NORTH CAROLINA
Turnpike Authority

Operations Statistics Report

Triangle Expressway

2016 Second Quarter Report

April - June

1 S. Wilmington Street
Raleigh, NC 27601

Last Updated:
August 2, 2016

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INTRODUCTION

Purpose

The North Carolina Turnpike Authority (NCTA) presents the operations statistics for the Triangle Expressway during the second quarter (April – June) of 2016. The report includes data related to traffic volumes, customer service center operations, and roadway operations and maintenance. The statistics will allow for future analysis to identify quarterly and annual trends over time, providing a quantifiable method to track performance.

Project

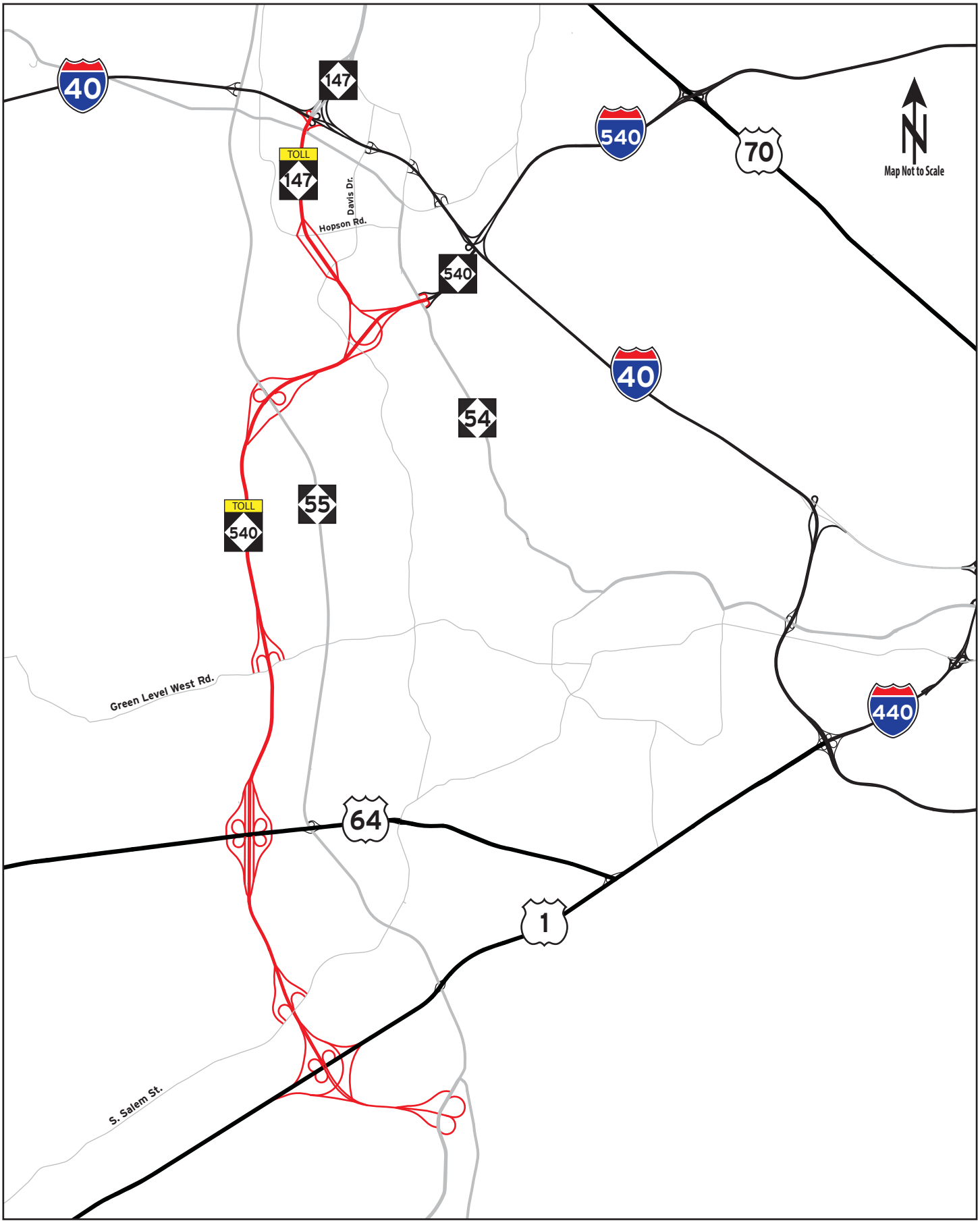
The Triangle Expressway is an 18.8-mile toll road that extends the partially complete "Outer Loop" around the greater Raleigh, North Carolina area from I-40 to NC-55 Bypass. The six-lane, controlled-access toll facility relieves congestion on NC-55, while improving access to the Research Triangle Park by reducing travel times for commuters residing to the south and east. The Triangle Expressway is currently comprised of two sections: Toll NC-147 and Toll NC-540.

Toll NC-147 includes 3.4 miles of toll road between I-40 and Toll NC-540. This section of the Triangle Expressway includes interchanges at Hopson Road, Davis Drive, and NC-540. It opened to toll-free traffic on December 8, 2011; tolling on this section began on January 3, 2012.

Toll NC-540 includes 15.4 miles of toll road between NC-54 in western Cary and the NC-55 Bypass near the Town of Holly Springs. The section from NC-54 to US-64 includes interchanges at NC-54, NC-55, Green Level West Road and US-64 and opened to toll-free traffic on August 1, 2012. Tolling on this section began on August 2, 2012. The section from US-64 to NC-55 Bypass includes interchanges at S. Salem St., US-1 and NC-55 Bypass and opened to toll-free traffic on December 20, 2012. Tolling on this section began on January 2, 2013.

The Triangle Expressway utilizes an all-electronic non-stop tolling system where there are no toll plazas at which drivers stop and pay cash tolls. Instead, free-flow toll zones are employed where vehicles are detected while traveling at highway speeds. Payments are accepted through an Electronic Toll Collection (ETC) program called NC Quick Pass or a video billing program called Bill by Mail.

NCTA toll zones are located along the Triangle Expressway at mainline and interchange ramp locations. An illustration of the Triangle Expressway can be seen in *Figure 1*.



Triangle Expressway System Map

Figure 1

Traffic Statistics

TRAFFIC STATISTICS

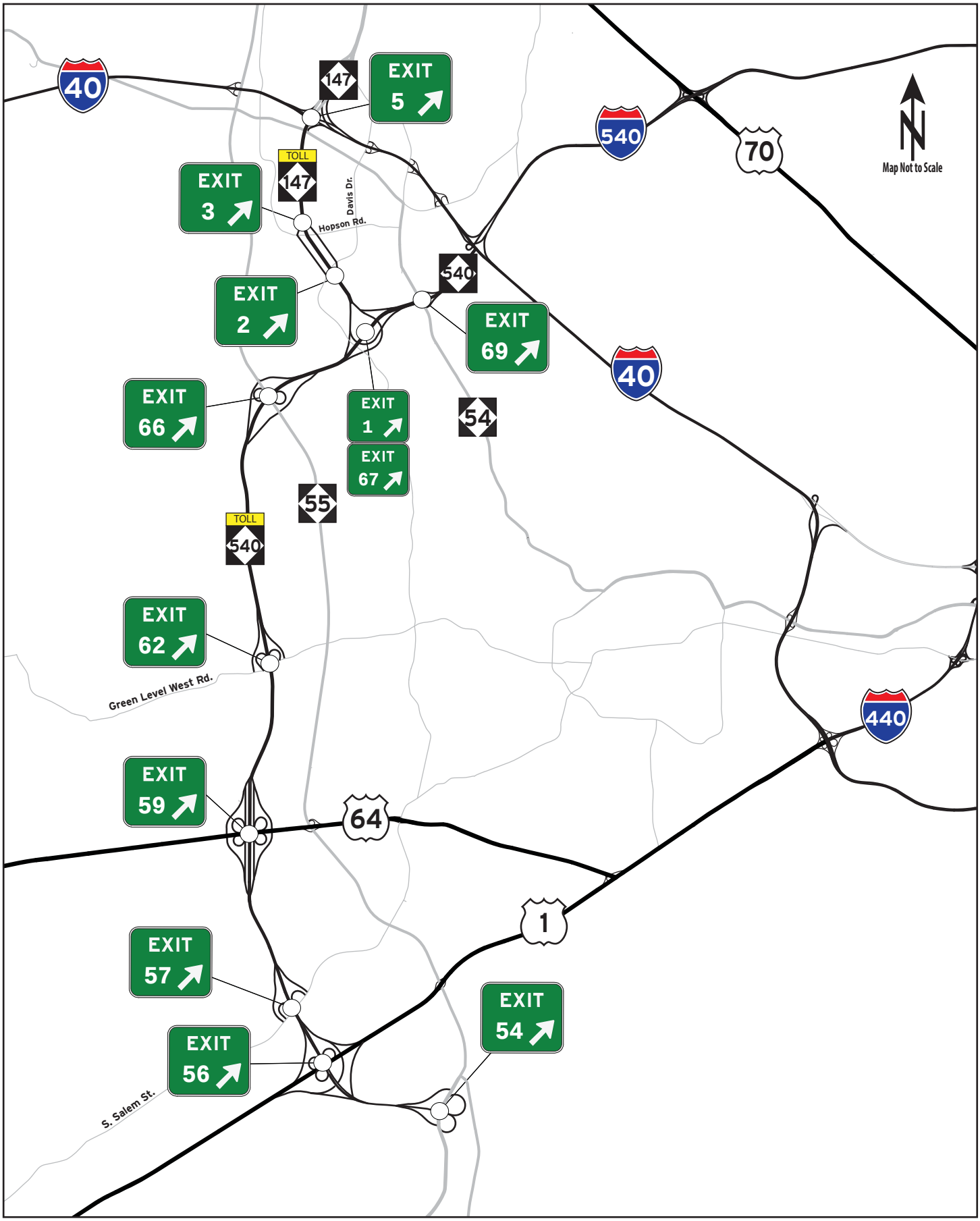
Current and historical traffic data is collected and stored through the use of roadside microwave vehicle detectors (MVD's) installed throughout the Triangle Expressway. The data provides an overview of the roadway's current utilization. The data can also be analyzed to identify trends that could more accurately predict future utilization.

It should be noted that the Triangle Expressway continues to experience a traffic pattern known as "ramp-up." During a ramp-up period, the traffic volumes on a new facility increase at a faster rate than typical growth on existing facilities. Traffic volumes increase significantly as the customers become more familiar with the facility. The ramp-up period for the Triangle Expressway is expected to continue through 2017.

Average Weekday Traffic (AWT)

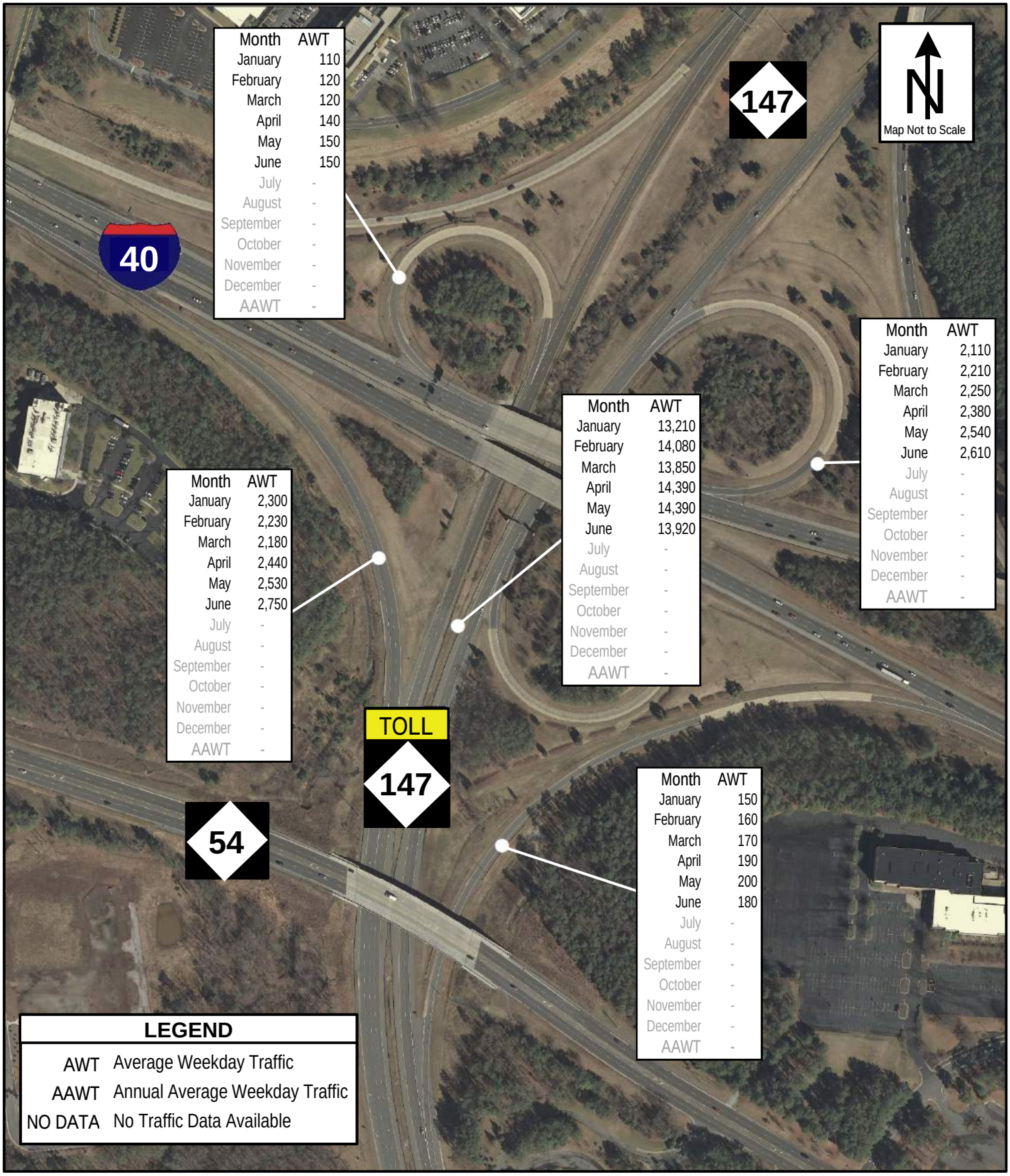
Traffic volume data is collected on all ramps and mainline segments between interchanges. The location of interchanges along the Triangle Expressway can be seen in *Figure 2*. Typically there is a large difference between peak and off-peak volumes, as well as between weekday and weekend volumes. This gap becomes significantly larger for a tolled facility because it tends to have a much higher percentage of traffic on weekdays during peak hours than non-toll facilities, as there is less of a benefit for toll users during off-peak hours. For this reason, Average Weekday Traffic (AWT) is reported instead of average daily traffic (ADT). AWT is a measure of the average daily traffic collected on a typical Monday through Friday over a designated time period.

Figures 3 to *13* contain visual representations of AWT along the facility which are representative of NCTA's MVD data. It should be noted that if an MVD fails to provide reliable data (meeting the established threshold) for at least five days in a month then "NO DATA" is reported for that MVD.



Triangle Expressway Interchange Map

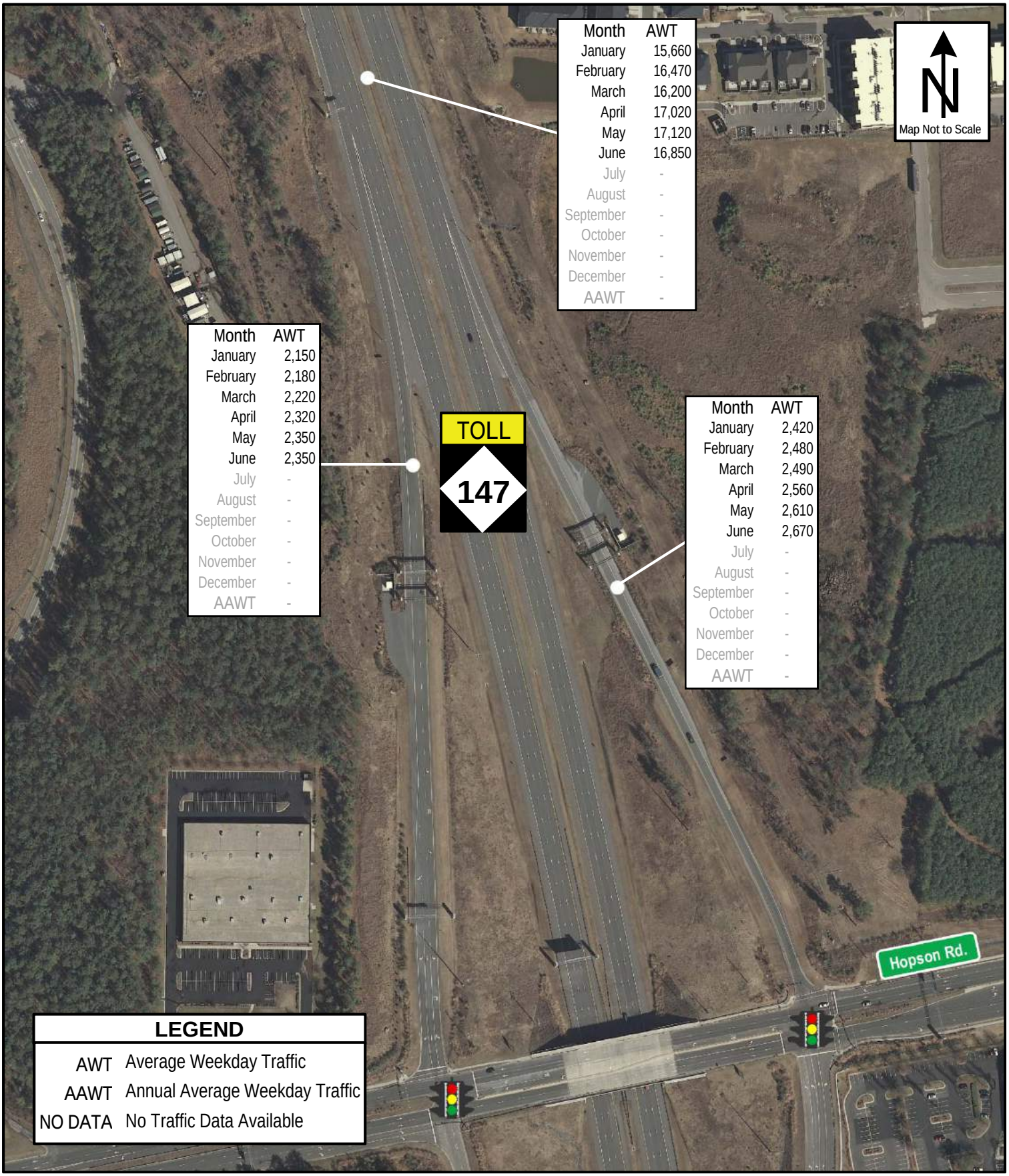
Figure 2



NC-147 at I-40 Interchange

2016 Average Weekday Traffic

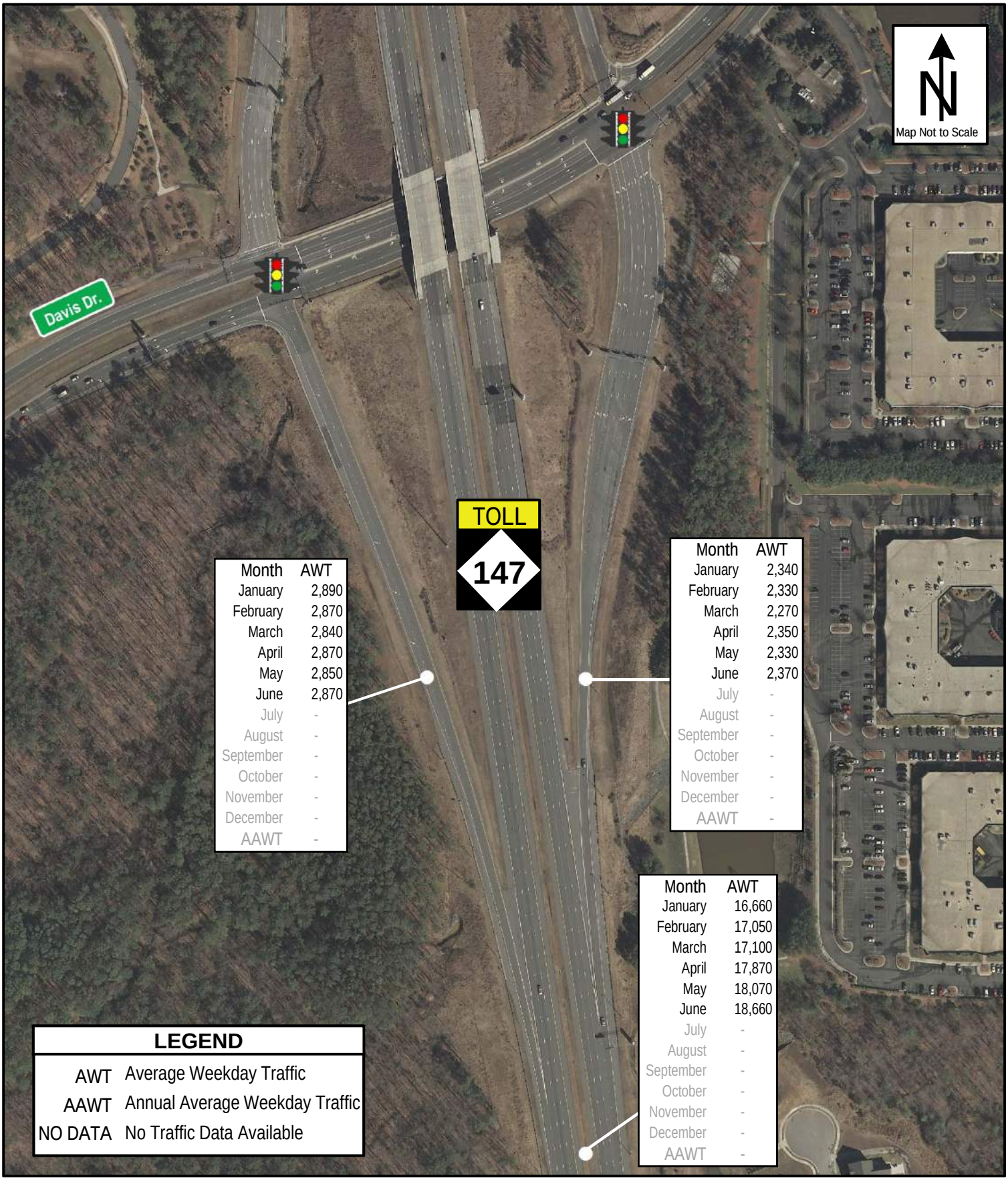
Figure 3



NC-147 at Hopson Rd. Interchange

2016 Average Weekday Traffic

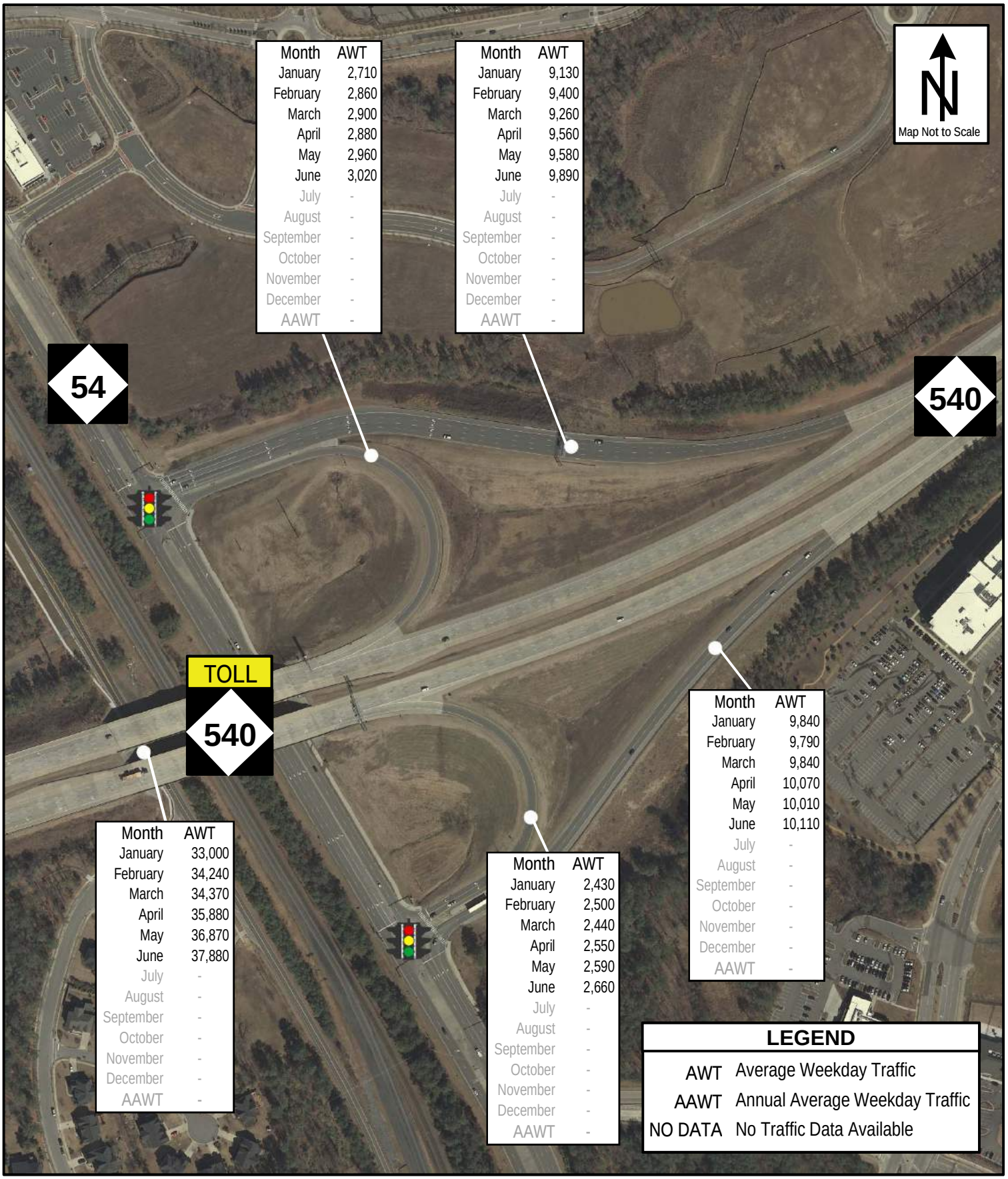
Figure 4



NC-147 at Davis Dr. Interchange

2016 Average Weekday Traffic

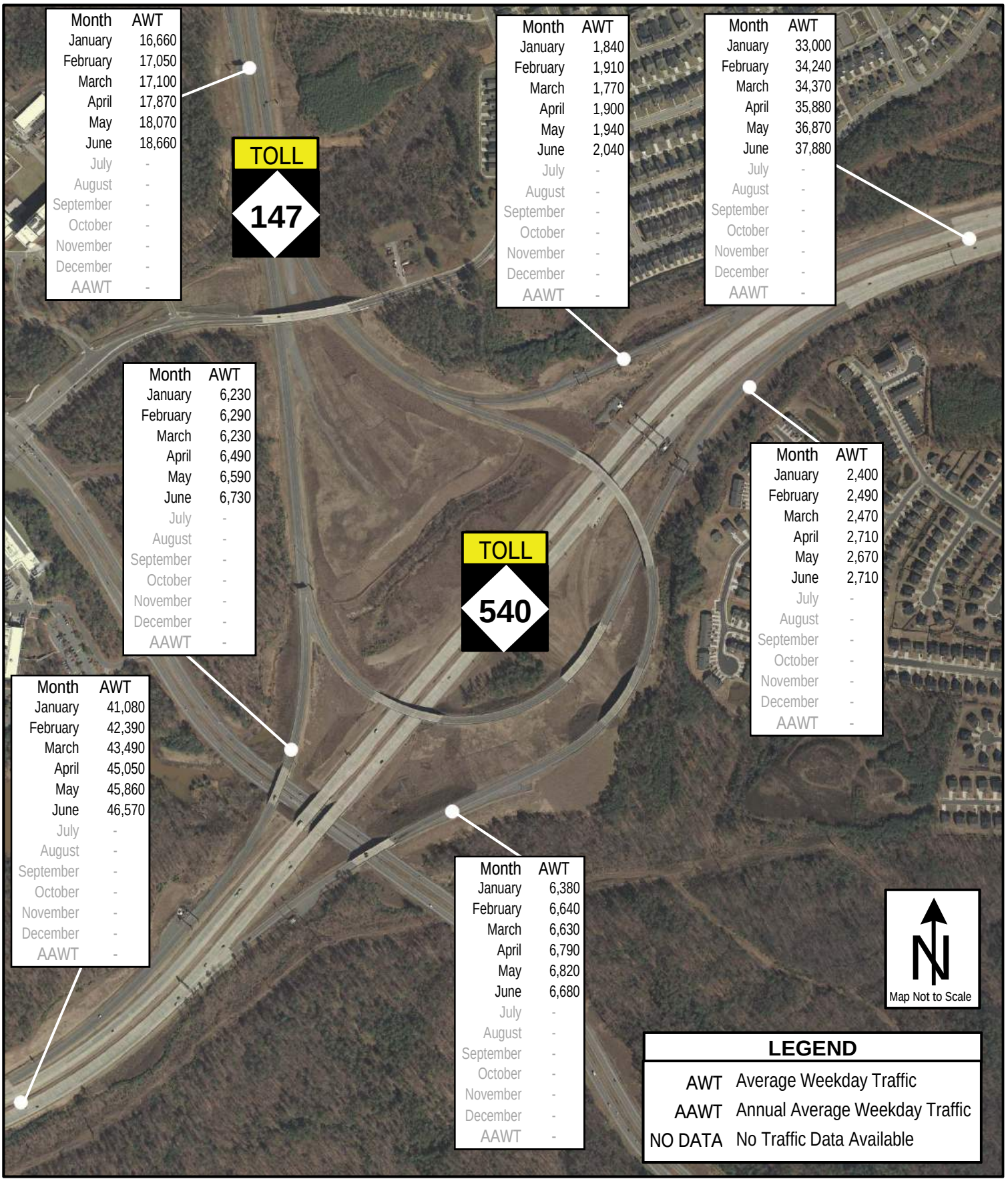
Figure 5



NC-540 at NC-54 Interchange

2016 Average Weekday Traffic

Figure 6



Month	AWT
January	16,660
February	17,050
March	17,100
April	17,870
May	18,070
June	18,660
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	1,840
February	1,910
March	1,770
April	1,900
May	1,940
June	2,040
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	33,000
February	34,240
March	34,370
April	35,880
May	36,870
June	37,880
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	6,230
February	6,290
March	6,230
April	6,490
May	6,590
June	6,730
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	2,400
February	2,490
March	2,470
April	2,710
May	2,670
June	2,710
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

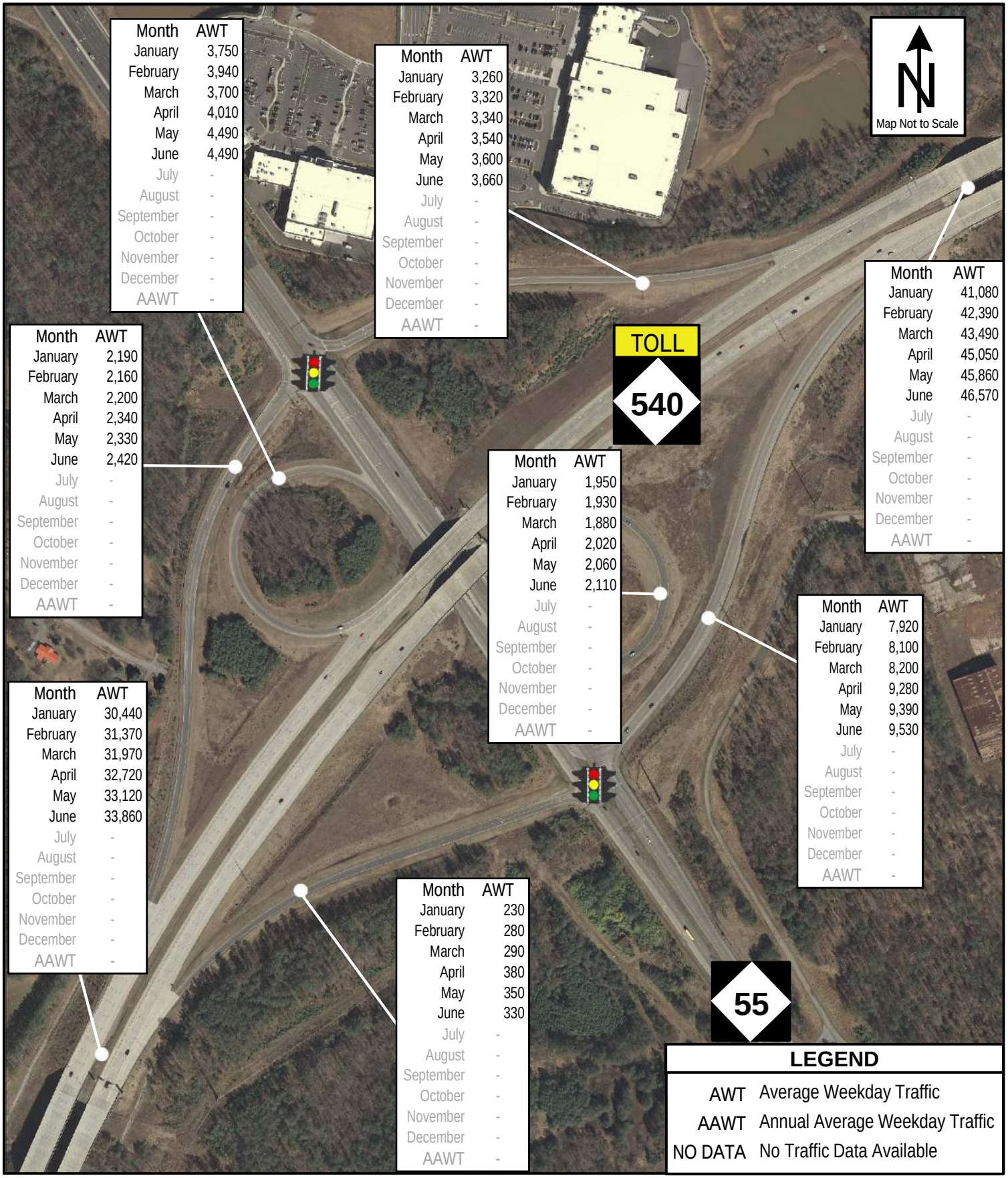
Month	AWT
January	41,080
February	42,390
March	43,490
April	45,050
May	45,860
June	46,570
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	6,380
February	6,640
March	6,630
April	6,790
May	6,820
June	6,680
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

NC-540 at NC-147 Interchange

2016 Average Weekday Traffic

Figure 7



Month	AWT
January	3,750
February	3,940
March	3,700
April	4,010
May	4,490
June	4,490
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	3,260
February	3,320
March	3,340
April	3,540
May	3,600
June	3,660
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	41,080
February	42,390
March	43,490
April	45,050
May	45,860
June	46,570
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	2,190
February	2,160
March	2,200
April	2,340
May	2,330
June	2,420
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	1,950
February	1,930
March	1,880
April	2,020
May	2,060
June	2,110
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	7,920
February	8,100
March	8,200
April	9,280
May	9,390
June	9,530
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

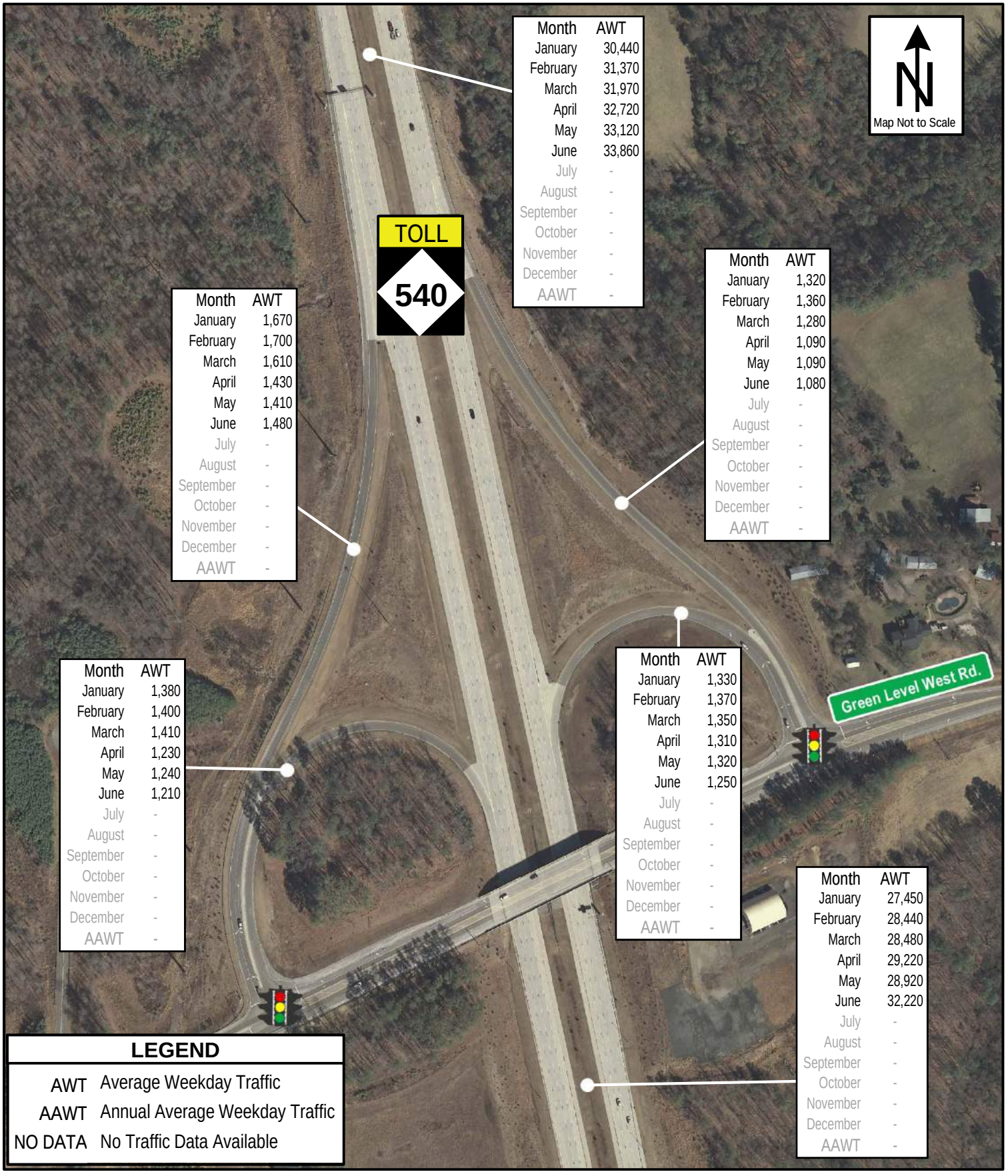
Month	AWT
January	30,440
February	31,370
March	31,970
April	32,720
May	33,120
June	33,860
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	230
February	280
March	290
April	380
May	350
June	330
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

NC-540 at NC-55 Interchange

2016 Average Weekday Traffic

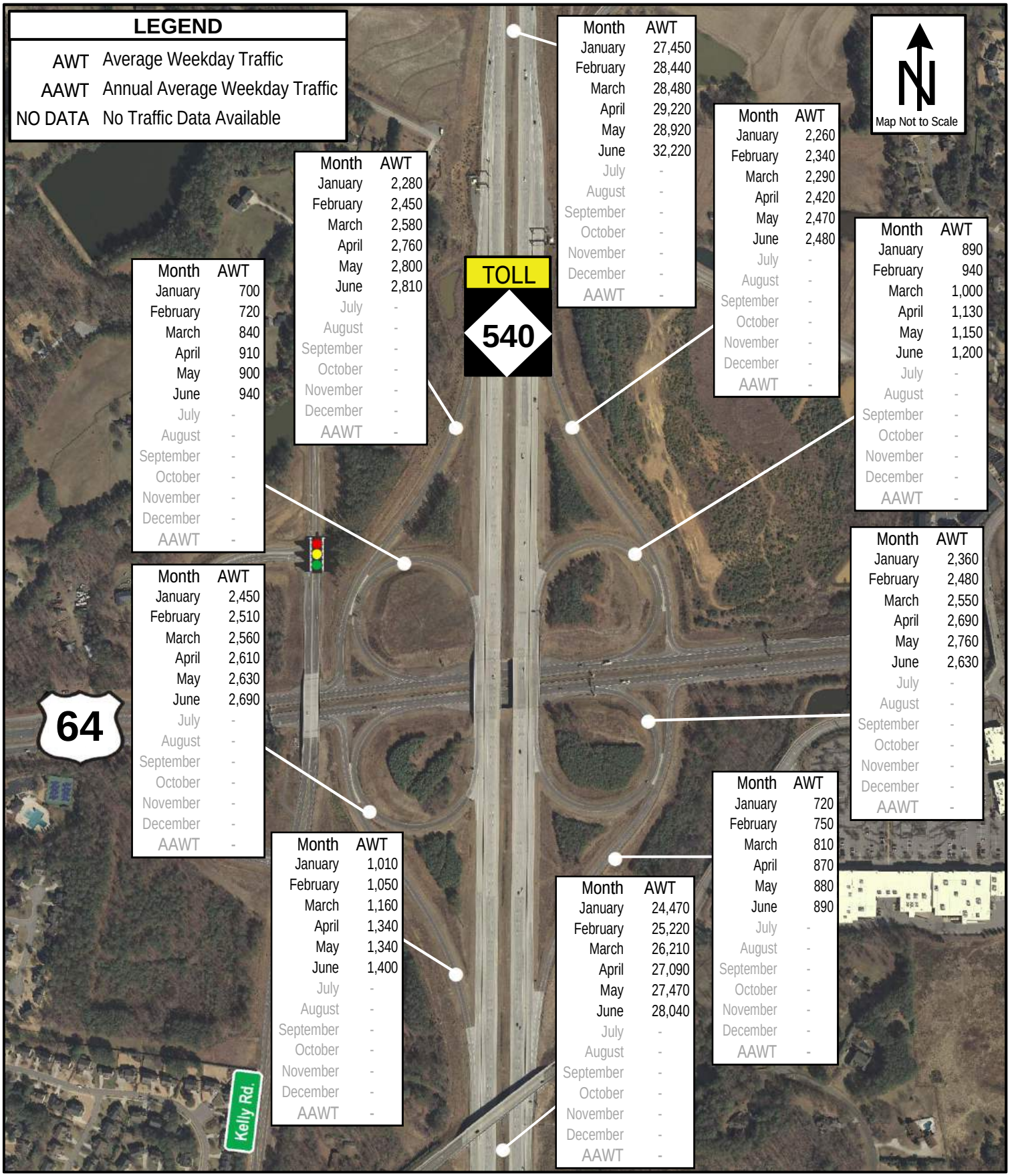
Figure 8



NC-540 at Green Level West Rd. Interchange

2016 Average Weekday Traffic

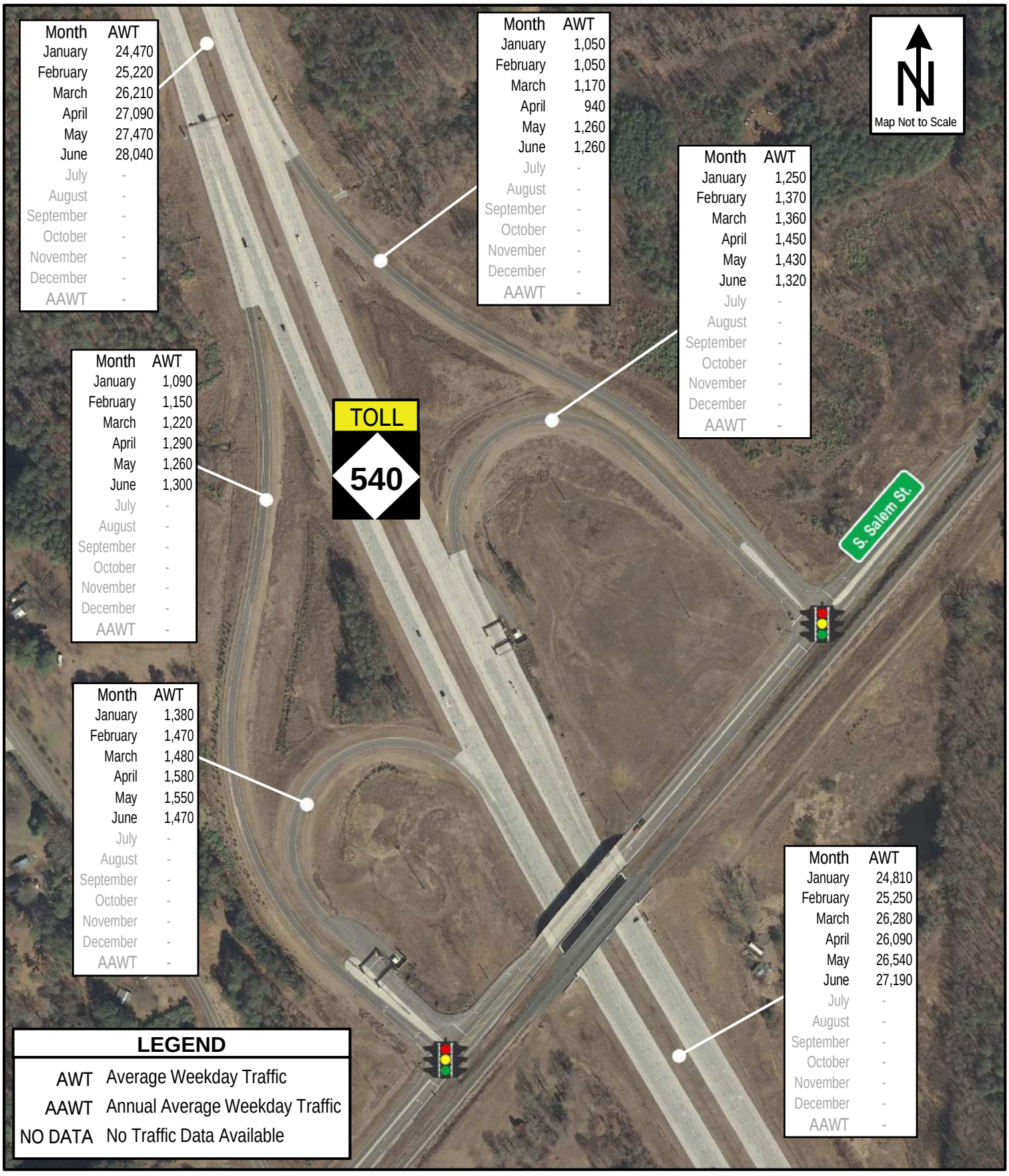
Figure 9



NC-540 at US-64 Interchange

2016 Average Weekday Traffic

Figure 10



Month	AWT
January	24,470
February	25,220
March	26,210
April	27,090
May	27,470
June	28,040
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	1,050
February	1,050
March	1,170
April	940
May	1,260
June	1,260
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	1,250
February	1,370
March	1,360
April	1,450
May	1,430
June	1,320
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	1,090
February	1,150
March	1,220
April	1,290
May	1,260
June	1,300
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	1,380
February	1,470
March	1,480
April	1,580
May	1,550
June	1,470
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	24,810
February	25,250
March	26,280
April	26,090
May	26,540
June	27,190
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

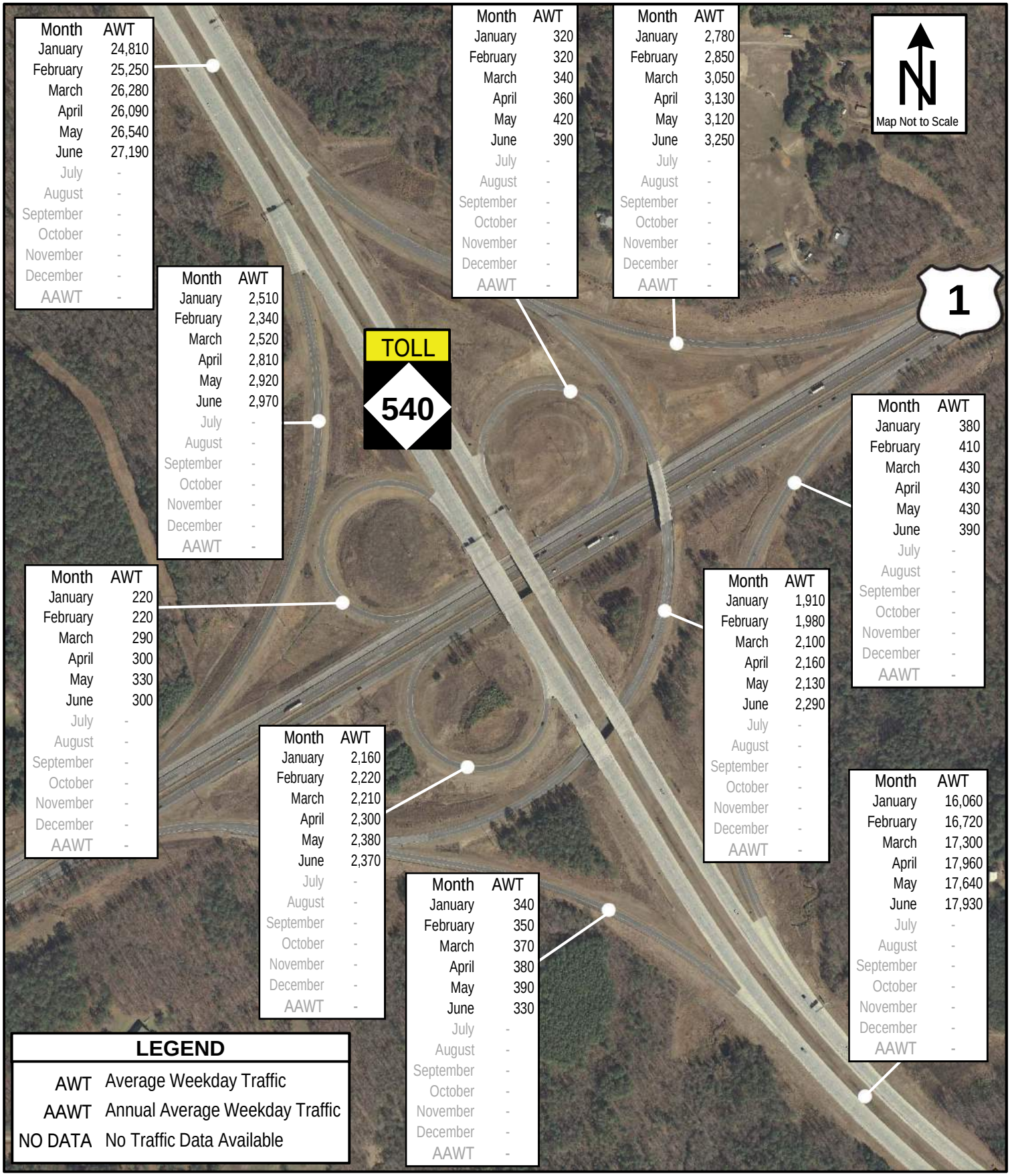
LEGEND

AWT	Average Weekday Traffic
AAWT	Annual Average Weekday Traffic
NO DATA	No Traffic Data Available

NC-540 at S. Salem St. Interchange

2016 Average Weekday Traffic

Figure 11



Month	AWT
January	24,810
February	25,250
March	26,280
April	26,090
May	26,540
June	27,190
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	320
February	320
March	340
April	360
May	420
June	390
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	2,780
February	2,850
March	3,050
April	3,130
May	3,120
June	3,250
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	2,510
February	2,340
March	2,520
April	2,810
May	2,920
June	2,970
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	380
February	410
March	430
April	430
May	430
June	390
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	220
February	220
March	290
April	300
May	330
June	300
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	1,910
February	1,980
March	2,100
April	2,160
May	2,130
June	2,290
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	2,160
February	2,220
March	2,210
April	2,300
May	2,380
June	2,370
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	340
February	350
March	370
April	380
May	390
June	330
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	16,060
February	16,720
March	17,300
April	17,960
May	17,640
June	17,930
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

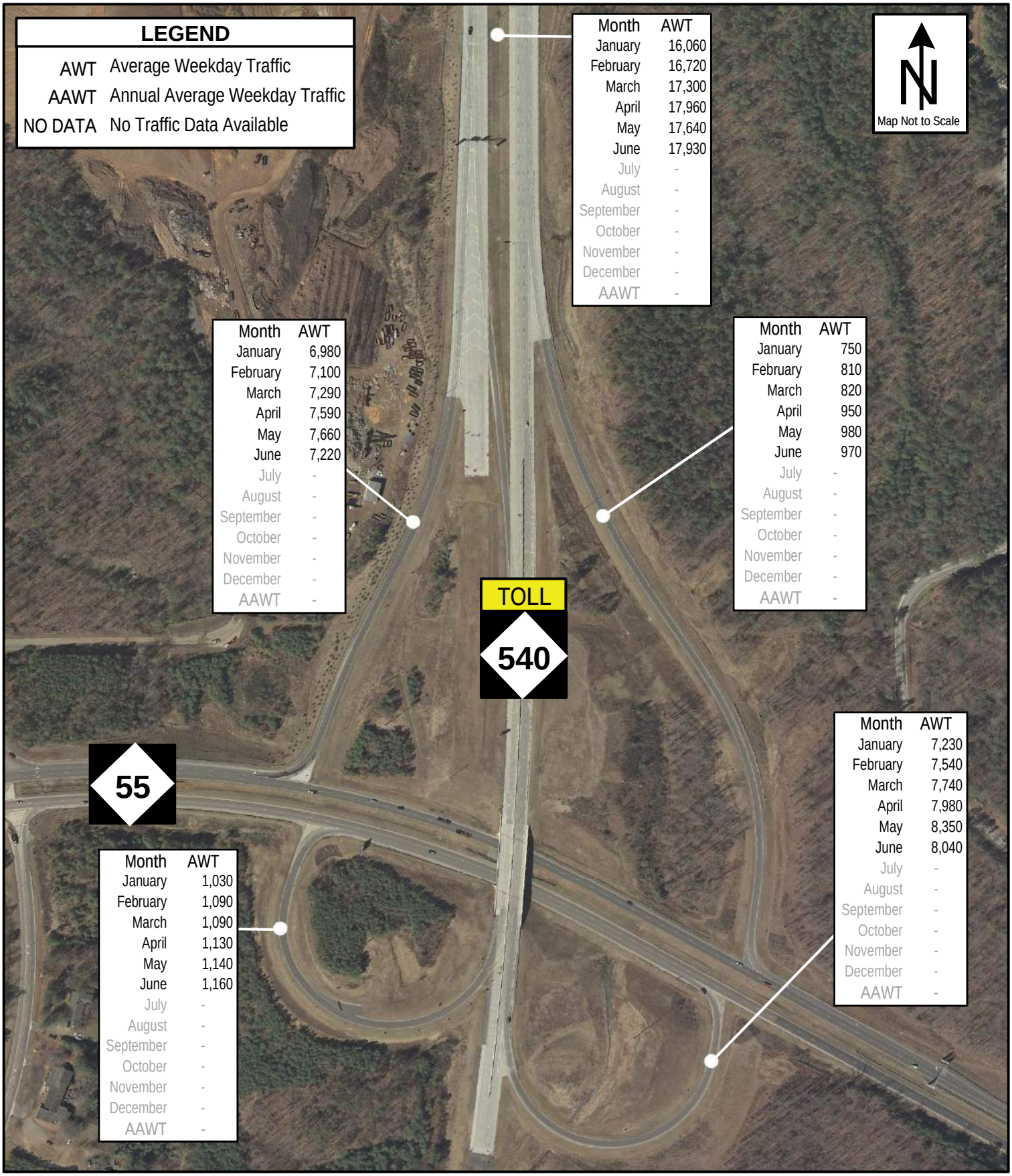
LEGEND

AWT	Average Weekday Traffic
AAWT	Annual Average Weekday Traffic
NO DATA	No Traffic Data Available

NC-540 at US-1 Interchange

2016 Average Weekday Traffic

Figure 12



NC-540 at NC-55 Bypass Interchange

2016 Average Weekday Traffic

Figure 13

Customer Service Center Operations Statistics

CUSTOMER SERVICE CENTER OPERATIONS STATISTICS

The function of the Customer Service Center (CSC) is to provide customer-facing activities such as account management services and customer call and walk-in services. The CSC also provides support services such as mail room, transponder inventory management and fulfillment, financial/banking, accounting and reconciliation, Bill by Mail document quality control (QC), video image review and processing services, and interoperability/reciprocity management with E-ZPass®, SunPass® and PeachPass®.

Current and historical Triangle Expressway customer service statistics are collected and reported through the NC Quick Pass® CSC, located in Morrisville, NC. These statistics provide an overview of the current toll operations on the facility and identifies any utilization trends. It also allows for comparison of historical and projected data. Transaction data is collected from the toll zones throughout the facility using all-electronic tolling (AET); toll gantries and the roadside toll vaults house the AET equipment.

Weekly, Monthly and Year-to-Date (YTD) Statistics

The statistics provided in the following section are representative of the entire Triangle Expressway facility. Weekly, monthly and/or year-to-date (YTD) statistics are presented in the following datasets:

- Customer Calls by Reason
- Payments Processed
- Walk-in Customers
- Transactions
- Classification
- Accounts
- Transponders

It should be noted that the percentages of total provided in this section might not sum to 100% due to rounding. In addition, weekly statistics are based on weeks starting Monday and ending Sunday.

Customer Calls by Reason

This section presents the reasons why customers call the NC Quick Pass® CSC. Pre-determined calling reason categories considered in this section include Bill by Mail Payment, Bill by Mail Inquiry, NC Quick Pass® Inquiry, Registration Hold Inquiry, Vehicle/Account Information Update, and LPN Mismatch/Video Dispute. The Other category encompasses calling reasons other than the pre-determined categories.

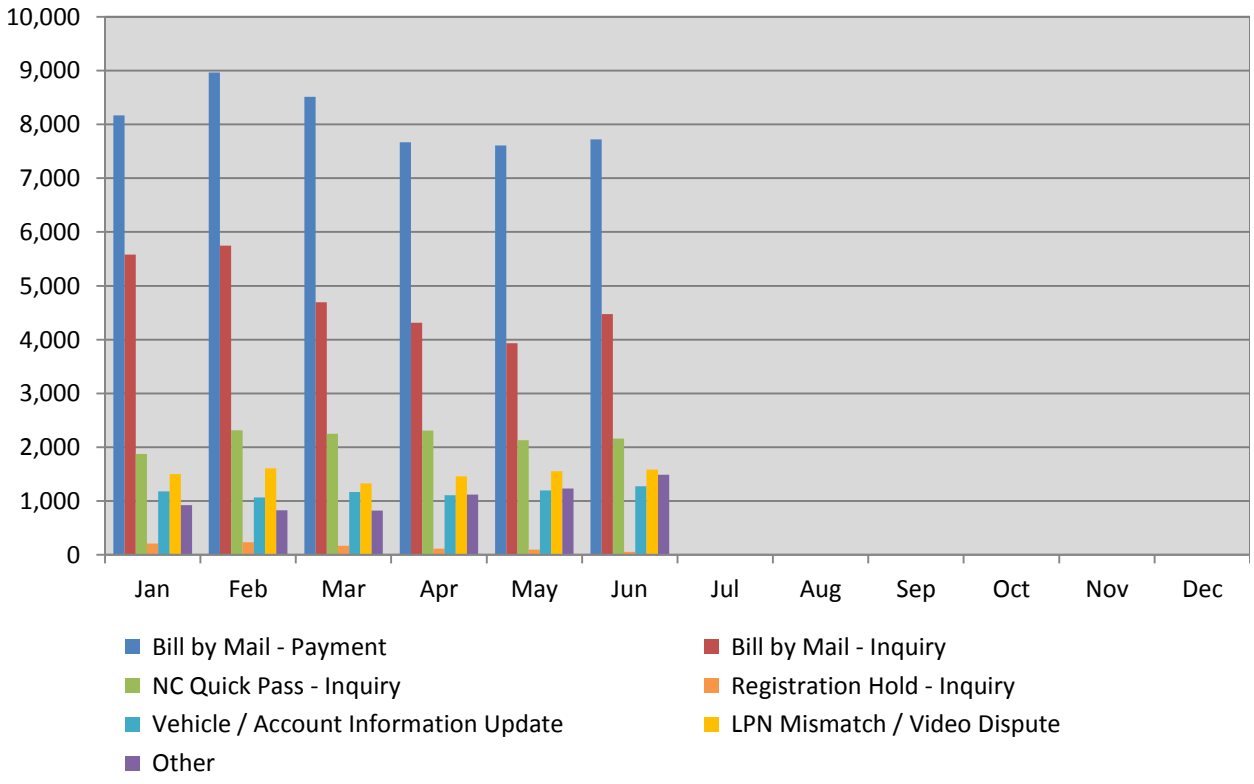
Table 1 presents a summary of the total monthly number of customer calls received by the NC Quick Pass® CSC, by reason.

Table 1: NC Quick Pass® CSC Calls by Reason, Second Quarter by Month

Month	Bill by Mail-Payment	Bill by Mail - Inquiry	NC Quick Pass® - Inquiry	Registration Hold - Inquiry	Vehicle / Account Information Update	LPN Mismatch / Video Dispute	Other	Total
April	7,671	4,314	2,308	112	1,106	1,460	1,120	**18,091**
May	7,608	3,932	2,132	97	1,197	1,554	1,232	**17,752**
June	7,721	4,476	2,158	55	1,272	1,583	1,488	**18,753**

Figure 14 presents the total monthly number of customer calls received by the NC Quick Pass® CSC by reason during 2016.

Figure 14: 2016 NC Quick Pass® CSC Calls by Reason, YTD



Payments Processed

This section presents the volume of payments processed by the NC Quick Pass® CSC by payment channel. Payment channels considered in this section include the Web, Call Center, Mail, IVR and Walk-in. The Back Office System (BOS) records payment volume based on the number of different revenue types and invoices paid during a given period. For example, if a Bill-by-Mail invoice including two tolls and one Processing Fee is paid the BOS counts that as two payments, one for tolls and one for Processing Fee, even though only a single payment was received and processed.

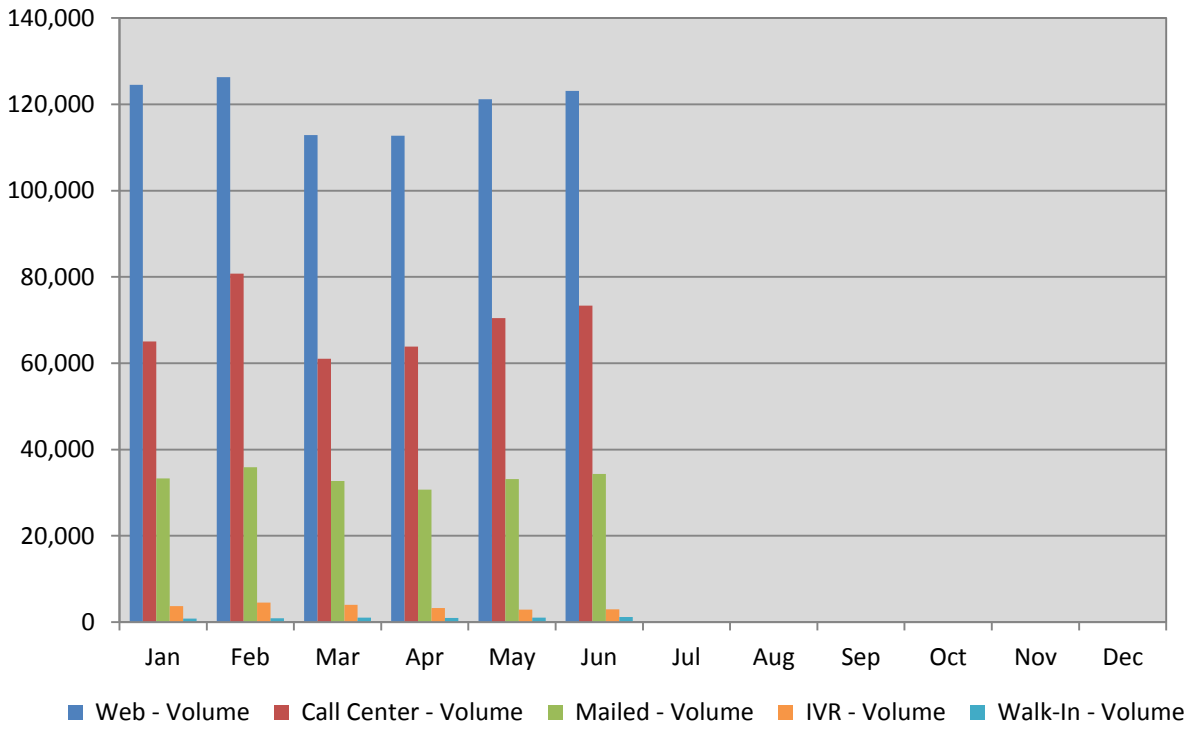
Table 2 presents a summary of the total monthly payments processed by the NC Quick Pass® CSC, by payment channel.

Table 2: NC Quick Pass® CSC Payments Processed, Second Quarter by Month

Month	Web Volume	Call Center Volume	Mailed Volume	IVR Volume	Walk-In Volume	Total
April	112,713	63,874	30,706	3,248	937	**211,478**
May	121,164	70,491	33,178	2,860	1,010	**228,703**
June	123,096	73,367	34,333	2,973	1,217	**234,986**

Figure 15 presents the total monthly payments processed by the NC Quick Pass® CSC during 2016, by payment channel.

Figure 15: 2016 NC Quick Pass® CSC Payments Processed by Channel, YTD



Walk-in Customers

This section presents the number of walk-in customers that were serviced in the NC Quick Pass® CSC Walk-In Center.

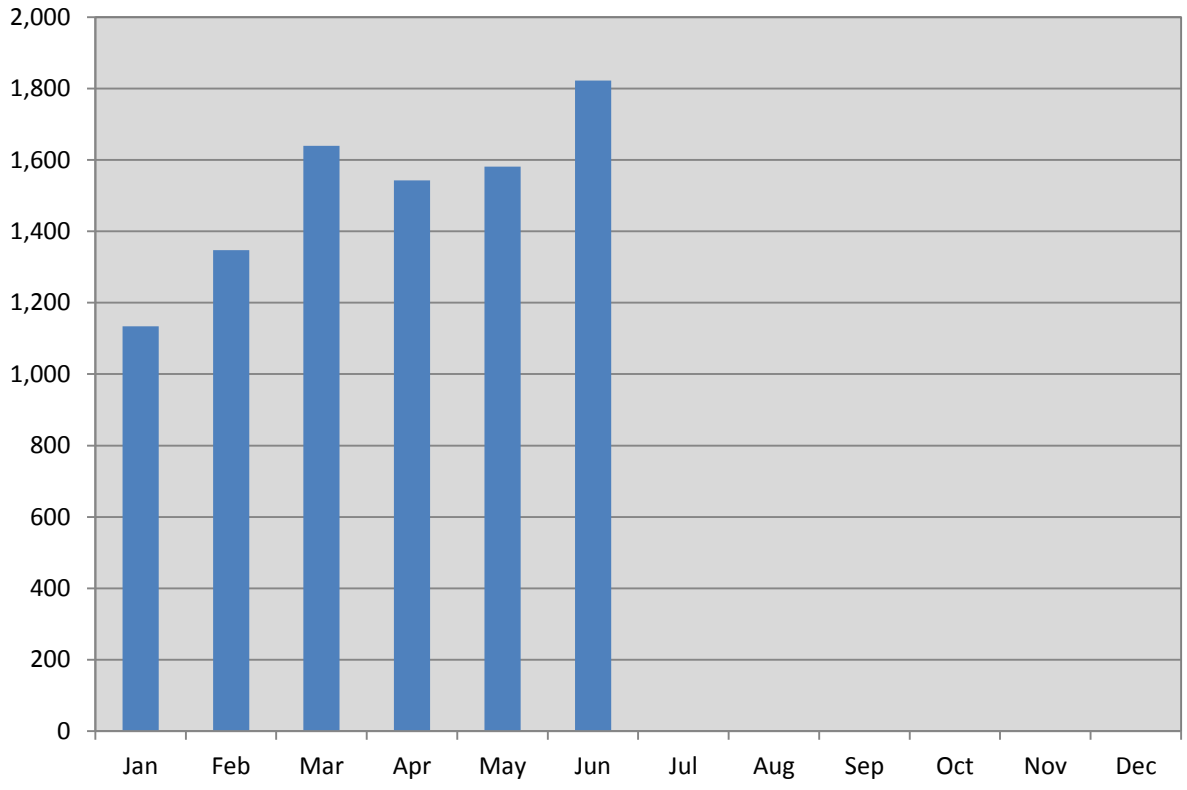
Table 3 presents a summary of the total monthly number of walk-in customers serviced in the NC Quick Pass® CSC Walk-In Center.

Table 3: NC Quick Pass® CSC Walk-In Customers, Second Quarter by Month

Month	Number of Walk-In Customers
April	1,543
May	1,581
June	1,822

Figure 16 depicts the number of walk-in customers that were serviced in the NC Quick Pass® CSC Walk-In Center during 2016.

Figure 16: 2016 NC Quick Pass® CSC Walk-in Customers, YTD



Transactions

This section presents the volume and percentage of North Carolina Quick Pass® (NCQP) users compared to Bill by Mail users. NCQP users have established accounts that are identified using the vehicle's onboard transponder, whereas Bill by Mail users do not have established accounts and are identified using vehicle recognition software.

Table 4 presents a summary of the total weekly transactions for NC Quick Pass® and Bill by Mail users.

Table 4: Transactions, Second Quarter by Week

Week Ending	Transponder (NC Quick Pass®)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
4/3/2016*	146,223	50.2%	144,890	49.8%	**291,113**
4/10/2016	523,500	59.3%	358,694	40.7%	**882,194**
4/17/2016	519,947	58.9%	363,016	41.1%	**882,963**
4/24/2016	526,338	58.2%	377,410	41.8%	**903,748**
5/1/2016	526,176	58.8%	368,777	41.2%	**894,953**
5/8/2016	528,955	58.7%	372,880	41.3%	**901,835**
5/15/2016	536,529	58.4%	382,956	41.6%	**919,485**
5/22/2016	521,493	59.1%	360,868	40.9%	**882,361**
5/29/2016	517,628	57.9%	376,079	42.1%	**893,707**
6/5/2016**	478,095	57.6%	351,213	42.4%	**829,308**
6/12/2016	532,327	57.7%	389,689	42.3%	**922,016**
6/19/2016	520,824	57.3%	387,371	42.7%	**908,195**
6/26/2016	518,401	57.9%	377,070	42.1%	**895,471**
6/30/2016***	353,291	59.9%	236,254	40.1%	**589,545**

*Week ending consists of three days of data
** Week ending includes Memorial Day
*** Week ending consists of four days of data

Table 5 presents a summary of the total monthly transactions for NC Quick Pass® and Bill by Mail transactions.

Table 5: Transactions, Second Quarter by Month

Month	Transponder (NC Quick Pass®)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
April	2,209,588	58.3%	1,582,244	41.7%	**3,791,832**
May	2,260,387	58.4%	1,611,418	41.6%	**3,871,805**
June	2,279,752	58.0%	1,653,505	42.0%	**3,933,257**

Figure 17 presents the total monthly transactions and NC Quick Pass® utilization during 2016.

Figure 17: 2016 Transactions, YTD

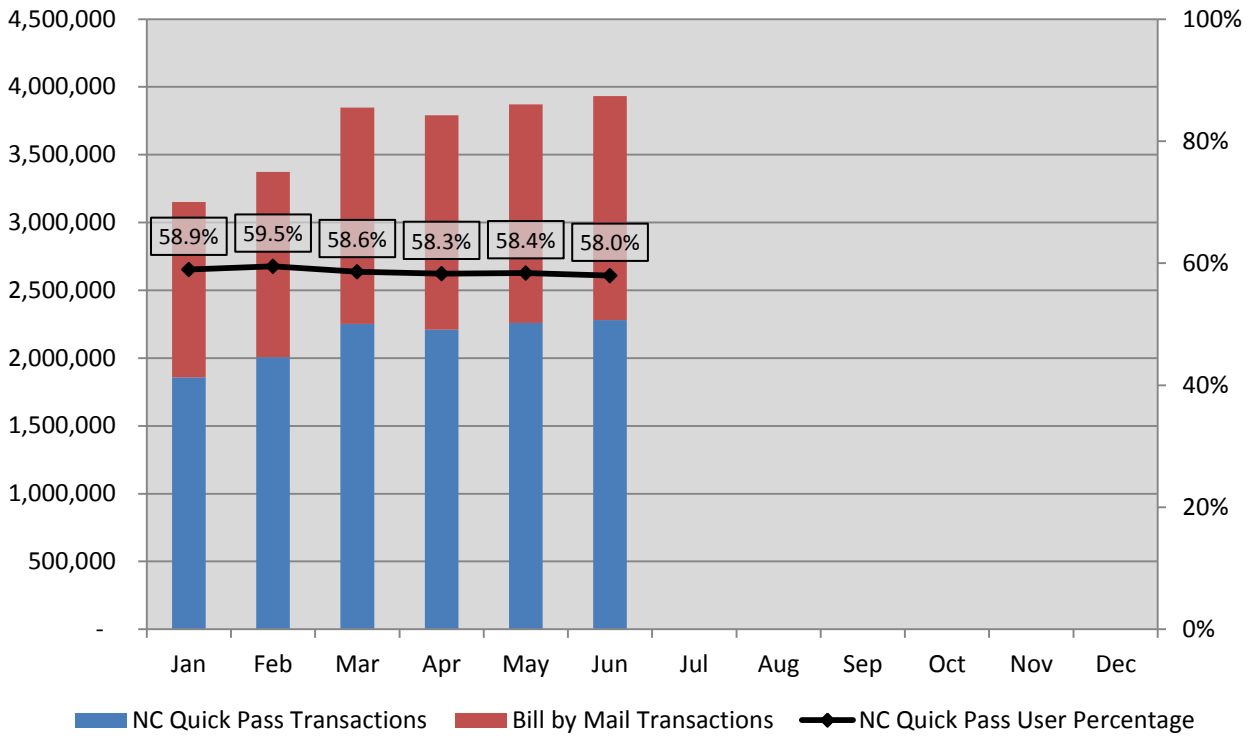


Table 6 presents a summary of the total NC Quick Pass® and Bill by Mail transactions, by year. Project to date is the total number of transactions since opening the facility to toll traffic.

Table 6: Transactions, by Year

Year	Transponder (NC Quick Pass®)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
2012	2,803,043	49.2%	2,892,496	50.8%	5,695,539
2013	13,249,972	57.5%	9,792,975	42.5%	23,042,947
2014	17,733,089	58.1%	12,802,237	41.9%	30,535,326
2015	22,083,270	57.6%	16,235,360	42.4%	38,318,630
2016*	12,865,369	58.6%	9,101,556	41.4%	21,966,925
Project to Date	**68,734,743**	**57.5%**	**50,824,624**	**42.5%**	**119,559,367**

*2016 transactions reported include six months of data (January - June).

Classification

This section presents the volume and percentage of users based on classification. The classification system used by NCTA includes three classes, determined by the vehicle's number of axles.

Table 7 presents a summary of the total weekly transactions for Class 1 (2-axle), Class 2 (3-axle) and Class 3 (4+axle) vehicles.

Table 7: Classification, Second Quarter by Week

Week Ending	Class 1 (2-axle)		Class 2 (3-axle)		Class 3 (4+axle)	
	Transactions	% of Total	Transactions	% of Total	Transactions	% of Total
4/3/2016*	285,214	98.0%	2,032	0.7%	3,867	1.3%
4/10/2016	849,394	96.3%	11,042	1.3%	21,758	2.5%
4/17/2016	851,834	96.5%	10,279	1.2%	20,850	2.4%
4/24/2016	867,659	96.0%	12,618	1.4%	23,471	2.6%
5/1/2016	860,269	96.1%	11,961	1.3%	22,723	2.5%
5/8/2016	874,534	97.0%	9,037	1.0%	18,264	2.0%
5/15/2016	882,983	96.0%	12,970	1.4%	23,532	2.6%
5/22/2016	852,067	96.6%	9,965	1.1%	20,329	2.3%
5/29/2016	855,684	95.7%	13,393	1.5%	24,630	2.8%
6/5/2016**	797,264	96.1%	11,468	1.4%	20,576	2.5%
6/12/2016	886,199	96.1%	12,511	1.4%	23,306	2.5%
6/19/2016	871,425	96.0%	12,765	1.4%	24,005	2.6%
6/26/2016	860,122	96.1%	12,733	1.4%	22,616	2.5%
6/30/2016***	566,487	96.1%	7,596	1.3%	15,462	2.6%

*Week ending consists of three days of data
** Week ending includes Memorial Day
*** Week ending consists of four days of data

Table 8 presents a summary of the total monthly transactions by classification.

Table 8: Classification, Second Quarter by Month

Month	Class 1 (2-axle)		Class 2 (3-axle)		Class 3 (4+axle)	
	Transactions	% of Total	Transactions	% of Total	Transactions	% of Total
April	3,651,971	96.3%	47,600	1.3%	92,261	2.4%
May	3,731,799	96.4%	48,099	1.2%	91,907	2.4%
June	3,777,365	96.0%	54,671	1.4%	101,221	2.6%

Figure 18 presents the total monthly percentage of transactions during 2016 for Class 1 (2-axle), Class 2 (3-axle) and Class 3 (4+axle) vehicles.

Figure 18: 2016 Classification, Percentage YTD

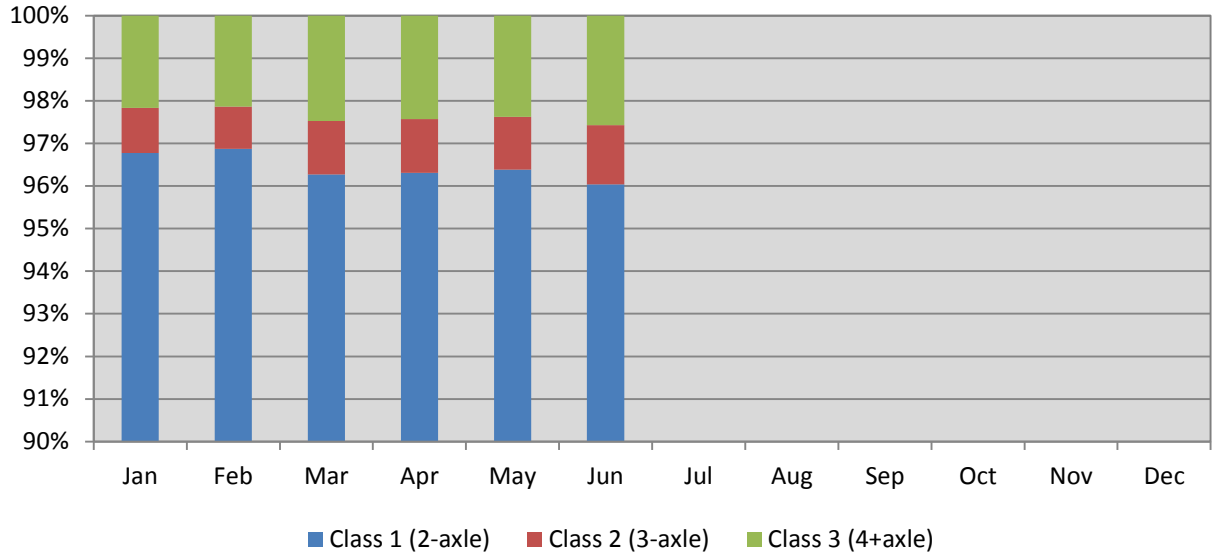


Table 9 presents a summary of the total transactions for Class 1 (2-axle), Class 2 (3-axle) and Class 3 (4+axle) vehicles, by year. Project to date is the total number of transactions since opening the facility to toll traffic.

Table 9: Classification, by Year

Year	Class 1 (2-axle)		Class 2 (3-axle)		Class 3 (4+axle)	
	Transactions	% of Total	Transactions	% of Total	Transactions	% of Total
2012	5,562,061	97.7%	46,935	0.8%	86,543	1.5%
2013	22,282,351	96.7%	267,558	1.2%	493,038	2.1%
2014	29,530,077	96.7%	355,721	1.2%	649,528	2.1%
2015	37,050,375	96.7%	426,656	1.1%	841,599	2.2%
2016*	21,180,762	96.4%	265,268	1.2%	520,895	2.4%
Project to Date	**115,605,626**	**96.7%**	**1,362,138**	**1.1%**	**2,591,603**	**2.2%**

*2016 classification reported includes six months of data (January - June).

Accounts

The statistics provided in this section outline the volume of accounts established and managed by the NCTA CSC.

Table 10 presents a summary of the monthly established accounts being managed by the NCTA CSC. Numbers presented in parentheses represent a reduction in accounts.

Table 10: Established Accounts, Second Quarter by Month

Month	NC Quick Pass®	Bill by Mail	Registered Video	Non-Revenue	Government	Total
April	2,688	27,319	0	0	0	30,007
May	3,115	32,035	0	2	0	35,150
June	3,085	28,924	0	0	0	32,009

Figure 19 presents the monthly established accounts managed by the NCTA CSC during 2016. The "Other" category includes registered video, non-revenue and government accounts.

Figure 19: 2016 Established Accounts, YTD

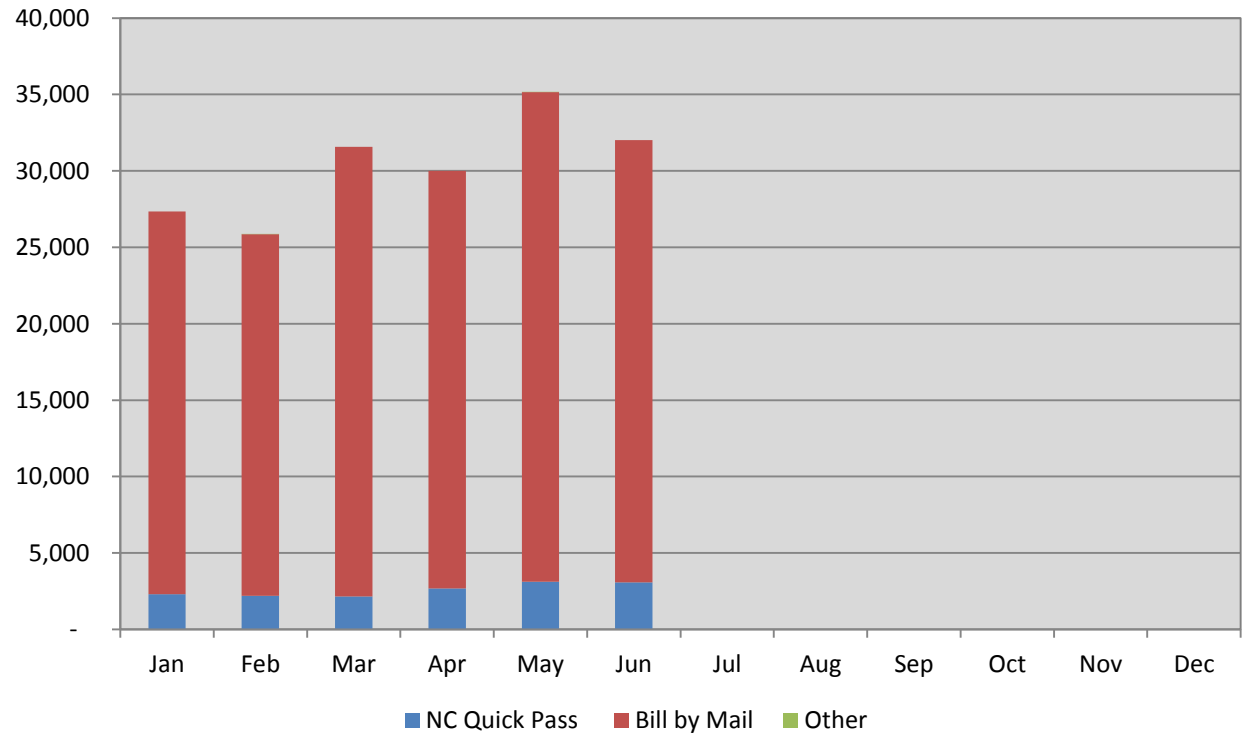


Table 11 presents a summary of the total established accounts managed by the NCTA CSC, by year. Project to date is the total number of accounts established since project opening. Numbers presented in parentheses represent a reduction in accounts.

Table 11: Established Accounts, by Year

Year	NC Quick Pass®	Bill by Mail	Registered Video	Non-Revenue	Government	Total
2012	27,179	359,431	5	38	18	386,610
2013	24,268	306,581	(1)	19	9	330,849
2014	18,652	342,476	2	13	3	361,128
2015	24,222	380,897	0	4	0	405,119
2016*	15,576	166,354	1	3	0	181,930
Project to Date	**109,897**	**1,555,739**	**7**	**77**	**30**	**1,665,636**

*2016 established accounts reported include six months of data (January - June).

Transponders

This section presents the volume of transponders sold.

Table 12 presents a summary of the total transponders sold, by month.

Table 12: Transponders Sold, Second Quarter by Month

Month	Sticker Tag	Hard Case Tag	Exterior Tag	Total
April	2,226	3,607	70	**5,903**
May	2,290	4,146	63	**6,499**
June	2,112	4,126	60	**6,298**

Figure 20 presents monthly transponders sold during 2016.

Figure 20: 2016 Transponders Sold, YTD

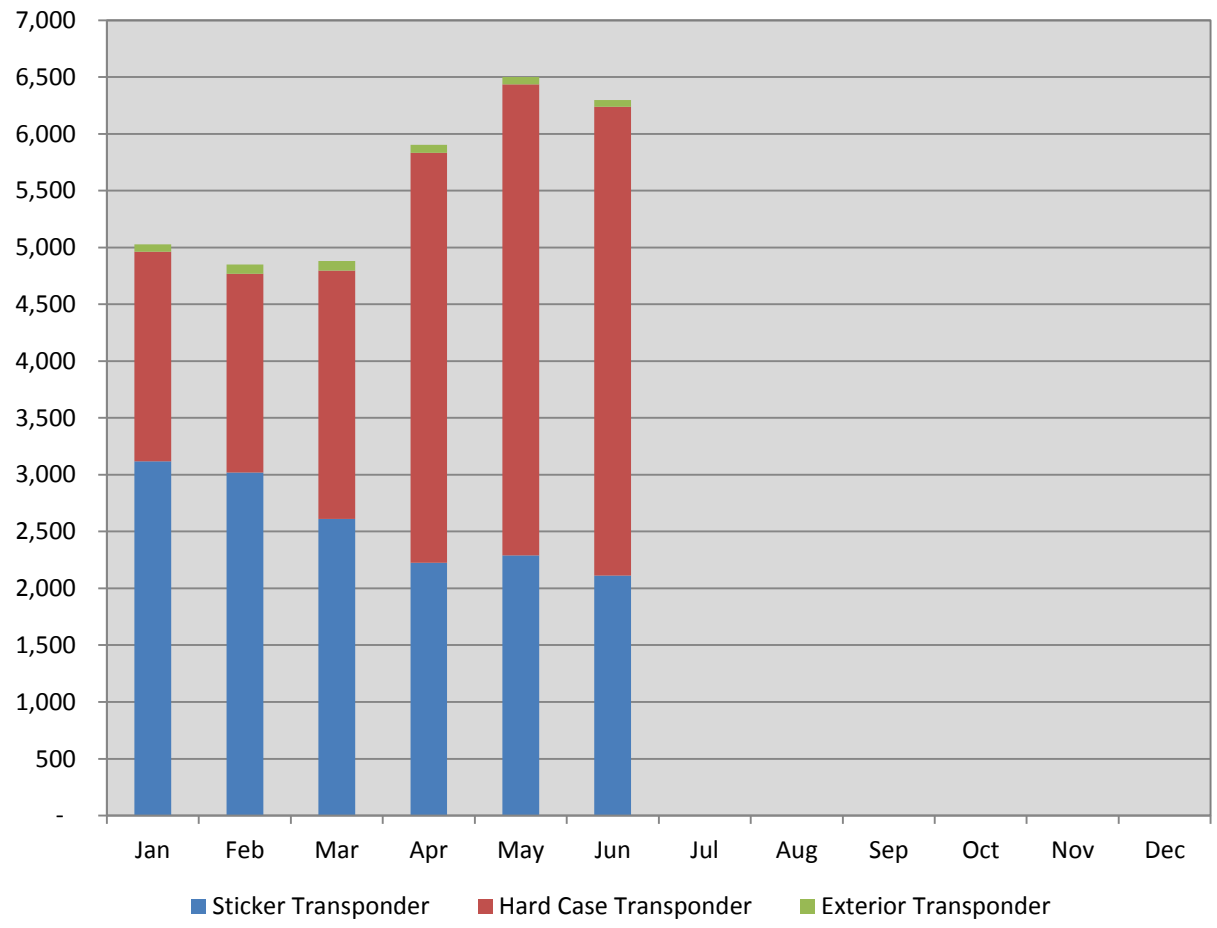


Table 13 presents a summary of the total transponders sold, by year. In October 2011, transponders went on sale prior to the opening of the roadway to provide potential motorists sufficient time to establish their accounts. Project to date is the total number of transponders sold to date.

Table 13: Transponders Sold, by Year

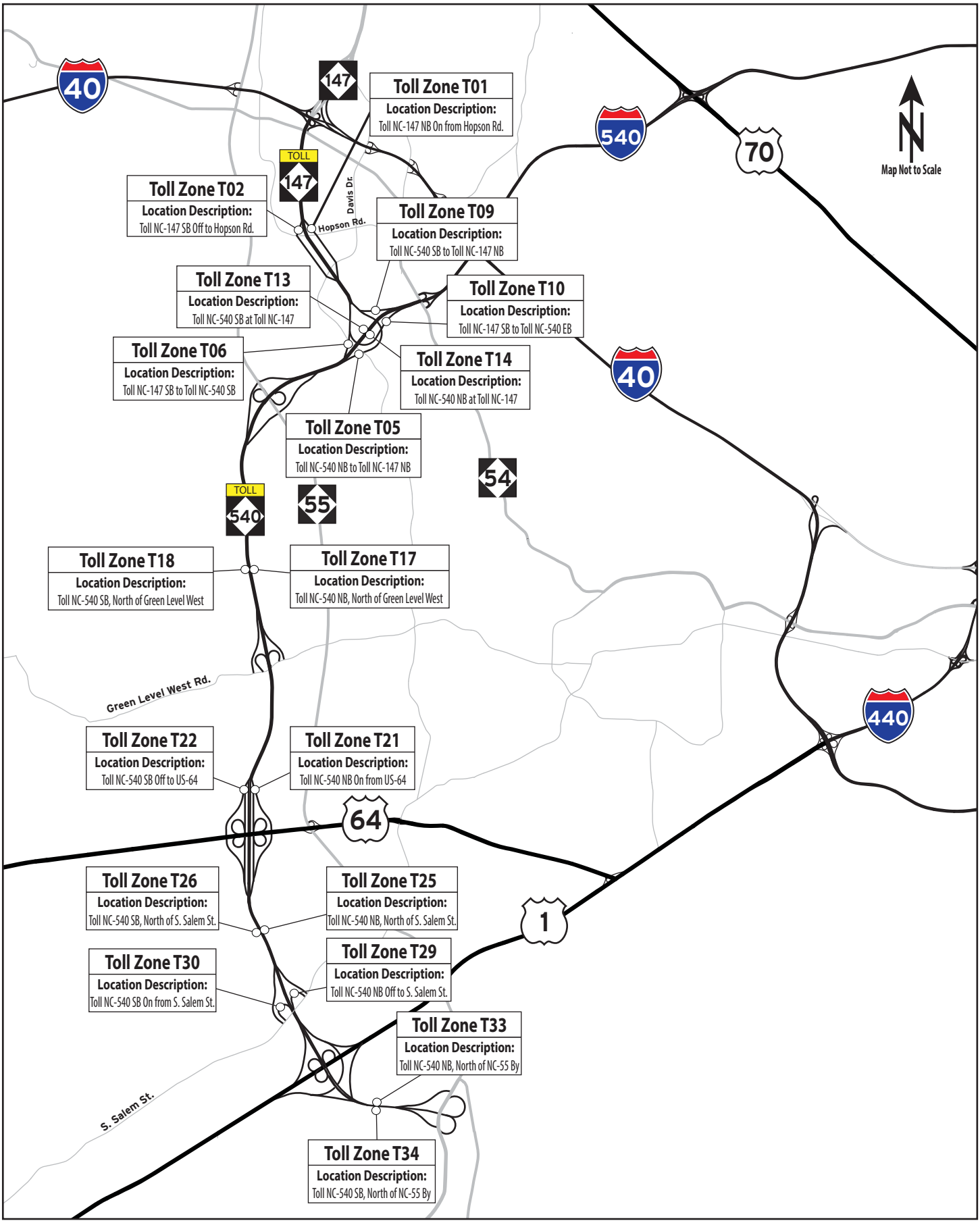
Year	Sticker Tag	Hard Case Tag	Exterior Tag	Total
2011	7,315	2,806	200	10,321
2012	35,338	6,861	250	42,449
2013	34,784	13,980	257	49,021
2014	26,066	14,778	221	41,065
2015	31,866	20,047	588	52,501
2016*	15,375	17,657	426	33,458
Project to Date	**150,744**	**76,129**	**1,942**	**228,815**

*2016 transponders sale reported include six months of data (January - June).

Toll Zone Statistics

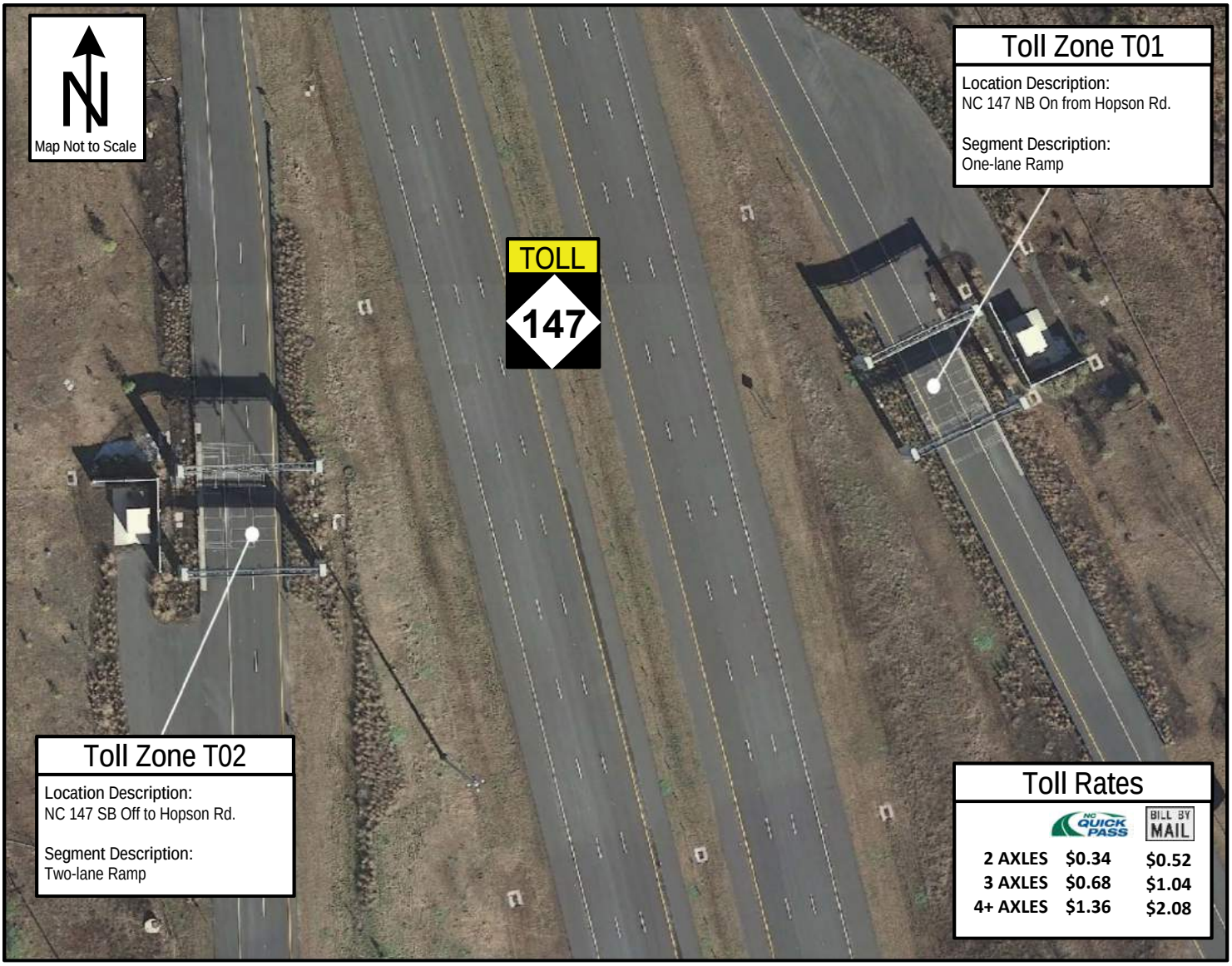
TOLL ZONE STATISTICS

The location of the toll zones along the Triangle Expressway can be seen in *Figure 21*. *Fi*gures *22 - 30* present the average weekday transactions (excludes holidays and days of inclement weather conditions) recorded at toll zones along the facility.



Triangle Expressway Toll Zone Map

Figure 21



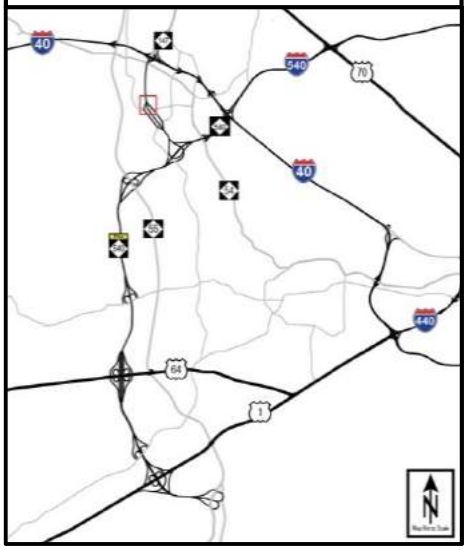
Transactions by Direction

Month	T01	T02
January	2,480	2,210
February	2,510	2,210
March	2,530	2,260
April	2,590	2,360
May	2,570	2,320
June	2,680	2,370
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage

Month	T01	T02
January	60%	61%
February	60%	62%
March	60%	61%
April	59%	61%
May	59%	61%
June	59%	60%
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

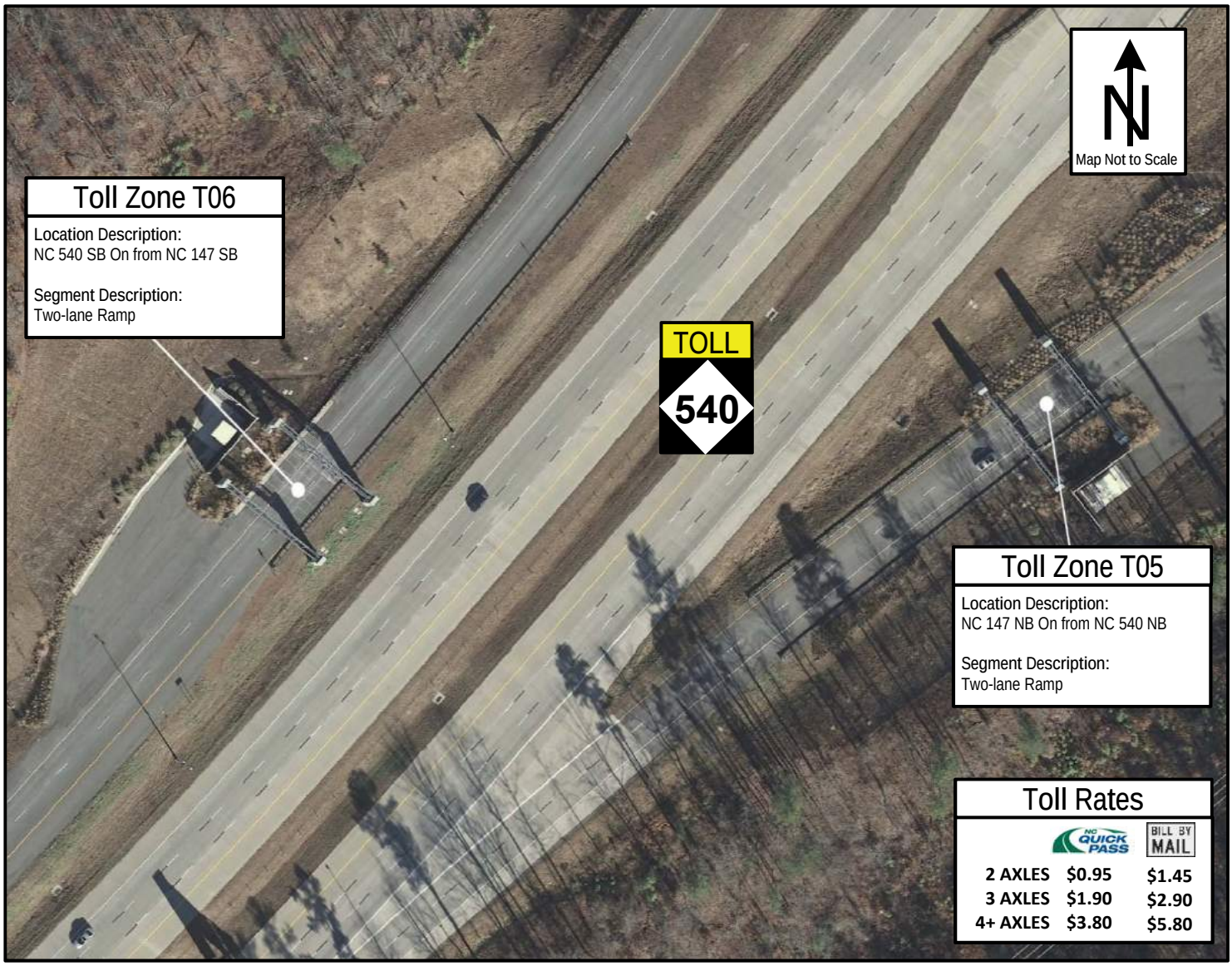
Map Locator



Hopson Road Ramp Toll Zones

2016 Average Weekday Toll Transactions

Figure 22



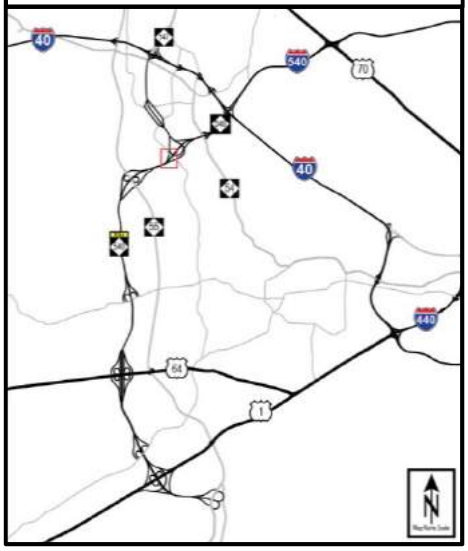
Transactions by Direction

Month	T05	T06
January	6,480	6,380
February	6,630	6,420
March	6,780	6,470
April	6,940	6,660
May	6,820	6,500
June	7,100	6,810
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage

Month	T05	T06
January	62%	64%
February	62%	64%
March	61%	63%
April	61%	63%
May	61%	63%
June	61%	62%
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

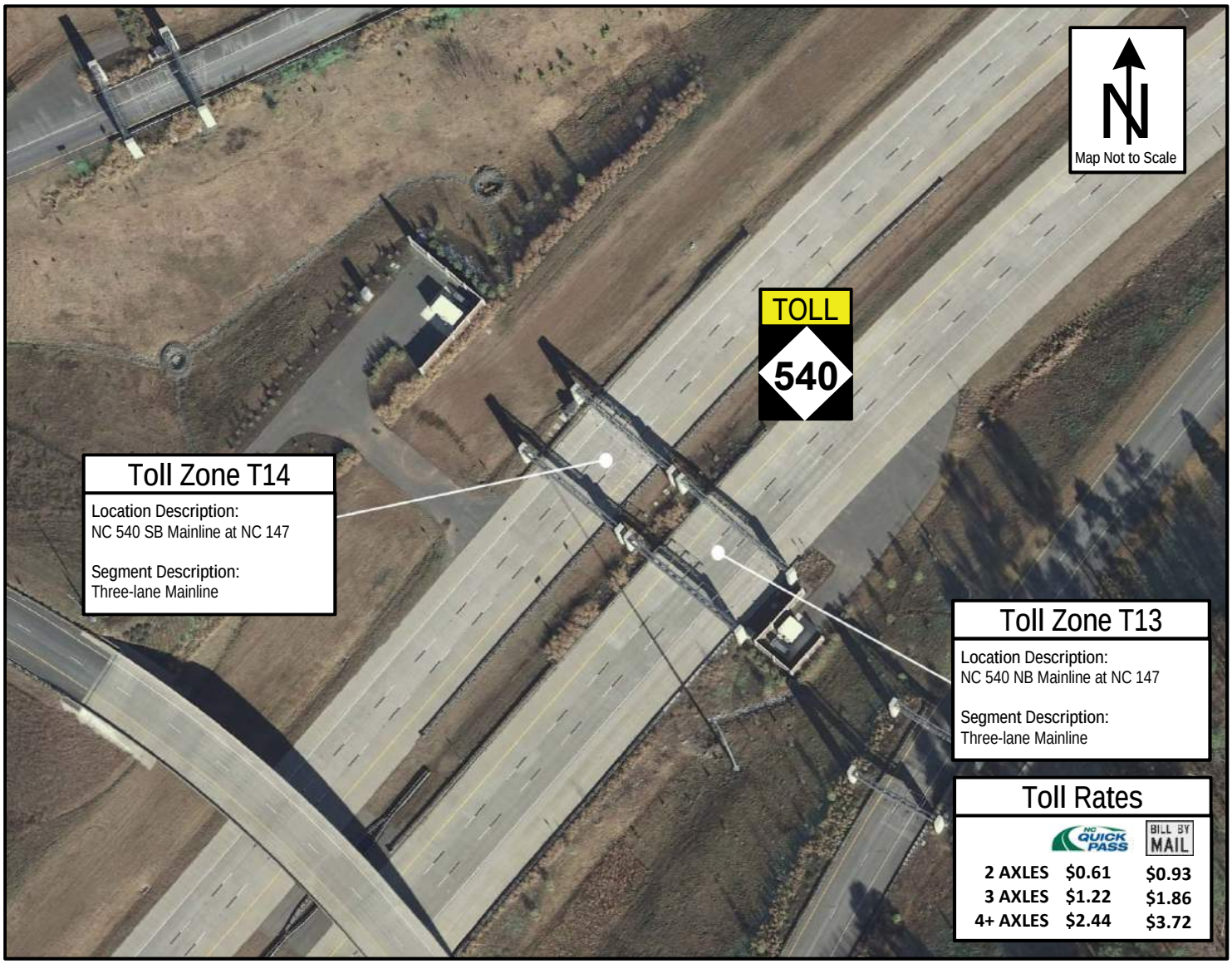
Map Locator



NC-147 South Ramp Toll Zones

2016 Average Weekday Toll Transactions

Figure 23



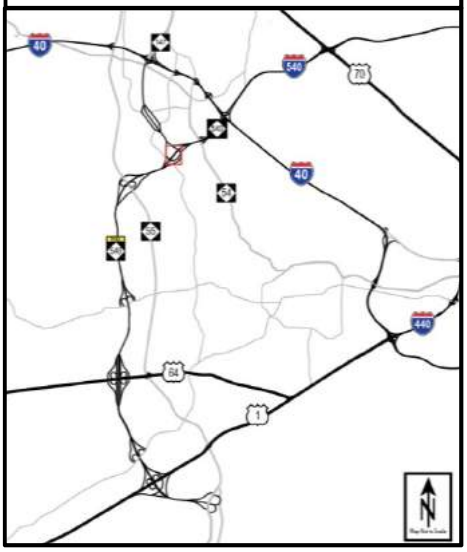
Transactions by Direction

Month	T13	T14
January	14,400	14,270
February	14,920	14,950
March	15,390	15,470
April	15,840	16,030
May	15,840	16,040
June	16,450	16,540
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage

Month	T13	T14
January	60%	62%
February	61%	62%
March	59%	61%
April	60%	61%
May	59%	61%
June	59%	60%
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

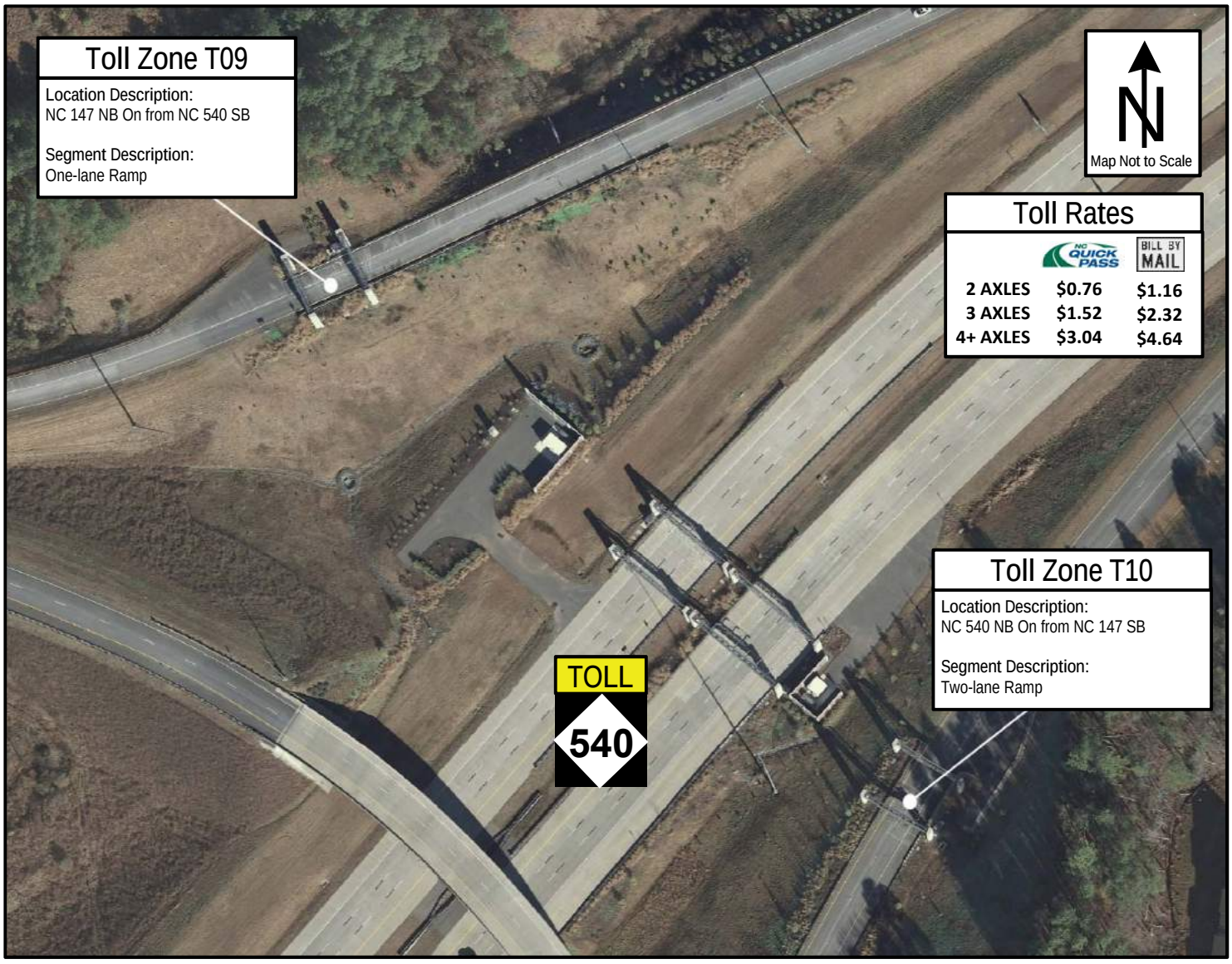
Map Locator



NC-540 Morrisville Mainline Toll Zones

2016 Average Weekday Toll Transactions

Figure 24



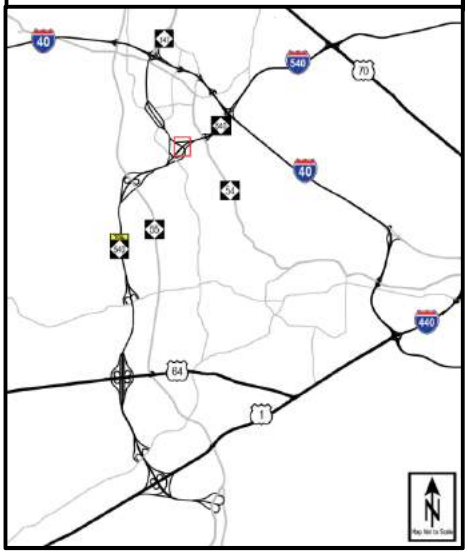
Transactions by Direction

Month	T09	T10
January	1,910	2,490
February	1,920	2,510
March	1,810	2,470
April	1,910	2,700
May	1,880	2,570
June	2,050	2,720
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage

Month	T09	T10
January	59%	61%
February	58%	60%
March	58%	60%
April	59%	57%
May	57%	58%
June	57%	57%
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

Map Locator



NC-147 North Ramp Toll Zones

2016 Average Weekday Toll Transactions

Figure 25

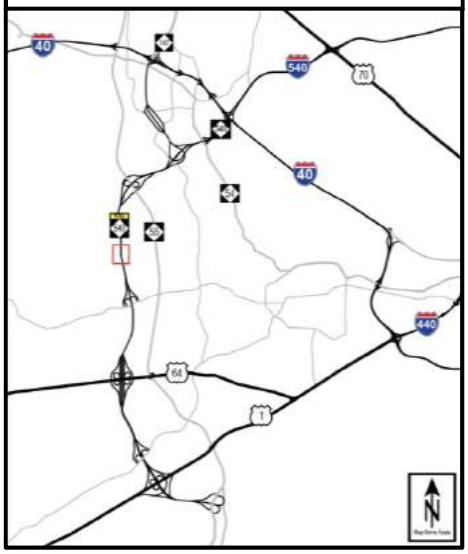
Transactions by Direction

Month	T17	T18
January	14,980	15,720
February	15,480	16,080
March	15,800	16,360
April	16,130	16,710
May	15,990	16,570
June	16,580	17,410
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage

Month	T17	T18
January	61%	61%
February	61%	61%
March	60%	60%
April	60%	60%
May	60%	60%
June	59%	59%
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

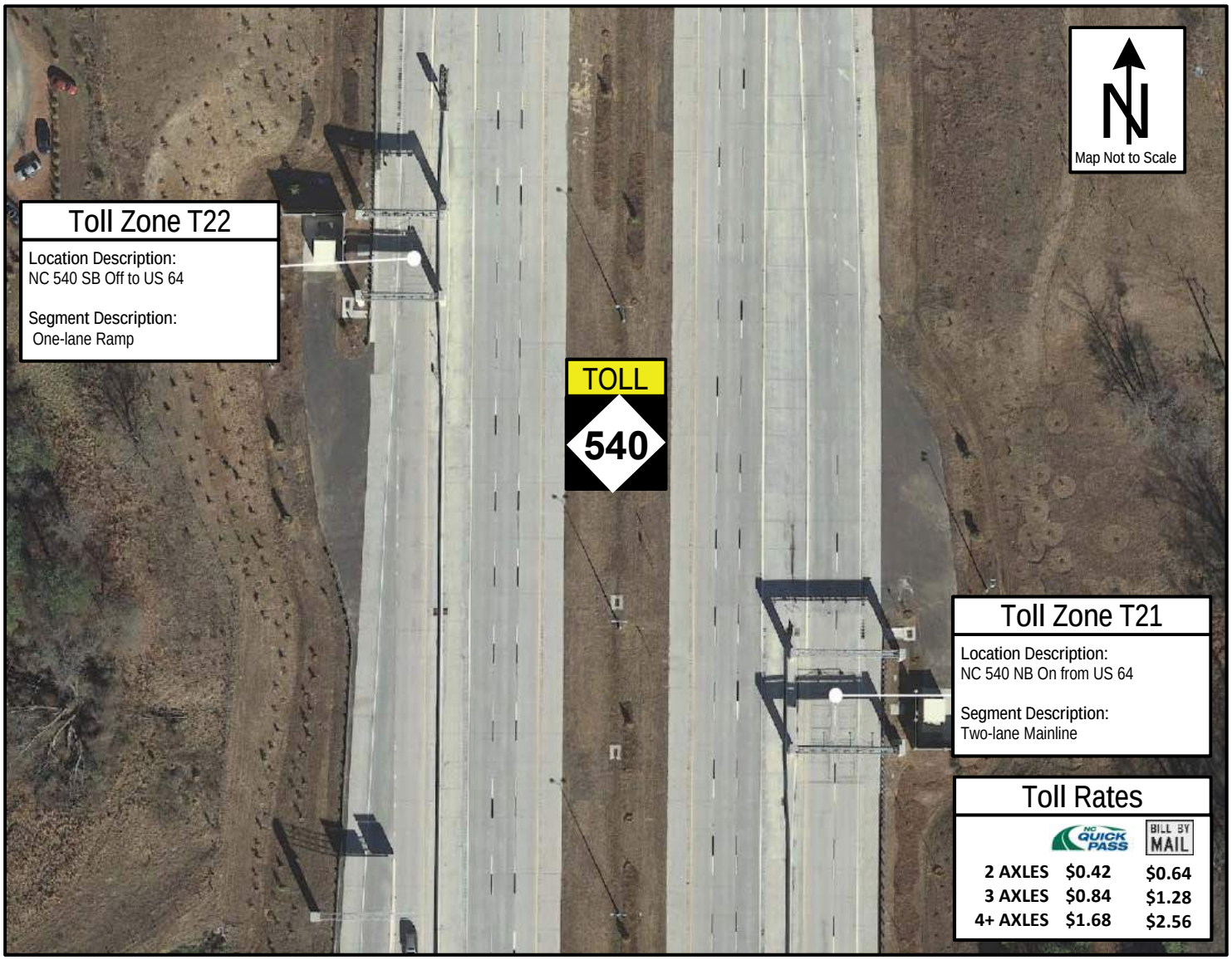
Map Locator



NC-540 Cary Mainline Toll Zones

2016 Average Weekday Toll Transactions

Figure 26



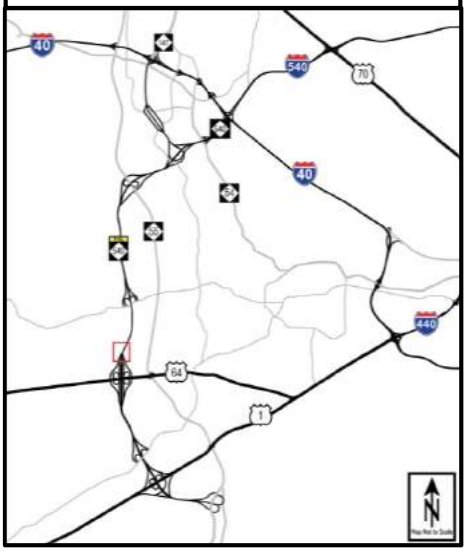
Transactions by Direction

Month	T21	T22
January	4,680	4,860
February	4,880	5,030
March	5,020	5,250
April	5,190	5,420
May	5,160	5,400
June	5,370	5,690
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage

Month	T21	T22
January	61%	62%
February	61%	62%
March	60%	62%
April	61%	62%
May	60%	62%
June	60%	61%
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

Map Locator



US-64 Ramp Toll Zones

2016 Average Weekday Toll Transactions

Figure 27

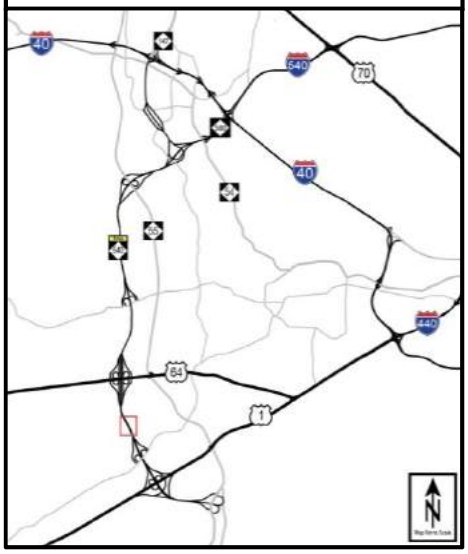
Transactions by Direction

Month	T25	T26
January	12,080	12,210
February	12,520	12,540
March	13,050	12,960
April	13,440	13,310
May	13,370	13,250
June	13,810	13,820
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage

Month	T25	T26
January	59%	59%
February	59%	59%
March	58%	58%
April	59%	58%
May	58%	58%
June	58%	57%
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

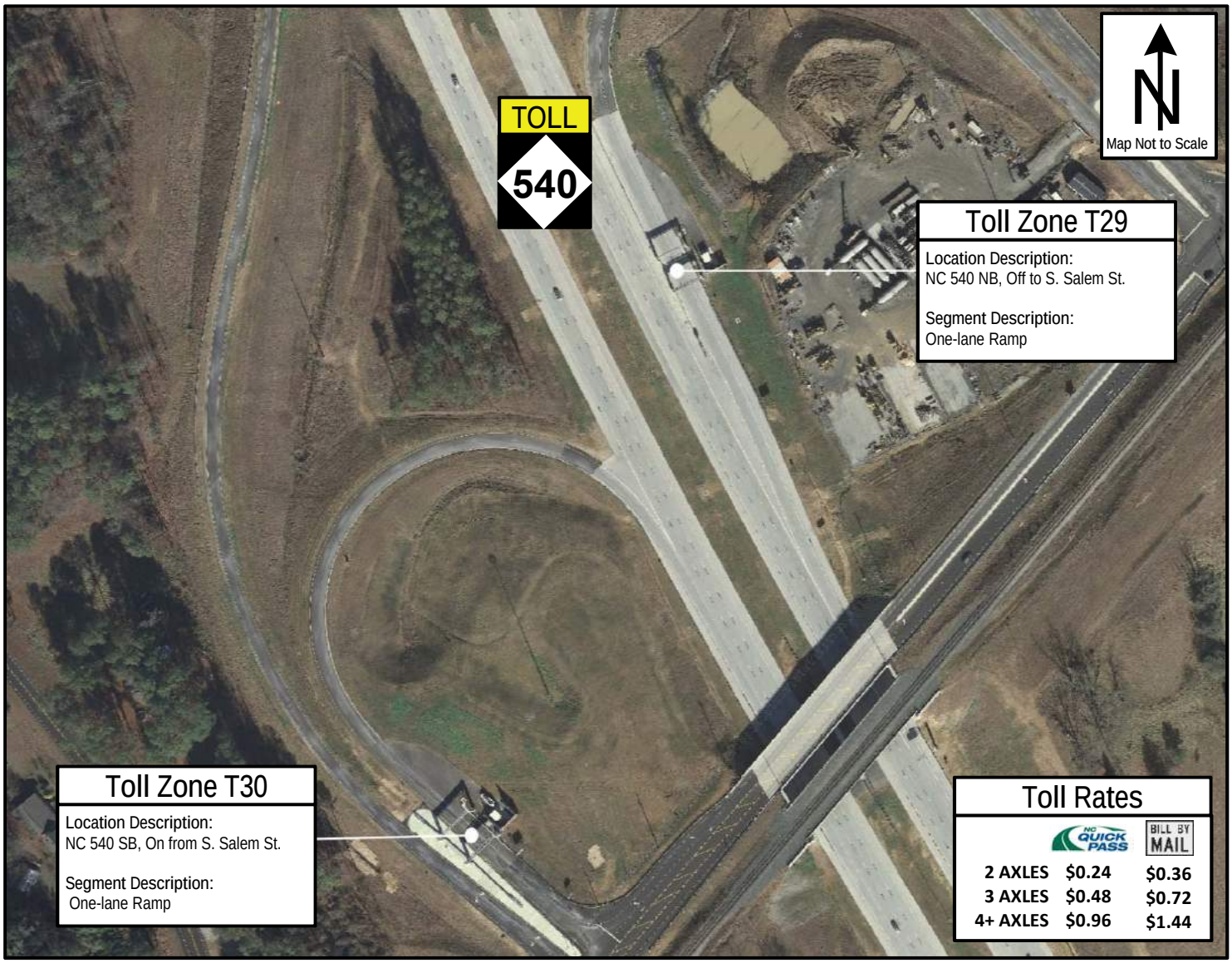
Map Locator



NC-540 Apex Mainline Toll Zones

2016 Average Weekday Toll Transactions

Figure 28



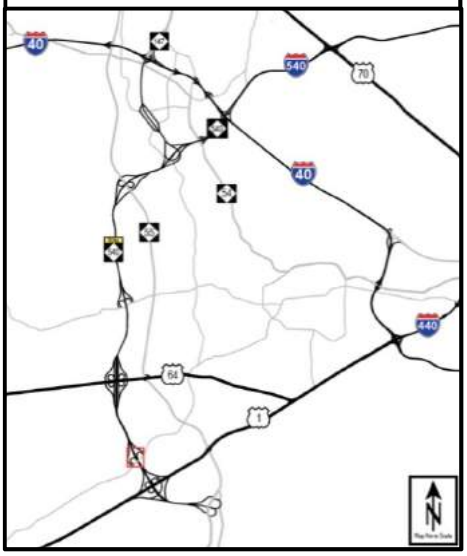
Transactions by Direction

Month	T29	T30
January	1,280	1,410
February	1,400	1,490
March	1,380	1,490
April	1,480	1,600
May	1,460	1,540
June	1,350	1,470
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage

Month	T29	T30
January	69%	70%
February	63%	69%
March	67%	70%
April	67%	69%
May	67%	69%
June	66%	69%
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

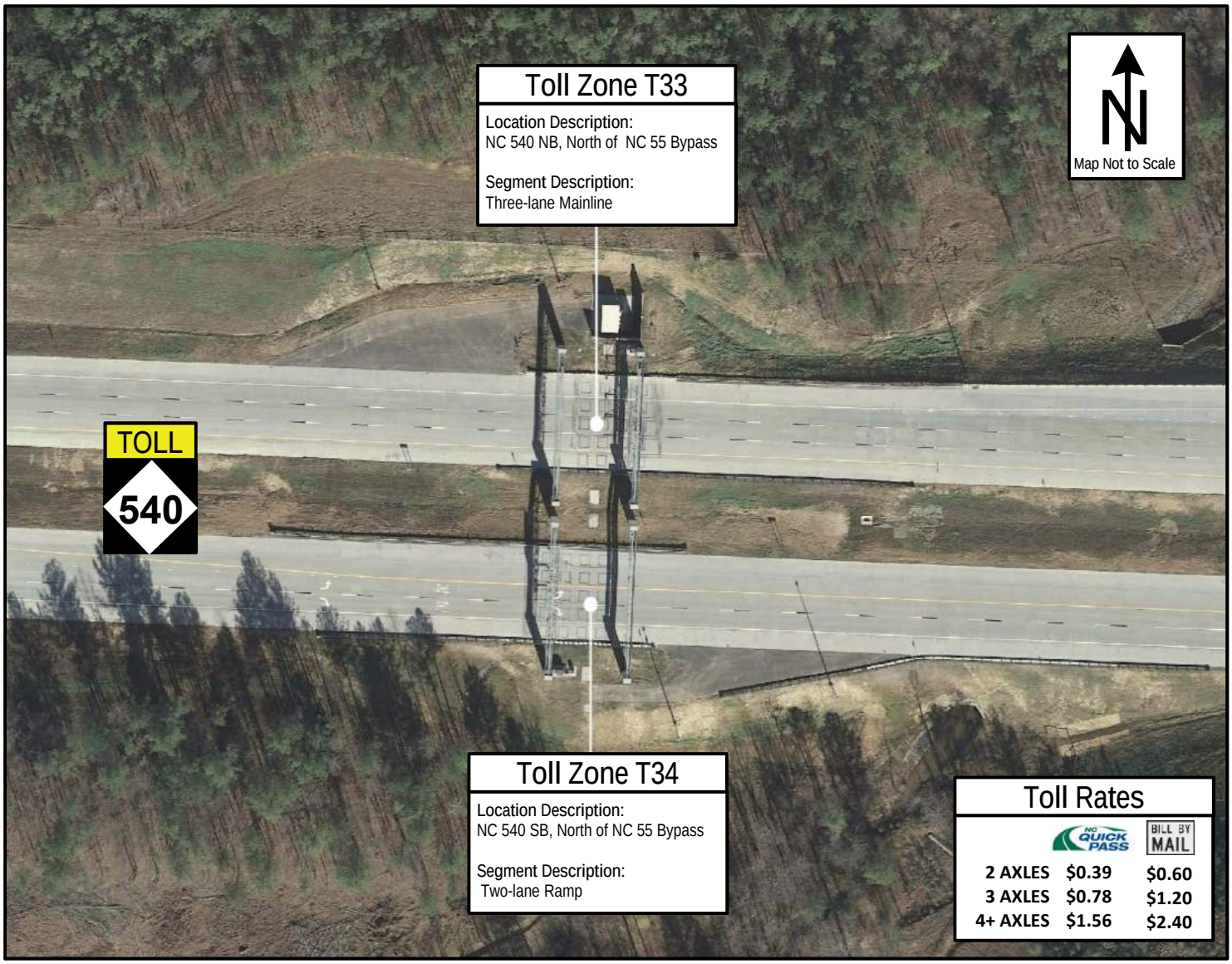
Map Locator



South Salem Street Ramp Toll Zones

2016 Average Weekday Toll Transactions

Figure 29



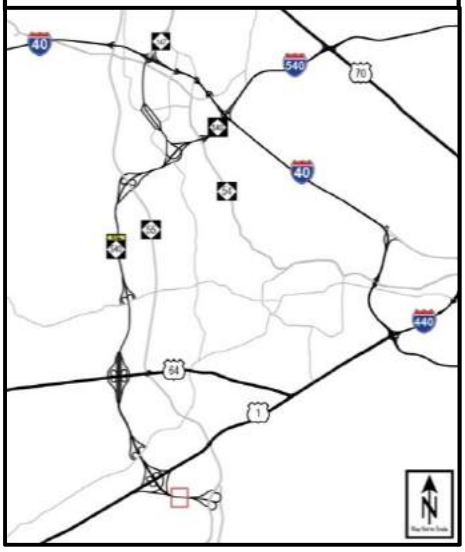
Transactions by Direction

Month	T33	T34
January	8,240	8,170
February	8,530	8,360
March	8,840	8,660
April	9,630	9,260
May	8,950	8,730
June	9,170	9,120
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage

Month	T33	T34
January	64%	62%
February	64%	63%
March	62%	61%
April	60%	59%
May	63%	61%
June	62%	60%
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

Map Locator



NC-540 Holly Springs Mainline Toll Zones

2016 Average Weekday Toll Transactions

Figure 30

Roadway Safety Statistics

ROADWAY SAFETY STATISTICS

Traffic crashes are often related to deficiencies in the safety and capacity characteristics of a transportation facility. In an effort to identify these deficiencies early, and therefore reduce the likelihood of crashes on the Triangle Expressway, NCTA monitors safety conditions on the facility through quarterly crash analyses. These analyses involve the use of the Traffic Engineering Accident Analysis System (TEAAS) to collect monthly crash data along the facility, separated into four (4) segments:

- NC 147, from I 40 to NC 540
- NC 540, from I 40 to NC 55
- NC 540, from NC 55 to US 64
- NC 540, fro, US 64 to NC 55 Bypass

The data collected includes total crashes and the number of fatal and injury crashes reported along each segment. This data is analyzed over a rolling three-year period to determine the Total Crash Rate of the four segments selected, as well as for the entire facility. These Crash Rates are then compared to the Critical Crash Rates to determine the Crash Ratio or Safety Ratio of the Triangle Expressway.

Crash Rates are a function of the length of roadway, average daily traffic and number of reported crashes along a route during a specific time frame. These rates are expressed in crashes per 100 million vehicle miles traveled (MVMT). In the crash analysis conducted during the second quarter, the Crash Rates of the four segments selected and the entire facility were calculated based on the roadway length, the average annual daily traffic (AADT) and the number of crashes recorded from June 2013 through May 2016 for each segment. The AADT used for this quarter analysis was collected from the NCDOT 2014 Wake County AADT Map. The statewide Total Crash Rate (85.41 crashes per 100 MVMT) used for comparison purposes in this analysis was collected from the 2012-2014 NCDOT Statewide Total Crash Rates for freeway facilities, as the Triangle Expressway operates more similar to a freeway or interstate than a state route.

Critical Crash Rates are crash rates that have been statistically adjusted with a 95% level of confidence to remove the elements of chance and randomness. They are used to determine if the rate at a particular location is significantly higher than a predetermined average rate for locations with similar characteristics. The Safety Ratio is the Total Crash Rate divided by the Critical Crash Rate. A segment with a Total Crash Rate that exceeds the Critical Crash Rate indicates a Safety Ratio greater than 1.0 and a potential safety deficiency.

Table 14 provides a summary of the crash data collected and the results of the second quarter analysis.

Table 14: Safety Statistics, June 2013 - May 2016

Segment	Length	AADT [1]	Total Crashes	Vehicle Exposure (MVMT)	Total Crash Rate	Statewide Crash Rate [2]	Critical Crash Rate	Safety Ratio
NC 147 I 40 to NC 540	3.1	10,400	33	35.37	93.29	85.41	87.98	1.06
NC 540 I 40 to NC 55	2.8	25,600	58	78.35	74.03	85.41	87.13	0.85
NC 540 NC 55 to US 64	6.7	18,600	76	136.03	55.87	85.41	86.72	0.64
NC 540 US 64 to NC 55 Bypass	5.9	13,500	44	86.64	50.78	85.41	87.05	0.58
Triangle Expressway	**18.4**	**17,000**	**211**	**343.28**	**61.46**	**85.41**	**86.23**	**0.71**

[1] AADT provided from NCDOT 2014 AADT Maps, Wake County
[2] Statewide Crash Rate for Interstate Facilities Applied

Roadway Operations Statistics

ROADWAY OPERATIONS STATISTICS

Highly trained NCTA operators monitor and manage traffic operations, and coordinate incident response and maintenance/construction work along the Triangle Expressway. These operators work at the Traffic Management Center (TMC) located in the North Carolina National Guard's Joint Force Headquarters in Raleigh. They are responsible for monitoring the facility 24-hours a day, 7-days a week, and 365-days a year using closed-circuit TV (CCTV) cameras, microwave speed detectors (MVD), toll zone security cameras, and Roadway Weather Information System (RWIS). Additionally, they monitor roadside technology and toll facilities.

Operators can communicate travel conditions and emergencies to customers via 10 full-color Dynamic Message Signs (DMS), NCDOT's 511 system and Traveler Information Management System (TIMS) website. They can also quickly dispatch toll technology technicians to address equipment failures via the Maintenance Online Management Software (MOMS). Additionally, they can use interoperable 800MHz radio frequency dispatch from local 911 and statewide Highway Patrol communications to dispatch State Highway Patrol (SHP) and Incident Management Assistance Patrol (IMAP) in the event of incidents on the facility.

The NCTA Toll Safety Patrol program consist of dedicated SHP and IMAP services provided on Triangle Expressway. This program provides one SHP officer and one IMAP responder to the facility during working hours, Monday through Friday. During this time, the assigned SHP officer and IMAP driver are responsible for patrolling the facility and responding to incidents reported by operators.

This section presents operations statistics reported by SHP and IMAP during the second quarter of 2016. It includes driver violations and warnings placed by SHP and total IMAP assistance recorded, as well as average monthly IMAP response and clearance time.

Table 15 and *Table 16* present SHP operation statistics during 2016. "Chargeable Activities" are SHP activities involving fines. It should be noted that the "Other Violations" category includes chargeable activities such as load and equipment violations, driver's license violations, vehicle registration violations and littering.

Table 15: SHP Chargeable Activities

Chargeable Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Speed Violations	54	62	76	44	48	48							**332**
Alcohol Violations	0	0	0	0	0	0							**0**
Seat Belt Violations	5	4	4	18	12	3							**46**
Child Restraint Violations	0	0	0	1	0	0							**1**
Reckless Driving	1	1	1	4	7	2							**16**
Drug Violations	0	0	0	0	0	0							**0**
Other Violations	28	78	47	49	50	39							**291**
Total Charges	**88**	**145**	**128**	**116**	**117**	**92**							**686**

Table 16: SHP Non-Chargeable Activities

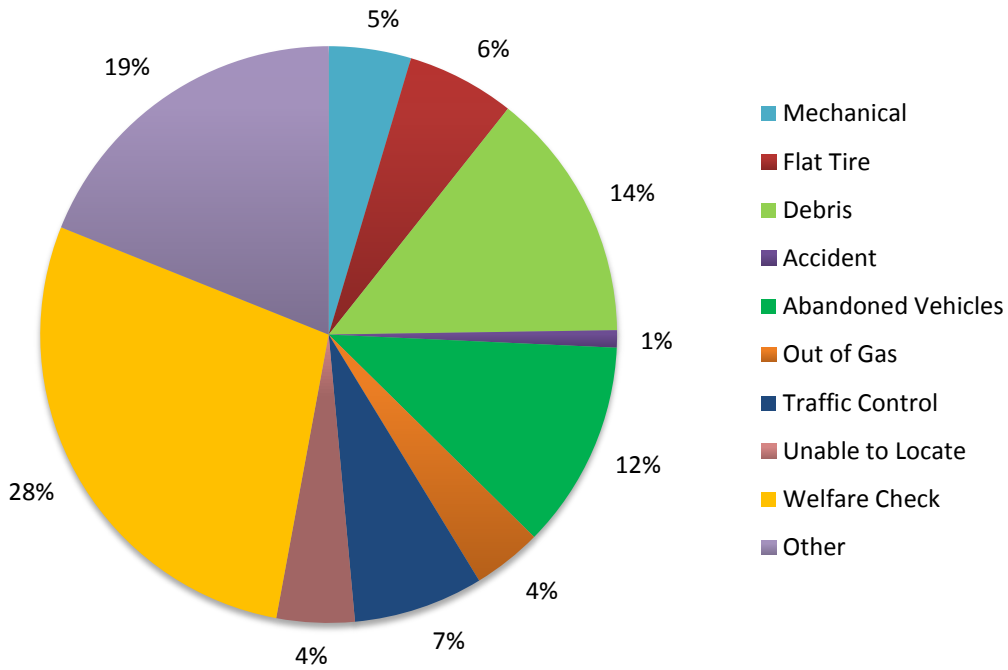
Non-Chargeable Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Warnings	53	40	56	90	57	97							**393**
Vehicles Towed	0	0	0	0	0	0							**0**
Crashes Investigated	4	8	5	5	16	3							**41**
Total	**57**	**48**	**61**	**95**	**73**	**100**							**434**

The IMAP assists with stranded motorists and incident clearance, thereby maintaining the flow of traffic along the roadway. *Table 17* and *Figure 31* present the monthly breakdown of IMAP assists, by type, for the Triangle Expressway during 2016. The "other" category includes the reporting categories of assist other unit, secured load, called for assistance, directions, and transported motorist.

Table 17: IMAP Assistance

Assist Type	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Mechanical	3	2	3	5	3	3							**19**
Flat Tire	5	1	10	3	4	2							**25**
Debris	7	9	11	9	11	11							**58**
Accident	1	1	2	0	0	0							**4**
Abandoned Vehicles	12	8	7	5	5	11							**48**
Out of Gas	2	2	7	0	4	1							**16**
Traffic Control	1	2	9	6	8	4							**30**
Unable to Locate	5	2	0	8	2	1							**18**
Welfare Check	4	17	22	9	38	26							**116**
Other	13	6	14	3	28	14							**78**
Total Assist	**53**	**50**	**85**	**48**	**103**	**73**							**412**

Figure 31: 2016 IMAP Assistance by Type, YTD



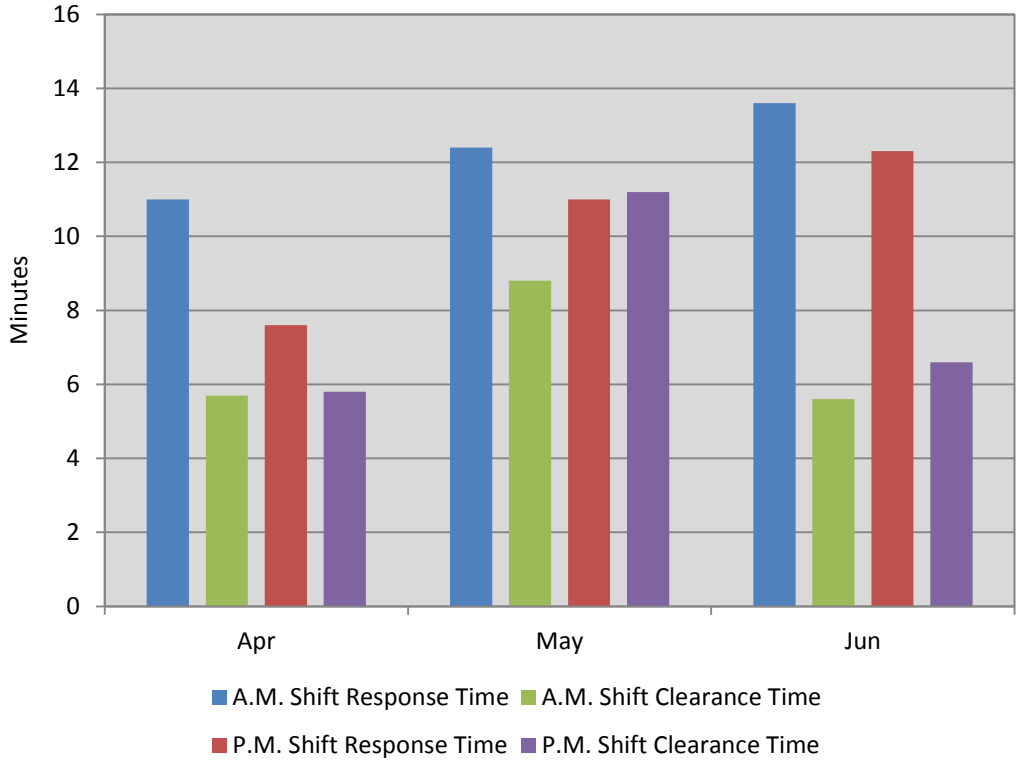
The response and clearance times for all IMAP assists are logged by IMAP and provided to the NCTA. Response time is the time from which a responder receives a call to the time they arrive on the scene. Clearance time is the time it takes the responder to clear the incident and return the roadway to normal operation. The IMAP staff's AM shift occurs from 6AM to 2PM, while the PM shift occurs from 2PM to 10PM. Shift response times may differ due to the number of drivers on duty and their coverage areas.

Table 18 and *Figure 32* present the average IMAP assistance response and clearance times, in minutes, for the Triangle Expressway.

Table 18: Average IMAP Assistance Response and Clearance Times (in Minutes)

Response Type	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2016 Average
A.M. Shift Response	12	12	16	11	12	14							**13**
A.M. Shift Clearance	6	5	11	6	9	6							**7**
P.M. Shift Response	13	10	11	8	11	12							**11**
P.M. Shift Clearance	7	10	10	6	11	7							**8**

Figure 32: Average IMAP Assistance Response and Clearance Times (in Minutes)



Roadway Maintenance Statistics

ROADWAY MAINTENANCE STATISTICS

This section outlines the NCTA Maintenance Rating Program (MRP), which is a maintenance evaluation program for roadway features and toll facilities. MRP is a comprehensive planning, measuring, and managing process that provides a means for communicating to managers, stakeholders and key customers the impacts of policy and budget decisions on program service delivery.

Using outcome-based performance measures and the service level scale (0 through 100), the inspection results are rated against established threshold criteria. The program analysis is accomplished through the use of sampling procedures that capture the level of service being provided for individual asset features. Over time, these ratings will then be charted to identify work needs and subsequent necessary actions. The evaluations are based on the establishment of threshold conditions that quantify the maximum defect allowed to exist for a characteristic before it is considered unacceptable. The NCTA performance standards, threshold criteria and maintenance rating program were developed through a collaborative effort by NCTA managers, NCDOT maintenance staff, and consultants.

Using field survey information, a maintenance matrix can be developed to show the ties between maintenance activities and the characteristics of various roadway features. The purpose of this evaluation is to provide information that will be used to schedule and prioritize routine maintenance activities and provide uniform maintenance conditions that meet established objectives.

Assessment Schedule

As part of the NCTA MRP, a “baseline” assessment was scheduled to be completed for each newly opened roadway section, soon after opening to toll collection. The baseline assessments included complete inventory data collection and assessment on 100% of the roadway assets.

After the initial baseline assessment was completed, future assessments for that segment switched over to a statistical sampling assessment. Inspections are performed during the months of February, May, August, and November to account for dynamic seasonal changes to assets. These inspections are accomplished through the use of statistically valid, random sampling procedures that capture the level of service for individual assets with a 95% confidence level in sampling.

Assessment Results

Table 19 presents the 2016 quarterly and annual MRP Assessment rating. It is important to note that the Quarterly Ratings are only representative of the samples inspected during each quarter. Therefore, they are not a statistically valid representation of the assets' conditions; only the annual rating will provide a 95% confidence level in statistical sampling.

Table 19: MRP Assessment Results

Element	Q1 2016 Rating	Q2 2016 Rating	Q3 2016 Rating	Q4 2016 Rating	2016 Annual Rating
Road Surface	98.3	100.0	N/A	N/A	N/A
Unpaved Shoulders and Ditches	97.7	100.0	N/A	N/A	N/A
Drainage	92.6	91.0	N/A	N/A	N/A
Roadside	92.1	83.4	N/A	N/A	N/A
Traffic Control Devices	93.5	96.1	N/A	N/A	N/A
Overall MRP Performance Rating	**94.9**	**94.7**	**N/A**	**N/A**	**N/A**

N/A (Not Applicable) – MRP Assessment has not been conducted yet.