft)	100				25	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	3433	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	35		45			45
Link Distance (ft)	454		681			1094
Travel Time (s)	8.8		10.3			16.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	644	0	0	0	0	1971
Shared Lane Traffic (%)						
Lane Group Flow (vph)	644	0	0	0	0	1971
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					12.0
Minimum Split (s)	14.0					19.0
Total Split (s)	29.0					71.0
Total Split (%)	29.0%					71.0%
Maximum Green (s)	22.0					64.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	23.2					66.8
Actuated g/C Ratio	0.23					0.67
v/c Ratio	0.81					0.83
Control Delay (s/veh)	34.9					16.8
Queue Delay	0.0					0.0
Total Delay (s/veh)	34.9					16.8
LOS	C					B
Approach Delay (s/veh)	34.9					16.8
Approach LOS	C					B

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Length 50th (ft)	201					455
Queue Length 95th (ft)	m215					573
Internal Link Dist (ft)	374		601			1014
Turn Bay Length (ft)	450					
Base Capacity (vph)	823					2365
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.78					0.83

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 99 (99%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 21.2		Intersection LOS: C	
Intersection Capacity Utilization 73.9%		ICU Level of Service D	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 101: S Providence Road (NC 16) & Northern U-turn Bulb

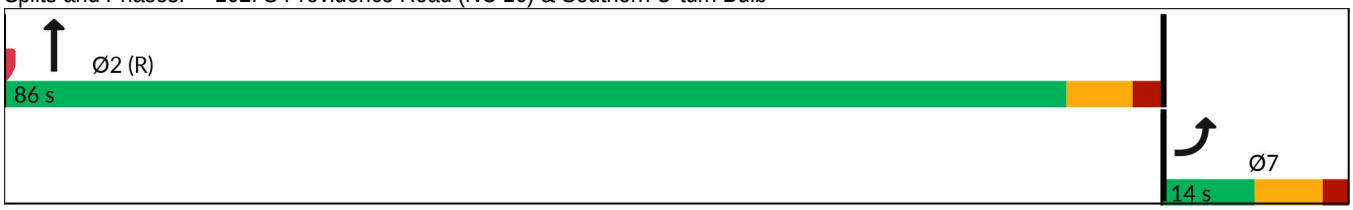


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	0	0	1798	0	0
Future Volume (vph)	41	0	0	1798	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	425	0	0			0
Storage Lanes	0	0	0			0
Taper Length (ft)	100		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	3539	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	3539	0	0
Right Turn on Red	No	No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	449			580	579	
Travel Time (s)	8.7			8.8	8.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	46	0	0	1998	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	0	0	1998	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			12.0		
Minimum Split (s)	14.0			19.0		
Total Split (s)	14.0			86.0		
Total Split (%)	14.0%			86.0%		
Maximum Green (s)	7.0			79.0		
Yellow Time (s)	5.0			5.0		
All-Red Time (s)	2.0			2.0		
Lost Time Adjust (s)	-2.0			-2.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0		
Recall Mode	None			C-Max		
Act Effct Green (s)	9.0			88.6		
Actuated g/C Ratio	0.09			0.89		
v/c Ratio	0.29			0.64		
Control Delay (s/veh)	45.3			4.1		
Queue Delay	0.0			0.0		
Total Delay (s/veh)	45.3			4.1		
LOS	D			A		
Approach Delay (s/veh)	45.3			4.1		
Approach LOS	D			A		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 50th (ft)	26			218		
Queue Length 95th (ft)	m47			275		
Internal Link Dist (ft)	369			500	499	
Turn Bay Length (ft)	425					
Base Capacity (vph)	159			3135		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.29			0.64		

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 18 (18%), Referenced to phase 2:NBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.64			
Intersection Signal Delay (s/veh): 5.0		Intersection LOS: A	
Intersection Capacity Utilization 63.9%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 102: S Providence Road (NC 16) & Southern U-turn Bulb



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	917	0	0	83	0
Future Volume (vph)	0	917	0	0	83	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	0	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	0	0	1770	0
Link Speed (mph)		45	45		35	
Link Distance (ft)		242	406		223	
Travel Time (s)		3.7	6.2		4.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1019	0	0	92	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1019	0	0	92	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.4%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	917	0	0	83	0
Future Vol, veh/h	0	917	0	0	83	0
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	0	1019	0	0	92	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	-	0	510	-
Stage 1	-	-	0	-
Stage 2	-	-	510	-
Critical Hdwy	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.84	-
Follow-up Hdwy	-	-	3.52	-
Pot Cap-1 Maneuver	0	-	493	0
Stage 1	0	-	-	0
Stage 2	0	-	568	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	493	-
Mov Cap-2 Maneuver	-	-	493	-
Stage 1	-	-	-	-
Stage 2	-	-	568	-

Approach	EB	SB
HCM Control Delay, s/v	0	14
HCM LOS		B

Minor Lane/Major Mvmt	EBT	SBLn1
Capacity (veh/h)	-	493
HCM Lane V/C Ratio	-	0.187
HCM Control Delay (s/veh)	-	14
HCM Lane LOS	-	B
HCM 95th %tile Q (veh)	-	0.7

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	400	385	0
Future Volume (vph)	0	0	0	400	385	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0		500	0
Storage Lanes		0	0		0	0
Taper Length (ft)			25		100	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	3539	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	3539	1770	0
Link Speed (mph)	45			45	35	
Link Distance (ft)	423			203	264	
Travel Time (s)	6.4			3.1	5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	444	428	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	444	428	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 39.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	7.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	400	385	0
Future Vol, veh/h	0	0	0	400	385	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
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	0	0	0	444	428	0

Major/Minor	Major2		Minor1	
Conflicting Flow All	-	-	222	-
Stage 1	-	-	0	-
Stage 2	-	-	222	-
Critical Hdwy	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.84	-
Follow-up Hdwy	-	-	3.52	-
Pot Cap-1 Maneuver	0	-	746	0
Stage 1	0	-	-	0
Stage 2	0	-	794	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	746	-
Mov Cap-2 Maneuver	-	-	746	-
Stage 1	-	-	-	-
Stage 2	-	-	794	-

Approach	WB	NB
HCM Control Delay, s/v	0	16.1
HCM LOS		C

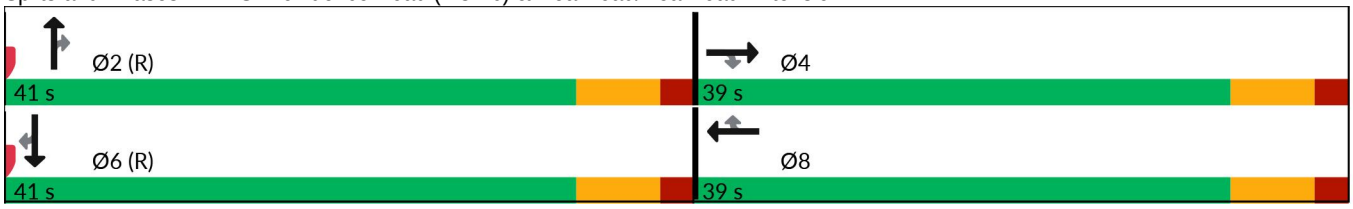
Minor Lane/Major Mvmt	NBLn1	WBT
Capacity (veh/h)	746	-
HCM Lane V/C Ratio	0.573	-
HCM Control Delay (s/veh)	16.1	-
HCM Lane LOS	C	-
HCM 95th %tile Q (veh)	3.7	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	847	569	0	360	530	0	1214	194	0	996	645
Future Volume (vph)	0	847	569	0	360	530	0	1214	194	0	996	645
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	11	11	11	12	11	12
Grade (%)		-2%			0%			1%			-1%	
Storage Length (ft)	0		750	0		425	0		375	0		500
Storage Lanes	0		2	0		2	0		2	0		2
Taper Length (ft)	0			25			0			0		
Lane Util. Factor	1.00	0.95	0.88	1.00	0.95	0.88	1.00	0.95	0.88	1.00	0.95	0.88
Frt			0.850			0.850			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	3575	2787	0	3539	2787	0	3371	2680	0	3438	2773
Flt Permitted												
Satd. Flow (perm)	0	3575	2787	0	3539	2787	0	3371	2680	0	3438	2773
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		910			646			587			716	
Travel Time (s)		13.8			9.8			8.9			10.8	
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
Heavy Vehicles (%)	2%	2%	3%	2%	2%	2%	2%	3%	2%	2%	2%	3%
Adj. Flow (vph)	0	941	632	0	400	589	0	1349	216	0	1107	717
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	941	632	0	400	589	0	1349	216	0	1107	717
Turn Type		NA	Perm		NA	Perm		NA	Perm		NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases			4			8			2			6
Detector Phase		4	4		8	8		2	2		6	6
Switch Phase												
Minimum Initial (s)		7.0	7.0		7.0	7.0		12.0	12.0		12.0	12.0
Minimum Split (s)		38.0	38.0		39.0	39.0		40.0	40.0		40.0	40.0
Total Split (s)		39.0	39.0		39.0	39.0		41.0	41.0		41.0	41.0
Total Split (%)		48.8%	48.8%		48.8%	48.8%		51.3%	51.3%		51.3%	51.3%
Maximum Green (s)		32.0	32.0		32.0	32.0		34.0	34.0		34.0	34.0
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		-2.0	-2.0
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
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		C-Max	C-Max		C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		24.0	24.0		25.0	25.0		26.0	26.0		26.0	26.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)		31.6	31.6		31.6	31.6		38.4	38.4		38.4	38.4
Actuated g/C Ratio		0.40	0.40		0.40	0.40		0.48	0.48		0.48	0.48
v/c Ratio		0.67	0.57		0.29	0.53		0.83	0.17		0.67	0.54

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)		22.2	20.9		16.6	20.2		20.5	11.9		14.3	12.7
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Delay (s/veh)		22.2	20.9		16.6	20.2		20.5	11.9		14.3	12.7
LOS		C	C		B	C		C	B		B	B
Approach Delay (s/veh)		21.6			18.7			19.3			13.6	
Approach LOS		C			B			B			B	
Queue Length 50th (ft)		186	128		65	118		190	30		140	97
Queue Length 95th (ft)		248	182		97	168		#243	47		193	123
Internal Link Dist (ft)		830			566			507			636	
Turn Bay Length (ft)			750			425			375			500
Base Capacity (vph)		1519	1184		1504	1184		1616	1285		1648	1329
Starvation Cap Reductn		0	0		0	0		0	0		0	0
Spillback Cap Reductn		0	0		0	0		0	0		0	0
Storage Cap Reductn		0	0		0	0		0	0		0	0
Reduced v/c Ratio		0.62	0.53		0.27	0.50		0.83	0.17		0.67	0.54

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 16 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.83			
Intersection Signal Delay (s/veh): 18.1		Intersection LOS: B	
Intersection Capacity Utilization 65.3%		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: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	769	481	136	67	7
Future Volume (vph)	19	769	481	136	67	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.970		0.987	
Flt Protected	0.950				0.957	
Satd. Flow (prot)	1574	1801	1645	0	1642	0
Flt Permitted	0.950				0.957	
Satd. Flow (perm)	1574	1801	1645	0	1642	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1162		1160	
Travel Time (s)		18.2	17.6		17.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	2%	5%	3%	2%	2%
Adj. Flow (vph)	21	854	534	151	74	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	21	854	685	0	82	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	19	769	481	136	67	7
Future Vol, veh/h	19	769	481	136	67	7
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, %	7	2	5	3	2	2
Mvmt Flow	21	854	534	151	74	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	685	0	-	0	1506	610
Stage 1	-	-	-	-	610	-
Stage 2	-	-	-	-	896	-
Critical Hdwy	4.17	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.263	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	885	-	-	-	133	494
Stage 1	-	-	-	-	542	-
Stage 2	-	-	-	-	399	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	885	-	-	-	130	494
Mov Cap-2 Maneuver	-	-	-	-	265	-
Stage 1	-	-	-	-	529	-
Stage 2	-	-	-	-	399	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.2	0	23.4
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	885	-	-	-	277
HCM Lane V/C Ratio	0.024	-	-	-	0.297
HCM Control Delay (s/veh)	9.2	-	-	-	23.4
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q (veh)	0.1	-	-	-	1.2

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	20	80	784	102	99	531	175	114	156	75	127	131
Future Volume (vph)	20	80	784	102	99	531	175	114	156	75	127	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-2%			1%			2%			-2%
Storage Length (ft)		450		400	300		375	225		225	175	
Storage Lanes		1		1	1		1	1		1	1	
Taper Length (ft)		100			100			150			150	
Lane Util. Factor	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850			0.850			0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	1787	3506	1599	1744	3454	1530	1735	1809	1523	1787	1863
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	1787	3506	1599	1744	3454	1530	1735	1809	1523	1787	1863
Right Turn on Red				No			No			No		
Satd. Flow (RTOR)												
Link Speed (mph)			45			45			45			45
Link Distance (ft)			1488			1019			1122			1136
Travel Time (s)			22.5			15.4			17.0			17.2
Peak Hour Factor	0.90	0.73	0.86	0.91	0.75	0.85	0.74	0.82	0.70	0.71	0.78	0.57
Heavy Vehicles (%)	2%	2%	4%	2%	3%	4%	5%	3%	4%	5%	2%	3%
Adj. Flow (vph)	22	110	912	112	132	625	236	139	223	106	163	230
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	132	912	112	132	625	236	139	223	106	163	230
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6			8		
Detector Phase	5	5	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	7.0	7.0	12.0	12.0	7.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	14.0	39.0	39.0	14.0	37.0	37.0	14.0	42.0	42.0	14.0	42.0
Total Split (s)	20.0	20.0	42.0	42.0	17.0	39.0	39.0	18.0	42.0	42.0	19.0	43.0
Total Split (%)	16.7%	16.7%	35.0%	35.0%	14.2%	32.5%	32.5%	15.0%	35.0%	35.0%	15.8%	35.8%
Maximum Green (s)	13.0	13.0	35.0	35.0	10.0	32.0	32.0	11.0	35.0	35.0	12.0	36.0
Yellow Time (s)	5.0	5.0	5.0	5.0	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	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0	-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	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Walk Time (s)			7.0	7.0		7.0	7.0		7.0	7.0		7.0
Flash Don't Walk (s)			25.0	25.0		23.0	23.0		28.0	28.0		28.0
Pedestrian Calls (#/hr)			0	0		0	0		0	0		0
Act Effct Green (s)		16.1	47.1	47.1	16.2	47.2	47.2	12.8	22.9	22.9	13.8	23.9
Actuated g/C Ratio		0.13	0.39	0.39	0.14	0.39	0.39	0.11	0.19	0.19	0.12	0.20
v/c Ratio		0.55	0.66	0.18	0.56	0.46	0.39	0.76	0.65	0.37	0.80	0.62
Control Delay (s/veh)		60.0	27.4	22.6	57.6	30.4	31.5	77.6	53.0	44.3	78.6	50.5

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	51
Future Volume (vph)	51
Ideal Flow (vphpl)	1900
Grade (%)	
Storage Length (ft)	125
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1599
Flt Permitted	
Satd. Flow (perm)	1599
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.49
Heavy Vehicles (%)	2%
Adj. Flow (vph)	104
Shared Lane Traffic (%)	
Lane Group Flow (vph)	104
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	42.0
Total Split (s)	43.0
Total Split (%)	35.8%
Maximum Green (s)	36.0
Yellow Time (s)	5.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	-2.0
Total Lost Time (s)	5.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	28.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	23.9
Actuated g/C Ratio	0.20
v/c Ratio	0.33
Control Delay (s/veh)	42.4

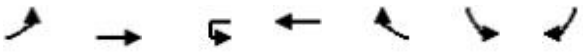
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		60.0	27.4	22.6	57.6	30.4	31.5	77.6	53.0	44.3	78.6	50.5
LOS		E	C	C	E	C	C	E	D	D	E	D
Approach Delay (s/veh)			30.6			34.3			58.3			58.0
Approach LOS			C			C			E			E
Queue Length 50th (ft)		104	216	45	96	187	130	106	161	72	125	164
Queue Length 95th (ft)		131	273	88	131	267	188	#173	169	90	#182	135
Internal Link Dist (ft)			1408			939			1042			1056
Turn Bay Length (ft)		450		400	300		375	225		225	175	
Base Capacity (vph)		255	1375	627	236	1357	601	187	557	469	208	589
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.52	0.66	0.18	0.56	0.46	0.39	0.74	0.40	0.23	0.78	0.39

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 87 (73%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay (s/veh): 40.3		Intersection LOS: D	
Intersection Capacity Utilization 59.4%		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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Lane Group	SBR
Queue Delay	0.0
Total Delay (s/veh)	42.4
LOS	D
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	69
Queue Length 95th (ft)	58
Internal Link Dist (ft)	
Turn Bay Length (ft)	125
Base Capacity (vph)	506
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.21

Intersection Summary



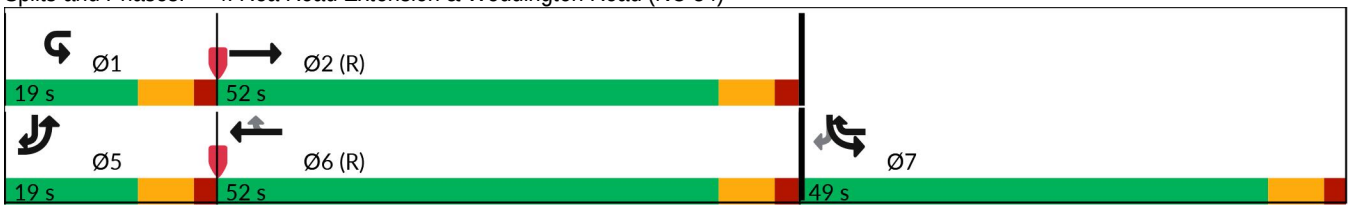
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	22	534	14	384	314	452	21
Future Volume (vph)	22	534	14	384	314	452	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	425		425		400	325	125
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.97	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1770	3539	1770	3539	1583	3433	1583
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1770	3539	1770	3539	1583	3433	1583
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		6405		877		725	
Travel Time (s)		97.0		13.3		11.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	24	593	16	427	349	502	23
Shared Lane Traffic (%)							
Lane Group Flow (vph)	24	593	16	427	349	502	23
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	1	6	7	7	5
Permitted Phases					6		7
Detector Phase	5	2	1	6	7	7	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	41.0	36.0	36.0	14.0
Total Split (s)	19.0	52.0	19.0	52.0	49.0	49.0	19.0
Total Split (%)	15.8%	43.3%	15.8%	43.3%	40.8%	40.8%	15.8%
Maximum Green (s)	12.0	45.0	12.0	45.0	42.0	42.0	12.0
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-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	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	C-Max	None	None	None
Walk Time (s)				7.0	7.0	7.0	
Flash Don't Walk (s)				27.0	22.0	22.0	
Pedestrian Calls (#/hr)				0	0	0	
Act Effct Green (s)	9.7	78.3	9.3	75.2	107.9	25.7	40.4
Actuated g/C Ratio	0.08	0.65	0.08	0.63	0.90	0.21	0.34
v/c Ratio	0.17	0.26	0.12	0.19	0.25	0.68	0.04
Control Delay (s/veh)	53.9	10.8	56.1	8.9	0.6	47.9	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	53.9	10.8	56.1	8.9	0.6	47.9	24.5

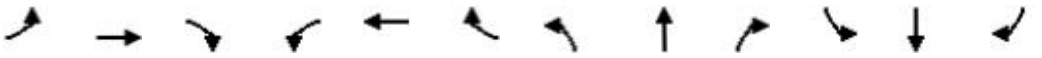
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
LOS	D	B	E	A	A	D	C
Approach Delay (s/veh)		12.5		6.2		46.9	
Approach LOS		B		A		D	
Queue Length 50th (ft)	18	78	13	54	8	185	12
Queue Length 95th (ft)	45	173	m27	70	6	227	28
Internal Link Dist (ft)		6325		797		645	
Turn Bay Length (ft)	425		425		400	325	125
Base Capacity (vph)	206	2309	206	2217	1544	1258	590
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.26	0.08	0.19	0.23	0.40	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay (s/veh): 19.2		Intersection LOS: B	
Intersection Capacity Utilization 39.5%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Rea Road Extension & Weddington Road (NC 84)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	969	31	0	709	2	0	0	19	0	0	4
Future Volume (vph)	0	969	31	0	709	2	0	0	19	0	0	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.995							0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3456	0	0	3471	0	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3456	0	0	3471	0	0	0	1611	0	0	1611
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		877			829			1095			1026	
Travel Time (s)		13.3			12.6			29.9			28.0	
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
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	1077	34	0	788	2	0	0	21	0	0	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1111	0	0	790	0	0	0	21	0	0	4
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.8%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.1

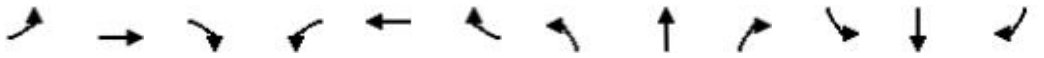
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	969	31	0	709	2	0	0	19	0	0	4
Future Vol, veh/h	0	969	31	0	709	2	0	0	19	0	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
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	4	2	2	4	2	2	2	2	2	2	2
Mvmt Flow	0	1077	34	0	788	2	0	0	21	0	0	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	556	-	-	395
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	*695	0	0	*797
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-			1			1
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	*695	-	-	*797
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	10.3	9.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	695	-	-	-	-	797
HCM Lane V/C Ratio	0.03	-	-	-	-	0.006
HCM Control Delay (s/veh)	10.3	-	-	-	-	9.5
HCM Lane LOS	B	-	-	-	-	A
HCM 95th %tile Q (veh)	0.1	-	-	-	-	0

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	984	4	0	708	8	0	0	2	0	0	2
Future Volume (vph)	0	984	4	0	708	8	0	0	2	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.998				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3468	0	0	3465	0	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3468	0	0	3465	0	0	0	1611	0	0	1611
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		829			1488			1046			1028	
Travel Time (s)		12.6			22.5			28.5			28.0	
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
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	1093	4	0	787	9	0	0	2	0	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1097	0	0	796	0	0	0	2	0	0	2
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 37.3%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	984	4	0	708	8	0	0	2	0	0	2
Future Vol, veh/h	0	984	4	0	708	8	0	0	2	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
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	4	2	2	4	2	2	2	2	2	2	2
Mvmt Flow	0	1093	4	0	787	9	0	0	2	0	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	549	-	-	398
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	*695	0	0	*797
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-			1			1
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	*695	-	-	*797
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	10.2	9.5
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	695	-	-	-	-	797
HCM Lane V/C Ratio	0.003	-	-	-	-	0.003
HCM Control Delay (s/veh)	10.2	-	-	-	-	9.5
HCM Lane LOS	B	-	-	-	-	A
HCM 95th %tile Q (veh)	0	-	-	-	-	0

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	1744	0	1641
Future Volume (vph)	0	0	0	1744	0	1641
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	0	2787	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	2787	0	3539
Link Speed (mph)	35		45			45
Link Distance (ft)	233		716			681
Travel Time (s)	4.5		10.8			10.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1938	0	1823
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1938	0	1823
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	307	1437	0	0
Future Volume (vph)	0	0	307	1437	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3539	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	0	3539	2787	0	0
Link Speed (mph)	35		45			45
Link Distance (ft)	1544		233			454
Travel Time (s)	30.1		3.5			6.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	341	1597	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	341	1597	0	0
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1437	0	1334
Future Volume (vph)	0	0	0	1437	0	1334
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	2787
Link Speed (mph)	35			45	45	
Link Distance (ft)	1094			1544	1022	
Travel Time (s)	21.3			23.4	15.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1597	0	1482
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1597	0	1482
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.0%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1408	0	1565
Future Volume (vph)	0	0	0	1408	0	1565
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	2787
Link Speed (mph)	35			45	45	
Link Distance (ft)	153			579	587	
Travel Time (s)	3.0			8.8	8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1564	0	1739
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1564	0	1739
Sign Control	Free			Free	Free	

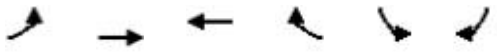
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.1%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	62	1503
Future Volume (vph)	0	0	0	0	62	1503
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	0	1863	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	0	1863	2787
Link Speed (mph)	45			35	45	
Link Distance (ft)	1018			449	153	
Travel Time (s)	15.4			8.7	2.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	69	1670
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	69	1670
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.9%		ICU Level of Service B	
Analysis Period (min) 15			

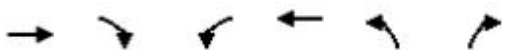
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	1346	0	1503
Future Volume (vph)	0	0	0	1346	0	1503
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	0	2787	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	2787	0	3539
Link Speed (mph)	35		45			45
Link Distance (ft)	580		1041			1018
Travel Time (s)	11.3		15.8			15.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1496	0	1670
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1496	0	1670
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.4%		ICU Level of Service A	
Analysis Period (min) 15			



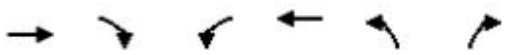
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1416	0	1005	0	0
Future Volume (vph)	0	1416	0	1005	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	3539	0	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	0	2787	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		406	910		187	
Travel Time (s)		6.2	13.8		2.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1573	0	1117	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1573	0	1117	0	0
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.5%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	96	909	0	0
Future Volume (vph)	0	0	96	909	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	0	0	1770	3539	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1770	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	462			187	223	
Travel Time (s)	7.0			2.8	3.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	107	1010	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	107	1010	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.5%		ICU Level of Service A	
Analysis Period (min) 15			

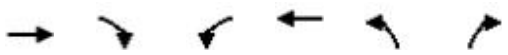


Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	1320	0	909	0	0
Future Volume (vph)	0	1320	0	909	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	0	2787	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	0	2787	0	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	1324			462	242	
Travel Time (s)	20.1			7.0	3.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1467	0	1010	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1467	0	1010	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.5%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	1041	0	890	0	0
Future Volume (vph)	0	1041	0	890	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	0	2787	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	0	2787	0	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	646			423	164	
Travel Time (s)	9.8			6.4	2.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1157	0	989	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1157	0	989	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.7%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	485	556	0	0	0	0
Future Volume (vph)	485	556	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	1863	2787	0	0	0	0
Flt Permitted						
Satd. Flow (perm)	1863	2787	0	0	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	164			264	460	
Travel Time (s)	2.5			4.0	7.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	539	618	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	539	618	0	0	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 43.4%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	556	0	405	0	0
Future Volume (vph)	0	556	0	405	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	3539	0	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	0	2787	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		460	6405		203	
Travel Time (s)		7.0	97.0		3.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	618	0	450	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	618	0	450	0	0
Sign Control		Free	Free		Free	

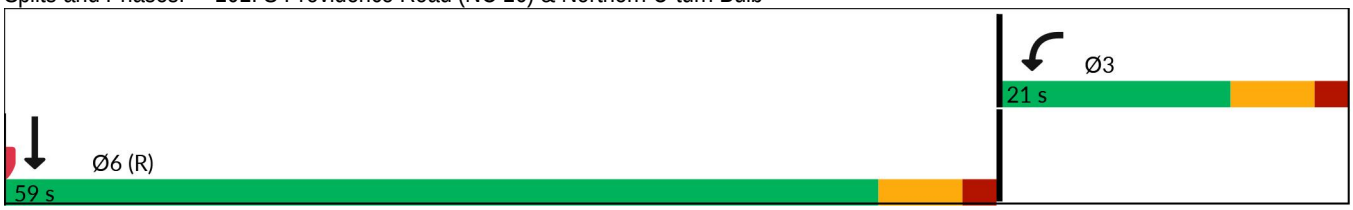
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 18.7%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	307	0	0	0	0	1334
Future Volume (vph)	307	0	0	0	0	1334
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450	0		0	0	
Storage Lanes	0	0		0	0	
Taper Length (ft)	100				25	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	3433	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	35		45			45
Link Distance (ft)	454		681			1094
Travel Time (s)	8.8		10.3			16.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	341	0	0	0	0	1482
Shared Lane Traffic (%)						
Lane Group Flow (vph)	341	0	0	0	0	1482
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					12.0
Minimum Split (s)	14.0					19.0
Total Split (s)	21.0					59.0
Total Split (%)	26.3%					73.8%
Maximum Green (s)	14.0					52.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	14.5					55.5
Actuated g/C Ratio	0.18					0.69
v/c Ratio	0.55					0.60
Control Delay (s/veh)	26.0					8.0
Queue Delay	0.0					0.0
Total Delay (s/veh)	26.0					8.0
LOS	C					A
Approach Delay (s/veh)	26.0					8.0
Approach LOS	C					A

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Length 50th (ft)	74					178
Queue Length 95th (ft)	m91					243
Internal Link Dist (ft)	374		601			1014
Turn Bay Length (ft)	450					
Base Capacity (vph)	686					2456
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.50					0.60

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 1 (1%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.60			
Intersection Signal Delay (s/veh): 11.3		Intersection LOS: B	
Intersection Capacity Utilization 54.0%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 101: S Providence Road (NC 16) & Northern U-turn Bulb

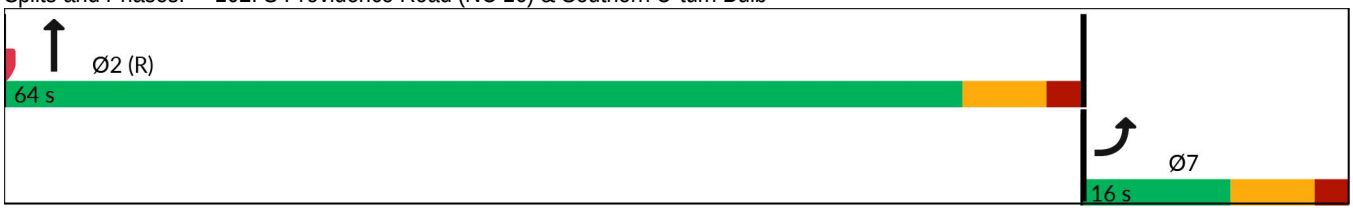


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	62	0	0	1346	0	0
Future Volume (vph)	62	0	0	1346	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	425	0	0			0
Storage Lanes	0	0	0			0
Taper Length (ft)	100		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	3539	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	3539	0	0
Right Turn on Red	No	No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	449			580	579	
Travel Time (s)	8.7			8.8	8.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	69	0	0	1496	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	69	0	0	1496	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			12.0		
Minimum Split (s)	14.0			19.0		
Total Split (s)	16.0			64.0		
Total Split (%)	20.0%			80.0%		
Maximum Green (s)	9.0			57.0		
Yellow Time (s)	5.0			5.0		
All-Red Time (s)	2.0			2.0		
Lost Time Adjust (s)	-2.0			-2.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0		
Recall Mode	None			C-Max		
Act Effct Green (s)	10.1			63.7		
Actuated g/C Ratio	0.13			0.80		
v/c Ratio	0.31			0.53		
Control Delay (s/veh)	32.6			4.8		
Queue Delay	0.0			0.0		
Total Delay (s/veh)	32.6			4.8		
LOS	C			A		
Approach Delay (s/veh)	32.6			4.8		
Approach LOS	C			A		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 50th (ft)	31			137		
Queue Length 95th (ft)	m53			186		
Internal Link Dist (ft)	369			500	499	
Turn Bay Length (ft)	425					
Base Capacity (vph)	243			2816		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.28			0.53		

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 12 (15%), Referenced to phase 2:NBT, Start of Green			
Natural Cycle: 40			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.53			
Intersection Signal Delay (s/veh): 6.0		Intersection LOS: A	
Intersection Capacity Utilization 58.1%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 102: S Providence Road (NC 16) & Southern U-turn Bulb



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1320	0	0	96	0
Future Volume (vph)	0	1320	0	0	96	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	0	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	0	0	1770	0
Link Speed (mph)		45	45		35	
Link Distance (ft)		242	406		223	
Travel Time (s)		3.7	6.2		4.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1467	0	0	107	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1467	0	0	107	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 68.3%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1320	0	0	96	0
Future Vol, veh/h	0	1320	0	0	96	0
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	0	1467	0	0	107	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	-	0	734	-
Stage 1	-	-	0	-
Stage 2	-	-	734	-
Critical Hdwy	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.84	-
Follow-up Hdwy	-	-	3.52	-
Pot Cap-1 Maneuver	0	-	355	0
Stage 1	0	-	-	0
Stage 2	0	-	436	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	355	-
Mov Cap-2 Maneuver	-	-	355	-
Stage 1	-	-	-	-
Stage 2	-	-	436	-

Approach	EB	SB
HCM Control Delay, s/v	0	19.4
HCM LOS		C

Minor Lane/Major Mvmt	EBT	SBLn1
Capacity (veh/h)	-	355
HCM Lane V/C Ratio	-	0.3
HCM Control Delay (s/veh)	-	19.4
HCM Lane LOS	-	C
HCM 95th %tile Q (veh)	-	1.2

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	405	485	0
Future Volume (vph)	0	0	0	405	485	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0		500	0
Storage Lanes		0	0		0	0
Taper Length (ft)			25		100	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	3539	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	3539	1770	0
Link Speed (mph)	45			45	35	
Link Distance (ft)	423			203	264	
Travel Time (s)	6.4			3.1	5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	450	539	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	450	539	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 44.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	11.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations				↑↑	↰	
Traffic Vol, veh/h	0	0	0	405	485	0
Future Vol, veh/h	0	0	0	405	485	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
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	0	0	0	450	539	0

Major/Minor	Major2		Minor1	
Conflicting Flow All	-	-	225	-
Stage 1	-	-	0	-
Stage 2	-	-	225	-
Critical Hdwy	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.84	-
Follow-up Hdwy	-	-	3.52	-
Pot Cap-1 Maneuver	0	-	743	0
Stage 1	0	-	-	0
Stage 2	0	-	791	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	743	-
Mov Cap-2 Maneuver	-	-	743	-
Stage 1	-	-	-	-
Stage 2	-	-	791	-

Approach	WB	NB
HCM Control Delay, s/v	0	21.5
HCM LOS		C

Minor Lane/Major Mvmt	NBLn1	WBT
Capacity (veh/h)	743	-
HCM Lane V/C Ratio	0.725	-
HCM Control Delay (s/veh)	21.5	-
HCM Lane LOS	C	-
HCM 95th %tile Q (veh)	6.3	-

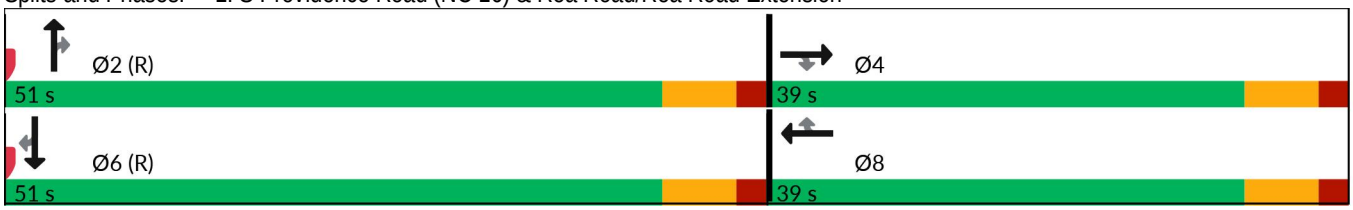
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	887	662	0	254	646	0	1498	124	0	1181	749
Future Volume (vph)	0	887	662	0	254	646	0	1498	124	0	1181	749
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	12	12	12	11	11	11	12	11	12
Grade (%)		-2%			0%			1%			-1%	
Storage Length (ft)	0		750	0		425	0		375	0		500
Storage Lanes	0		2	0		2	0		2	0		2
Taper Length (ft)	0			25			0			0		
Lane Util. Factor	1.00	0.95	0.88	1.00	0.95	0.88	1.00	0.95	0.88	1.00	0.95	0.88
Frt			0.850			0.850			0.850			0.850
Flt Protected												
Satd. Flow (prot)	0	3575	2815	0	3539	2787	0	3404	2680	0	3438	2801
Flt Permitted												
Satd. Flow (perm)	0	3575	2815	0	3539	2787	0	3404	2680	0	3438	2801
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		910			646			587			716	
Travel Time (s)		13.8			9.8			8.9			10.8	
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)	0	986	736	0	282	718	0	1664	138	0	1312	832
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	986	736	0	282	718	0	1664	138	0	1312	832
Turn Type		NA	Perm		NA	Perm		NA	Perm		NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases			4			8			2			6
Detector Phase		4	4		8	8		2	2		6	6
Switch Phase												
Minimum Initial (s)		7.0	7.0		7.0	7.0		12.0	12.0		12.0	12.0
Minimum Split (s)		38.0	38.0		39.0	39.0		40.0	40.0		40.0	40.0
Total Split (s)		39.0	39.0		39.0	39.0		51.0	51.0		51.0	51.0
Total Split (%)		43.3%	43.3%		43.3%	43.3%		56.7%	56.7%		56.7%	56.7%
Maximum Green (s)		32.0	32.0		32.0	32.0		44.0	44.0		44.0	44.0
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		-2.0	-2.0
Total Lost Time (s)		5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0
Lead/Lag												
Lead-Lag Optimize?												
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		C-Max	C-Max		C-Max	C-Max
Walk Time (s)		7.0	7.0		7.0	7.0		7.0	7.0		7.0	7.0
Flash Don't Walk (s)		24.0	24.0		25.0	25.0		26.0	26.0		26.0	26.0
Pedestrian Calls (#/hr)		0	0		0	0		0	0		0	0
Act Effct Green (s)		33.1	33.1		33.1	33.1		46.9	46.9		46.9	46.9
Actuated g/C Ratio		0.37	0.37		0.37	0.37		0.52	0.52		0.52	0.52
v/c Ratio		0.75	0.71		0.22	0.70		0.94	0.10		0.73	0.57
Control Delay (s/veh)		29.0	28.7		19.8	28.4		28.0	10.9		14.7	12.2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0
Total Delay (s/veh)		29.0	28.7		19.8	28.4		28.0	10.9		14.7	12.2
LOS		C	C		B	C		C	B		B	B
Approach Delay (s/veh)		28.8			26.0			26.7			13.8	
Approach LOS		C			C			C			B	
Queue Length 50th (ft)		249	196		55	190		237	19		211	111
Queue Length 95th (ft)		323	268		84	260		#623	34		269	152
Internal Link Dist (ft)		830			566			507			636	
Turn Bay Length (ft)			750			425			375			500
Base Capacity (vph)		1350	1063		1336	1052		1773	1396		1791	1459
Starvation Cap Reductn		0	0		0	0		0	0		0	0
Spillback Cap Reductn		0	0		0	0		0	0		0	0
Storage Cap Reductn		0	0		0	0		0	0		0	0
Reduced v/c Ratio		0.73	0.69		0.21	0.68		0.94	0.10		0.73	0.57

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 18 (20%), Referenced to phase 2:NBT and 6:SBT, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.94
Intersection Signal Delay (s/veh): 23.0 Intersection LOS: C
Intersection Capacity Utilization 74.3% 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: S Providence Road (NC 16) & Rea Road/Rea Road Extension



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	774	608	67	33	11
Future Volume (vph)	30	774	608	67	33	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.987		0.967	
Flt Protected	0.950				0.964	
Satd. Flow (prot)	1652	1801	1686	0	1586	0
Flt Permitted	0.950				0.964	
Satd. Flow (perm)	1652	1801	1686	0	1586	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1162		1160	
Travel Time (s)		18.2	17.6		17.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	2%	3%	8%
Adj. Flow (vph)	33	860	676	74	37	12
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	860	750	0	49	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 50.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	774	608	67	33	11
Future Vol, veh/h	30	774	608	67	33	11
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	4	2	3	8
Mvmt Flow	33	860	676	74	37	12

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	750	0	-	0	1639	713
Stage 1	-	-	-	-	713	-
Stage 2	-	-	-	-	926	-
Critical Hdwy	4.12	-	-	-	6.43	6.28
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.372
Pot Cap-1 Maneuver	859	-	-	-	110	422
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	384	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	859	-	-	-	106	422
Mov Cap-2 Maneuver	-	-	-	-	240	-
Stage 1	-	-	-	-	466	-
Stage 2	-	-	-	-	384	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.3	0	21.3
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	859	-	-	-	269
HCM Lane V/C Ratio	0.039	-	-	-	0.182
HCM Control Delay (s/veh)	9.4	-	-	-	21.3
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q (veh)	0.1	-	-	-	0.7

Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (vph)	23	171	1063	138	78	870	81	149	46	103	52	23
Future Volume (vph)	23	171	1063	138	78	870	81	149	46	103	52	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%)			-2%			1%			2%			-2%
Storage Length (ft)		450		400	300		375	225		225	175	
Storage Lanes		1		1	1		1	1		1	1	
Taper Length (ft)		100			100			150			150	
Lane Util. Factor	0.95	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850			0.850			0.850		
Flt Protected		0.950			0.950			0.950			0.950	
Satd. Flow (prot)	0	1772	3575	1599	1744	3487	1575	1735	1844	1568	1688	1881
Flt Permitted		0.950			0.950			0.950			0.950	
Satd. Flow (perm)	0	1772	3575	1599	1744	3487	1575	1735	1844	1568	1688	1881
Right Turn on Red				No			No			No		
Satd. Flow (RTOR)												
Link Speed (mph)			45			45			45			45
Link Distance (ft)			1492			1019			1122			1136
Travel Time (s)			22.6			15.4			17.0			17.2
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
Heavy Vehicles (%)	2%	3%	2%	2%	3%	3%	2%	3%	2%	2%	8%	2%
Adj. Flow (vph)	26	190	1181	153	87	967	90	166	51	114	58	26
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	216	1181	153	87	967	90	166	51	114	58	26
Turn Type	Prot	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm	Prot	NA
Protected Phases	5	5	2		1	6		3	8		7	4
Permitted Phases				2			6			8		
Detector Phase	5	5	2	2	1	6	6	3	8	8	7	4
Switch Phase												
Minimum Initial (s)	7.0	7.0	12.0	12.0	7.0	12.0	12.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	14.0	14.0	39.0	39.0	14.0	37.0	37.0	14.0	42.0	42.0	14.0	42.0
Total Split (s)	20.0	20.0	47.0	47.0	14.0	41.0	41.0	18.0	45.0	45.0	14.0	41.0
Total Split (%)	16.7%	16.7%	39.2%	39.2%	11.7%	34.2%	34.2%	15.0%	37.5%	37.5%	11.7%	34.2%
Maximum Green (s)	13.0	13.0	40.0	40.0	7.0	34.0	34.0	11.0	38.0	38.0	7.0	34.0
Yellow Time (s)	5.0	5.0	5.0	5.0	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	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		-2.0	-2.0	-2.0	-2.0	-2.0	-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	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	None	C-Max	C-Max	None	C-Max	C-Max	None	None	None	None	None
Walk Time (s)			7.0	7.0		7.0	7.0		7.0	7.0		7.0
Flash Don't Walk (s)			25.0	25.0		23.0	23.0		28.0	28.0		28.0
Pedestrian Calls (#/hr)			0	0		0	0		0	0		0
Act Effct Green (s)		24.5	57.9	57.9	13.7	47.0	47.0	13.0	22.3	22.3	9.0	15.5
Actuated g/C Ratio		0.20	0.48	0.48	0.11	0.39	0.39	0.11	0.19	0.19	0.08	0.13
v/c Ratio		0.60	0.69	0.20	0.44	0.71	0.15	0.89	0.15	0.39	0.46	0.11
Control Delay (s/veh)		48.7	22.8	17.3	55.8	35.5	26.7	95.0	42.5	47.7	65.5	45.0

Lane Group	SBR
Lane Configurations	
Traffic Volume (vph)	93
Future Volume (vph)	93
Ideal Flow (vphpl)	1900
Grade (%)	
Storage Length (ft)	125
Storage Lanes	1
Taper Length (ft)	
Lane Util. Factor	1.00
Frt	0.850
Flt Protected	
Satd. Flow (prot)	1539
Flt Permitted	
Satd. Flow (perm)	1539
Right Turn on Red	No
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	0.90
Heavy Vehicles (%)	6%
Adj. Flow (vph)	103
Shared Lane Traffic (%)	
Lane Group Flow (vph)	103
Turn Type	Perm
Protected Phases	
Permitted Phases	4
Detector Phase	4
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	42.0
Total Split (s)	41.0
Total Split (%)	34.2%
Maximum Green (s)	34.0
Yellow Time (s)	5.0
All-Red Time (s)	2.0
Lost Time Adjust (s)	-2.0
Total Lost Time (s)	5.0
Lead/Lag	Lag
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	7.0
Flash Don't Walk (s)	28.0
Pedestrian Calls (#/hr)	0
Act Effct Green (s)	15.5
Actuated g/C Ratio	0.13
v/c Ratio	0.52
Control Delay (s/veh)	57.3

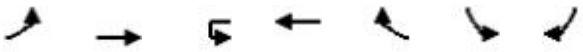
Lane Group	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		48.7	22.8	17.3	55.8	35.5	26.7	95.0	42.5	47.7	65.5	45.0
LOS		D	C	B	E	D	C	F	D	D	E	D
Approach Delay (s/veh)			25.8			36.3			70.7			58.1
Approach LOS			C			D			E			E
Queue Length 50th (ft)		166	273	58	64	328	45	129	34	81	44	18
Queue Length 95th (ft)		226	399	121	113	#468	93	#258	68	133	89	44
Internal Link Dist (ft)			1412			939			1042			1056
Turn Bay Length (ft)		450		400	300		375	225		225	175	
Base Capacity (vph)		361	1723	770	198	1366	617	187	614	522	126	564
Starvation Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio		0.60	0.69	0.20	0.44	0.71	0.15	0.89	0.08	0.22	0.46	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 91 (76%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 110			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay (s/veh): 36.1		Intersection LOS: D	
Intersection Capacity Utilization 65.6%		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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Lane Group	SBR
Queue Delay	0.0
Total Delay (s/veh)	57.3
LOS	E
Approach Delay (s/veh)	
Approach LOS	
Queue Length 50th (ft)	76
Queue Length 95th (ft)	128
Internal Link Dist (ft)	
Turn Bay Length (ft)	125
Base Capacity (vph)	461
Starvation Cap Reductn	0
Spillback Cap Reductn	0
Storage Cap Reductn	0
Reduced v/c Ratio	0.22

Intersection Summary



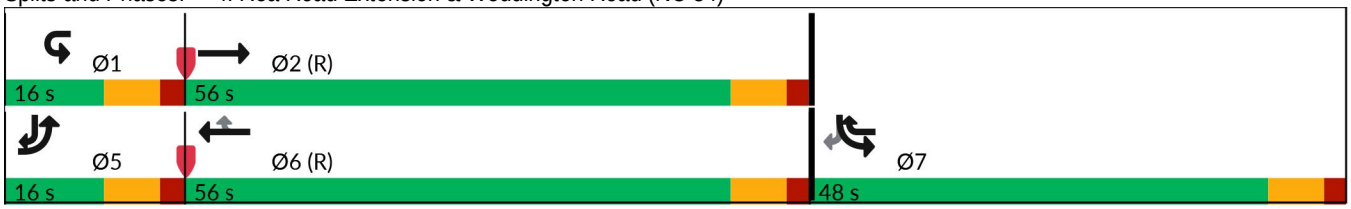
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (vph)	26	760	17	618	505	633	26
Future Volume (vph)	26	760	17	618	505	633	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	425		425		400	325	125
Storage Lanes	1		1		1	1	1
Taper Length (ft)	100		100			100	
Lane Util. Factor	1.00	0.95	1.00	0.95	1.00	0.97	1.00
Frt					0.850		0.850
Flt Protected	0.950		0.950			0.950	
Satd. Flow (prot)	1770	3539	1770	3539	1583	3433	1583
Flt Permitted	0.950		0.950			0.950	
Satd. Flow (perm)	1770	3539	1770	3539	1583	3433	1583
Right Turn on Red					No		No
Satd. Flow (RTOR)							
Link Speed (mph)		45		45		45	
Link Distance (ft)		6405		877		725	
Travel Time (s)		97.0		13.3		11.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	29	844	19	687	561	703	29
Shared Lane Traffic (%)							
Lane Group Flow (vph)	29	844	19	687	561	703	29
Turn Type	Prot	NA	Prot	NA	pm+ov	Prot	pm+ov
Protected Phases	5	2	1	6	7	7	5
Permitted Phases					6		7
Detector Phase	5	2	1	6	7	7	5
Switch Phase							
Minimum Initial (s)	7.0	12.0	7.0	12.0	7.0	7.0	7.0
Minimum Split (s)	14.0	19.0	14.0	41.0	36.0	36.0	14.0
Total Split (s)	16.0	56.0	16.0	56.0	48.0	48.0	16.0
Total Split (%)	13.3%	46.7%	13.3%	46.7%	40.0%	40.0%	13.3%
Maximum Green (s)	9.0	49.0	9.0	49.0	41.0	41.0	9.0
Yellow Time (s)	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
Lost Time Adjust (s)	-2.0	-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	5.0
Lead/Lag	Lead	Lag	Lead	Lag			Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Recall Mode	None	C-Max	None	C-Max	None	None	None
Walk Time (s)				7.0	7.0	7.0	
Flash Don't Walk (s)				27.0	22.0	22.0	
Pedestrian Calls (#/hr)				0	0	0	
Act Effct Green (s)	9.9	70.1	9.5	64.0	103.9	33.8	48.8
Actuated g/C Ratio	0.08	0.58	0.08	0.53	0.87	0.28	0.41
v/c Ratio	0.20	0.41	0.14	0.36	0.41	0.73	0.05
Control Delay (s/veh)	54.2	16.6	62.0	11.9	1.2	43.2	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	54.2	16.6	62.0	11.9	1.2	43.2	19.3

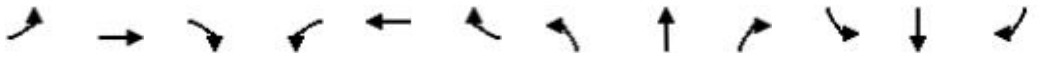
Lane Group	EBL	EBT	WBU	WBT	WBR	SBL	SBR
LOS	D	B	E	B	A	D	B
Approach Delay (s/veh)		17.8		7.9		42.2	
Approach LOS		B		A		D	
Queue Length 50th (ft)	21	152	15	78	5	254	14
Queue Length 95th (ft)	52	307	m24	m117	m17	294	29
Internal Link Dist (ft)		6325		797		645	
Turn Bay Length (ft)	425		425		400	325	125
Base Capacity (vph)	165	2066	162	1888	1447	1230	659
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.41	0.12	0.36	0.39	0.57	0.04

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:EBT and 6:WBT, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay (s/veh): 19.7		Intersection LOS: B	
Intersection Capacity Utilization 48.0%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 4: Rea Road Extension & Weddington Road (NC 84)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1373	37	0	1135	3	0	0	21	0	0	5
Future Volume (vph)	0	1373	37	0	1135	3	0	0	21	0	0	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996							0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3525	0	0	3505	0	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3525	0	0	3505	0	0	0	1611	0	0	1611
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		877			829			1095			1028	
Travel Time (s)		13.3			12.6			29.9			28.0	
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
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	1526	41	0	1261	3	0	0	23	0	0	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1567	0	0	1264	0	0	0	23	0	0	6
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.1

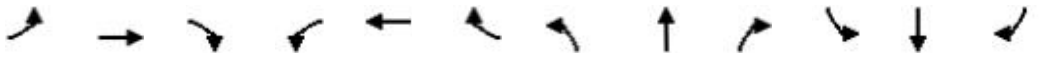
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1373	37	0	1135	3	0	0	21	0	0	5
Future Vol, veh/h	0	1373	37	0	1135	3	0	0	21	0	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
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	3	2	2	2	2	2	2	2
Mvmt Flow	0	1526	41	0	1261	3	0	0	23	0	0	6

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	784	-	-	632
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	*516	0	0	*618
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-			1			1
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	*516	-	-	*618
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	12.3	10.9
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	516	-	-	-	-	618
HCM Lane V/C Ratio	0.045	-	-	-	-	0.009
HCM Control Delay (s/veh)	12.3	-	-	-	-	10.9
HCM Lane LOS	B	-	-	-	-	B
HCM 95th %tile Q (veh)	0.1	-	-	-	-	0

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	1389	5	0	1136	9	0	0	3	0	0	2
Future Volume (vph)	0	1389	5	0	1136	9	0	0	3	0	0	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999			0.999				0.865			0.865
Flt Protected												
Satd. Flow (prot)	0	3536	0	0	3502	0	0	0	1611	0	0	1611
Flt Permitted												
Satd. Flow (perm)	0	3536	0	0	3502	0	0	0	1611	0	0	1611
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		829			1492			1046			1028	
Travel Time (s)		12.6			22.6			28.5			28.0	
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
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	0	1543	6	0	1262	10	0	0	3	0	0	2
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1549	0	0	1272	0	0	0	3	0	0	2
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1389	5	0	1136	9	0	0	3	0	0	2
Future Vol, veh/h	0	1389	5	0	1136	9	0	0	3	0	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	0	-	-	0
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	3	2	2	2	2	2	2	2
Mvmt Flow	0	1543	6	0	1262	10	0	0	3	0	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	-	-	0	-	-	775	-	-	636
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	-	-	-	6.94	-	-	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	-	-	-	3.32	-	-	3.32
Pot Cap-1 Maneuver	0	-	-	0	-	-	0	0	*516	0	0	*618
Stage 1	0	-	-	0	-	-	0	0	-	0	0	-
Stage 2	0	-	-	0	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-			1			1
Mov Cap-1 Maneuver	-	-	-	-	-	-	-	-	*516	-	-	*618
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	12	10.8
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT	WBR	SBLn1
Capacity (veh/h)	516	-	-	-	-	618
HCM Lane V/C Ratio	0.006	-	-	-	-	0.004
HCM Control Delay (s/veh)	12	-	-	-	-	10.8
HCM Lane LOS	B	-	-	-	-	B
HCM 95th %tile Q (veh)	0	-	-	-	-	0

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	2137	0	1930
Future Volume (vph)	0	0	0	2137	0	1930
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	0	2787	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	2787	0	3539
Link Speed (mph)	35		45			45
Link Distance (ft)	233		716			681
Travel Time (s)	4.5		10.8			10.3
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	2374	0	2144
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	2374	0	2144
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 78.1%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	365	1772	0	0
Future Volume (vph)	0	0	365	1772	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	0.95	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	3539	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	0	3539	2787	0	0
Link Speed (mph)	35		45			45
Link Distance (ft)	1544		233			454
Travel Time (s)	30.1		3.5			6.9
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	406	1969	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	406	1969	0	0
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.3%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1772	0	1565
Future Volume (vph)	0	0	0	1772	0	1565
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	2787
Link Speed (mph)	35			45	45	
Link Distance (ft)	1094			1544	1022	
Travel Time (s)	21.3			23.4	15.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1969	0	1739
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1969	0	1739
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.1%		ICU Level of Service B	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	1622	0	1843
Future Volume (vph)	0	0	0	1622	0	1843
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	3539	0	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	3539	0	2787
Link Speed (mph)	35			45	45	
Link Distance (ft)	153			579	587	
Travel Time (s)	3.0			8.8	8.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1802	0	2048
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1802	0	2048
Sign Control	Free			Free	Free	

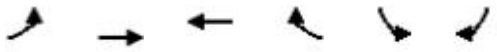
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	41	1802
Future Volume (vph)	0	0	0	0	41	1802
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	0.88
Frt						0.850
Flt Protected						
Satd. Flow (prot)	0	0	0	0	1863	2787
Flt Permitted						
Satd. Flow (perm)	0	0	0	0	1863	2787
Link Speed (mph)	45			35	45	
Link Distance (ft)	1018			449	153	
Travel Time (s)	15.4			8.7	2.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	0	46	2002
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	46	2002
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.4%		ICU Level of Service C	
Analysis Period (min) 15			

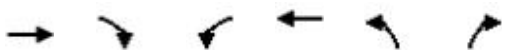
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	1581	0	1802
Future Volume (vph)	0	0	0	1581	0	1802
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.88	1.00	0.95
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	0	0	2787	0	3539
Flt Permitted						
Satd. Flow (perm)	0	0	0	2787	0	3539
Link Speed (mph)	35		45			45
Link Distance (ft)	580		1041			1018
Travel Time (s)	11.3		15.8			15.4
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	1757	0	2002
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	1757	0	2002
Sign Control	Free		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 58.6%		ICU Level of Service B	
Analysis Period (min) 15			



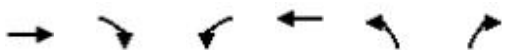
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1549	0	1002	0	0
Future Volume (vph)	0	1549	0	1002	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	3539	0	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	0	2787	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		406	910		187	
Travel Time (s)		6.2	13.8		2.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1721	0	1113	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1721	0	1113	0	0
Sign Control		Free	Free		Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.7%		ICU Level of Service A	
Analysis Period (min) 15			



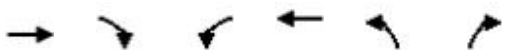
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	80	922	0	0
Future Volume (vph)	0	0	80	922	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected			0.950			
Satd. Flow (prot)	0	0	1770	3539	0	0
Flt Permitted			0.950			
Satd. Flow (perm)	0	0	1770	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	462			187	223	
Travel Time (s)	7.0			2.8	3.4	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	89	1024	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	89	1024	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.6%		ICU Level of Service A	
Analysis Period (min) 15			



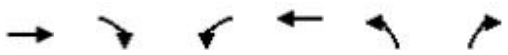
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	1469	0	922	0	0
Future Volume (vph)	0	1469	0	922	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	0	2787	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	0	2787	0	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	1324			462	242	
Travel Time (s)	20.1			7.0	3.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1632	0	1024	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1632	0	1024	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 54.7%		ICU Level of Service A	
Analysis Period (min) 15			



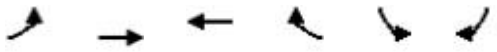
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	1011	0	900	0	0
Future Volume (vph)	0	1011	0	900	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	0.95	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	0	2787	0	3539	0	0
Flt Permitted						
Satd. Flow (perm)	0	2787	0	3539	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	646			423	164	
Travel Time (s)	9.8			6.4	2.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1123	0	1000	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1123	0	1000	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.4%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	608	403	0	0	0	0
Future Volume (vph)	608	403	0	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.88	1.00	1.00	1.00	1.00
Frt		0.850				
Flt Protected						
Satd. Flow (prot)	1863	2787	0	0	0	0
Flt Permitted						
Satd. Flow (perm)	1863	2787	0	0	0	0
Link Speed (mph)	45			45	45	
Link Distance (ft)	164			264	460	
Travel Time (s)	2.5			4.0	7.0	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	676	448	0	0	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	676	448	0	0	0	0
Sign Control	Free			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.7%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	403	0	292	0	0
Future Volume (vph)	0	403	0	292	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	0.88	1.00	1.00
Frt				0.850		
Flt Protected						
Satd. Flow (prot)	0	3539	0	2787	0	0
Flt Permitted						
Satd. Flow (perm)	0	3539	0	2787	0	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		460	6405		203	
Travel Time (s)		7.0	97.0		3.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	448	0	324	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	448	0	324	0	0
Sign Control		Free	Free		Free	

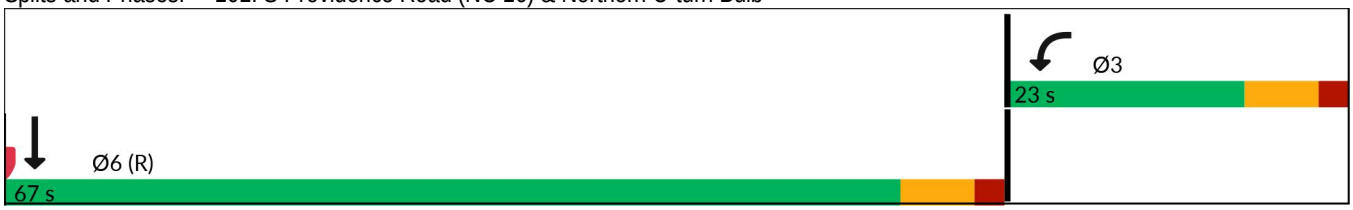
Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 14.5%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	365	0	0	0	0	1565
Future Volume (vph)	365	0	0	0	0	1565
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	450	0		0	0	
Storage Lanes	0	0		0	0	
Taper Length (ft)	100				25	
Lane Util. Factor	0.97	1.00	1.00	1.00	1.00	0.95
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	3433	0	0	0	0	3539
Flt Permitted	0.950					
Satd. Flow (perm)	3433	0	0	0	0	3539
Right Turn on Red	No	No		No		
Satd. Flow (RTOR)						
Link Speed (mph)	35		45			45
Link Distance (ft)	454		681			1094
Travel Time (s)	8.8		10.3			16.6
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	406	0	0	0	0	1739
Shared Lane Traffic (%)						
Lane Group Flow (vph)	406	0	0	0	0	1739
Turn Type	Prot					NA
Protected Phases	3					6
Permitted Phases						
Detector Phase	3					6
Switch Phase						
Minimum Initial (s)	7.0					12.0
Minimum Split (s)	14.0					19.0
Total Split (s)	23.0					67.0
Total Split (%)	25.6%					74.4%
Maximum Green (s)	16.0					60.0
Yellow Time (s)	5.0					5.0
All-Red Time (s)	2.0					2.0
Lost Time Adjust (s)	-2.0					-2.0
Total Lost Time (s)	5.0					5.0
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0					3.0
Recall Mode	None					C-Max
Act Effct Green (s)	16.7					63.3
Actuated g/C Ratio	0.19					0.70
v/c Ratio	0.64					0.70
Control Delay (s/veh)	29.8					10.0
Queue Delay	0.0					0.0
Total Delay (s/veh)	29.8					10.0
LOS	C					A
Approach Delay (s/veh)	29.8					10.0
Approach LOS	C					A

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Length 50th (ft)	102					272
Queue Length 95th (ft)	m118					352
Internal Link Dist (ft)	374		601			1014
Turn Bay Length (ft)	450					
Base Capacity (vph)	686					2488
Starvation Cap Reductn	0					0
Spillback Cap Reductn	0					0
Storage Cap Reductn	0					0
Reduced v/c Ratio	0.59					0.70

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 2 (2%), Referenced to phase 6:SBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.70			
Intersection Signal Delay (s/veh): 13.7		Intersection LOS: B	
Intersection Capacity Utilization 65.3%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 101: S Providence Road (NC 16) & Northern U-turn Bulb

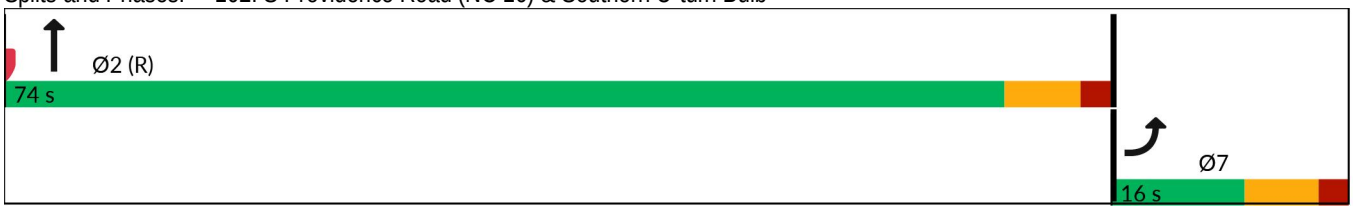


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	41	0	0	1581	0	0
Future Volume (vph)	41	0	0	1581	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	425	0	0			0
Storage Lanes	0	0	0			0
Taper Length (ft)	100		25			
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected	0.950					
Satd. Flow (prot)	1770	0	0	3539	0	0
Flt Permitted	0.950					
Satd. Flow (perm)	1770	0	0	3539	0	0
Right Turn on Red	No	No				No
Satd. Flow (RTOR)						
Link Speed (mph)	35			45	45	
Link Distance (ft)	449			580	579	
Travel Time (s)	8.7			8.8	8.8	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	46	0	0	1757	0	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	46	0	0	1757	0	0
Turn Type	Prot			NA		
Protected Phases	7			2		
Permitted Phases						
Detector Phase	7			2		
Switch Phase						
Minimum Initial (s)	7.0			12.0		
Minimum Split (s)	14.0			19.0		
Total Split (s)	16.0			74.0		
Total Split (%)	17.8%			82.2%		
Maximum Green (s)	9.0			67.0		
Yellow Time (s)	5.0			5.0		
All-Red Time (s)	2.0			2.0		
Lost Time Adjust (s)	-2.0			-2.0		
Total Lost Time (s)	5.0			5.0		
Lead/Lag						
Lead-Lag Optimize?						
Vehicle Extension (s)	3.0			3.0		
Recall Mode	None			C-Max		
Act Effct Green (s)	9.9			77.7		
Actuated g/C Ratio	0.11			0.86		
v/c Ratio	0.24			0.58		
Control Delay (s/veh)	39.0			4.2		
Queue Delay	0.0			0.0		
Total Delay (s/veh)	39.0			4.2		
LOS	D			A		
Approach Delay (s/veh)	39.0			4.2		
Approach LOS	D			A		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Queue Length 50th (ft)	24			175		
Queue Length 95th (ft)	m35			245		
Internal Link Dist (ft)	369			500	499	
Turn Bay Length (ft)	425					
Base Capacity (vph)	216			3055		
Starvation Cap Reductn	0			0		
Spillback Cap Reductn	0			0		
Storage Cap Reductn	0			0		
Reduced v/c Ratio	0.21			0.58		

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 15 (17%), Referenced to phase 2:NBT, Start of Green			
Natural Cycle: 50			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay (s/veh): 5.1		Intersection LOS: A	
Intersection Capacity Utilization 67.8%		ICU Level of Service C	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 102: S Providence Road (NC 16) & Southern U-turn Bulb



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1469	0	0	80	0
Future Volume (vph)	0	1469	0	0	80	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	1.00	1.00	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	3539	0	0	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	3539	0	0	1770	0
Link Speed (mph)		45	45		35	
Link Distance (ft)		242	406		223	
Travel Time (s)		3.7	6.2		4.3	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	1632	0	0	89	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	1632	0	0	89	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	1469	0	0	80	0
Future Vol, veh/h	0	1469	0	0	80	0
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	0	1632	0	0	89	0

Major/Minor	Major1		Minor2	
Conflicting Flow All	-	0	816	-
Stage 1	-	-	0	-
Stage 2	-	-	816	-
Critical Hdwy	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.84	-
Follow-up Hdwy	-	-	3.52	-
Pot Cap-1 Maneuver	0	-	315	0
Stage 1	0	-	-	0
Stage 2	0	-	395	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	315	-
Mov Cap-2 Maneuver	-	-	315	-
Stage 1	-	-	-	-
Stage 2	-	-	395	-

Approach	EB	SB
HCM Control Delay, s/v	0	20.9
HCM LOS		C

Minor Lane/Major Mvmt	EBT	SBLn1
Capacity (veh/h)	-	315
HCM Lane V/C Ratio	-	0.282
HCM Control Delay (s/veh)	-	20.9
HCM Lane LOS	-	C
HCM 95th %tile Q (veh)	-	1.1

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	292	608	0
Future Volume (vph)	0	0	0	292	608	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	0		500	0
Storage Lanes		0	0		0	0
Taper Length (ft)			25		100	
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00
Frt						
Flt Protected					0.950	
Satd. Flow (prot)	0	0	0	3539	1770	0
Flt Permitted					0.950	
Satd. Flow (perm)	0	0	0	3539	1770	0
Link Speed (mph)	45			45	35	
Link Distance (ft)	423			203	264	
Travel Time (s)	6.4			3.1	5.1	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	0	0	0	324	676	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	324	676	0
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	18.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	0	0	292	608	0
Future Vol, veh/h	0	0	0	292	608	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	-
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	0	0	0	324	676	0

Major/Minor	Major2		Minor1	
Conflicting Flow All	-	-	162	-
Stage 1	-	-	0	-
Stage 2	-	-	162	-
Critical Hdwy	-	-	6.84	-
Critical Hdwy Stg 1	-	-	-	-
Critical Hdwy Stg 2	-	-	5.84	-
Follow-up Hdwy	-	-	3.52	-
Pot Cap-1 Maneuver	0	-	813	0
Stage 1	0	-	-	0
Stage 2	0	-	850	0
Platoon blocked, %		-		
Mov Cap-1 Maneuver	-	-	813	-
Mov Cap-2 Maneuver	-	-	813	-
Stage 1	-	-	-	-
Stage 2	-	-	850	-

Approach	WB	NB
HCM Control Delay, s/v	0	27.1
HCM LOS		D

Minor Lane/Major Mvmt	NBLn1	WBT
Capacity (veh/h)	813	-
HCM Lane V/C Ratio	0.831	-
HCM Control Delay (s/veh)	27.1	-
HCM Lane LOS	D	-
HCM 95th %tile Q (veh)	9.5	-

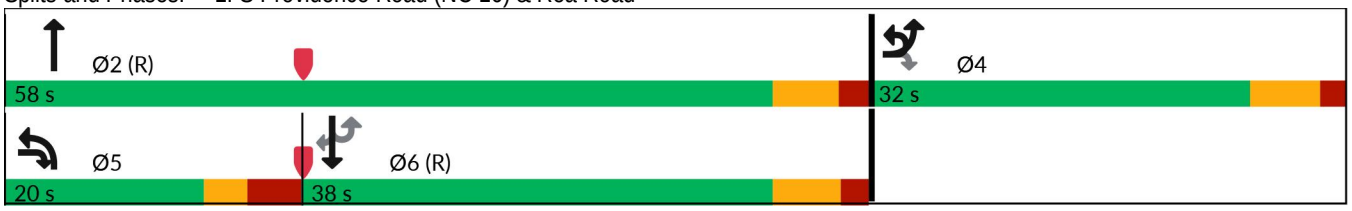
2029 Background Conditions w/o STIPs

Lane Group	EBU	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	4	388	224	415	1056	4	499	359
Future Volume (vph)	4	388	224	415	1056	4	499	359
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	12	11	12	12
Grade (%)		-2%			1%		-1%	
Storage Length (ft)		0	0	425		325		0
Storage Lanes		1	1	2		1		1
Taper Length (ft)		0		100		75		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	1.00	1.00	1.00
Frt			0.850					0.850
Flt Protected		0.950		0.950		0.950		
Satd. Flow (prot)	0	1728	1546	3302	3522	1719	1836	1591
Flt Permitted		0.950		0.950		0.241		
Satd. Flow (perm)	0	1728	1546	3302	3522	436	1836	1591
Right Turn on Red			No					Yes
Satd. Flow (RTOR)								399
Link Speed (mph)		45			45		45	
Link Distance (ft)		1527			1308		1378	
Travel Time (s)		23.1			19.8		20.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	2%
Adj. Flow (vph)	4	431	249	461	1173	4	554	399
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	435	249	461	1173	4	554	399
Turn Type	Prot	Prot	pm+ov	Prot	NA	Perm	NA	Perm
Protected Phases	4	4	5	5	2		6	
Permitted Phases			4			6		6
Detector Phase	4	4	5	5	2	6	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	12.0	12.0	12.0	12.0
Minimum Split (s)	13.4	13.4	13.6	13.6	18.4	18.5	18.5	18.5
Total Split (s)	32.0	32.0	20.0	20.0	58.0	38.0	38.0	38.0
Total Split (%)	35.6%	35.6%	22.2%	22.2%	64.4%	42.2%	42.2%	42.2%
Maximum Green (s)	25.6	25.6	13.4	13.4	51.6	31.5	31.5	31.5
Yellow Time (s)	4.7	4.7	3.0	3.0	4.4	4.6	4.6	4.6
All-Red Time (s)	1.7	1.7	3.6	3.6	2.0	1.9	1.9	1.9
Lost Time Adjust (s)		-1.4	-1.6	-1.6	-1.4	-1.5	-1.5	-1.5
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0	2.0	2.0	2.0	6.0	6.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	15.0	15.0	15.0	15.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	30.0	30.0	30.0	30.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		25.5	45.6	15.1	54.5	34.4	34.4	34.4
Actuated g/C Ratio		0.28	0.51	0.17	0.61	0.38	0.38	0.38
v/c Ratio		0.89	0.32	0.83	0.55	0.02	0.79	0.47

Lane Group	EBU	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Control Delay (s/veh)		52.3	14.0	50.8	12.1	19.0	35.3	4.2
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		52.3	14.0	50.8	12.1	19.0	35.3	4.2
LOS		D	B	D	B	B	D	A
Approach Delay (s/veh)		38.4			23.0		22.2	
Approach LOS		D			C		C	
Queue Length 50th (ft)		230	76	132	199	1	281	0
Queue Length 95th (ft)		#392	126	#209	256	9	#457	57
Internal Link Dist (ft)		1447			1228		1298	
Turn Bay Length (ft)				425		325		
Base Capacity (vph)		518	786	559	2131	166	701	854
Starvation Cap Reductn		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		0.84	0.32	0.82	0.55	0.02	0.79	0.47

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 29 (32%), Referenced to phase 2:NBT and 6:SBTU, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay (s/veh): 26.0		Intersection LOS: C	
Intersection Capacity Utilization 73.4%		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: S Providence Road (NC 16) & Rea Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	441	804	117	132	9
Future Volume (vph)	9	441	804	117	132	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983		0.991	
Flt Protected	0.950				0.955	
Satd. Flow (prot)	1491	1801	1709	0	1595	0
Flt Permitted	0.950				0.955	
Satd. Flow (perm)	1491	1801	1709	0	1595	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1025		1160	
Travel Time (s)		18.2	15.5		17.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	13%	2%	2%	2%	3%	38%
Adj. Flow (vph)	10	490	893	130	147	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	490	1023	0	157	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 63.9%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.5

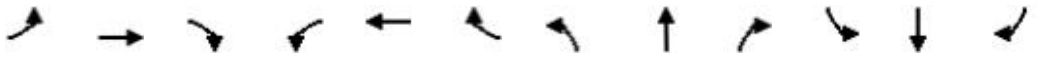
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	441	804	117	132	9
Future Vol, veh/h	9	441	804	117	132	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	13	2	2	2	3	38
Mvmt Flow	10	490	893	130	147	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1023	0	-	0	1468	958
Stage 1	-	-	-	-	958	-
Stage 2	-	-	-	-	510	-
Critical Hdwy	4.23	-	-	-	6.43	6.58
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.317	-	-	-	3.527	3.642
Pot Cap-1 Maneuver	638	-	-	-	~ 140	268
Stage 1	-	-	-	-	371	-
Stage 2	-	-	-	-	601	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	638	-	-	-	~ 138	268
Mov Cap-2 Maneuver	-	-	-	-	265	-
Stage 1	-	-	-	-	365	-
Stage 2	-	-	-	-	601	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.2	0	36.5
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	638	-	-	-	265
HCM Lane V/C Ratio	0.016	-	-	-	0.591
HCM Control Delay (s/veh)	10.7	-	-	-	36.5
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q (veh)	0	-	-	-	3.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	88	466	66	43	577	97	237	82	148	257	96	131
Future Volume (vph)	88	466	66	43	577	97	237	82	148	257	96	131
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	11	12	12	10	12	12	10	12
Grade (%)		-2%			1%			2%			-2%	
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			0			0		
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			0.976			0.945			0.964	
Flt Protected	0.950			0.950				0.981			0.972	
Satd. Flow (prot)	1728	1770	0	1653	1721	0	0	1589	0	0	1627	0
Flt Permitted	0.950			0.950				0.571			0.510	
Satd. Flow (perm)	1728	1770	0	1653	1721	0	0	925	0	0	854	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1035			1019			1122			1136	
Travel Time (s)		15.7			15.4			17.0			17.2	
Peak Hour Factor	0.57	0.74	0.82	0.75	0.84	0.76	0.88	0.54	0.51	0.53	0.68	0.57
Heavy Vehicles (%)	2%	3%	3%	5%	3%	7%	2%	2%	3%	4%	2%	2%
Adj. Flow (vph)	154	630	80	57	687	128	269	152	290	485	141	230
Shared Lane Traffic (%)												
Lane Group Flow (vph)	154	710	0	57	815	0	0	711	0	0	856	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		7	7	
Switch Phase										4	4	
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.1	18.2		11.9	18.2		13.2	13.2		11.9	13.2	
Total Split (s)	13.0	40.0		12.0	39.0		48.0	48.0		20.0	68.0	
Total Split (%)	10.8%	33.3%		10.0%	32.5%		40.0%	40.0%		16.7%	56.7%	
Maximum Green (s)	7.9	33.8		7.1	32.8		41.8	41.8		15.1	61.8	
Yellow Time (s)	3.0	4.7		3.0	4.7		4.7	4.7		3.0	4.7	
All-Red Time (s)	2.1	1.5		1.9	1.5		1.5	1.5		1.9	1.5	
Lost Time Adjust (s)	-0.1	-1.2		0.1	-1.2			-1.2			-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	1.0		1.0	1.0	
Minimum Gap (s)	1.0	3.0		1.0	3.0		1.0	1.0		1.0	1.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0		0.0	0.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	8.0	37.4		7.0	34.0			43.0			63.0	
Actuated g/C Ratio	0.07	0.31		0.06	0.28			0.36			0.53	
v/c Ratio	1.34	1.29		0.59	1.67			2.15			1.57	

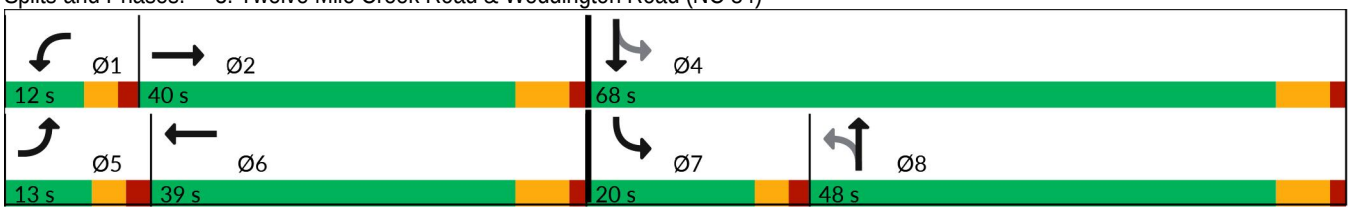
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	242.5	177.9		80.4	341.8			549.9			290.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	242.5	177.9		80.4	341.8			549.9			290.5	
LOS	F	F		F	F			F			F	
Approach Delay (s/veh)		189.4			324.7			549.9			290.5	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	~155	~728		44	~921			~879			~941	
Queue Length 95th (ft)	#152	#717		74	#1058			#561			#789	
Internal Link Dist (ft)		955			939			1042			1056	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	115	552		96	487			331			544	
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	1.34	1.29		0.59	1.67			2.15			1.57	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 240			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.15			
Intersection Signal Delay (s/veh): 328.9		Intersection LOS: F	
Intersection Capacity Utilization 89.2%		ICU Level of Service E	
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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

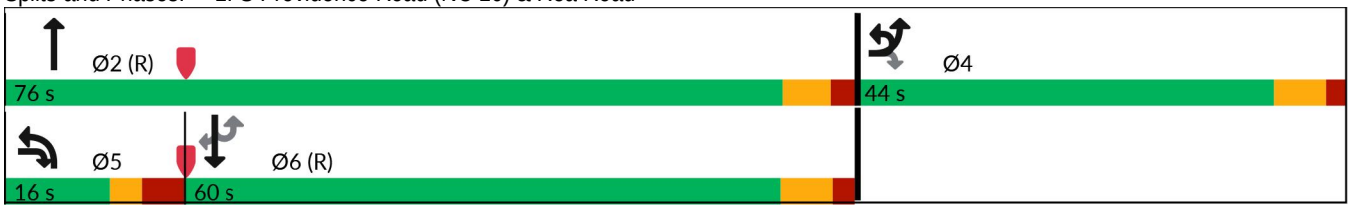


Lane Group	EBU	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	4	544	403	261	781	4	806	380
Future Volume (vph)	4	544	403	261	781	4	806	380
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	12	11	12	12
Grade (%)		-2%			1%		-1%	
Storage Length (ft)		0	0	425		325		0
Storage Lanes		1	1	2		1		1
Taper Length (ft)		0		100		75		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	1.00	1.00	1.00
Frt			0.850					0.850
Flt Protected		0.950		0.950		0.950		
Satd. Flow (prot)	0	1728	1531	3302	3487	1719	1872	1576
Flt Permitted		0.950		0.950		0.327		
Satd. Flow (perm)	0	1728	1531	3302	3487	592	1872	1576
Right Turn on Red			No					Yes
Satd. Flow (RTOR)								287
Link Speed (mph)		45			45		45	
Link Distance (ft)		1527			1308		1378	
Travel Time (s)		23.1			19.8		20.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	3%	2%	3%	2%	2%	3%
Adj. Flow (vph)	4	604	448	290	868	4	896	422
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	608	448	290	868	4	896	422
Turn Type	Prot	Prot	pm+ov	Prot	NA	Perm	NA	Perm
Protected Phases	4	4	5	5	2		6	
Permitted Phases			4			6		6
Detector Phase	4	4	5	5	2	6	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	12.0	12.0	12.0	12.0
Minimum Split (s)	13.4	13.4	13.6	13.6	18.4	18.5	18.5	18.5
Total Split (s)	44.0	44.0	16.0	16.0	76.0	60.0	60.0	60.0
Total Split (%)	36.7%	36.7%	13.3%	13.3%	63.3%	50.0%	50.0%	50.0%
Maximum Green (s)	37.6	37.6	9.4	9.4	69.6	53.5	53.5	53.5
Yellow Time (s)	4.7	4.7	3.0	3.0	4.4	4.6	4.6	4.6
All-Red Time (s)	1.7	1.7	3.6	3.6	2.0	1.9	1.9	1.9
Lost Time Adjust (s)		-1.4	-1.6	-1.6	-1.4	-1.5	-1.5	-1.5
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0	2.0	2.0	2.0	6.0	6.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	15.0	15.0	15.0	15.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	30.0	30.0	30.0	30.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		39.0	55.0	11.0	71.0	55.0	55.0	55.0
Actuated g/C Ratio		0.33	0.46	0.09	0.59	0.46	0.46	0.46
v/c Ratio		1.08	0.64	0.96	0.42	0.01	1.04	0.48

Lane Group	EBU	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Control Delay (s/veh)		101.6	30.1	97.1	14.1	18.3	75.5	8.7
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		101.6	30.1	97.1	14.1	18.3	75.5	8.7
LOS		F	C	F	B	B	E	A
Approach Delay (s/veh)		71.3			34.9		54.0	
Approach LOS		E			C		D	
Queue Length 50th (ft)		~527	260	117	181	2	~753	61
Queue Length 95th (ft)		#751	377	#205	226	8	#999	144
Internal Link Dist (ft)		1447			1228		1298	
Turn Bay Length (ft)				425		325		
Base Capacity (vph)		561	701	302	2063	271	858	877
Starvation Cap Reductn		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		1.08	0.64	0.96	0.42	0.01	1.04	0.48

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTU, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.08			
Intersection Signal Delay (s/veh): 52.9		Intersection LOS: D	
Intersection Capacity Utilization 92.7%		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: S Providence Road (NC 16) & Rea Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	907	574	103	50	7
Future Volume (vph)	17	907	574	103	50	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.980		0.983	
Flt Protected	0.950				0.958	
Satd. Flow (prot)	1574	1801	1660	0	1637	0
Flt Permitted	0.950				0.958	
Satd. Flow (perm)	1574	1801	1660	0	1637	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1025		1160	
Travel Time (s)		18.2	15.5		17.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	2%	5%	3%	2%	2%
Adj. Flow (vph)	19	1008	638	114	56	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	1008	752	0	64	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 57.7%		ICU Level of Service B	
Analysis Period (min) 15			

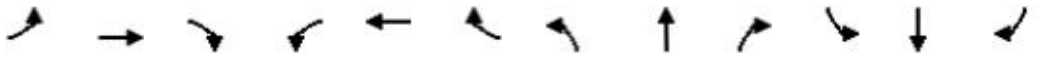
Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	907	574	103	50	7
Future Vol, veh/h	17	907	574	103	50	7
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, %	7	2	5	3	2	2
Mvmt Flow	19	1008	638	114	56	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	752	0	-	0	1741	695
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	1046	-
Critical Hdwy	4.17	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.263	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	835	-	-	-	95	442
Stage 1	-	-	-	-	495	-
Stage 2	-	-	-	-	338	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	835	-	-	-	93	442
Mov Cap-2 Maneuver	-	-	-	-	222	-
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	338	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.2	0	25.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	835	-	-	-	236
HCM Lane V/C Ratio	0.023	-	-	-	0.268
HCM Control Delay (s/veh)	9.4	-	-	-	25.8
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q (veh)	0.1	-	-	-	1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	95	731	121	83	489	137	134	84	63	99	71	58
Future Volume (vph)	95	731	121	83	489	137	134	84	63	99	71	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	11	12	12	10	12	12	10	12
Grade (%)		-2%			1%			2%			-2%	
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			0			0		
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		0.980			0.963			0.968			0.956	
Flt Protected	0.950			0.950				0.978			0.983	
Satd. Flow (prot)	1728	1753	0	1686	1688	0	0	1601	0	0	1645	0
Flt Permitted	0.950			0.950				0.675			0.716	
Satd. Flow (perm)	1728	1753	0	1686	1688	0	0	1105	0	0	1198	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1035			1019			1122			1136	
Travel Time (s)		15.7			15.4			17.0			17.2	
Peak Hour Factor	0.72	0.86	0.91	0.75	0.85	0.74	0.81	0.70	0.71	0.78	0.57	0.48
Heavy Vehicles (%)	2%	4%	2%	3%	4%	5%	3%	4%	5%	2%	3%	2%
Adj. Flow (vph)	132	850	133	111	575	185	165	120	89	127	125	121
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	983	0	111	760	0	0	374	0	0	373	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		7	7	
Switch Phase										4	4	
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.1	18.2		11.9	18.2		13.2	13.2		11.9	13.2	
Total Split (s)	19.0	94.0		16.0	91.0		55.0	55.0		15.0	70.0	
Total Split (%)	10.6%	52.2%		8.9%	50.6%		30.6%	30.6%		8.3%	38.9%	
Maximum Green (s)	13.9	87.8		11.1	84.8		48.8	48.8		10.1	63.8	
Yellow Time (s)	3.0	4.7		3.0	4.7		4.7	4.7		3.0	4.7	
All-Red Time (s)	2.1	1.5		1.9	1.5		1.5	1.5		1.9	1.5	
Lost Time Adjust (s)	-0.1	-1.2		0.1	-1.2			-1.2			-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	1.0		1.0	1.0	
Minimum Gap (s)	1.0	3.0		1.0	3.0		1.0	1.0		1.0	1.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0		0.0	0.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	14.0	89.0		11.0	86.0			50.0			65.0	
Actuated g/C Ratio	0.08	0.49		0.06	0.48			0.28			0.36	
v/c Ratio	0.99	1.14		1.08	0.94			1.22			0.82	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	153.1	116.3		184.7	65.1			177.6			66.1	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	153.1	116.3		184.7	65.1			177.6			66.1	
LOS	F	F		F	E			F			E	
Approach Delay (s/veh)		120.6			80.3			177.6			66.1	
Approach LOS		F			F			F			E	
Queue Length 50th (ft)	159	~1344		~146	845			~539			365	
Queue Length 95th (ft)	#217	#1493		#221	#1017			#508			271	
Internal Link Dist (ft)		955			939			1042			1056	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	134	866		103	806			306			457	
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	0.99	1.14		1.08	0.94			1.22			0.82	

Intersection Summary			
Area Type:	Other		
Cycle Length: 180			
Actuated Cycle Length: 180			
Natural Cycle: 180			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.22			
Intersection Signal Delay (s/veh): 108.1		Intersection LOS: F	
Intersection Capacity Utilization 84.9%		ICU Level of Service E	
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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

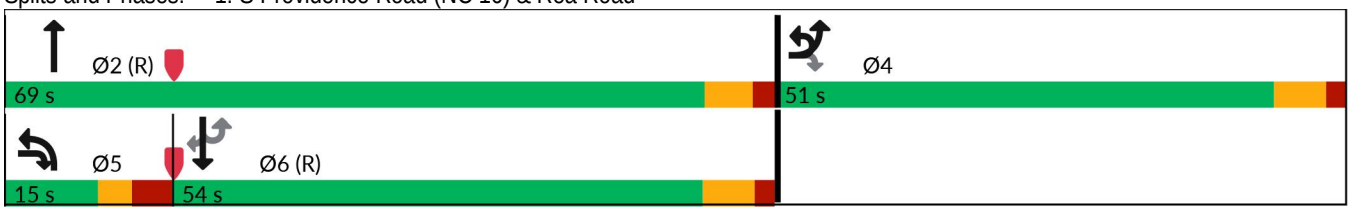
Lane Group	EBU	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	4	640	413	228	867	4	722	609
Future Volume (vph)	4	640	413	228	867	4	722	609
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	12	11	12	12
Grade (%)		-2%			1%		-1%	
Storage Length (ft)		0	0	425		325		0
Storage Lanes		1	1	2		1		1
Taper Length (ft)		0		100		75		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	1.00	1.00	1.00
Frt			0.850					0.850
Flt Protected		0.950		0.950		0.950		
Satd. Flow (prot)	0	1728	1546	3302	3522	1719	1872	1591
Flt Permitted		0.950		0.950		0.286		
Satd. Flow (perm)	0	1728	1546	3302	3522	518	1872	1591
Right Turn on Red			No					Yes
Satd. Flow (RTOR)								471
Link Speed (mph)		45			45		45	
Link Distance (ft)		1527			1308		1378	
Travel Time (s)		23.1			19.8		20.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	711	459	253	963	4	802	677
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	715	459	253	963	4	802	677
Turn Type	Prot	Prot	pm+ov	Prot	NA	Perm	NA	Perm
Protected Phases	4	4	5	5	2		6	
Permitted Phases			4			6		6
Detector Phase	4	4	5	5	2	6	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	12.0	12.0	12.0	12.0
Minimum Split (s)	13.4	13.4	13.6	13.6	18.4	18.5	18.5	18.5
Total Split (s)	51.0	51.0	15.0	15.0	69.0	54.0	54.0	54.0
Total Split (%)	42.5%	42.5%	12.5%	12.5%	57.5%	45.0%	45.0%	45.0%
Maximum Green (s)	44.6	44.6	8.4	8.4	62.6	47.5	47.5	47.5
Yellow Time (s)	4.7	4.7	3.0	3.0	4.4	4.6	4.6	4.6
All-Red Time (s)	1.7	1.7	3.6	3.6	2.0	1.9	1.9	1.9
Lost Time Adjust (s)		-1.4	-1.6	-1.6	-1.4	-1.5	-1.5	-1.5
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0	2.0	2.0	2.0	6.0	6.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	15.0	15.0	15.0	15.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	30.0	30.0	30.0	30.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		46.0	61.0	10.0	64.0	49.0	49.0	49.0
Actuated g/C Ratio		0.38	0.51	0.08	0.53	0.41	0.41	0.41
v/c Ratio		1.08	0.58	0.92	0.51	0.02	1.05	0.73
Control Delay (s/veh)		94.6	24.4	92.0	19.2	21.8	81.6	13.7

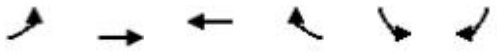
Lane Group	EBU	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		94.6	24.4	92.0	19.2	21.8	81.6	13.7
LOS		F	C	F	B	C	F	B
Approach Delay (s/veh)		67.2			34.3		50.4	
Approach LOS		E			C		D	
Queue Length 50th (ft)		~619	241	102	242	2	~677	128
Queue Length 95th (ft)		#852	348	#181	300	9	#917	285
Internal Link Dist (ft)		1447			1228		1298	
Turn Bay Length (ft)				425		325		
Base Capacity (vph)		662	785	275	1878	211	764	928
Starvation Cap Reductn		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		1.08	0.58	0.92	0.51	0.02	1.05	0.73

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTU, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.08
Intersection Signal Delay (s/veh): 50.5 Intersection LOS: D
Intersection Capacity Utilization 92.7% 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: S Providence Road (NC 16) & Rea Road





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	915	628	43	64	13
Future Volume (vph)	25	915	628	43	64	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.978	
Flt Protected	0.950				0.960	
Satd. Flow (prot)	1652	1801	1692	0	1604	0
Flt Permitted	0.950				0.960	
Satd. Flow (perm)	1652	1801	1692	0	1604	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1025		1160	
Travel Time (s)		18.2	15.5		17.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	2%	3%	8%
Adj. Flow (vph)	28	1017	698	48	71	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	1017	746	0	85	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.2%		ICU Level of Service B	
Analysis Period (min) 15			

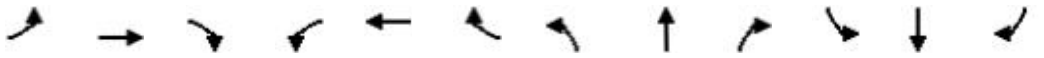
Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	915	628	43	64	13
Future Vol, veh/h	25	915	628	43	64	13
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	4	2	3	8
Mvmt Flow	28	1017	698	48	71	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	746	0	-	0	1795	722
Stage 1	-	-	-	-	722	-
Stage 2	-	-	-	-	1073	-
Critical Hdwy	4.12	-	-	-	6.43	6.28
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.372
Pot Cap-1 Maneuver	862	-	-	-	88	417
Stage 1	-	-	-	-	479	-
Stage 2	-	-	-	-	327	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	862	-	-	-	85	417
Mov Cap-2 Maneuver	-	-	-	-	212	-
Stage 1	-	-	-	-	464	-
Stage 2	-	-	-	-	327	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.2	0	29.5
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	862	-	-	-	231
HCM Lane V/C Ratio	0.032	-	-	-	0.37
HCM Control Delay (s/veh)	9.3	-	-	-	29.5
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q (veh)	0.1	-	-	-	1.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	772	174	86	477	62	116	56	94	115	113	55
Future Volume (vph)	34	772	174	86	477	62	116	56	94	115	113	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	11	12	12	10	12	12	10	12
Grade (%)		-2%			1%			2%			-2%	
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			0			0		
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		0.972			0.983			0.952			0.974	
Flt Protected	0.950			0.950				0.979			0.980	
Satd. Flow (prot)	1711	1768	0	1686	1746	0	0	1597	0	0	1625	0
Flt Permitted	0.950			0.950				0.712			0.682	
Satd. Flow (perm)	1711	1768	0	1686	1746	0	0	1162	0	0	1131	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1035			1019			1122			1136	
Travel Time (s)		15.7			15.4			17.0			17.2	
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
Heavy Vehicles (%)	3%	2%	2%	3%	3%	2%	3%	2%	2%	8%	2%	6%
Adj. Flow (vph)	38	858	193	96	530	69	129	62	104	128	126	61
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	1051	0	96	599	0	0	295	0	0	315	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		7	7	
Switch Phase										4	4	
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.1	18.2		11.9	18.2		13.2	13.2		11.9	13.2	
Total Split (s)	14.0	87.0		13.0	86.0		37.0	37.0		13.0	50.0	
Total Split (%)	9.3%	58.0%		8.7%	57.3%		24.7%	24.7%		8.7%	33.3%	
Maximum Green (s)	8.9	80.8		8.1	79.8		30.8	30.8		8.1	43.8	
Yellow Time (s)	3.0	4.7		3.0	4.7		4.7	4.7		3.0	4.7	
All-Red Time (s)	2.1	1.5		1.9	1.5		1.5	1.5		1.9	1.5	
Lost Time Adjust (s)	-0.1	-1.2		0.1	-1.2			-1.2			-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	1.0		1.0	1.0	
Minimum Gap (s)	1.0	3.0		1.0	3.0		1.0	1.0		1.0	1.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0		0.0	0.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	7.7	82.0		8.0	84.7			32.0			45.0	
Actuated g/C Ratio	0.05	0.55		0.05	0.56			0.21			0.30	
v/c Ratio	0.44	1.09		1.08	0.61			1.19			0.86	

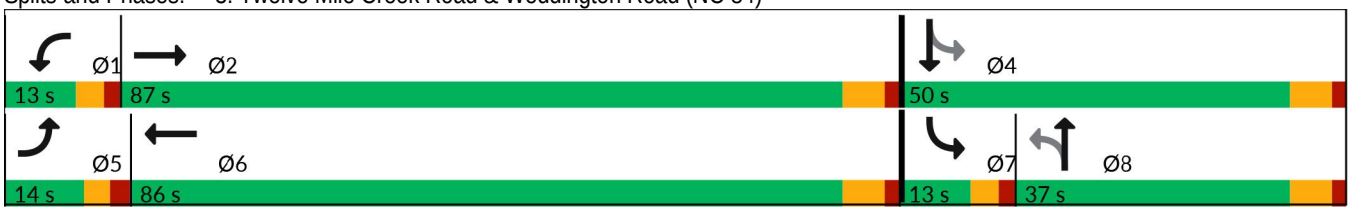
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	84.2	89.0		181.6	25.8			169.2			71.5	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	84.2	89.0		181.6	25.8			169.2			71.5	
LOS	F	F		F	C			F			E	
Approach Delay (s/veh)		88.8			47.3			169.2			71.5	
Approach LOS		F			D			F			E	
Queue Length 50th (ft)	37	~1152		~104	387			~347			269	
Queue Length 95th (ft)	78	#1415		#229	531			#540			#441	
Internal Link Dist (ft)		955			939			1042			1056	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	102	966		89	985			247			365	
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	0.37	1.09		1.08	0.61			1.19			0.86	

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.19			
Intersection Signal Delay (s/veh): 84.4		Intersection LOS: F	
Intersection Capacity Utilization 89.5%		ICU Level of Service E	
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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)



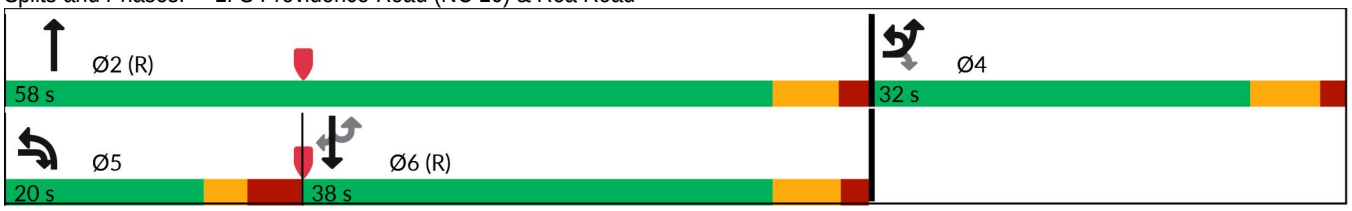
2029 Build-out Conditions w/o STIPs

Lane Group	EBU	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	4	391	224	415	1058	4	504	369
Future Volume (vph)	4	391	224	415	1058	4	504	369
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	12	11	12	12
Grade (%)		-2%			1%		-1%	
Storage Length (ft)		0	0	425		325		0
Storage Lanes		1	1	2		1		1
Taper Length (ft)		0		100		75		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	1.00	1.00	1.00
Frt			0.850					0.850
Flt Protected		0.950		0.950		0.950		
Satd. Flow (prot)	0	1728	1546	3302	3522	1719	1836	1591
Flt Permitted		0.950		0.950		0.240		
Satd. Flow (perm)	0	1728	1546	3302	3522	434	1836	1591
Right Turn on Red			No					Yes
Satd. Flow (RTOR)								410
Link Speed (mph)		45			45		45	
Link Distance (ft)		1527			1308		1378	
Travel Time (s)		23.1			19.8		20.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	4%	2%
Adj. Flow (vph)	4	434	249	461	1176	4	560	410
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	438	249	461	1176	4	560	410
Turn Type	Prot	Prot	pm+ov	Prot	NA	Perm	NA	Perm
Protected Phases	4	4	5	5	2		6	
Permitted Phases			4			6		6
Detector Phase	4	4	5	5	2	6	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	12.0	12.0	12.0	12.0
Minimum Split (s)	13.4	13.4	13.6	13.6	18.4	18.5	18.5	18.5
Total Split (s)	32.0	32.0	20.0	20.0	58.0	38.0	38.0	38.0
Total Split (%)	35.6%	35.6%	22.2%	22.2%	64.4%	42.2%	42.2%	42.2%
Maximum Green (s)	25.6	25.6	13.4	13.4	51.6	31.5	31.5	31.5
Yellow Time (s)	4.7	4.7	3.0	3.0	4.4	4.6	4.6	4.6
All-Red Time (s)	1.7	1.7	3.6	3.6	2.0	1.9	1.9	1.9
Lost Time Adjust (s)		-1.4	-1.6	-1.6	-1.4	-1.5	-1.5	-1.5
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0	2.0	2.0	2.0	6.0	6.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	15.0	15.0	15.0	15.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	30.0	30.0	30.0	30.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		25.6	45.7	15.0	54.4	34.3	34.3	34.3
Actuated g/C Ratio		0.28	0.51	0.17	0.60	0.38	0.38	0.38
v/c Ratio		0.89	0.32	0.84	0.55	0.02	0.80	0.48

Lane Group	EBU	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Control Delay (s/veh)		52.6	14.0	51.2	12.1	19.0	35.9	4.2
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		52.6	14.0	51.2	12.1	19.0	35.9	4.2
LOS		D	B	D	B	B	D	A
Approach Delay (s/veh)		38.6			23.1		22.5	
Approach LOS		D			C		C	
Queue Length 50th (ft)		232	76	132	200	1	286	0
Queue Length 95th (ft)		#395	126	#209	257	9	#464	58
Internal Link Dist (ft)		1447			1228		1298	
Turn Bay Length (ft)				425		325		
Base Capacity (vph)		518	787	557	2127	165	700	860
Starvation Cap Reductn		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		0.85	0.32	0.83	0.55	0.02	0.80	0.48

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 29 (32%), Referenced to phase 2:NBT and 6:SBTU, Start of Green			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.89			
Intersection Signal Delay (s/veh): 26.2		Intersection LOS: C	
Intersection Capacity Utilization 73.6%		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: S Providence Road (NC 16) & Rea Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	451	833	119	133	9
Future Volume (vph)	9	451	833	119	133	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.983		0.991	
Flt Protected	0.950				0.955	
Satd. Flow (prot)	1491	1801	1709	0	1595	0
Flt Permitted	0.950				0.955	
Satd. Flow (perm)	1491	1801	1709	0	1595	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1025		1160	
Travel Time (s)		18.2	15.5		17.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	13%	2%	2%	2%	3%	38%
Adj. Flow (vph)	10	501	926	132	148	10
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	501	1058	0	158	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	3.7

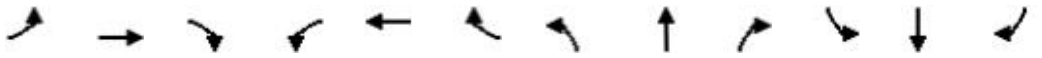
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	451	833	119	133	9
Future Vol, veh/h	9	451	833	119	133	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	125	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	13	2	2	2	3	38
Mvmt Flow	10	501	926	132	148	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	1058	0	-	0	1513	992
Stage 1	-	-	-	-	992	-
Stage 2	-	-	-	-	521	-
Critical Hdwy	4.23	-	-	-	6.43	6.58
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.317	-	-	-	3.527	3.642
Pot Cap-1 Maneuver	618	-	-	-	~ 131	255
Stage 1	-	-	-	-	357	-
Stage 2	-	-	-	-	594	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	618	-	-	-	~ 129	255
Mov Cap-2 Maneuver	-	-	-	-	255	-
Stage 1	-	-	-	-	351	-
Stage 2	-	-	-	-	594	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.2	0	39.6
HCM LOS			E

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	618	-	-	-	255
HCM Lane V/C Ratio	0.016	-	-	-	0.619
HCM Control Delay (s/veh)	10.9	-	-	-	39.6
HCM Lane LOS	B	-	-	-	E
HCM 95th %tile Q (veh)	0	-	-	-	3.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

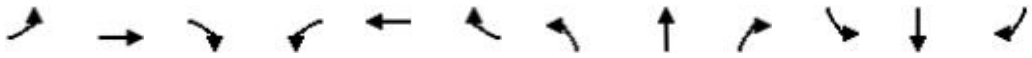


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	476	71	43	580	97	239	82	148	257	96	132
Future Volume (vph)	90	476	71	43	580	97	239	82	148	257	96	132
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	11	12	12	10	12	12	10	12
Grade (%)		-2%			1%			2%			-2%	
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			0			0		
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		0.982			0.977			0.945			0.963	
Flt Protected	0.950			0.950				0.981			0.973	
Satd. Flow (prot)	1728	1769	0	1653	1723	0	0	1589	0	0	1627	0
Flt Permitted	0.950			0.950				0.575			0.513	
Satd. Flow (perm)	1728	1769	0	1653	1723	0	0	932	0	0	858	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1033			1019			1122			1136	
Travel Time (s)		15.7			15.4			17.0			17.2	
Peak Hour Factor	0.57	0.74	0.82	0.75	0.84	0.76	0.88	0.54	0.51	0.53	0.68	0.57
Heavy Vehicles (%)	2%	3%	3%	5%	3%	7%	2%	2%	3%	4%	2%	2%
Adj. Flow (vph)	158	643	87	57	690	128	272	152	290	485	141	232
Shared Lane Traffic (%)												
Lane Group Flow (vph)	158	730	0	57	818	0	0	714	0	0	858	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		7	7	
Switch Phase										4	4	
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.1	18.2		11.9	18.2		13.2	13.2		11.9	13.2	
Total Split (s)	13.0	41.0		12.0	40.0		48.0	48.0		19.0	67.0	
Total Split (%)	10.8%	34.2%		10.0%	33.3%		40.0%	40.0%		15.8%	55.8%	
Maximum Green (s)	7.9	34.8		7.1	33.8		41.8	41.8		14.1	60.8	
Yellow Time (s)	3.0	4.7		3.0	4.7		4.7	4.7		3.0	4.7	
All-Red Time (s)	2.1	1.5		1.9	1.5		1.5	1.5		1.9	1.5	
Lost Time Adjust (s)	-0.1	-1.2		0.1	-1.2			-1.2			-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	1.0		1.0	1.0	
Minimum Gap (s)	1.0	3.0		1.0	3.0		1.0	1.0		1.0	1.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0		0.0	0.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	8.0	38.4		7.0	35.0			43.0			62.0	
Actuated g/C Ratio	0.07	0.32		0.06	0.29			0.36			0.52	
v/c Ratio	1.37	1.29		0.59	1.63			2.14			1.61	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	255.2	178.5		80.4	322.5			548.1			306.8	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	255.2	178.5		80.4	322.5			548.1			306.8	
LOS	F	F		F	F			F			F	
Approach Delay (s/veh)		192.2			306.7			548.1			306.8	
Approach LOS		F			F			F			F	
Queue Length 50th (ft)	~162	~749		44	~914			~882			~953	
Queue Length 95th (ft)	#155	#733		74	#1052			#563			#800	
Internal Link Dist (ft)		953			939			1042			1056	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	115	566		96	502			333			533	
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	1.37	1.29		0.59	1.63			2.14			1.61	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Natural Cycle: 240			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 2.14			
Intersection Signal Delay (s/veh): 327.9		Intersection LOS: F	
Intersection Capacity Utilization 89.3%		ICU Level of Service E	
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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	622	8	4	948	0	22	0	11	1	0	6
Future Volume (vph)	2	622	8	4	948	0	22	0	11	1	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.998						0.955			0.882	
Flt Protected								0.968			0.994	
Satd. Flow (prot)	0	1841	0	0	1845	0	0	1722	0	0	1633	0
Flt Permitted								0.968			0.994	
Satd. Flow (perm)	0	1841	0	0	1845	0	0	1722	0	0	1633	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1486			829			1088			1008	
Travel Time (s)		22.5			12.6			29.7			27.5	
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
Heavy Vehicles (%)	2%	3%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	2	691	9	4	1053	0	24	0	12	1	0	7
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	702	0	0	1057	0	0	36	0	0	8	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 65.8%		ICU Level of Service C	
Analysis Period (min) 15			

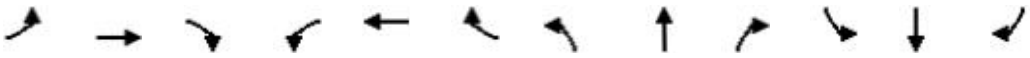
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	622	8	4	948	0	22	0	11	1	0	6
Future Vol, veh/h	2	622	8	4	948	0	22	0	11	1	0	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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	3	2	2	3	2	2	2	2	2	2	2
Mvmt Flow	2	691	9	4	1053	0	24	0	12	1	0	7

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1053	0	0	700	0	0	1765	1761	696	1767	1765	1053
Stage 1	-	-	-	-	-	-	700	700	-	1061	1061	-
Stage 2	-	-	-	-	-	-	1065	1061	-	706	704	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	661	-	-	897	-	-	65	84	442	65	84	275
Stage 1	-	-	-	-	-	-	430	441	-	271	300	-
Stage 2	-	-	-	-	-	-	269	300	-	427	440	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	661	-	-	897	-	-	63	83	442	62	83	275
Mov Cap-2 Maneuver	-	-	-	-	-	-	63	83	-	62	83	-
Stage 1	-	-	-	-	-	-	428	439	-	270	297	-
Stage 2	-	-	-	-	-	-	260	297	-	413	438	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	72.4	25.4
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	88	661	-	-	897	-	-	184
HCM Lane V/C Ratio	0.417	0.003	-	-	0.005	-	-	0.042
HCM Control Delay (s/veh)	72.4	10.5	0	-	9	0	-	25.4
HCM Lane LOS	F	B	A	-	A	A	-	D
HCM 95th %tile Q (veh)	1.7	0	-	-	0	-	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	633	0	1	949	1	2	0	2	3	0	1
Future Volume (vph)	1	633	0	1	949	1	2	0	2	3	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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								0.932			0.966	
Flt Protected								0.976			0.964	
Satd. Flow (prot)	0	1845	0	0	1845	0	0	1694	0	0	1735	0
Flt Permitted								0.976			0.964	
Satd. Flow (perm)	0	1845	0	0	1845	0	0	1694	0	0	1735	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		829			534			1082			1049	
Travel Time (s)		12.6			8.1			29.5			28.6	
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
Heavy Vehicles (%)	2%	3%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	1	703	0	1	1054	1	2	0	2	3	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	704	0	0	1056	0	0	4	0	0	4	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 60.8%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	1	633	0	1	949	1	2	0	2	3	0	1
Future Vol, veh/h	1	633	0	1	949	1	2	0	2	3	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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	3	2	2	3	2	2	2	2	2	2	2
Mvmt Flow	1	703	0	1	1054	1	2	0	2	3	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1055	0	0	703	0	0	1762	1762	703	1763	1762	1055
Stage 1	-	-	-	-	-	-	705	705	-	1057	1057	-
Stage 2	-	-	-	-	-	-	1057	1057	-	706	705	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	660	-	-	895	-	-	66	84	438	66	84	274
Stage 1	-	-	-	-	-	-	427	439	-	272	302	-
Stage 2	-	-	-	-	-	-	272	302	-	427	439	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	660	-	-	895	-	-	65	84	438	65	84	274
Mov Cap-2 Maneuver	-	-	-	-	-	-	65	84	-	65	84	-
Stage 1	-	-	-	-	-	-	426	438	-	271	301	-
Stage 2	-	-	-	-	-	-	270	301	-	424	438	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	38.2	52.6
HCM LOS			E	F

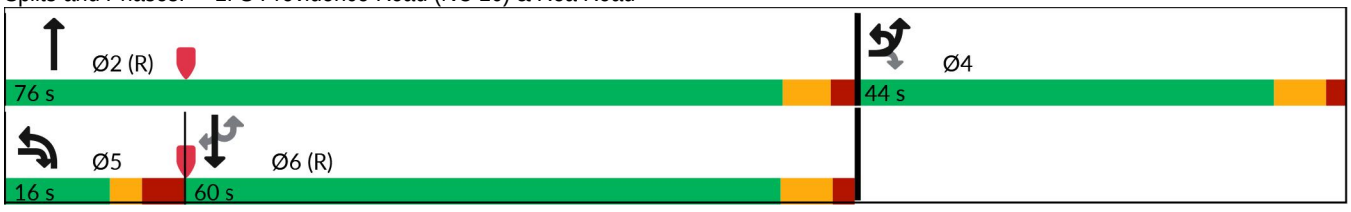
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	113	660	-	-	895	-	-	80
HCM Lane V/C Ratio	0.039	0.002	-	-	0.001	-	-	0.056
HCM Control Delay (s/veh)	38.2	10.5	0	-	9	0	-	52.6
HCM Lane LOS	E	B	A	-	A	A	-	F
HCM 95th %tile Q (veh)	0.1	0	-	-	0	-	-	0.2

Lane Group	EBU	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	4	553	403	261	786	4	809	385
Future Volume (vph)	4	553	403	261	786	4	809	385
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	12	11	12	12
Grade (%)		-2%			1%		-1%	
Storage Length (ft)		0	0	425		325		0
Storage Lanes		1	1	2		1		1
Taper Length (ft)		0		100		75		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	1.00	1.00	1.00
Frt			0.850					0.850
Flt Protected		0.950		0.950		0.950		
Satd. Flow (prot)	0	1728	1531	3302	3487	1719	1872	1576
Flt Permitted		0.950		0.950		0.325		
Satd. Flow (perm)	0	1728	1531	3302	3487	588	1872	1576
Right Turn on Red			No					Yes
Satd. Flow (RTOR)								290
Link Speed (mph)		45			45		45	
Link Distance (ft)		1527			1308		1378	
Travel Time (s)		23.1			19.8		20.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	3%	2%	3%	2%	2%	3%
Adj. Flow (vph)	4	614	448	290	873	4	899	428
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	618	448	290	873	4	899	428
Turn Type	Prot	Prot	pm+ov	Prot	NA	Perm	NA	Perm
Protected Phases	4	4	5	5	2		6	
Permitted Phases			4			6		6
Detector Phase	4	4	5	5	2	6	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	12.0	12.0	12.0	12.0
Minimum Split (s)	13.4	13.4	13.6	13.6	18.4	18.5	18.5	18.5
Total Split (s)	44.0	44.0	16.0	16.0	76.0	60.0	60.0	60.0
Total Split (%)	36.7%	36.7%	13.3%	13.3%	63.3%	50.0%	50.0%	50.0%
Maximum Green (s)	37.6	37.6	9.4	9.4	69.6	53.5	53.5	53.5
Yellow Time (s)	4.7	4.7	3.0	3.0	4.4	4.6	4.6	4.6
All-Red Time (s)	1.7	1.7	3.6	3.6	2.0	1.9	1.9	1.9
Lost Time Adjust (s)		-1.4	-1.6	-1.6	-1.4	-1.5	-1.5	-1.5
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0	2.0	2.0	2.0	6.0	6.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	15.0	15.0	15.0	15.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	30.0	30.0	30.0	30.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		39.0	55.0	11.0	71.0	55.0	55.0	55.0
Actuated g/C Ratio		0.33	0.46	0.09	0.59	0.46	0.46	0.46
v/c Ratio		1.10	0.64	0.96	0.42	0.01	1.05	0.49

Lane Group	EBU	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Control Delay (s/veh)		107.4	30.1	97.1	14.1	18.3	76.5	8.8
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		107.4	30.1	97.1	14.1	18.3	76.5	8.8
LOS		F	C	F	B	B	E	A
Approach Delay (s/veh)		74.9			34.8		54.6	
Approach LOS		E			C		D	
Queue Length 50th (ft)		~544	260	117	183	2	~758	62
Queue Length 95th (ft)		#769	377	#205	228	8	#1004	148
Internal Link Dist (ft)		1447			1228		1298	
Turn Bay Length (ft)				425		325		
Base Capacity (vph)		561	701	302	2063	269	858	879
Starvation Cap Reductn		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		1.10	0.64	0.96	0.42	0.01	1.05	0.49

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTU, Start of Green			
Natural Cycle: 120			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.10			
Intersection Signal Delay (s/veh): 54.2		Intersection LOS: D	
Intersection Capacity Utilization 93.4%		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: S Providence Road (NC 16) & Rea Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	17	935	590	104	52	7
Future Volume (vph)	17	935	590	104	52	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.980		0.984	
Flt Protected	0.950				0.958	
Satd. Flow (prot)	1574	1801	1660	0	1639	0
Flt Permitted	0.950				0.958	
Satd. Flow (perm)	1574	1801	1660	0	1639	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1025		1160	
Travel Time (s)		18.2	15.5		17.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	7%	2%	5%	3%	2%	2%
Adj. Flow (vph)	19	1039	656	116	58	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	19	1039	772	0	66	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 59.2%		ICU Level of Service B	
Analysis Period (min) 15			

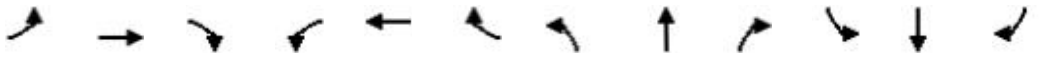
Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	17	935	590	104	52	7
Future Vol, veh/h	17	935	590	104	52	7
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, %	7	2	5	3	2	2
Mvmt Flow	19	1039	656	116	58	8

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	772	0	-	0	1791	714
Stage 1	-	-	-	-	714	-
Stage 2	-	-	-	-	1077	-
Critical Hdwy	4.17	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.263	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	821	-	-	-	89	431
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	327	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	821	-	-	-	87	431
Mov Cap-2 Maneuver	-	-	-	-	215	-
Stage 1	-	-	-	-	474	-
Stage 2	-	-	-	-	327	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.2	0	26.9
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	821	-	-	-	229
HCM Lane V/C Ratio	0.023	-	-	-	0.286
HCM Control Delay (s/veh)	9.5	-	-	-	26.9
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q (veh)	0.1	-	-	-	1.1

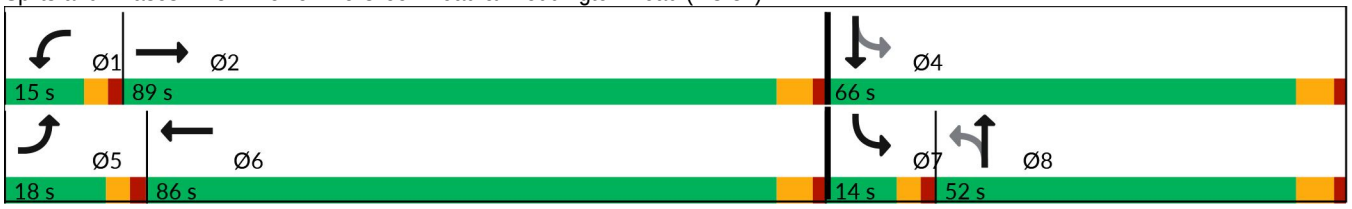


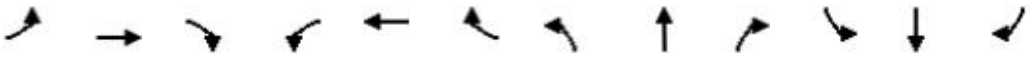
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	96	737	124	83	497	137	139	84	63	99	71	60
Future Volume (vph)	96	737	124	83	497	137	139	84	63	99	71	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	11	12	12	10	12	12	10	12
Grade (%)		-2%			1%			2%			-2%	
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			0			0		
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		0.979			0.964			0.968			0.956	
Flt Protected	0.950			0.950				0.978			0.983	
Satd. Flow (prot)	1728	1751	0	1686	1690	0	0	1601	0	0	1645	0
Flt Permitted	0.950			0.950				0.671			0.719	
Satd. Flow (perm)	1728	1751	0	1686	1690	0	0	1099	0	0	1203	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1035			1019			1122			1136	
Travel Time (s)		15.7			15.4			17.0			17.2	
Peak Hour Factor	0.73	0.86	0.91	0.75	0.85	0.74	0.82	0.70	0.71	0.78	0.57	0.49
Heavy Vehicles (%)	2%	4%	2%	3%	4%	5%	3%	4%	5%	2%	3%	2%
Adj. Flow (vph)	132	857	136	111	585	185	170	120	89	127	125	122
Shared Lane Traffic (%)												
Lane Group Flow (vph)	132	993	0	111	770	0	0	379	0	0	374	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		7	7	
Switch Phase										4	4	
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.1	18.2		11.9	18.2		13.2	13.2		11.9	13.2	
Total Split (s)	18.0	89.0		15.0	86.0		52.0	52.0		14.0	66.0	
Total Split (%)	10.6%	52.4%		8.8%	50.6%		30.6%	30.6%		8.2%	38.8%	
Maximum Green (s)	12.9	82.8		10.1	79.8		45.8	45.8		9.1	59.8	
Yellow Time (s)	3.0	4.7		3.0	4.7		4.7	4.7		3.0	4.7	
All-Red Time (s)	2.1	1.5		1.9	1.5		1.5	1.5		1.9	1.5	
Lost Time Adjust (s)	-0.1	-1.2		0.1	-1.2			-1.2			-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	1.0		1.0	1.0	
Minimum Gap (s)	1.0	3.0		1.0	3.0		1.0	1.0		1.0	1.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0		0.0	0.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	13.0	84.0		10.0	81.0			47.0			61.0	
Actuated g/C Ratio	0.08	0.49		0.06	0.48			0.28			0.36	
v/c Ratio	1.00	1.15		1.12	0.96			1.25			0.82	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	153.6	119.2		193.9	65.4			185.8			64.2	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	153.6	119.2		193.9	65.4			185.8			64.2	
LOS	F	F		F	E			F			E	
Approach Delay (s/veh)		123.2			81.6			185.8			64.2	
Approach LOS		F			F			F			E	
Queue Length 50th (ft)	150	~1292		~142	815			~524			346	
Queue Length 95th (ft)	#217	#1447		#215	#993			#498			258	
Internal Link Dist (ft)		955			939			1042			1056	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	132	865		99	805			303			455	
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	1.00	1.15		1.12	0.96			1.25			0.82	

Intersection Summary			
Area Type:	Other		
Cycle Length: 170			
Actuated Cycle Length: 170			
Natural Cycle: 170			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.25			
Intersection Signal Delay (s/veh): 110.5		Intersection LOS: F	
Intersection Capacity Utilization 86.1%		ICU Level of Service E	
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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	951	21	10	684	1	12	0	6	1	0	3
Future Volume (vph)	5	951	21	10	684	1	12	0	6	1	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.997						0.953			0.899	
Flt Protected					0.999			0.969			0.988	
Satd. Flow (prot)	0	1822	0	0	1826	0	0	1720	0	0	1655	0
Flt Permitted					0.999			0.969			0.988	
Satd. Flow (perm)	0	1822	0	0	1826	0	0	1720	0	0	1655	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1486			829			1236			1149	
Travel Time (s)		22.5			12.6			33.7			31.3	
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
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	6	1057	23	11	760	1	13	0	7	1	0	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1086	0	0	772	0	0	20	0	0	4	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.1%		ICU Level of Service C	
Analysis Period (min) 15			

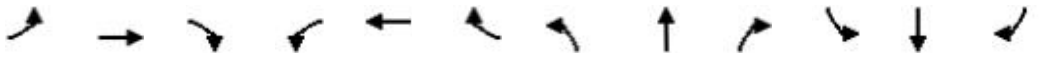
Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	951	21	10	684	1	12	0	6	1	0	3
Future Vol, veh/h	5	951	21	10	684	1	12	0	6	1	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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	4	2	2	4	2	2	2	2	2	2	2
Mvmt Flow	6	1057	23	11	760	1	13	0	7	1	0	3

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	761	0	0	1080	0	0	1865	1864	1069	1867	1875	761
Stage 1	-	-	-	-	-	-	1081	1081	-	783	783	-
Stage 2	-	-	-	-	-	-	784	783	-	1084	1092	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	851	-	-	646	-	-	56	73	269	55	72	405
Stage 1	-	-	-	-	-	-	264	294	-	387	404	-
Stage 2	-	-	-	-	-	-	386	404	-	263	291	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	851	-	-	646	-	-	54	70	269	52	69	405
Mov Cap-2 Maneuver	-	-	-	-	-	-	54	70	-	52	69	-
Stage 1	-	-	-	-	-	-	259	289	-	380	392	-
Stage 2	-	-	-	-	-	-	371	392	-	252	286	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.2	70.8	29.7
HCM LOS			F	D

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	74	851	-	-	646	-	-	150
HCM Lane V/C Ratio	0.27	0.007	-	-	0.017	-	-	0.03
HCM Control Delay (s/veh)	70.8	9.3	0	-	10.7	0	-	29.7
HCM Lane LOS	F	A	A	-	B	A	-	D
HCM 95th %tile Q (veh)	1	0	-	-	0.1	-	-	0.1



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	954	2	2	693	2	1	0	2	1	0	1
Future Volume (vph)	2	954	2	2	693	2	1	0	2	1	0	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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								0.910			0.932	
Flt Protected								0.984			0.976	
Satd. Flow (prot)	0	1827	0	0	1827	0	0	1668	0	0	1694	0
Flt Permitted								0.984			0.976	
Satd. Flow (perm)	0	1827	0	0	1827	0	0	1668	0	0	1694	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		829			530			1177			1454	
Travel Time (s)		12.6			8.0			32.1			39.7	
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
Heavy Vehicles (%)	2%	4%	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	2	1060	2	2	770	2	1	0	2	1	0	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1064	0	0	774	0	0	3	0	0	2	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.8%		ICU Level of Service B	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	954	2	2	693	2	1	0	2	1	0	1
Future Vol, veh/h	2	954	2	2	693	2	1	0	2	1	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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	4	2	2	4	2	2	2	2	2	2	2
Mvmt Flow	2	1060	2	2	770	2	1	0	2	1	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	772	0	0	1062	0	0	1841	1841	1061	1841	1841	771
Stage 1	-	-	-	-	-	-	1065	1065	-	775	775	-
Stage 2	-	-	-	-	-	-	776	776	-	1066	1066	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	843	-	-	656	-	-	58	75	272	58	75	400
Stage 1	-	-	-	-	-	-	269	299	-	391	408	-
Stage 2	-	-	-	-	-	-	390	407	-	269	299	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	843	-	-	656	-	-	57	74	272	57	74	400
Mov Cap-2 Maneuver	-	-	-	-	-	-	57	74	-	57	74	-
Stage 1	-	-	-	-	-	-	267	297	-	389	406	-
Stage 2	-	-	-	-	-	-	387	405	-	265	297	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	35.9	41.8
HCM LOS			E	E

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	120	843	-	-	656	-	-	100
HCM Lane V/C Ratio	0.028	0.003	-	-	0.003	-	-	0.022
HCM Control Delay (s/veh)	35.9	9.3	0	-	10.5	0	-	41.8
HCM Lane LOS	E	A	A	-	B	A	-	E
HCM 95th %tile Q (veh)	0.1	0	-	-	0	-	-	0.1

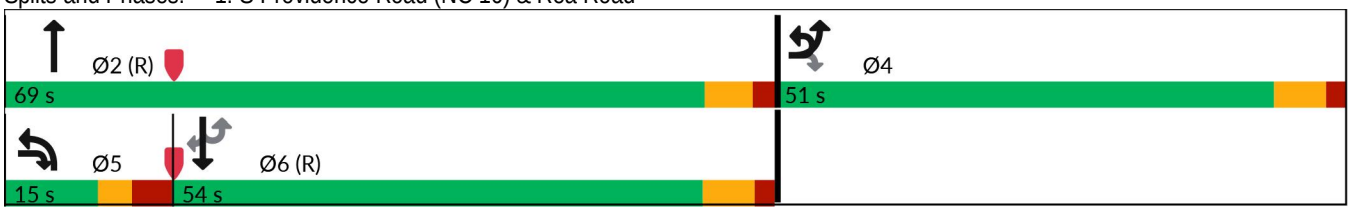
Lane Group	EBU	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations								
Traffic Volume (vph)	4	651	413	228	872	4	725	615
Future Volume (vph)	4	651	413	228	872	4	725	615
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	11	12	11	12	12
Grade (%)		-2%			1%		-1%	
Storage Length (ft)		0	0	425		325		0
Storage Lanes		1	1	2		1		1
Taper Length (ft)		0		100		75		
Lane Util. Factor	1.00	1.00	1.00	0.97	0.95	1.00	1.00	1.00
Frt			0.850					0.850
Flt Protected		0.950		0.950		0.950		
Satd. Flow (prot)	0	1728	1546	3302	3522	1719	1872	1591
Flt Permitted		0.950		0.950		0.283		
Satd. Flow (perm)	0	1728	1546	3302	3522	512	1872	1591
Right Turn on Red			No					Yes
Satd. Flow (RTOR)								473
Link Speed (mph)		45			45		45	
Link Distance (ft)		1527			1308		1378	
Travel Time (s)		23.1			19.8		20.9	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	4	723	459	253	969	4	806	683
Shared Lane Traffic (%)								
Lane Group Flow (vph)	0	727	459	253	969	4	806	683
Turn Type	Prot	Prot	pm+ov	Prot	NA	Perm	NA	Perm
Protected Phases	4	4	5	5	2		6	
Permitted Phases			4			6		6
Detector Phase	4	4	5	5	2	6	6	6
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	12.0	12.0	12.0	12.0
Minimum Split (s)	13.4	13.4	13.6	13.6	18.4	18.5	18.5	18.5
Total Split (s)	51.0	51.0	15.0	15.0	69.0	54.0	54.0	54.0
Total Split (%)	42.5%	42.5%	12.5%	12.5%	57.5%	45.0%	45.0%	45.0%
Maximum Green (s)	44.6	44.6	8.4	8.4	62.6	47.5	47.5	47.5
Yellow Time (s)	4.7	4.7	3.0	3.0	4.4	4.6	4.6	4.6
All-Red Time (s)	1.7	1.7	3.6	3.6	2.0	1.9	1.9	1.9
Lost Time Adjust (s)		-1.4	-1.6	-1.6	-1.4	-1.5	-1.5	-1.5
Total Lost Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead	Lead		Lag	Lag	Lag
Lead-Lag Optimize?								
Vehicle Extension (s)	2.0	2.0	2.0	2.0	6.0	6.0	6.0	6.0
Minimum Gap (s)	2.0	2.0	2.0	2.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0	15.0	15.0	15.0	15.0
Time To Reduce (s)	0.0	0.0	0.0	0.0	30.0	30.0	30.0	30.0
Recall Mode	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)		46.0	61.0	10.0	64.0	49.0	49.0	49.0
Actuated g/C Ratio		0.38	0.51	0.08	0.53	0.41	0.41	0.41
v/c Ratio		1.10	0.58	0.92	0.52	0.02	1.05	0.74
Control Delay (s/veh)		100.6	24.4	92.0	19.3	21.8	83.2	13.9

Lane Group	EBU	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Queue Delay		0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)		100.6	24.4	92.0	19.3	21.8	83.2	13.9
LOS		F	C	F	B	C	F	B
Approach Delay (s/veh)		71.1			34.3		51.3	
Approach LOS		E			C		D	
Queue Length 50th (ft)		~638	241	102	244	2	~683	132
Queue Length 95th (ft)		#873	348	#181	301	9	#925	291
Internal Link Dist (ft)		1447			1228		1298	
Turn Bay Length (ft)				425		325		
Base Capacity (vph)		662	785	275	1878	209	764	929
Starvation Cap Reductn		0	0	0	0	0	0	0
Spillback Cap Reductn		0	0	0	0	0	0	0
Storage Cap Reductn		0	0	0	0	0	0	0
Reduced v/c Ratio		1.10	0.58	0.92	0.52	0.02	1.05	0.74

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTU, Start of Green
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay (s/veh): 52.0 Intersection LOS: D
Intersection Capacity Utilization 93.5% 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: S Providence Road (NC 16) & Rea Road



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	25	948	646	45	67	13
Future Volume (vph)	25	948	646	45	67	13
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	11	10	12	10	12
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	75				0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.991		0.979	
Flt Protected	0.950				0.960	
Satd. Flow (prot)	1652	1801	1692	0	1606	0
Flt Permitted	0.950				0.960	
Satd. Flow (perm)	1652	1801	1692	0	1606	0
Link Speed (mph)		45	45		45	
Link Distance (ft)		1199	1025		1160	
Travel Time (s)		18.2	15.5		17.6	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	4%	2%	3%	8%
Adj. Flow (vph)	28	1053	718	50	74	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	1053	768	0	88	0
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 61.1%		ICU Level of Service B	
Analysis Period (min) 15			

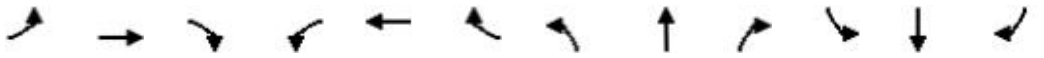
Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	948	646	45	67	13
Future Vol, veh/h	25	948	646	45	67	13
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	4	2	3	8
Mvmt Flow	28	1053	718	50	74	14

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	768	0	-	0	1852	743
Stage 1	-	-	-	-	743	-
Stage 2	-	-	-	-	1109	-
Critical Hdwy	4.12	-	-	-	6.43	6.28
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.218	-	-	-	3.527	3.372
Pot Cap-1 Maneuver	846	-	-	-	81	405
Stage 1	-	-	-	-	468	-
Stage 2	-	-	-	-	314	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	846	-	-	-	78	405
Mov Cap-2 Maneuver	-	-	-	-	203	-
Stage 1	-	-	-	-	453	-
Stage 2	-	-	-	-	314	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.2	0	31.8
HCM LOS			D

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	846	-	-	-	221
HCM Lane V/C Ratio	0.033	-	-	-	0.402
HCM Control Delay (s/veh)	9.4	-	-	-	31.8
HCM Lane LOS	A	-	-	-	D
HCM 95th %tile Q (veh)	0.1	-	-	-	1.8

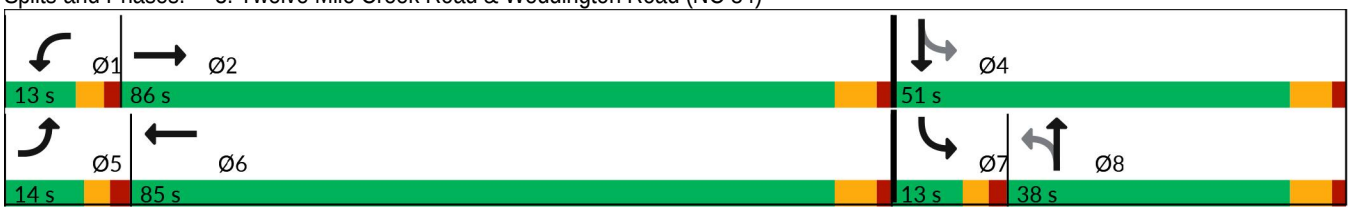


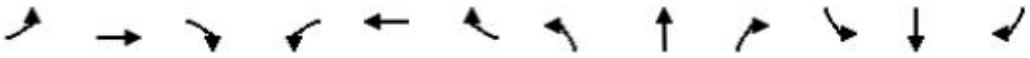
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	778	177	86	487	62	121	56	94	115	113	58
Future Volume (vph)	36	778	177	86	487	62	121	56	94	115	113	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	11	12	12	10	12	12	10	12
Grade (%)		-2%			1%			2%			-2%	
Storage Length (ft)	100		0	100		0	0		0	0		0
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	100			100			0			0		
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		0.972			0.983			0.953			0.973	
Flt Protected	0.950			0.950				0.978			0.980	
Satd. Flow (prot)	1711	1768	0	1686	1746	0	0	1597	0	0	1623	0
Flt Permitted	0.950			0.950				0.707			0.690	
Satd. Flow (perm)	1711	1768	0	1686	1746	0	0	1155	0	0	1143	0
Right Turn on Red			No			No			No			No
Satd. Flow (RTOR)												
Link Speed (mph)		45			45			45			45	
Link Distance (ft)		1035			1019			1122			1136	
Travel Time (s)		15.7			15.4			17.0			17.2	
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
Heavy Vehicles (%)	3%	2%	2%	3%	3%	2%	3%	2%	2%	8%	2%	6%
Adj. Flow (vph)	40	864	197	96	541	69	134	62	104	128	126	64
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	1061	0	96	610	0	0	300	0	0	318	0
Turn Type	Prot	NA		Prot	NA		Perm	NA		pm+pt	NA	
Protected Phases	5	2		1	6			8		7	4	
Permitted Phases							8			4		
Detector Phase	5	2		1	6		8	8		7	7	
Switch Phase										4	4	
Minimum Initial (s)	7.0	12.0		7.0	12.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	12.1	18.2		11.9	18.2		13.2	13.2		11.9	13.2	
Total Split (s)	14.0	86.0		13.0	85.0		38.0	38.0		13.0	51.0	
Total Split (%)	9.3%	57.3%		8.7%	56.7%		25.3%	25.3%		8.7%	34.0%	
Maximum Green (s)	8.9	79.8		8.1	78.8		31.8	31.8		8.1	44.8	
Yellow Time (s)	3.0	4.7		3.0	4.7		4.7	4.7		3.0	4.7	
All-Red Time (s)	2.1	1.5		1.9	1.5		1.5	1.5		1.9	1.5	
Lost Time Adjust (s)	-0.1	-1.2		0.1	-1.2			-1.2			-1.2	
Total Lost Time (s)	5.0	5.0		5.0	5.0			5.0			5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	1.0	6.0		1.0	6.0		1.0	1.0		1.0	1.0	
Minimum Gap (s)	1.0	3.0		1.0	3.0		1.0	1.0		1.0	1.0	
Time Before Reduce (s)	0.0	15.0		0.0	15.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	30.0		0.0	30.0		0.0	0.0		0.0	0.0	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	7.8	81.0		8.0	83.7			33.0			46.0	
Actuated g/C Ratio	0.05	0.54		0.05	0.56			0.22			0.31	
v/c Ratio	0.45	1.11		1.08	0.63			1.18			0.85	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Control Delay (s/veh)	85.5	98.2		181.6	27.0			163.8			68.3	
Queue Delay	0.0	0.0		0.0	0.0			0.0			0.0	
Total Delay (s/veh)	85.5	98.2		181.6	27.0			163.8			68.3	
LOS	F	F		F	C			F			E	
Approach Delay (s/veh)		97.7			48.0			163.8			68.3	
Approach LOS		F			D			F			E	
Queue Length 50th (ft)	39	~1184		~104	404			~351			269	
Queue Length 95th (ft)	81	#1448		#229	555			#546			#434	
Internal Link Dist (ft)		955			939			1042			1056	
Turn Bay Length (ft)	100			100								
Base Capacity (vph)	102	954		89	974			254			376	
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	0.39	1.11		1.08	0.63			1.18			0.85	

Intersection Summary			
Area Type:	Other		
Cycle Length: 150			
Actuated Cycle Length: 150			
Natural Cycle: 150			
Control Type: Actuated-Uncoordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay (s/veh): 87.6		Intersection LOS: F	
Intersection Capacity Utilization 90.7%		ICU Level of Service E	
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: 3: Twelve Mile Creek Road & Weddington Road (NC 84)





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	984	26	12	650	4	15	4	6	4	4	4
Future Volume (vph)	6	984	26	12	650	4	15	4	6	4	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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		0.997			0.999			0.966			0.955	
Flt Protected					0.999			0.971			0.984	
Satd. Flow (prot)	0	1857	0	0	1841	0	0	1747	0	0	1750	0
Flt Permitted					0.999			0.971			0.984	
Satd. Flow (perm)	0	1857	0	0	1841	0	0	1747	0	0	1750	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		1481			827			1039			1032	
Travel Time (s)		22.4			12.5			28.3			28.1	
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
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	7	1093	29	13	722	4	17	4	7	4	4	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1129	0	0	739	0	0	28	0	0	12	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 66.5%		ICU Level of Service C	
Analysis Period (min) 15			

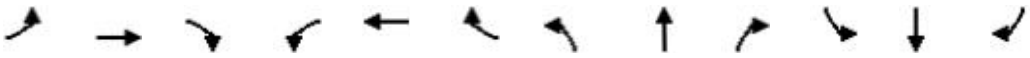
Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	984	26	12	650	4	15	4	6	4	4	4
Future Vol, veh/h	6	984	26	12	650	4	15	4	6	4	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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	3	2	2	2	2	2	2	2
Mvmt Flow	7	1093	29	13	722	4	17	4	7	4	4	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	726	0	0	1122	0	0	1876	1874	1108	1877	1886	724
Stage 1	-	-	-	-	-	-	1122	1122	-	750	750	-
Stage 2	-	-	-	-	-	-	754	752	-	1127	1136	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	877	-	-	623	-	-	55	72	255	55	71	426
Stage 1	-	-	-	-	-	-	250	281	-	403	419	-
Stage 2	-	-	-	-	-	-	401	418	-	249	277	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	877	-	-	623	-	-	50	68	255	49	67	426
Mov Cap-2 Maneuver	-	-	-	-	-	-	50	68	-	49	67	-
Stage 1	-	-	-	-	-	-	245	275	-	395	404	-
Stage 2	-	-	-	-	-	-	379	403	-	234	271	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.1	0.2	96.6	58.8
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	65	877	-	-	623	-	-	80
HCM Lane V/C Ratio	0.427	0.008	-	-	0.021	-	-	0.167
HCM Control Delay (s/veh)	96.6	9.1	0	-	10.9	0	-	58.8
HCM Lane LOS	F	A	A	-	B	A	-	F
HCM 95th %tile Q (veh)	1.7	0	-	-	0.1	-	-	0.6



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	4	987	4	4	661	4	4	4	4	4	4	4
Future Volume (vph)	4	987	4	4	661	4	4	4	4	4	4	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
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					0.999			0.955			0.955	
Flt Protected								0.984			0.984	
Satd. Flow (prot)	0	1863	0	0	1843	0	0	1750	0	0	1750	0
Flt Permitted								0.984			0.984	
Satd. Flow (perm)	0	1863	0	0	1843	0	0	1750	0	0	1750	0
Link Speed (mph)		45			45			25			25	
Link Distance (ft)		827			528			1010			1072	
Travel Time (s)		12.5			8.0			27.5			29.2	
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
Heavy Vehicles (%)	2%	2%	2%	2%	3%	2%	2%	2%	2%	2%	2%	2%
Adj. Flow (vph)	4	1097	4	4	734	4	4	4	4	4	4	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1105	0	0	742	0	0	12	0	0	12	0
Sign Control		Free			Free			Stop			Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 64.9%		ICU Level of Service C	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	987	4	4	661	4	4	4	4	4	4	4
Future Vol, veh/h	4	987	4	4	661	4	4	4	4	4	4	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
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	3	2	2	2	2	2	2	2
Mvmt Flow	4	1097	4	4	734	4	4	4	4	4	4	4

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	738	0	0	1101	0	0	1855	1853	1099	1855	1853	736
Stage 1	-	-	-	-	-	-	1107	1107	-	744	744	-
Stage 2	-	-	-	-	-	-	748	746	-	1111	1109	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
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	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	868	-	-	634	-	-	57	74	258	57	74	419
Stage 1	-	-	-	-	-	-	255	286	-	407	421	-
Stage 2	-	-	-	-	-	-	404	421	-	254	285	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	868	-	-	634	-	-	53	72	258	52	72	419
Mov Cap-2 Maneuver	-	-	-	-	-	-	53	72	-	52	72	-
Stage 1	-	-	-	-	-	-	252	283	-	402	416	-
Stage 2	-	-	-	-	-	-	391	416	-	243	282	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.1	57.2	55.8
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	82	868	-	-	634	-	-	84
HCM Lane V/C Ratio	0.163	0.005	-	-	0.007	-	-	0.159
HCM Control Delay (s/veh)	57.2	9.2	0	-	10.7	0	-	55.8
HCM Lane LOS	F	A	A	-	B	A	-	F
HCM 95th %tile Q (veh)	0.5	0	-	-	0	-	-	0.5

Queuing and Blocking Reports

2024 Existing Conditions

Intersection: 1: S Providence Road (NC 16) & Rea Road

Movement	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	L	L	T	T	U	T	R
Maximum Queue (ft)	396	158	210	239	217	186	28	373	155
Average Queue (ft)	205	65	114	156	131	79	4	184	73
95th Queue (ft)	347	130	201	222	203	172	19	315	132
Link Distance (ft)	1480	1480			1262			1326	1326
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			425	425		450	325		
Storage Blk Time (%)								1	
Queuing Penalty (veh)								0	

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	29	152
Average Queue (ft)	3	55
95th Queue (ft)	17	117
Link Distance (ft)		1127
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	125	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	B13	WB	WB	NB	SB
Directions Served	L	TR	T	L	TR	LTR	LTR
Maximum Queue (ft)	200	924	60	200	1037	1106	1142
Average Queue (ft)	92	454	9	68	839	551	517
95th Queue (ft)	214	944	95	198	1257	1243	1256
Link Distance (ft)		976	2797		985	1088	1098
Upstream Blk Time (%)		3			55	25	23
Queuing Penalty (veh)		15			0	0	0
Storage Bay Dist (ft)	100			100			
Storage Blk Time (%)	4	50		0	69		
Queuing Penalty (veh)	21	42		1	27		

Network Summary

Network wide Queuing Penalty: 106

Intersection: 1: S Providence Road (NC 16) & Rea Road

Movement	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	L	L	T	T	U	T	R
Maximum Queue (ft)	636	315	182	212	225	204	325	1084	680
Average Queue (ft)	343	137	75	123	130	77	14	616	187
95th Queue (ft)	619	261	171	198	206	176	123	1173	775
Link Distance (ft)	1480	1480			1262			1326	1326
Upstream Blk Time (%)								5	3
Queuing Penalty (veh)								0	0
Storage Bay Dist (ft)			425	425		450	325		
Storage Blk Time (%)								39	
Queuing Penalty (veh)								2	

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	40	107
Average Queue (ft)	6	33
95th Queue (ft)	26	80
Link Distance (ft)		1127
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	125	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	B13	WB	WB	NB	SB
Directions Served	L	TR	T	L	TR	LTR	LTR
Maximum Queue (ft)	200	1043	450	199	597	512	352
Average Queue (ft)	83	578	78	76	275	193	122
95th Queue (ft)	204	1090	411	180	541	420	280
Link Distance (ft)		976	2797		985	1088	1098
Upstream Blk Time (%)		10			0		
Queuing Penalty (veh)		87			0		
Storage Bay Dist (ft)	100			100			
Storage Blk Time (%)	2	47		4	32		
Queuing Penalty (veh)	12	39		27	25		

Network Summary

Network wide Queuing Penalty: 192

Intersection: 1: S Providence Road (NC 16) & Rea Road

Movement	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	L	L	T	T	U	T	R
Maximum Queue (ft)	809	460	160	186	236	218	177	869	379
Average Queue (ft)	475	158	62	110	151	101	10	455	125
95th Queue (ft)	868	361	143	176	225	199	98	861	403
Link Distance (ft)	1480	1480			1262			1326	1326
Upstream Blk Time (%)								1	0
Queuing Penalty (veh)								0	0
Storage Bay Dist (ft)			425	425		450	325		
Storage Blk Time (%)								31	
Queuing Penalty (veh)								1	

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	44	128
Average Queue (ft)	9	41
95th Queue (ft)	31	89
Link Distance (ft)		1127
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	125	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	B13	WB	WB	NB	SB
Directions Served	L	TR	T	L	TR	LTR	LTR
Maximum Queue (ft)	199	1071	764	192	447	592	547
Average Queue (ft)	31	765	164	70	209	252	204
95th Queue (ft)	125	1178	633	156	386	544	455
Link Distance (ft)		976	2797		985	1088	1098
Upstream Blk Time (%)		19					
Queuing Penalty (veh)		167					
Storage Bay Dist (ft)	100			100			
Storage Blk Time (%)	0	50		3	22		
Queuing Penalty (veh)	0	15		16	18		

Network Summary

Network wide Queuing Penalty: 217

2029 Background Conditions w/ STIPs

Intersection: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	R	R	T	T	R	R	T	T	R	R
Maximum Queue (ft)	294	174	184	205	140	158	166	170	509	519	433	21
Average Queue (ft)	162	92	96	116	78	92	82	89	348	351	53	1
95th Queue (ft)	254	155	168	193	129	146	161	166	528	535	285	13
Link Distance (ft)	839	839			576	576			491	491		
Upstream Blk Time (%)									5	6	0	
Queuing Penalty (veh)									51	55	0	
Storage Bay Dist (ft)			750	750			425	425			375	375
Storage Blk Time (%)										13		
Queuing Penalty (veh)										15		

Intersection: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension

Movement	SB	SB	SB	SB
Directions Served	T	T	R	R
Maximum Queue (ft)	262	328	468	466
Average Queue (ft)	149	171	277	291
95th Queue (ft)	224	309	464	456
Link Distance (ft)	631	631		
Upstream Blk Time (%)		0		
Queuing Penalty (veh)		3		
Storage Bay Dist (ft)			500	500
Storage Blk Time (%)		0	1	1
Queuing Penalty (veh)		0	7	7

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	45	2	143
Average Queue (ft)	6	0	55
95th Queue (ft)	26	2	109
Link Distance (ft)		1102	1127
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	125		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	347	478	458	248	358	516	529	236	231	128	168	280
Average Queue (ft)	94	229	234	92	113	256	273	33	130	23	50	85
95th Queue (ft)	245	405	404	203	246	442	458	139	228	106	122	211
Link Distance (ft)		964	964			975	975			1061		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	450			400	300			375	225		225	175
Storage Blk Time (%)	0	1	2			6	4		4	0		7
Queuing Penalty (veh)	1	1	3			8	3		5	1		24

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	349	224
Average Queue (ft)	85	107
95th Queue (ft)	246	200
Link Distance (ft)	1072	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)	6	10
Queuing Penalty (veh)	20	18

Intersection: 4: Rea Road Extension & Weddington Road (NC 84)

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	L	R
Maximum Queue (ft)	76	207	216	29	202	220	123	284	296	150
Average Queue (ft)	23	91	97	3	82	97	55	154	168	13
95th Queue (ft)	56	177	182	18	156	178	106	243	258	71
Link Distance (ft)		6341	6341		2100	2100			636	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	425			425			400	325		125
Storage Blk Time (%)								0	24	
Queuing Penalty (veh)								0	64	

Intersection: 7: S Providence Road (NC 16)

Movement	NB	NB	SB	SB
Directions Served	R	R	T	T
Maximum Queue (ft)	100	104	8	40
Average Queue (ft)	6	7	0	3
95th Queue (ft)	44	48	8	46
Link Distance (ft)	631	631	542	542
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 8: Northern U-turn Bulb

Movement	NB	NB	NB	NB
Directions Served	T	T	R	R
Maximum Queue (ft)	44	79	62	58
Average Queue (ft)	2	6	4	6
95th Queue (ft)	25	43	34	31
Link Distance (ft)	189	189	189	189
Upstream Blk Time (%)		0	0	
Queuing Penalty (veh)		0	0	
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: S Providence Road (NC 16)

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	176	221
Average Queue (ft)	15	24
95th Queue (ft)	96	120
Link Distance (ft)	994	994
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: S Providence Road (NC 16)

Movement	NB	NB	SB	SB
Directions Served	T	T	R	R
Maximum Queue (ft)	331	342	169	157
Average Queue (ft)	60	63	29	28
95th Queue (ft)	287	296	105	101
Link Distance (ft)	489	489	491	491
Upstream Blk Time (%)	0	0		
Queuing Penalty (veh)	1	2		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: Southern U-turn Bulb

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	44	58
Average Queue (ft)	2	5
95th Queue (ft)	21	28
Link Distance (ft)	86	86
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: S Providence Road (NC 16)

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	121	100
Average Queue (ft)	13	9
95th Queue (ft)	72	65
Link Distance (ft)	1013	1013
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: Rea Road

Movement	WB	WB
Directions Served	R	R
Maximum Queue (ft)	33	14
Average Queue (ft)	1	1
95th Queue (ft)	16	10
Link Distance (ft)	839	839
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Western U-turn Bulb & Rea Road

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

Intersection: 17: Rea Road

Movement	EB	EB
Directions Served	R	R
Maximum Queue (ft)	62	87
Average Queue (ft)	3	5
95th Queue (ft)	29	41
Link Distance (ft)	1296	1296
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: Rea Road Extension

Movement	EB
Directions Served	R
Maximum Queue (ft)	62
Average Queue (ft)	4
95th Queue (ft)	29
Link Distance (ft)	576
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 20: Eastern U-turn Bulb

Movement	EB	EB
Directions Served	T	R
Maximum Queue (ft)	138	18
Average Queue (ft)	44	1
95th Queue (ft)	119	15
Link Distance (ft)	120	120
Upstream Blk Time (%)	1	0
Queuing Penalty (veh)	2	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 21: Rea Road Extension

Movement	WB	WB
Directions Served	R	R
Maximum Queue (ft)	16	19
Average Queue (ft)	1	1
95th Queue (ft)	8	10
Link Distance (ft)	6341	6341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 101: S Providence Road (NC 16) & Northern U-turn Bulb

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	263	289	467	538
Average Queue (ft)	144	205	207	282
95th Queue (ft)	235	287	395	482
Link Distance (ft)	287	287	1050	1050
Upstream Blk Time (%)	0	2		
Queuing Penalty (veh)	1	6		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 102: S Providence Road (NC 16) & Southern U-turn Bulb

Movement	EB	NB	NB
Directions Served	L	T	T
Maximum Queue (ft)	90	194	199
Average Queue (ft)	36	79	79
95th Queue (ft)	78	170	171
Link Distance (ft)	360	536	536
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 103: Rea Road & Western U-turn Bulb

Movement	SB
Directions Served	L
Maximum Queue (ft)	82
Average Queue (ft)	38
95th Queue (ft)	67
Link Distance (ft)	107
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 104: Eastern U-turn Bulb & Rea Road Extension

Movement	NB
Directions Served	L
Maximum Queue (ft)	125
Average Queue (ft)	92
95th Queue (ft)	133
Link Distance (ft)	118
Upstream Blk Time (%)	3
Queuing Penalty (veh)	10
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 308

Intersection: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	R	R	T	T	R	R	T	T	R	R
Maximum Queue (ft)	256	196	184	216	114	122	156	157	386	370	105	60
Average Queue (ft)	152	118	93	122	51	60	64	85	198	204	24	7
95th Queue (ft)	224	179	163	199	93	102	145	159	327	326	74	36
Link Distance (ft)	839	839			576	576			491	491		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			750	750			425	425			375	375
Storage Blk Time (%)										1		
Queuing Penalty (veh)										1		

Intersection: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension

Movement	SB	SB	SB	SB
Directions Served	T	T	R	R
Maximum Queue (ft)	215	226	243	254
Average Queue (ft)	128	139	122	135
95th Queue (ft)	195	205	209	223
Link Distance (ft)	631	631		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			500	500
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	44	4	112
Average Queue (ft)	9	0	41
95th Queue (ft)	32	3	84
Link Distance (ft)		1102	1127
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	125		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	L	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	148	362	344	129	180	238	255	233	188	229	115	195
Average Queue (ft)	68	196	201	58	83	114	121	91	82	92	39	97
95th Queue (ft)	125	306	306	113	148	200	212	180	154	179	92	169
Link Distance (ft)		964	964			975	975			1061		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	450			400	300			375	225		225	175
Storage Blk Time (%)			0						0	0		2
Queuing Penalty (veh)			0						1	1		4

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	247	170
Average Queue (ft)	87	31
95th Queue (ft)	186	103
Link Distance (ft)	1072	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)	5	0
Queuing Penalty (veh)	12	0

Intersection: 4: Rea Road Extension & Weddington Road (NC 84)

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	L	R
Maximum Queue (ft)	64	153	164	28	152	150	95	240	243	115
Average Queue (ft)	20	62	68	3	53	52	36	128	142	10
95th Queue (ft)	52	127	136	17	111	119	80	204	215	56
Link Distance (ft)		6341	6341		2100	2100			636	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	425			425			400	325		125
Storage Blk Time (%)									15	
Queuing Penalty (veh)									36	

Intersection: 7: S Providence Road (NC 16)

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	67	51
Average Queue (ft)	4	2
95th Queue (ft)	34	22
Link Distance (ft)	631	631
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Northern U-turn Bulb

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	40	45
Average Queue (ft)	3	3
95th Queue (ft)	19	21
Link Distance (ft)	189	189
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: S Providence Road (NC 16)

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	55	65
Average Queue (ft)	3	5
95th Queue (ft)	24	34
Link Distance (ft)	994	994
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: S Providence Road (NC 16)

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	137	136
Average Queue (ft)	19	23
95th Queue (ft)	77	84
Link Distance (ft)	491	491
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Southern U-turn Bulb

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	15	49
Average Queue (ft)	1	4
95th Queue (ft)	10	26
Link Distance (ft)	86	86
Upstream Blk Time (%)		0
Queuing Penalty (veh)		0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: S Providence Road (NC 16)

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	46	34
Average Queue (ft)	3	1
95th Queue (ft)	24	15
Link Distance (ft)	1013	1013
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: Rea Road

Movement	EB	WB
Directions Served	T	R
Maximum Queue (ft)	5	8
Average Queue (ft)	0	0
95th Queue (ft)	5	4
Link Distance (ft)	329	839
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Western U-turn Bulb & Rea Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	27
Average Queue (ft)	1
95th Queue (ft)	13
Link Distance (ft)	143
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 17: Rea Road

Movement	EB	EB
Directions Served	R	R
Maximum Queue (ft)	193	256
Average Queue (ft)	15	19
95th Queue (ft)	158	182
Link Distance (ft)	1296	1296
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: Rea Road Extension

Movement	EB	EB
Directions Served	R	R
Maximum Queue (ft)	130	10
Average Queue (ft)	14	0
95th Queue (ft)	78	8
Link Distance (ft)	576	576
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 20: Eastern U-turn Bulb

Movement	EB	EB	EB
Directions Served	T	R	R
Maximum Queue (ft)	137	25	12
Average Queue (ft)	49	0	1
95th Queue (ft)	128	13	8
Link Distance (ft)	120	120	120
Upstream Blk Time (%)	2	0	
Queuing Penalty (veh)	6	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 21: Rea Road Extension

Movement	WB	WB
Directions Served	R	R
Maximum Queue (ft)	28	37
Average Queue (ft)	1	2
95th Queue (ft)	26	29
Link Distance (ft)	6341	6341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 101: S Providence Road (NC 16) & Northern U-turn Bulb

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	158	184	144	201
Average Queue (ft)	74	100	78	113
95th Queue (ft)	128	157	130	177
Link Distance (ft)	287	287	1050	1050
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 102: S Providence Road (NC 16) & Southern U-turn Bulb

Movement	EB	NB	NB
Directions Served	L	T	T
Maximum Queue (ft)	106	134	145
Average Queue (ft)	48	60	59
95th Queue (ft)	94	123	125
Link Distance (ft)	360	536	536
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 103: Rea Road & Western U-turn Bulb

Movement	EB	SB
Directions Served	T	L
Maximum Queue (ft)	2	114
Average Queue (ft)	0	50
95th Queue (ft)	2	93
Link Distance (ft)	198	107
Upstream Blk Time (%)		2
Queuing Penalty (veh)		2
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 104: Eastern U-turn Bulb & Rea Road Extension

Movement	NB
Directions Served	L
Maximum Queue (ft)	124
Average Queue (ft)	97
95th Queue (ft)	134
Link Distance (ft)	118
Upstream Blk Time (%)	3
Queuing Penalty (veh)	17
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 81

Intersection: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	R	R	T	T	R	R	T	T	R	R
Maximum Queue (ft)	464	230	260	291	86	96	214	213	458	473	270	21
Average Queue (ft)	263	124	146	175	42	48	116	130	238	246	23	1
95th Queue (ft)	423	205	238	271	78	85	202	201	435	443	161	15
Link Distance (ft)	839	839			576	576			491	491		
Upstream Blk Time (%)									1	1	0	
Queuing Penalty (veh)									8	9	0	
Storage Bay Dist (ft)			750	750			425	425			375	375
Storage Blk Time (%)										5		
Queuing Penalty (veh)										6		

Intersection: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension

Movement	SB	SB	SB	SB
Directions Served	T	T	R	R
Maximum Queue (ft)	265	282	221	229
Average Queue (ft)	154	166	131	144
95th Queue (ft)	236	247	199	213
Link Distance (ft)	631	631		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			500	500
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	47	2	67
Average Queue (ft)	12	0	25
95th Queue (ft)	37	2	55
Link Distance (ft)		1102	1127
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	125		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	EB	EB	B28	B28	WB	WB	WB	WB	NB	NB
Directions Served	L	T	T	R	T	T	L	T	T	R	L	T
Maximum Queue (ft)	262	419	420	169	9	18	176	339	357	123	249	209
Average Queue (ft)	134	235	246	67	0	0	70	196	207	43	141	44
95th Queue (ft)	230	369	373	135	0	7	136	302	325	94	249	165
Link Distance (ft)		964	964		2100	2100		975	975			1061
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	450			400			300			375	225	
Storage Blk Time (%)		0	1					1	0		5	0
Queuing Penalty (veh)		0	1					1	0		7	0

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	NB	SB	SB	SB
Directions Served	R	L	T	R
Maximum Queue (ft)	173	121	150	143
Average Queue (ft)	56	46	26	57
95th Queue (ft)	129	99	86	114
Link Distance (ft)			1072	
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	225	175		125
Storage Blk Time (%)		0	1	1
Queuing Penalty (veh)		0	1	1

Intersection: 4: Rea Road Extension & Weddington Road (NC 84)

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	L	R
Maximum Queue (ft)	82	231	243	37	240	250	157	287	305	171
Average Queue (ft)	23	115	119	5	114	125	59	169	182	19
95th Queue (ft)	61	206	214	22	209	220	120	256	269	97
Link Distance (ft)		6341	6341		2100	2100			636	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	425			425			400	325		125
Storage Blk Time (%)								0	23	0
Queuing Penalty (veh)								0	77	0

Intersection: 7: S Providence Road (NC 16)

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	79	90
Average Queue (ft)	6	6
95th Queue (ft)	40	40
Link Distance (ft)	631	631
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Northern U-turn Bulb

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	68	57
Average Queue (ft)	7	10
95th Queue (ft)	35	37
Link Distance (ft)	189	189
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: S Providence Road (NC 16)

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	72	109
Average Queue (ft)	6	12
95th Queue (ft)	38	60
Link Distance (ft)	994	994
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: S Providence Road (NC 16)

Movement	NB	NB	SB	SB
Directions Served	T	T	R	R
Maximum Queue (ft)	91	98	155	172
Average Queue (ft)	8	9	37	38
95th Queue (ft)	63	68	110	119
Link Distance (ft)	489	489	491	491
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: Southern U-turn Bulb

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	41	83
Average Queue (ft)	3	12
95th Queue (ft)	26	48
Link Distance (ft)	86	86
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: S Providence Road (NC 16)

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	92	108
Average Queue (ft)	7	6
95th Queue (ft)	53	59
Link Distance (ft)	1013	1013
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: Rea Road

Movement	WB	WB
Directions Served	R	R
Maximum Queue (ft)	45	31
Average Queue (ft)	4	3
95th Queue (ft)	57	52
Link Distance (ft)	839	839
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Western U-turn Bulb & Rea Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	70
Average Queue (ft)	6
95th Queue (ft)	48
Link Distance (ft)	143
Upstream Blk Time (%)	1
Queuing Penalty (veh)	4
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 17: Rea Road

Movement	EB	EB
Directions Served	R	R
Maximum Queue (ft)	318	388
Average Queue (ft)	34	46
95th Queue (ft)	263	321
Link Distance (ft)	1296	1296
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: Rea Road Extension

Movement	EB	EB
Directions Served	R	R
Maximum Queue (ft)	183	10
Average Queue (ft)	43	0
95th Queue (ft)	136	8
Link Distance (ft)	576	576
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 20: Eastern U-turn Bulb

Movement	EB	EB	EB
Directions Served	T	R	R
Maximum Queue (ft)	154	63	26
Average Queue (ft)	94	5	1
95th Queue (ft)	161	46	17
Link Distance (ft)	120	120	120
Upstream Blk Time (%)	5	0	0
Queuing Penalty (veh)	15	1	0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 21: Rea Road Extension

Movement	WB	WB
Directions Served	R	R
Maximum Queue (ft)	8	8
Average Queue (ft)	0	0
95th Queue (ft)	6	5
Link Distance (ft)	6341	6341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 101: S Providence Road (NC 16) & Northern U-turn Bulb

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	170	195	210	246
Average Queue (ft)	92	123	114	155
95th Queue (ft)	147	179	186	230
Link Distance (ft)	287	287	1050	1050
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 102: S Providence Road (NC 16) & Southern U-turn Bulb

Movement	EB	NB	NB
Directions Served	L	T	T
Maximum Queue (ft)	80	136	157
Average Queue (ft)	32	53	57
95th Queue (ft)	69	130	142
Link Distance (ft)	360	536	536
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 103: Rea Road & Western U-turn Bulb

Movement	EB	SB
Directions Served	T	L
Maximum Queue (ft)	2	119
Average Queue (ft)	0	55
95th Queue (ft)	2	105
Link Distance (ft)	198	107
Upstream Blk Time (%)		6
Queuing Penalty (veh)		4
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 104: Eastern U-turn Bulb & Rea Road Extension

Movement	WB	NB
Directions Served	T	L
Maximum Queue (ft)	2	126
Average Queue (ft)	0	108
95th Queue (ft)	2	136
Link Distance (ft)	159	118
Upstream Blk Time (%)		4
Queuing Penalty (veh)		27
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 164

2029 Build-out Conditions
w/ STIPs

Intersection: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	R	R	T	T	R	R	T	T	R	R
Maximum Queue (ft)	278	190	186	216	144	161	184	174	508	516	391	28
Average Queue (ft)	160	98	97	116	81	93	84	91	350	350	66	2
95th Queue (ft)	241	165	173	196	130	145	176	173	538	541	317	15
Link Distance (ft)	839	839			576	576			491	491		
Upstream Blk Time (%)									5	6	0	
Queuing Penalty (veh)									49	53	0	
Storage Bay Dist (ft)			750	750			425	425			375	375
Storage Blk Time (%)										14		
Queuing Penalty (veh)										17		

Intersection: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension

Movement	SB	SB	SB	SB
Directions Served	T	T	R	R
Maximum Queue (ft)	287	420	463	454
Average Queue (ft)	152	196	287	295
95th Queue (ft)	242	413	498	481
Link Distance (ft)	631	631		
Upstream Blk Time (%)		1		
Queuing Penalty (veh)		14		
Storage Bay Dist (ft)			500	500
Storage Blk Time (%)		0	4	4
Queuing Penalty (veh)		0	25	25

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	37	155
Average Queue (ft)	5	58
95th Queue (ft)	24	121
Link Distance (ft)		1127
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	125	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	UL	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	283	414	415	225	362	601	631	401	260	146	167	305
Average Queue (ft)	118	212	218	93	121	283	301	53	142	20	52	91
95th Queue (ft)	241	361	360	192	269	515	539	218	254	91	125	223
Link Distance (ft)		1418	1418			975	975			1061		
Upstream Blk Time (%)							0					
Queuing Penalty (veh)							0					
Storage Bay Dist (ft)	450			400	300			375	225		225	175
Storage Blk Time (%)		0	1			9	7		7	0	0	6
Queuing Penalty (veh)		0	1			11	4		5	0	0	18

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	461	224
Average Queue (ft)	117	112
95th Queue (ft)	346	211
Link Distance (ft)	1072	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)	6	11
Queuing Penalty (veh)	20	20

Intersection: 4: Rea Road Extension & Weddington Road (NC 84)

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	L	R
Maximum Queue (ft)	72	196	203	37	183	192	161	292	313	208
Average Queue (ft)	20	85	91	8	76	92	48	162	180	24
95th Queue (ft)	53	173	178	27	147	161	118	247	267	115
Link Distance (ft)		6341	6341		814	814			643	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	425			425			400	325		125
Storage Blk Time (%)								0	27	
Queuing Penalty (veh)								0	74	

Intersection: 5: Access A & Weddington Road (NC 84)

Movement	NB	SB
Directions Served	R	R
Maximum Queue (ft)	55	35
Average Queue (ft)	20	7
95th Queue (ft)	47	28
Link Distance (ft)	1046	982
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Access B & Weddington Road (NC 84)

Movement	WB	NB	SB
Directions Served	TR	R	R
Maximum Queue (ft)	10	29	30
Average Queue (ft)	0	4	3
95th Queue (ft)	10	20	19
Link Distance (ft)	1418	998	982
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 7: S Providence Road (NC 16)

Movement	NB	NB	SB
Directions Served	R	R	T
Maximum Queue (ft)	82	86	109
Average Queue (ft)	7	6	19
95th Queue (ft)	41	40	162
Link Distance (ft)	631	631	542
Upstream Blk Time (%)			0
Queuing Penalty (veh)			0
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 8: Northern U-turn Bulb

Movement	NB	NB	NB	NB
Directions Served	T	T	R	R
Maximum Queue (ft)	19	54	37	48
Average Queue (ft)	1	3	4	6
95th Queue (ft)	17	31	22	29
Link Distance (ft)	189	189	189	189
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 9: S Providence Road (NC 16)

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	176	193
Average Queue (ft)	15	21
95th Queue (ft)	84	102
Link Distance (ft)	994	994
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: S Providence Road (NC 16)

Movement	NB	NB	SB	SB
Directions Served	T	T	R	R
Maximum Queue (ft)	287	280	139	151
Average Queue (ft)	50	50	23	28
95th Queue (ft)	245	245	82	98
Link Distance (ft)	489	489	491	491
Upstream Blk Time (%)	0	0		
Queuing Penalty (veh)	2	2		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: Southern U-turn Bulb

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	20	64
Average Queue (ft)	0	8
95th Queue (ft)	7	37
Link Distance (ft)	86	86
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: S Providence Road (NC 16)

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	140	136
Average Queue (ft)	16	13
95th Queue (ft)	81	85
Link Distance (ft)	1013	1013
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: Rea Road

Movement	WB	WB
Directions Served	R	R
Maximum Queue (ft)	29	26
Average Queue (ft)	1	1
95th Queue (ft)	19	17
Link Distance (ft)	839	839
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Western U-turn Bulb & Rea Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	3
Average Queue (ft)	0
95th Queue (ft)	4
Link Distance (ft)	143
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 17: Rea Road

Movement	EB	EB
Directions Served	R	R
Maximum Queue (ft)	57	65
Average Queue (ft)	3	5
95th Queue (ft)	35	48
Link Distance (ft)	1296	1296
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: Rea Road Extension

Movement	EB
Directions Served	R
Maximum Queue (ft)	89
Average Queue (ft)	5
95th Queue (ft)	37
Link Distance (ft)	576
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 20: Eastern U-turn Bulb

Movement	EB	EB
Directions Served	T	R
Maximum Queue (ft)	132	9
Average Queue (ft)	40	0
95th Queue (ft)	114	9
Link Distance (ft)	120	120
Upstream Blk Time (%)	1	
Queuing Penalty (veh)	2	
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 21: Rea Road Extension

Movement	WB	WB
Directions Served	R	R
Maximum Queue (ft)	3	18
Average Queue (ft)	0	1
95th Queue (ft)	3	10
Link Distance (ft)	6341	6341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 101: S Providence Road (NC 16) & Northern U-turn Bulb

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	263	287	501	564
Average Queue (ft)	143	197	218	293
95th Queue (ft)	227	280	458	535
Link Distance (ft)	287	287	1050	1050
Upstream Blk Time (%)	0	1		
Queuing Penalty (veh)	0	3		
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 102: S Providence Road (NC 16) & Southern U-turn Bulb

Movement	EB	NB	NB
Directions Served	L	T	T
Maximum Queue (ft)	86	218	216
Average Queue (ft)	37	90	87
95th Queue (ft)	76	219	217
Link Distance (ft)	360	536	536
Upstream Blk Time (%)		0	0
Queuing Penalty (veh)		1	2
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 103: Rea Road & Western U-turn Bulb

Movement	SB
Directions Served	L
Maximum Queue (ft)	82
Average Queue (ft)	40
95th Queue (ft)	69
Link Distance (ft)	107
Upstream Blk Time (%)	0
Queuing Penalty (veh)	0
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 104: Eastern U-turn Bulb & Rea Road Extension

Movement	NB
Directions Served	L
Maximum Queue (ft)	122
Average Queue (ft)	93
95th Queue (ft)	134
Link Distance (ft)	118
Upstream Blk Time (%)	3
Queuing Penalty (veh)	10
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Network Summary

Network wide Queuing Penalty: 359

Intersection: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	R	R	T	T	R	R	T	T	R	R
Maximum Queue (ft)	258	200	184	206	111	120	159	164	346	345	135	78
Average Queue (ft)	151	119	89	124	52	62	74	89	194	200	28	12
95th Queue (ft)	226	177	163	195	91	103	152	162	304	307	90	51
Link Distance (ft)	839	839			576	576			491	491		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)			750	750			425	425			375	375
Storage Blk Time (%)										0		
Queuing Penalty (veh)										1		

Intersection: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension

Movement	SB	SB	SB	SB
Directions Served	T	T	R	R
Maximum Queue (ft)	208	210	220	235
Average Queue (ft)	123	135	126	142
95th Queue (ft)	187	192	196	212
Link Distance (ft)	631	631		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			500	500
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	38	10	108
Average Queue (ft)	8	0	43
95th Queue (ft)	30	7	89
Link Distance (ft)		1102	1127
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	125		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	UL	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	179	344	352	136	180	246	256	221	193	224	129	188
Average Queue (ft)	81	195	203	58	82	129	132	93	98	98	52	100
95th Queue (ft)	149	307	312	113	159	214	222	184	171	185	105	169
Link Distance (ft)		1419	1419			975	975			1060		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	450			400	300			375	225		225	175
Storage Blk Time (%)			0			0			0	0		2
Queuing Penalty (veh)			0			0			0	1		5

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	271	165
Average Queue (ft)	94	34
95th Queue (ft)	197	102
Link Distance (ft)	1072	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)	6	0
Queuing Penalty (veh)	16	0

Intersection: 4: Rea Road Extension & Weddington Road (NC 84)

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	L	R
Maximum Queue (ft)	71	167	163	40	98	117	90	224	238	108
Average Queue (ft)	20	62	64	10	36	45	29	136	151	11
95th Queue (ft)	54	133	135	31	76	94	71	201	216	57
Link Distance (ft)		6341	6341		814	814			643	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	425			425			400	325		125
Storage Blk Time (%)									18	
Queuing Penalty (veh)									46	

Intersection: 5: Access A & Weddington Road (NC 84)

Movement	WB	NB	SB
Directions Served	T	R	R
Maximum Queue (ft)	3	42	29
Average Queue (ft)	0	15	4
95th Queue (ft)	0	39	20
Link Distance (ft)	767	1046	978
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 6: Access B & Weddington Road (NC 84)

Movement	NB	SB
Directions Served	R	R
Maximum Queue (ft)	26	25
Average Queue (ft)	2	3
95th Queue (ft)	12	17
Link Distance (ft)	998	982
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: S Providence Road (NC 16)

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	58	47
Average Queue (ft)	3	2
95th Queue (ft)	29	21
Link Distance (ft)	631	631
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Northern U-turn Bulb

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	32	44
Average Queue (ft)	2	3
95th Queue (ft)	16	22
Link Distance (ft)	189	189
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: S Providence Road (NC 16)

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	59	75
Average Queue (ft)	3	5
95th Queue (ft)	24	36
Link Distance (ft)	994	994
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: S Providence Road (NC 16)

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	109	118
Average Queue (ft)	18	20
95th Queue (ft)	73	78
Link Distance (ft)	491	491
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 12: Southern U-turn Bulb

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	20	53
Average Queue (ft)	1	4
95th Queue (ft)	11	28
Link Distance (ft)	86	86
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: S Providence Road (NC 16)

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	52	50
Average Queue (ft)	2	2
95th Queue (ft)	24	27
Link Distance (ft)	1013	1013
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: Rea Road

Movement	WB
Directions Served	R
Maximum Queue (ft)	16
Average Queue (ft)	1
95th Queue (ft)	11
Link Distance (ft)	839
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 16: Western U-turn Bulb & Rea Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	28
Average Queue (ft)	2
95th Queue (ft)	16
Link Distance (ft)	143
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 17: Rea Road

Movement	EB	EB
Directions Served	R	R
Maximum Queue (ft)	84	178
Average Queue (ft)	5	12
95th Queue (ft)	38	97
Link Distance (ft)	1296	1296
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: Rea Road Extension

Movement	EB	EB
Directions Served	R	R
Maximum Queue (ft)	115	24
Average Queue (ft)	11	1
95th Queue (ft)	65	16
Link Distance (ft)	576	576
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 20: Eastern U-turn Bulb

Movement	EB	EB	EB
Directions Served	T	R	R
Maximum Queue (ft)	134	62	12
Average Queue (ft)	50	3	0
95th Queue (ft)	126	33	7
Link Distance (ft)	120	120	120
Upstream Blk Time (%)	1	0	
Queuing Penalty (veh)	4	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 21: Rea Road Extension

Movement	WB	WB
Directions Served	R	R
Maximum Queue (ft)	23	48
Average Queue (ft)	1	2
95th Queue (ft)	12	19
Link Distance (ft)	6341	6341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 101: S Providence Road (NC 16) & Northern U-turn Bulb

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	149	172	166	197
Average Queue (ft)	69	101	80	114
95th Queue (ft)	119	152	133	178
Link Distance (ft)	287	287	1050	1050
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 102: S Providence Road (NC 16) & Southern U-turn Bulb

Movement	EB	NB	NB
Directions Served	L	T	T
Maximum Queue (ft)	111	146	151
Average Queue (ft)	48	63	63
95th Queue (ft)	92	130	133
Link Distance (ft)	360	536	536
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 103: Rea Road & Western U-turn Bulb

Movement	EB	SB
Directions Served	T	L
Maximum Queue (ft)	2	117
Average Queue (ft)	0	55
95th Queue (ft)	2	103
Link Distance (ft)	198	107
Upstream Blk Time (%)		2
Queuing Penalty (veh)		2
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 104: Eastern U-turn Bulb & Rea Road Extension

Movement	WB	NB
Directions Served	T	L
Maximum Queue (ft)	2	124
Average Queue (ft)	0	100
95th Queue (ft)	2	135
Link Distance (ft)	159	118
Upstream Blk Time (%)		3
Queuing Penalty (veh)		17
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 91

Intersection: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	R	R	T	T	R	R	T	T	R	R
Maximum Queue (ft)	453	256	267	296	95	109	208	208	472	484	276	35
Average Queue (ft)	255	130	143	171	48	51	112	129	268	276	22	2
95th Queue (ft)	406	216	225	252	86	90	198	198	433	441	146	17
Link Distance (ft)	839	839			576	576			491	491		
Upstream Blk Time (%)									1	1	0	
Queuing Penalty (veh)									6	7	0	
Storage Bay Dist (ft)			750	750			425	425			375	375
Storage Blk Time (%)										5		
Queuing Penalty (veh)										6		

Intersection: 1: S Providence Road (NC 16) & Rea Road/Rea Road Extension

Movement	SB	SB	SB	SB
Directions Served	T	T	R	R
Maximum Queue (ft)	263	260	212	222
Average Queue (ft)	149	159	127	143
95th Queue (ft)	229	233	198	216
Link Distance (ft)	631	631		
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)			500	500
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	43	80
Average Queue (ft)	12	27
95th Queue (ft)	36	60
Link Distance (ft)		1127
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	125	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	SB
Directions Served	UL	T	T	R	L	T	T	R	L	T	R	L
Maximum Queue (ft)	332	391	405	217	195	379	408	148	278	266	152	126
Average Queue (ft)	159	242	254	83	72	222	234	49	160	60	58	46
95th Queue (ft)	282	372	378	167	160	350	368	127	272	181	122	101
Link Distance (ft)		1417	1417			975	975			1056		
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	450			400	300			375	225		225	175
Storage Blk Time (%)	0	0	1			2	1		8	0		0
Queuing Penalty (veh)	1	0	1			2	1		12	0		0

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	169	156
Average Queue (ft)	28	62
95th Queue (ft)	100	126
Link Distance (ft)	1072	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		125
Storage Blk Time (%)	1	2
Queuing Penalty (veh)	2	1

Intersection: 4: Rea Road Extension & Weddington Road (NC 84)

Movement	EB	EB	EB	WB	WB	WB	WB	SB	SB	SB
Directions Served	L	T	T	U	T	T	R	L	L	R
Maximum Queue (ft)	74	251	261	59	173	185	112	289	314	193
Average Queue (ft)	23	123	127	15	81	96	51	180	194	22
95th Queue (ft)	58	215	225	44	150	167	99	266	284	104
Link Distance (ft)		6341	6341		813	813			643	
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	425			425			400	325		125
Storage Blk Time (%)								0	26	
Queuing Penalty (veh)								0	90	

Intersection: 5: Access A & Weddington Road (NC 84)

Movement	NB	SB
Directions Served	R	R
Maximum Queue (ft)	57	31
Average Queue (ft)	17	5
95th Queue (ft)	46	24
Link Distance (ft)	1047	983
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 6: Access B & Weddington Road (NC 84)

Movement	NB	SB
Directions Served	R	R
Maximum Queue (ft)	23	25
Average Queue (ft)	2	3
95th Queue (ft)	13	17
Link Distance (ft)	998	982
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: S Providence Road (NC 16)

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	72	78
Average Queue (ft)	7	7
95th Queue (ft)	38	41
Link Distance (ft)	631	631
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: Northern U-turn Bulb

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	52	56
Average Queue (ft)	8	10
95th Queue (ft)	34	39
Link Distance (ft)	189	189
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: S Providence Road (NC 16)

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	84	96
Average Queue (ft)	6	10
95th Queue (ft)	42	55
Link Distance (ft)	994	994
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 11: S Providence Road (NC 16)

Movement	NB	NB	SB	SB
Directions Served	T	T	R	R
Maximum Queue (ft)	75	82	167	172
Average Queue (ft)	6	6	36	41
95th Queue (ft)	53	52	115	127
Link Distance (ft)	489	489	491	491
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: Southern U-turn Bulb

Movement	SB	SB
Directions Served	R	R
Maximum Queue (ft)	60	63
Average Queue (ft)	3	9
95th Queue (ft)	26	39
Link Distance (ft)	86	86
Upstream Blk Time (%)	0	0
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: S Providence Road (NC 16)

Movement	NB	NB
Directions Served	R	R
Maximum Queue (ft)	53	50
Average Queue (ft)	3	2
95th Queue (ft)	29	24
Link Distance (ft)	1013	1013
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: Rea Road

Movement	WB	WB
Directions Served	R	R
Maximum Queue (ft)	16	20
Average Queue (ft)	1	1
95th Queue (ft)	17	21
Link Distance (ft)	839	839
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: Western U-turn Bulb & Rea Road

Movement	WB
Directions Served	L
Maximum Queue (ft)	69
Average Queue (ft)	7
95th Queue (ft)	45
Link Distance (ft)	143
Upstream Blk Time (%)	0
Queuing Penalty (veh)	1
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 17: Rea Road

Movement	EB	EB
Directions Served	R	R
Maximum Queue (ft)	335	372
Average Queue (ft)	24	29
95th Queue (ft)	184	216
Link Distance (ft)	1296	1296
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: Rea Road Extension

Movement	EB	EB
Directions Served	R	R
Maximum Queue (ft)	236	23
Average Queue (ft)	50	1
95th Queue (ft)	161	15
Link Distance (ft)	576	576
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 20: Eastern U-turn Bulb

Movement	EB	EB	EB
Directions Served	T	R	R
Maximum Queue (ft)	153	89	16
Average Queue (ft)	95	5	1
95th Queue (ft)	164	46	8
Link Distance (ft)	120	120	120
Upstream Blk Time (%)	5	0	
Queuing Penalty (veh)	17	0	
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 21: Rea Road Extension

Movement	WB	WB
Directions Served	R	R
Maximum Queue (ft)	23	28
Average Queue (ft)	1	1
95th Queue (ft)	15	15
Link Distance (ft)	6341	6341
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 101: S Providence Road (NC 16) & Northern U-turn Bulb

Movement	WB	WB	SB	SB
Directions Served	L	L	T	T
Maximum Queue (ft)	169	200	197	251
Average Queue (ft)	87	117	108	145
95th Queue (ft)	142	175	173	218
Link Distance (ft)	287	287	1050	1050
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 102: S Providence Road (NC 16) & Southern U-turn Bulb

Movement	EB	NB	NB
Directions Served	L	T	T
Maximum Queue (ft)	98	151	162
Average Queue (ft)	37	59	61
95th Queue (ft)	83	141	146
Link Distance (ft)	360	536	536
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 103: Rea Road & Western U-turn Bulb

Movement	EB	SB
Directions Served	T	L
Maximum Queue (ft)	25	116
Average Queue (ft)	1	58
95th Queue (ft)	26	109
Link Distance (ft)	198	107
Upstream Blk Time (%)	0	7
Queuing Penalty (veh)	0	6
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 104: Eastern U-turn Bulb & Rea Road Extension

Movement	WB	NB
Directions Served	T	L
Maximum Queue (ft)	2	126
Average Queue (ft)	0	109
95th Queue (ft)	2	135
Link Distance (ft)	159	118
Upstream Blk Time (%)		5
Queuing Penalty (veh)		29
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Network Summary

Network wide Queuing Penalty: 182

2029 Background Conditions w/o STIPs

Intersection: 1: S Providence Road (NC 16) & Rea Road

Movement	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	UL	R	L	L	T	T	U	T	R
Maximum Queue (ft)	380	176	204	237	244	220	29	465	194
Average Queue (ft)	212	76	123	159	153	109	2	236	88
95th Queue (ft)	335	144	196	218	227	206	14	419	153
Link Distance (ft)	1480	1480			1262			1326	1326
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			425	425		450	325		
Storage Blk Time (%)								5	
Queuing Penalty (veh)								0	

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	37	11	193
Average Queue (ft)	5	0	74
95th Queue (ft)	23	7	150
Link Distance (ft)		965	1127
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	125		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	B13	WB	WB	NB	SB
Directions Served	L	TR	T	L	TR	LTR	LTR
Maximum Queue (ft)	200	1004	264	199	1045	1132	1140
Average Queue (ft)	124	560	45	61	998	628	562
95th Queue (ft)	241	1081	267	180	1091	1322	1318
Link Distance (ft)		976	2797		985	1088	1098
Upstream Blk Time (%)		11			82	37	32
Queuing Penalty (veh)		62			0	0	0
Storage Bay Dist (ft)	100			100			
Storage Blk Time (%)	20	56		0	72		
Queuing Penalty (veh)	113	51		0	31		

Network Summary

Network wide Queuing Penalty: 257

Intersection: 1: S Providence Road (NC 16) & Rea Road

Movement	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	UL	R	L	L	T	T	U	T	R
Maximum Queue (ft)	1158	953	222	247	265	236	175	1323	1322
Average Queue (ft)	666	325	127	163	162	115	12	895	639
95th Queue (ft)	1203	819	216	231	243	217	107	1570	1603
Link Distance (ft)	1480	1480			1262			1326	1326
Upstream Blk Time (%)	2	2						22	21
Queuing Penalty (veh)	0	0						0	0
Storage Bay Dist (ft)			425	425		450	325		
Storage Blk Time (%)								48	
Queuing Penalty (veh)								2	

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	40	2	89
Average Queue (ft)	7	0	36
95th Queue (ft)	28	2	71
Link Distance (ft)		965	1127
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	125		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	B13	WB	WB	NB	SB
Directions Served	L	TR	T	L	TR	LTR	LTR
Maximum Queue (ft)	200	1076	1598	199	932	867	433
Average Queue (ft)	126	845	448	114	475	345	165
95th Queue (ft)	226	1239	1577	215	953	750	354
Link Distance (ft)		976	2797		985	1088	1098
Upstream Blk Time (%)		24			6	0	
Queuing Penalty (veh)		237			0	0	
Storage Bay Dist (ft)	100			100			
Storage Blk Time (%)	27	47		18	39		
Queuing Penalty (veh)	233	45		114	33		

Network Summary

Network wide Queuing Penalty: 664

Intersection: 1: S Providence Road (NC 16) & Rea Road

Movement	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	UL	R	L	L	T	T	U	T	R
Maximum Queue (ft)	1193	955	233	258	293	261	210	1356	1360
Average Queue (ft)	724	404	124	158	192	152	14	806	588
95th Queue (ft)	1339	1078	222	238	275	250	122	1475	1468
Link Distance (ft)	1480	1480			1262			1326	1326
Upstream Blk Time (%)	5	5						16	15
Queuing Penalty (veh)	0	0						0	0
Storage Bay Dist (ft)			425	425		450	325		
Storage Blk Time (%)								46	
Queuing Penalty (veh)								2	

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	46	113
Average Queue (ft)	11	47
95th Queue (ft)	35	95
Link Distance (ft)		1127
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	125	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	B13	B12	WB	WB	NB	SB
Directions Served	L	TR	T	T	L	TR	LTR	LTR
Maximum Queue (ft)	199	1076	1940	89	199	616	784	408
Average Queue (ft)	54	961	726	8	112	271	436	233
95th Queue (ft)	155	1246	2119	110	205	534	828	402
Link Distance (ft)		976	2797	965		985	1088	1098
Upstream Blk Time (%)		38	2			0	1	
Queuing Penalty (veh)		378	19			0	0	
Storage Bay Dist (ft)	100				100			
Storage Blk Time (%)	0	47			23	26		
Queuing Penalty (veh)	4	16			126	22		

Network Summary

Network wide Queuing Penalty: 568

2029 Build-out Conditions w/o STIPs

Intersection: 1: S Providence Road (NC 16) & Rea Road

Movement	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	UL	R	L	L	T	T	U	T	R
Maximum Queue (ft)	387	173	213	243	253	216	66	414	253
Average Queue (ft)	218	76	127	164	153	110	5	235	92
95th Queue (ft)	340	142	212	229	232	207	47	379	177
Link Distance (ft)	1480	1480			1262			1326	1326
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)			425	425		450	325		
Storage Blk Time (%)								4	
Queuing Penalty (veh)								0	

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	36	6	162
Average Queue (ft)	5	0	68
95th Queue (ft)	25	6	127
Link Distance (ft)		965	1127
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	125		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	B13	WB	WB	NB	SB
Directions Served	L	TR	T	L	TR	LTR	LTR
Maximum Queue (ft)	200	1063	382	199	1044	1129	1148
Average Queue (ft)	125	617	99	69	993	599	577
95th Queue (ft)	247	1185	398	199	1104	1298	1344
Link Distance (ft)		973	478		985	1086	1098
Upstream Blk Time (%)		21	4		81	34	35
Queuing Penalty (veh)		136	26		0	0	0
Storage Bay Dist (ft)	100			100			
Storage Blk Time (%)	26	55		1	71		
Queuing Penalty (veh)	149	50		4	30		

Intersection: 5: Access A & Weddington Road (NC 84)

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	51	35	53	30
Average Queue (ft)	3	2	22	7
95th Queue (ft)	25	16	50	28
Link Distance (ft)	1427	769	1059	977
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 6: Access B & Weddington Road (NC 84)

Movement	EB	NB	SB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	344	29	33
Average Queue (ft)	48	4	3
95th Queue (ft)	281	20	19
Link Distance (ft)	769	1052	1021
Upstream Blk Time (%)	0		
Queuing Penalty (veh)	0		
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Network Summary

Network wide Queuing Penalty: 397

Intersection: 1: S Providence Road (NC 16) & Rea Road

Movement	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	UL	R	L	L	T	T	U	T	R
Maximum Queue (ft)	1290	1132	225	247	260	236	140	1357	1325
Average Queue (ft)	752	438	128	163	166	111	10	876	569
95th Queue (ft)	1378	1179	218	226	245	217	98	1494	1444
Link Distance (ft)	1480	1480			1262			1326	1326
Upstream Blk Time (%)	5	4						14	14
Queuing Penalty (veh)	0	0						0	0
Storage Bay Dist (ft)			425	425		450	325		
Storage Blk Time (%)								48	
Queuing Penalty (veh)								2	

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	39	2	97
Average Queue (ft)	8	0	38
95th Queue (ft)	29	2	78
Link Distance (ft)		965	1127
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	125		
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	B13	WB	WB	NB	SB
Directions Served	L	TR	T	L	TR	LTR	LTR
Maximum Queue (ft)	200	1084	487	200	1007	864	478
Average Queue (ft)	110	865	219	123	533	365	180
95th Queue (ft)	210	1270	589	227	1010	800	394
Link Distance (ft)		976	473		985	1087	1098
Upstream Blk Time (%)		29	9		7	1	
Queuing Penalty (veh)		280	82		0	0	
Storage Bay Dist (ft)	100			100			
Storage Blk Time (%)	20	48		23	41		
Queuing Penalty (veh)	177	46		149	35		

Intersection: 5: Access A & Weddington Road (NC 84)

Movement	EB	B12	WB	NB	SB
Directions Served	LTR	T	LTR	LTR	LTR
Maximum Queue (ft)	751	15	153	55	32
Average Queue (ft)	122	1	12	16	4
95th Queue (ft)	598	16	75	47	22
Link Distance (ft)	1428	965	772	1206	1120
Upstream Blk Time (%)	0				
Queuing Penalty (veh)	3				
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Access B & Weddington Road (NC 84)

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	782	52	35	24
Average Queue (ft)	230	2	4	2
95th Queue (ft)	766	27	21	13
Link Distance (ft)	772	473	1148	1425
Upstream Blk Time (%)	3			
Queuing Penalty (veh)	30			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

Network wide Queuing Penalty: 804

Intersection: 1: S Providence Road (NC 16) & Rea Road

Movement	EB	EB	NB	NB	NB	NB	SB	SB	SB
Directions Served	UL	R	L	L	T	T	U	T	R
Maximum Queue (ft)	1301	1214	213	241	288	260	171	1230	1221
Average Queue (ft)	906	590	114	149	194	149	13	810	563
95th Queue (ft)	1556	1431	206	223	273	248	116	1451	1423
Link Distance (ft)	1480	1480			1262			1326	1326
Upstream Blk Time (%)	10	9						15	15
Queuing Penalty (veh)	0	0						0	0
Storage Bay Dist (ft)			425	425		450	325		
Storage Blk Time (%)								48	
Queuing Penalty (veh)								2	

Intersection: 2: Weddington Road (NC 84) & Cox Road

Movement	EB	EB	WB	SB
Directions Served	L	T	TR	LR
Maximum Queue (ft)	57	120	4	182
Average Queue (ft)	13	22	0	64
95th Queue (ft)	53	258	3	198
Link Distance (ft)		1180	965	1127
Upstream Blk Time (%)		1		
Queuing Penalty (veh)		0		
Storage Bay Dist (ft)	125			
Storage Blk Time (%)		2		
Queuing Penalty (veh)		1		

Intersection: 3: Twelve Mile Creek Road & Weddington Road (NC 84)

Movement	EB	EB	B13	WB	WB	NB	SB
Directions Served	L	TR	T	L	TR	LTR	LTR
Maximum Queue (ft)	198	1078	481	199	682	880	462
Average Queue (ft)	49	954	272	115	299	464	251
95th Queue (ft)	139	1225	635	206	571	913	431
Link Distance (ft)		976	466		985	1088	1098
Upstream Blk Time (%)		38	10		0	5	
Queuing Penalty (veh)		376	102		0	0	
Storage Bay Dist (ft)	100			100			
Storage Blk Time (%)	1	47		27	29		
Queuing Penalty (veh)	6	17		148	25		

Intersection: 5: Access A & Weddington Road (NC 84)

Movement	EB	B12	WB	NB	SB
Directions Served	LTR	T	LTR	LTR	LTR
Maximum Queue (ft)	1036	214	235	70	30
Average Queue (ft)	291	45	24	19	3
95th Queue (ft)	1099	354	139	53	16
Link Distance (ft)	1420	965	754	1002	999
Upstream Blk Time (%)	7	0			
Queuing Penalty (veh)	66	2			
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 6: Access B & Weddington Road (NC 84)

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	755	22	32	29
Average Queue (ft)	319	1	4	4
95th Queue (ft)	898	15	21	19
Link Distance (ft)	754	466	976	1037
Upstream Blk Time (%)	5			
Queuing Penalty (veh)	49			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Network Summary

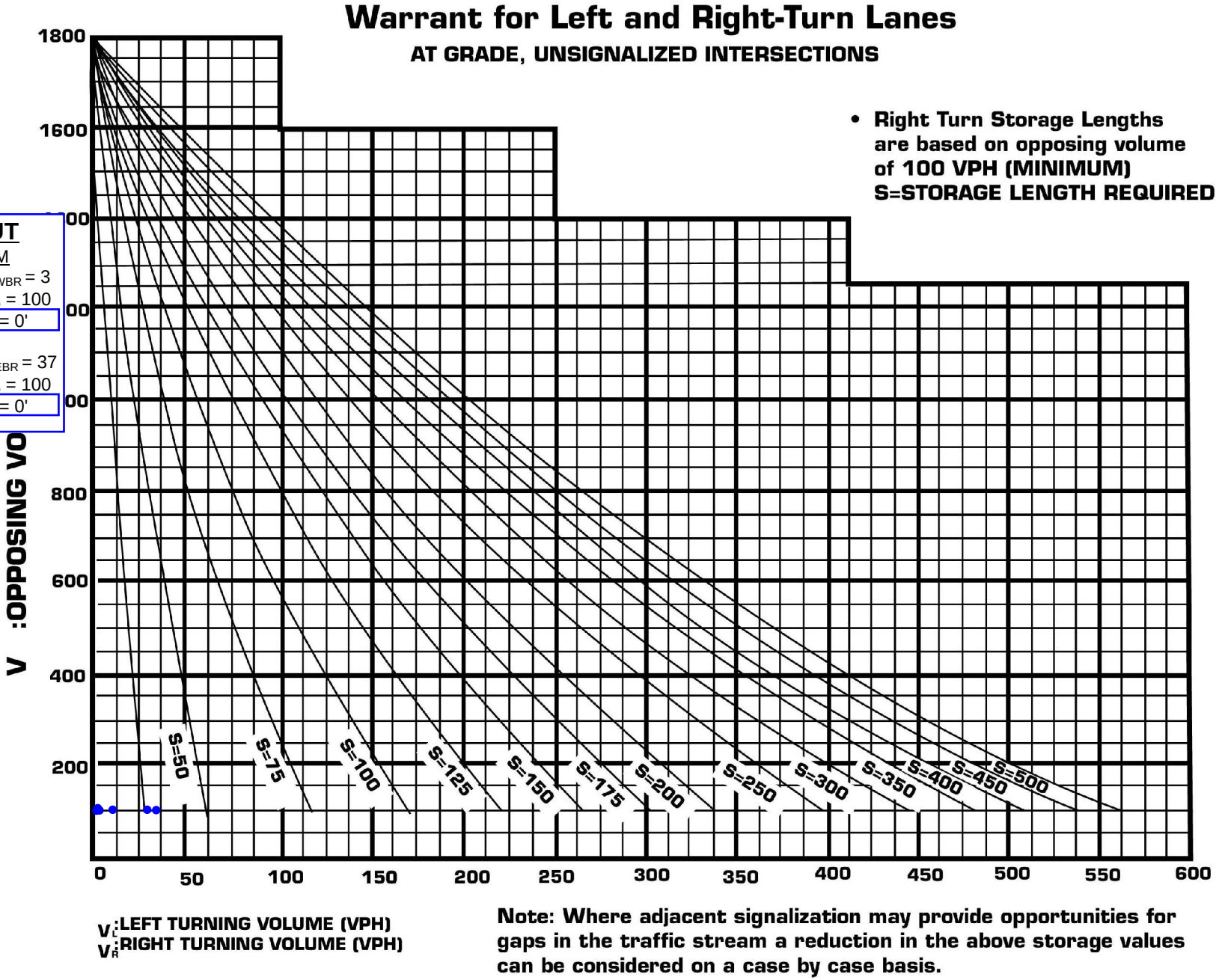
Network wide Queuing Penalty: 794

Auxiliary Turn-Lane Warrants

Int. # 5: Weddington Road (NC 84) and Access A (RIRO)

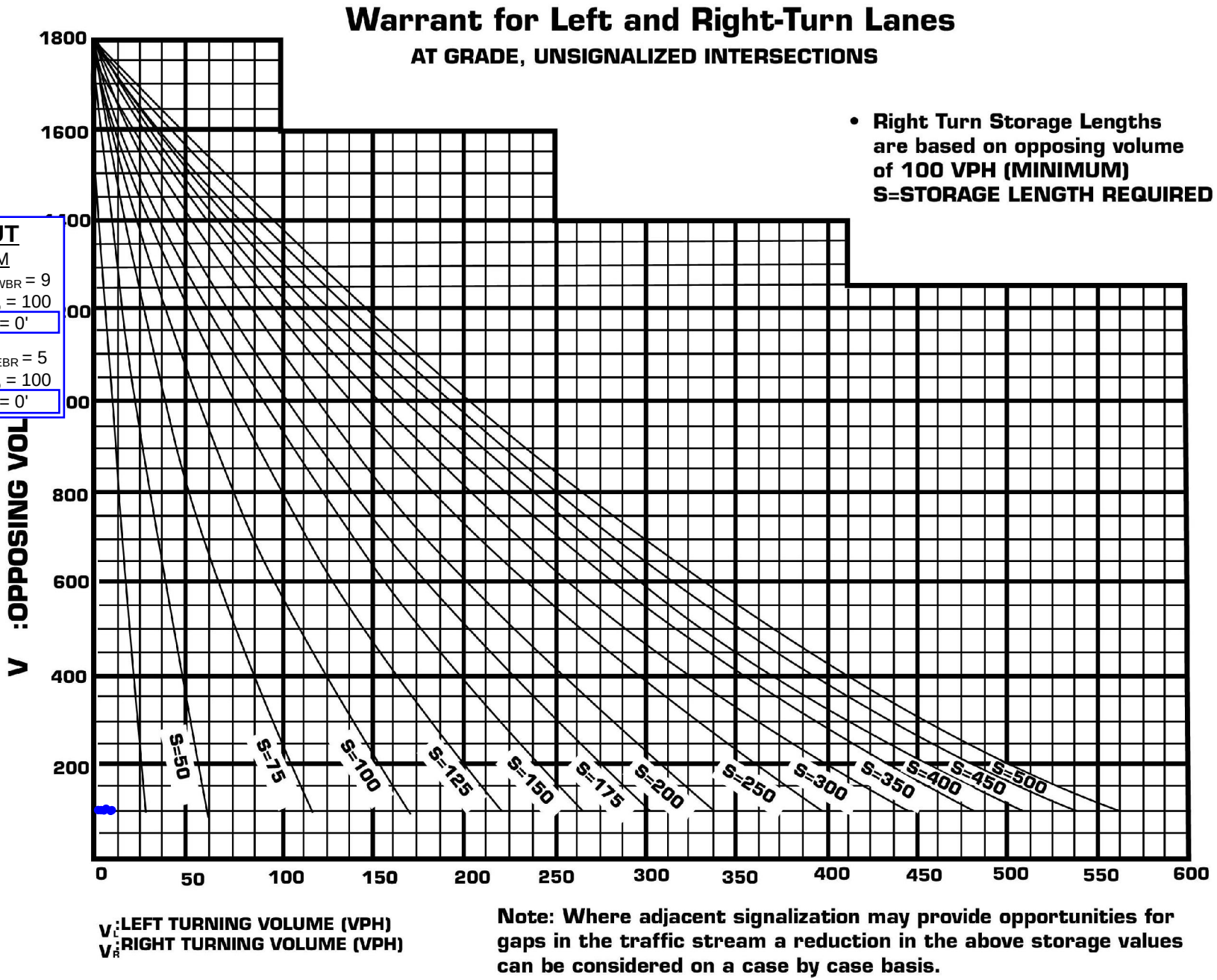
2029 BUILD-OUT

AM	MD	PM
V_{WBR} = 1	V_{WBR} = 2	V_{WBR} = 3
V_o = 100	V_o = 100	V_o = 100
S = 0'	S = 0'	S = 0'
V_{EBR} = 11	V_{EBR} = 31	V_{EBR} = 37
V_o = 100	V_o = 100	V_o = 100
S = 0'	S = 0'	S = 0'



Int. # 6: Weddington Road (NC 84) and Access B (RIRO)

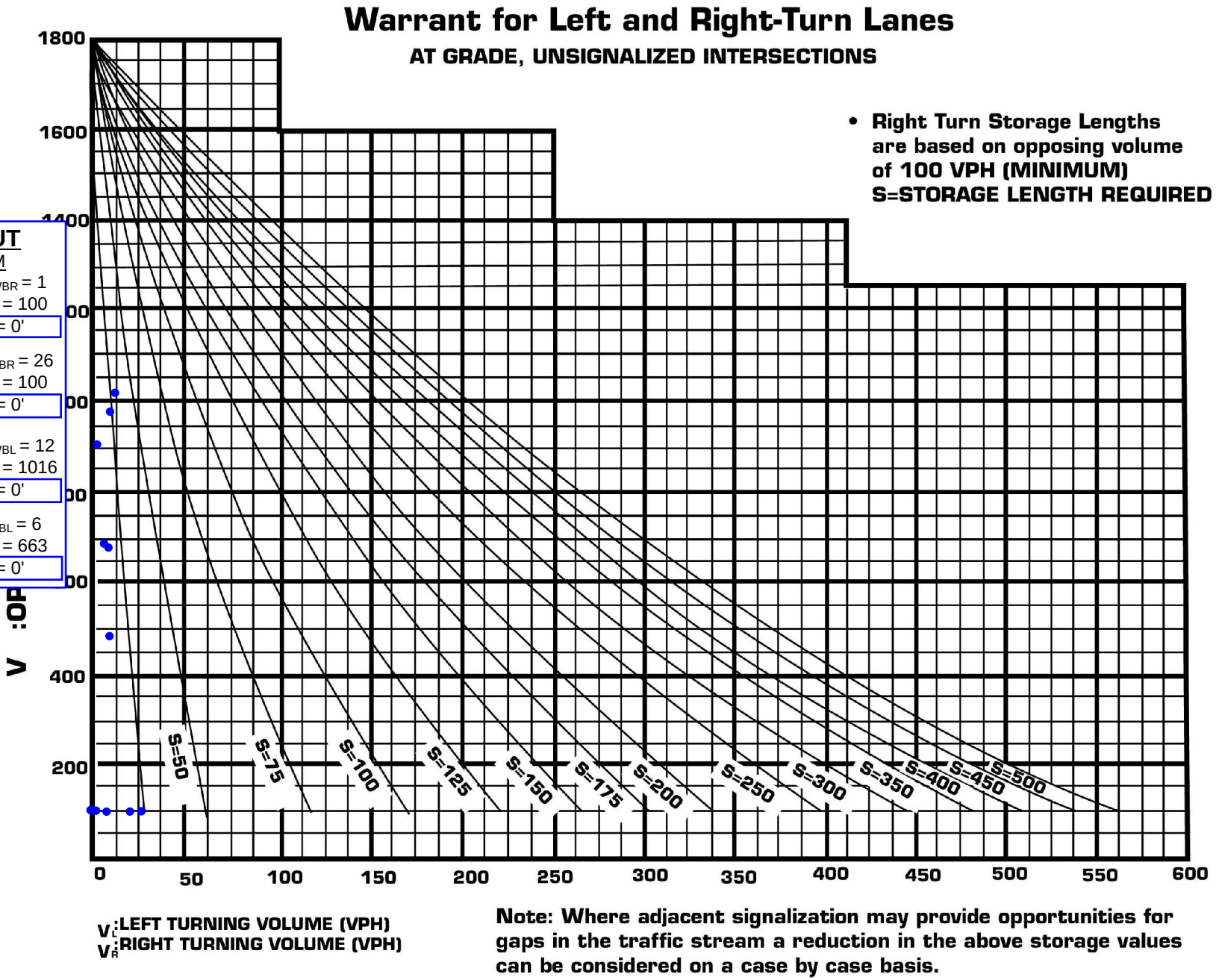
2029 BUILD-OUT		
AM	MD	PM
V_{WBR} = 3	V_{WBR} = 8	V_{WBR} = 9
V_o = 100	V_o = 100	V_o = 100
S = 0'	S = 0'	S = 0'
V_{EBR} = 2	V_{EBR} = 4	V_{EBR} = 5
V_o = 100	V_o = 100	V_o = 100
S = 0'	S = 0'	S = 0'



Int. # 5: Weddington Road (NC 84) and Access A (FM)

2029 BUILD-OUT

AM	MD	PM
V_{WBR} = 0	V_{WBR} = 1	V_{WBR} = 1
V_o = 100	V_o = 100	V_o = 100
S = 0'	S = 0'	S = 0'
V_{EBR} = 8	V_{EBR} = 21	V_{EBR} = 26
V_o = 100	V_o = 100	V_o = 100
S = 0'	S = 0'	S = 0'
V_{WBL} = 4	V_{WBL} = 10	V_{WBL} = 12
V_o = 632	V_o = 977	V_o = 1016
S = 0'	S = 0'	S = 0'
V_{EBL} = 2	V_{EBL} = 5	V_{EBL} = 6
V_o = 952	V_o = 695	V_o = 663
S = 0'	S = 0'	S = 0'



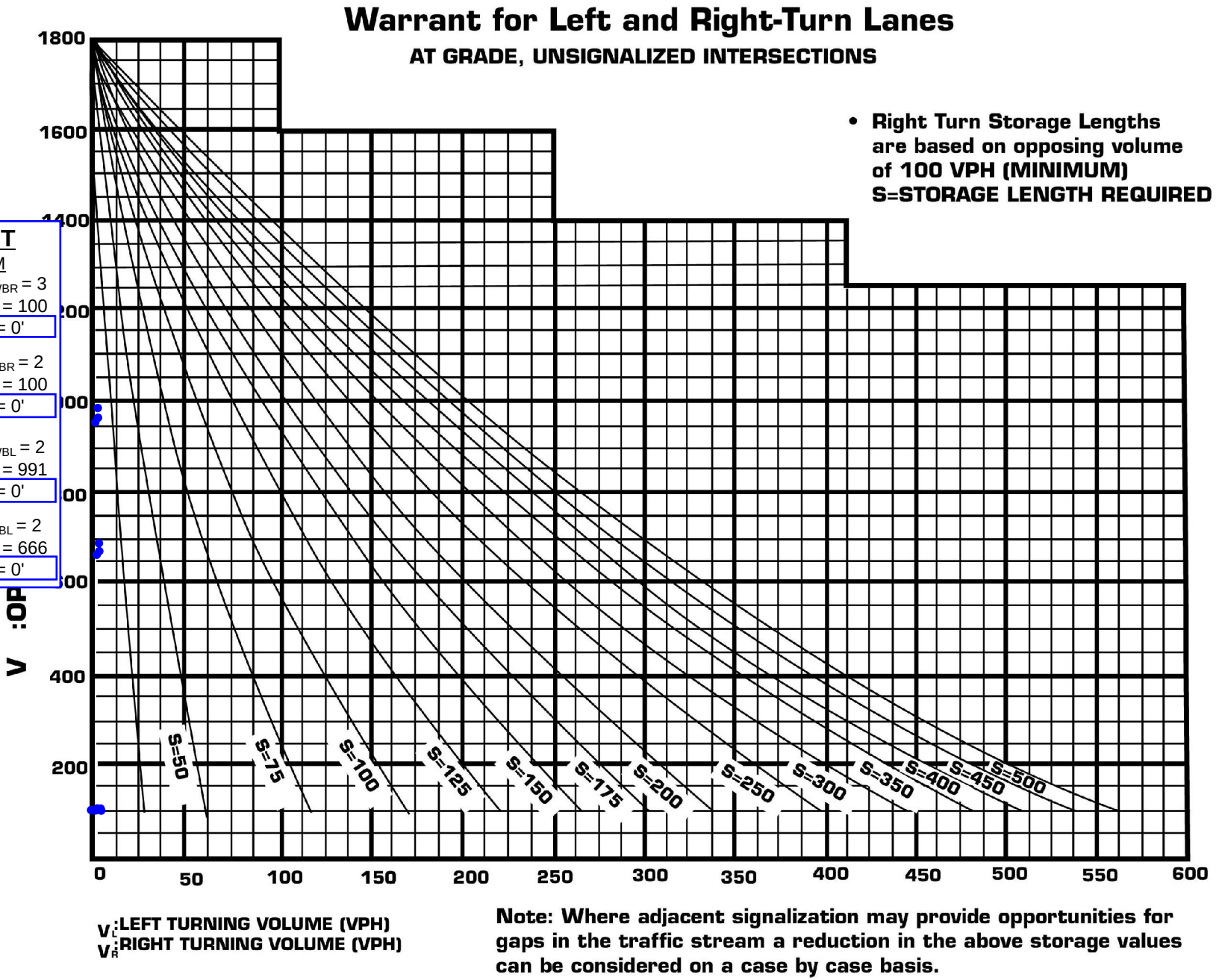
Policy On Street And Driveway Access to North Carolina Highways

July 2003

Int. # 6: Weddington Road (NC 84) and Access B (FM)

2029 BUILD-OUT

AM	MD	PM
V_{WBR} = 1	V_{WBR} = 2	V_{WBR} = 3
V_o = 100	V_o = 100	V_o = 100
S = 0'	S = 0'	S = 0'
V_{EBR} = 0	V_{EBR} = 2	V_{EBR} = 2
V_o = 100	V_o = 100	V_o = 100
S = 0'	S = 0'	S = 0'
V_{WBL} = 1	V_{WBL} = 2	V_{WBL} = 2
V_o = 634	V_o = 958	V_o = 991
S = 0'	S = 0'	S = 0'
V_{EBL} = 1	V_{EBL} = 2	V_{EBL} = 2
V_o = 951	V_o = 697	V_o = 666
S = 0'	S = 0'	S = 0'



July 2003

Policy On Street And Driveway Access to North Carolina Highways