

NORTH CAROLINA

**Turnpike Authority**

## **Operations Statistics Report**

Triangle Expressway

**2014 First Quarter Report**

1 S. Wilmington Street  
Raleigh, NC 27601



Last Updated:  
April 23, 2014

# Table of Contents

# Table of Contents

- INTRODUCTION ..... 5**
  - Purpose ..... 5
  - Project ..... 5
- TRAFFIC STATISTICS ..... 8**
  - Average Weekday Traffic (AWT) ..... 8
  - Interchange Statistics ..... 8
- TOLL SYSTEM STATISTICS ..... 22**
  - Weekly, Monthly and Year-to-Date (YTD) Statistics ..... 22
  - Transactions ..... 23
  - Classification ..... 25
  - Accounts ..... 27
  - Transponders ..... 29
- TOLL ZONE STATISTICS ..... 32**
- ROADWAY OPERATIONS STATISTICS ..... 44**
- ROADWAY MAINTENANCE STATISTICS ..... 49**
  - Assessment Schedule ..... 49
  - Assessment Results ..... 50

## Table of Figures and Tables

Figure 1: Triangle Expressway System Map.....	6
Figure 2: Triangle Expressway Interchange Map.....	9
Figure 3: NC-147 at I-40 Interchange AWT.....	10
Figure 4: NC-147 at Hopson Road Interchange AWT.....	11
Figure 5: NC-147 at Davis Drive Interchange AWT.....	12
Figure 6: NC-540 at NC-54 Interchange AWT.....	13
Figure 7: NC-540 at NC-147 Interchange AWT.....	14
Figure 8: NC-540 at NC-55 Interchange AWT.....	15
Figure 9: NC-540 at Green Level West Rd. Interchange AWT.....	16
Figure 10: NC-540 at US-64 Interchange AWT.....	17
Figure 11: NC-540 at US-1 Interchange AWT.....	18
Figure 12: NC-540 at South Salem Street Interchange AWT.....	19
Figure 13: NC-540 at NC-55 Bypass Interchange AWT.....	20
Figure 14: Total Monthly Transactions YTD.....	24
Figure 15: Total Monthly Class 1 Percentage YTD.....	26
Figure 16: Monthly Established Accounts YTD.....	27
Figure 17: Total Monthly Transponders Sold by Type YTD.....	29
Figure 18: Triangle Expressway Toll Zone Map.....	33
Figure 19: Hopson Road Ramp Toll Zones.....	34
Figure 20: NC-147 South Ramp Toll Zones.....	35
Figure 21: NC-540 Morrisville Mainline Toll Zones.....	36
Figure 22: NC-147 North Ramp Toll Zones.....	37
Figure 23: NC-540 Cary Mainline Toll Zones.....	38
Figure 24: US-64 Ramp Toll Zones.....	39
Figure 25: NC-540 Apex Mainline Toll Zones.....	40
Figure 26: South Salem Street Ramp Toll Zones.....	41
Figure 27: NC-540 Holly Springs Mainline Toll Zones.....	42
Figure 28: 2014 YTD IMAP Assistance by Type.....	46
Figure 29: Average IMAP Assistance Response and Clear Times (in Minutes).....	47
Table 1: Total Weekly Transactions.....	23
Table 2: Total Monthly Transactions.....	23
Table 3: Total Yearly Transactions.....	24
Table 4: Total Weekly Classification.....	25
Table 5: Total Monthly Classification.....	25
Table 6: Total Yearly Classification.....	26
Table 7: Total Monthly Established Accounts by Type.....	27
Table 8: Total Yearly Established Accounts by Type.....	28
Table 9: Total Monthly Transponders Sold by Type.....	29
Table 10: Total Yearly Transponders Sold by Type.....	30
Table 11: SHP Statistics.....	45
Table 12: Monthly IMAP Assistance by Type.....	46
Table 13: Monthly Average IMAP Assistance Response and Clear Times (in Minutes).....	47
Table 14: MRP Assessment Results.....	50

## INTRODUCTION

### Purpose

The purpose of this report is to provide various North Carolina Turnpike Authority (NCTA) operations related performance metrics of the Triangle Expressway for the first quarter of 2014. The summarized data will provide a general overview of traffic statistics, toll system statistics, roadway operations and maintenance operations for the entire facility. Future reports will compare monthly and annual statistical trends over time to show the progression of the roadway.

### Project

#### *The Triangle Expressway*

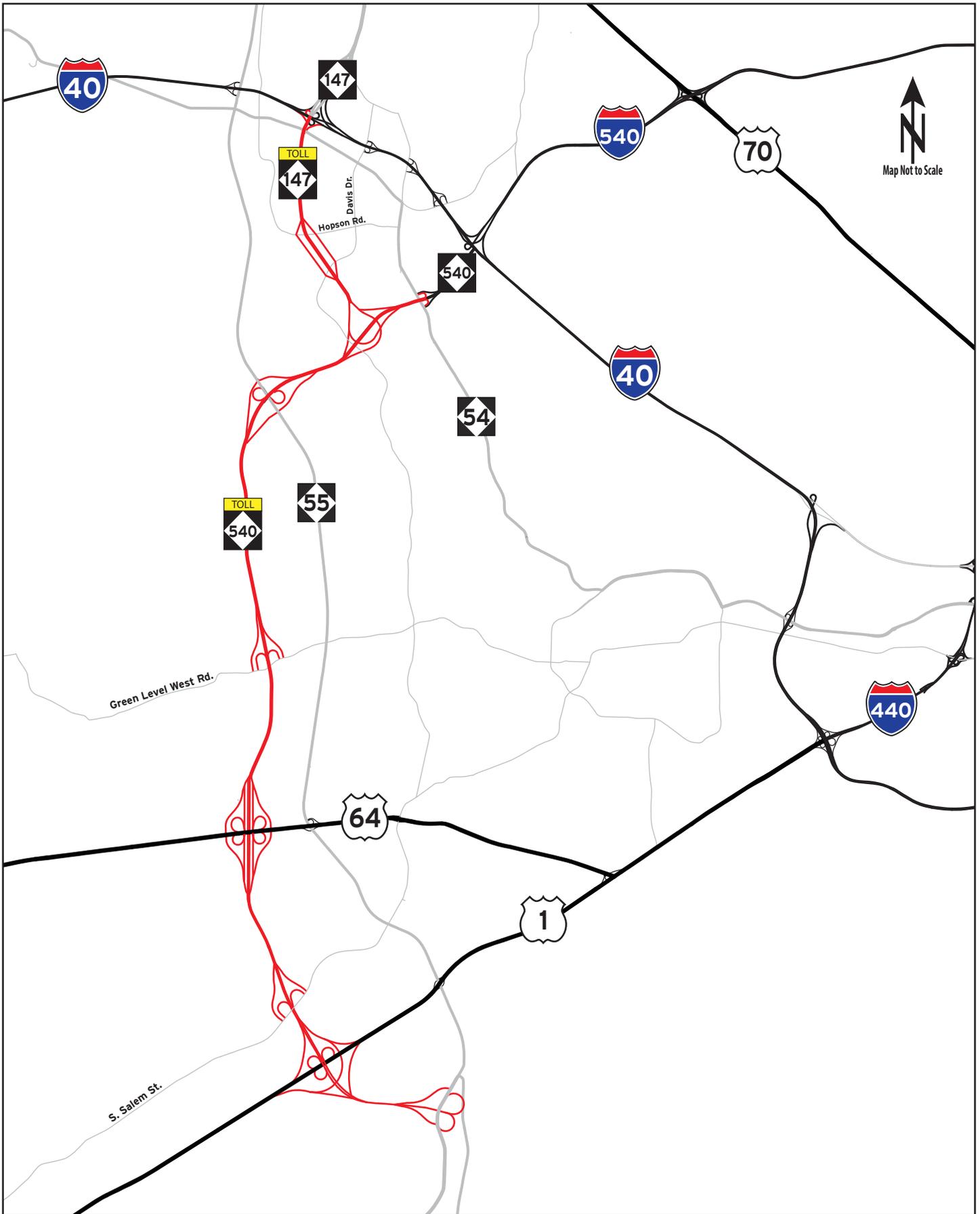
The Triangle Expressway is an 18.8 mile toll road that extends the partially complete “Outer Loop” around the greater Raleigh, North Carolina area from I-40 to the NC-55 Bypass in Holly Springs. The controlled access, six-lane toll facility relieves congestion on the paralleling NC-55 facility, while 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 elements; 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 and opened to toll-free traffic on December 8, 2011. Tolling on this section began on January 3, 2012.

Toll NC-540 includes 12.6 miles of toll road between NC-55 in western Cary and the NC-55 Bypass near the Town of Holly Springs. The section from NC-55 to US-64 includes interchanges at 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 video billing program called Bill by Mail.

NCTA toll zones are located along the Triangle Expressway at mainline and interchange ramp locations to ensure that there are no non-tolled trips. An illustration of the entire Triangle Expressway can be seen in *Figure 1* on the following page.



**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 facility. The data gives an overview of the current utilization of the roadway. The data can also be analyzed to identify trends that could be used to determine a more accurate estimate of the future utilization of these facilities.

It should be noted that due to the recent completion of the Triangle Expressway the facility is currently experiencing 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 found at an existing facility. The growth rates increase as the customers become more familiar with the facility. The ramp-up period is expected to continue through 2014.

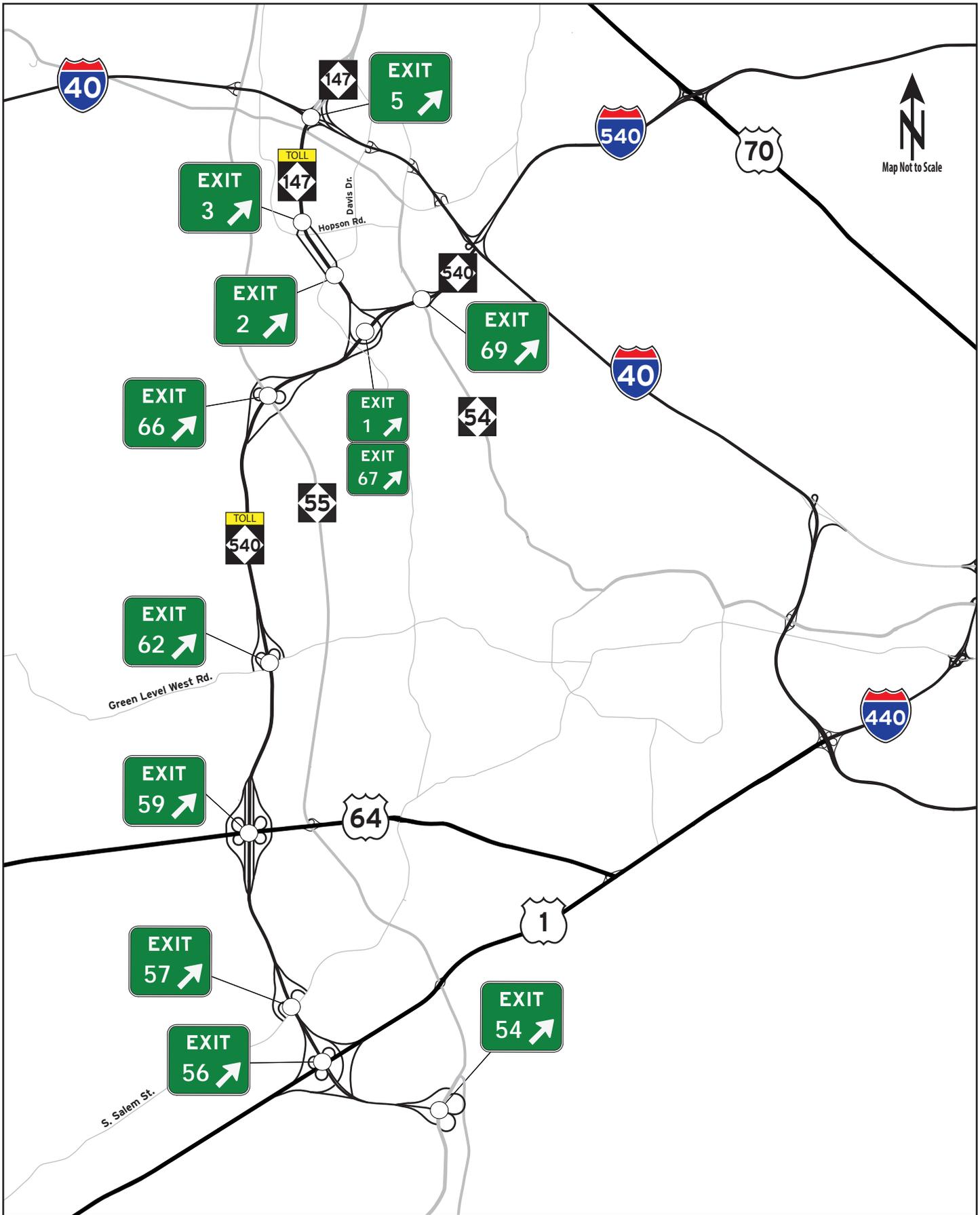
### Average Weekday Traffic (AWT)

Traffic volume data is collected on all mainline segments between interchanges and on all ramp locations. Typically there is a large difference between peak and off-peak volumes, as well as between weekday and weekend volumes. However, this gap becomes even larger for a tolled facility. This is due to the fact that toll roads tend to have a much higher percentage of traffic occurring during peak hours when compared to a normal roadway, as there is less of a benefit for toll users during off peak hours. For these reasons, 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.

### Interchange Statistics

The following pages contain visual representations of AWT for all interchanges along the facility and are representative of NCTA's MVD data. The location of the interchanges in relation to the entire expressway can be seen on the following page in *Figure 2*.

If there are not enough reliable days (5) for a particular month to report an AWT, then that MVD will report "NO DATA."



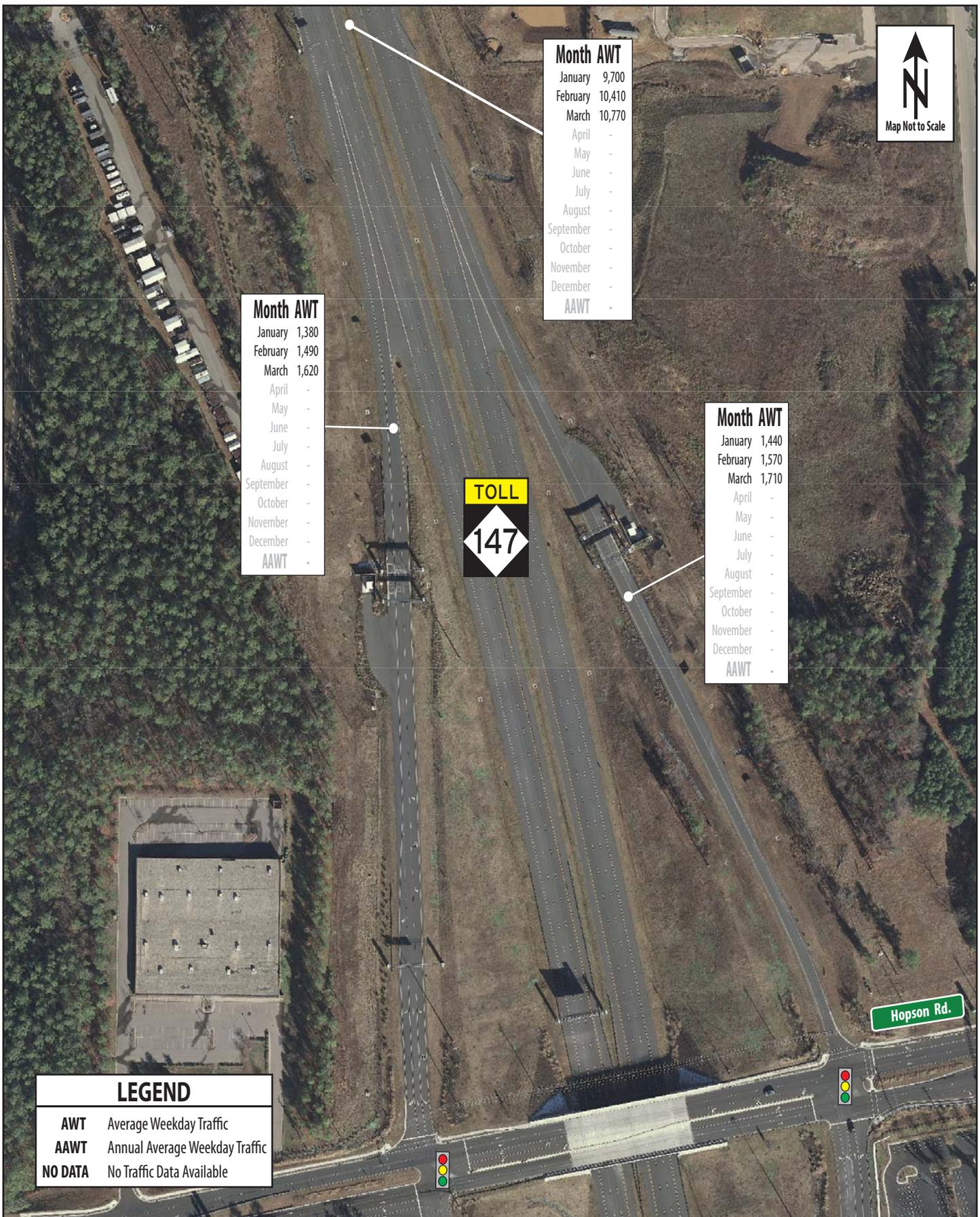
**Triangle Expressway Interchange Map**

**Figure 2**



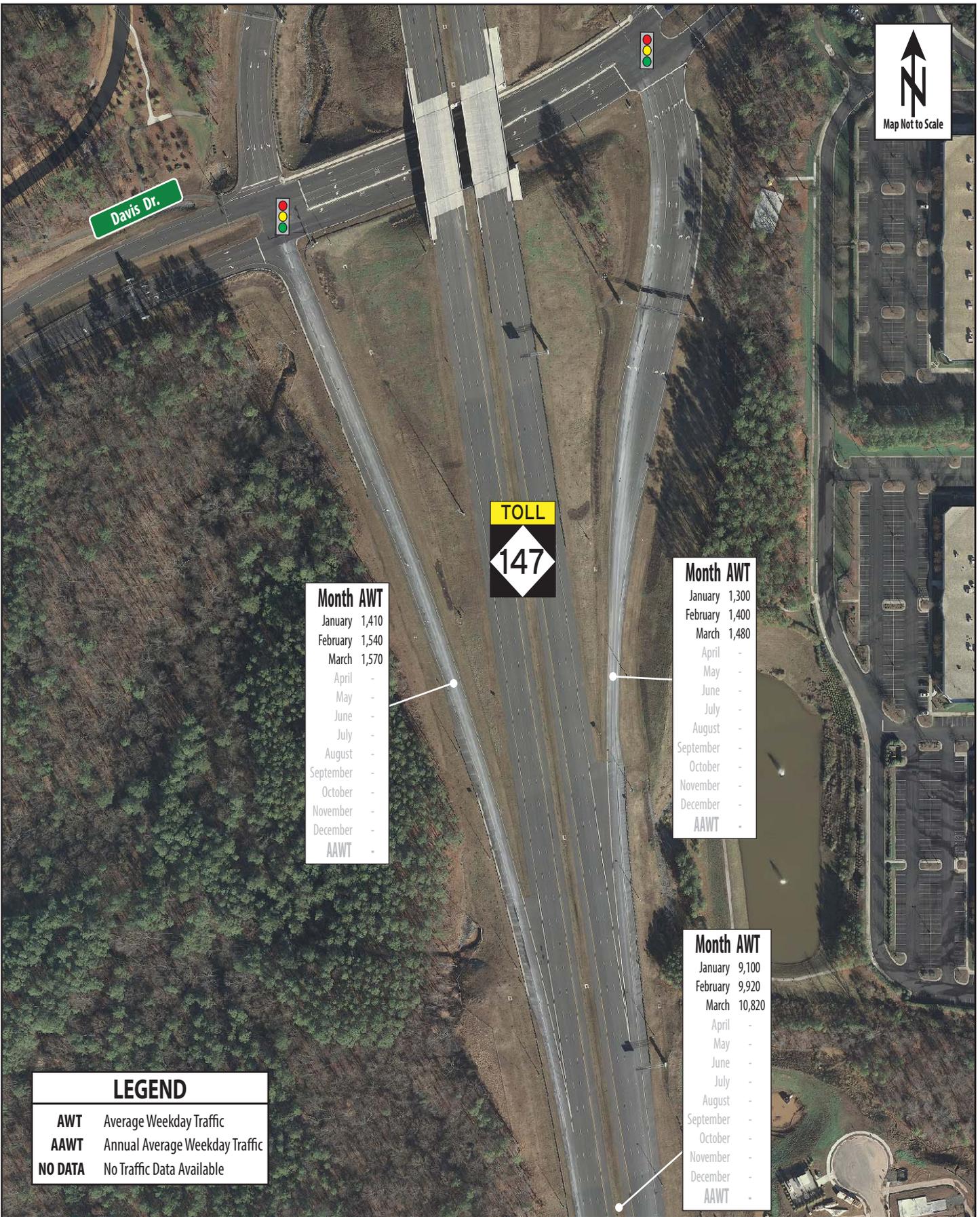
**NC-147 at I-40 Interchange**  
2014 Average Weekday Traffic

**Figure**  
**3**



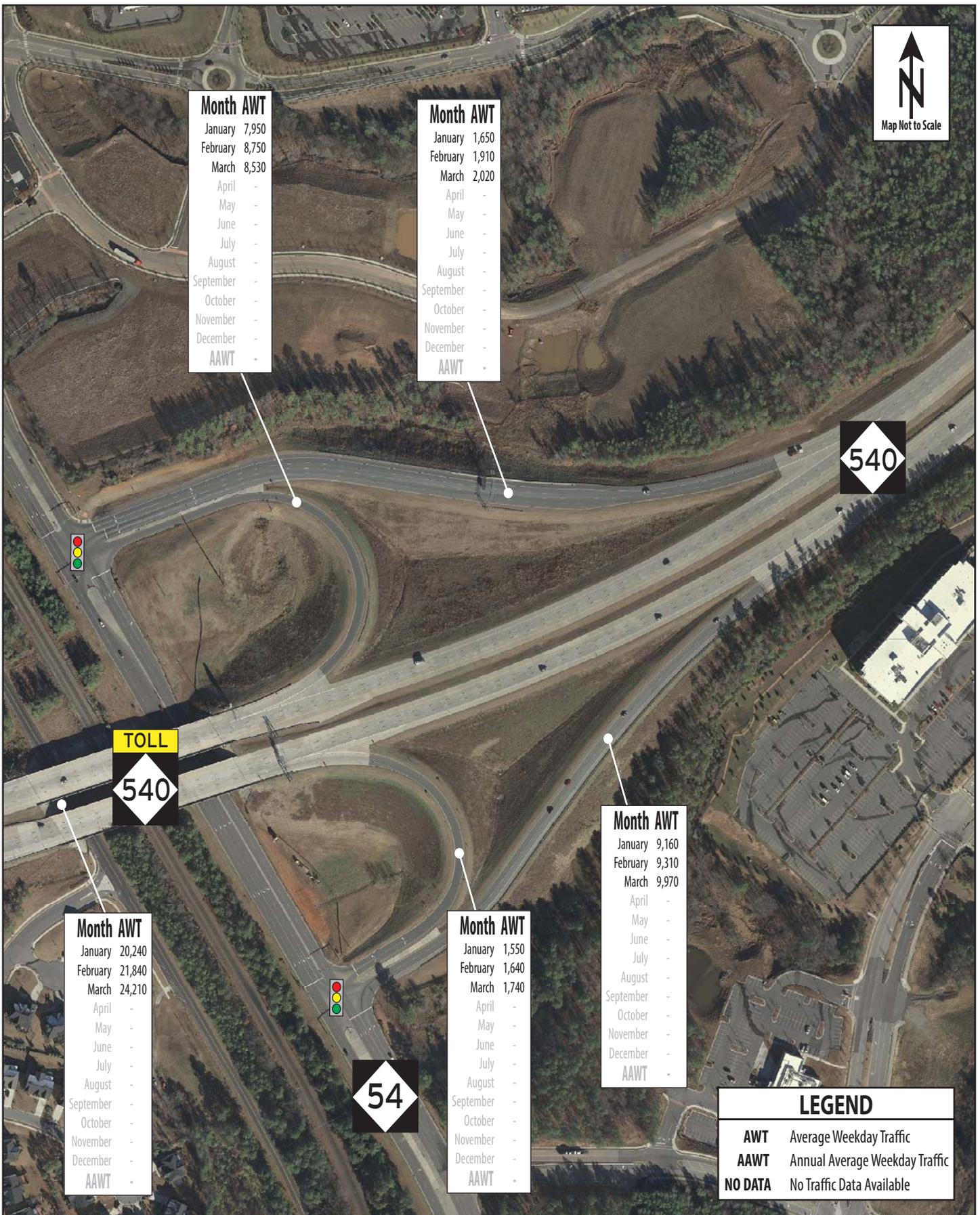
**NC-147 at Hopson Rd. Interchange**  
2014 Average Weekday Traffic

**Figure**  
**4**



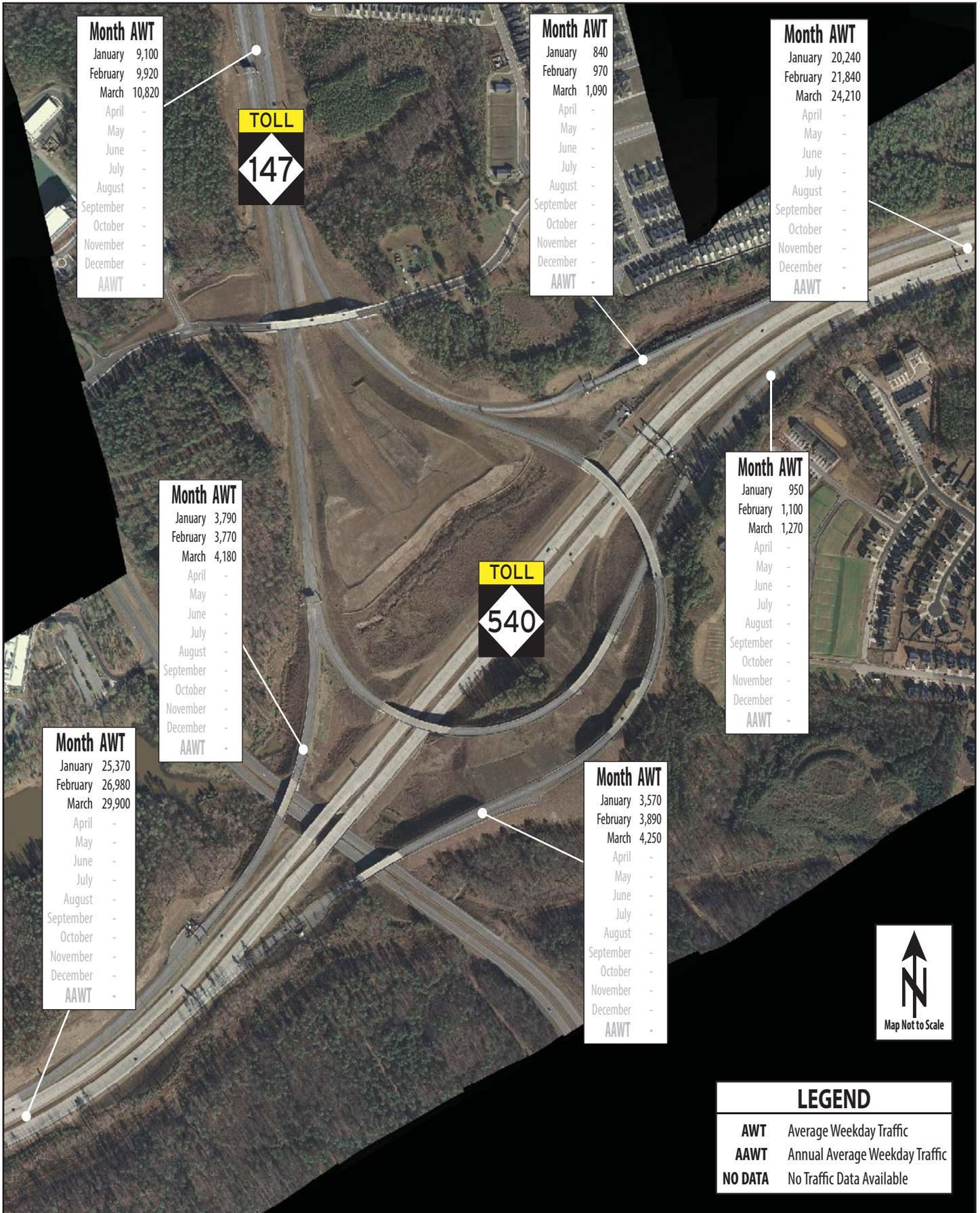
**NC-147 at Davis Dr. Interchange**  
2014 Average Weekday Traffic

**Figure**  
**5**



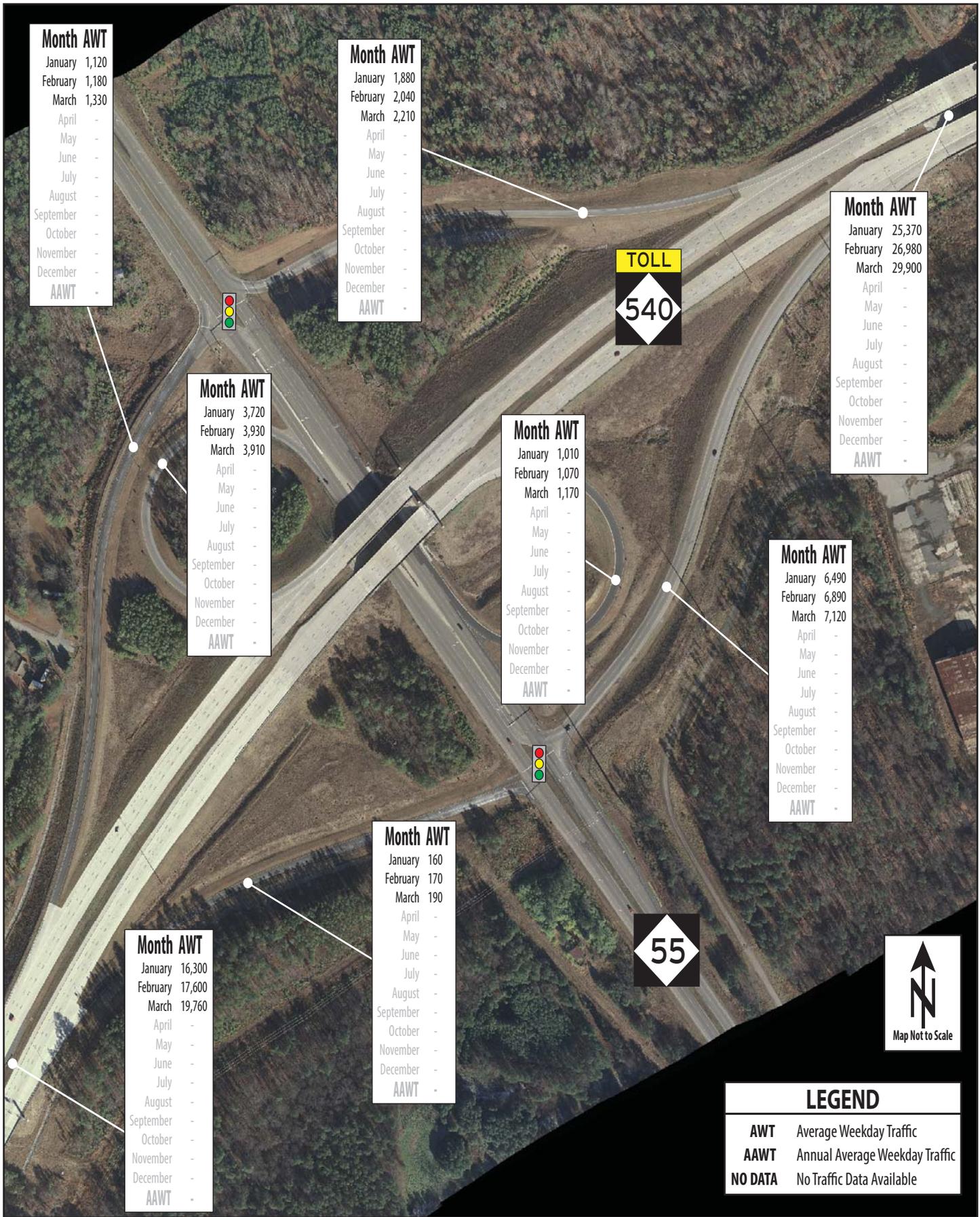
**NC-540 at NC-54 Interchange**  
2014 Average Weekday Traffic

**Figure**  
**6**



**NC-540 at NC-147 Interchange**  
2014 Average Weekday Traffic

**Figure**  
**7**



**NC-540 at NC-55 Interchange**  
2014 Average Weekday Traffic

**Figure**  
**8**

Month AWT	
January	16,300
February	17,600
March	19,760
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-



Month AWT	
January	660
February	700
March	770
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month AWT	
January	850
February	920
March	1,020
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Green Level West Rd.

Month AWT	
January	680
February	750
March	790
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

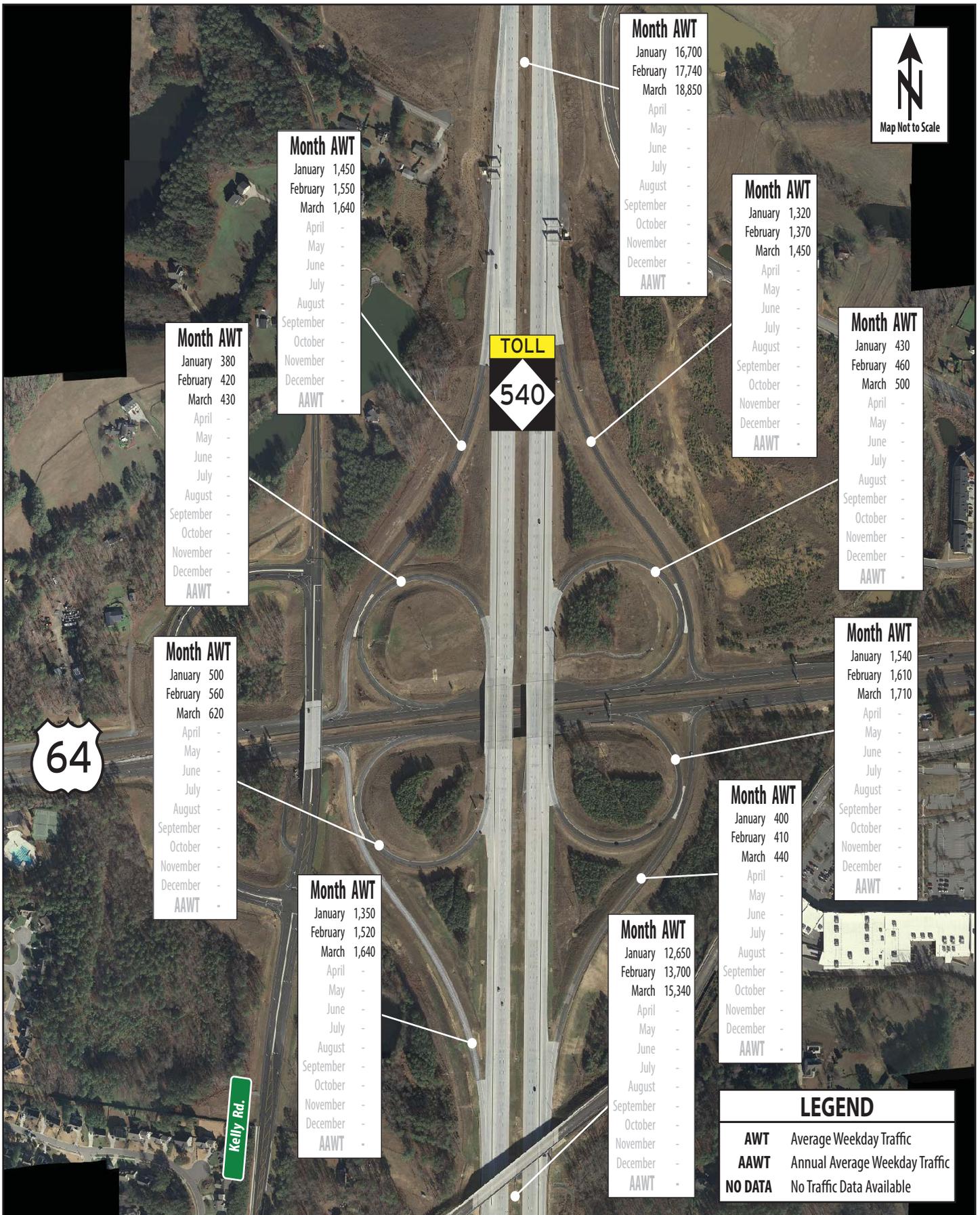
Month AWT	
January	680
February	760
March	810
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month AWT	
January	16,700
February	17,740
March	18,850
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

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

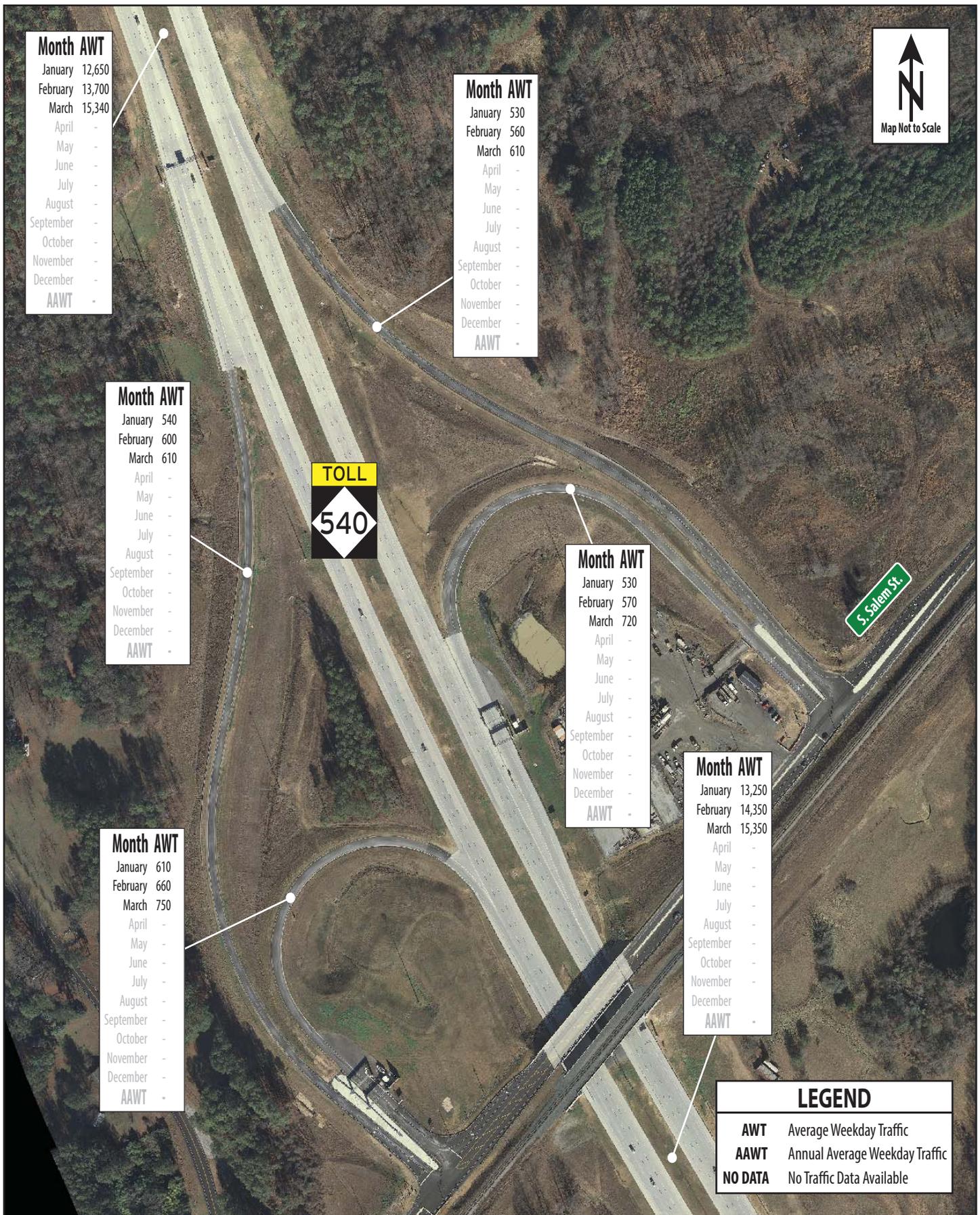
**NC-540 at Green Level West Rd. Interchange**  
2014 Average Weekday Traffic

**Figure 9**



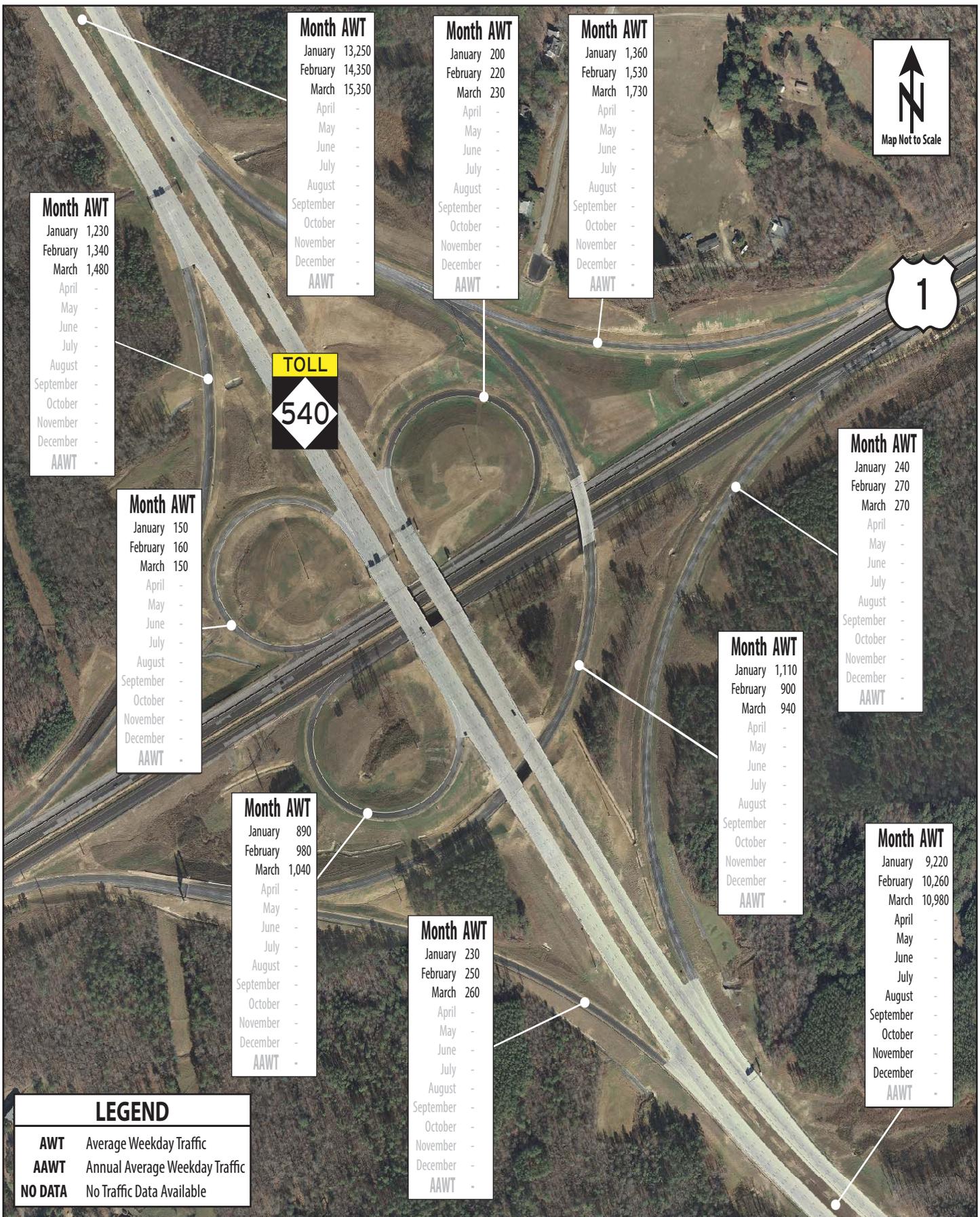
**NC-540 at US-64 Interchange**  
2014 Average Weekday Traffic

**Figure**  
**10**



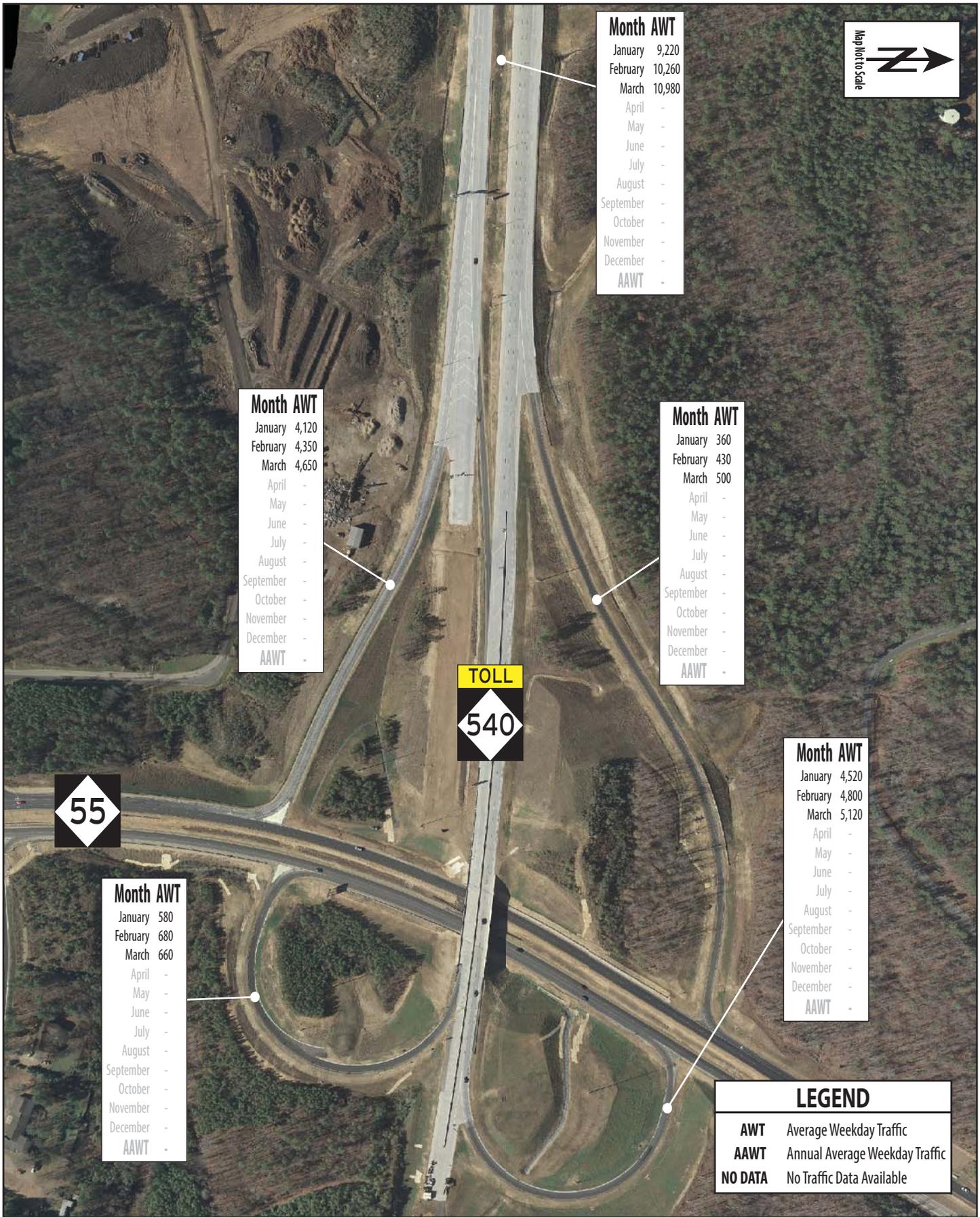
**NC-540 at S. Salem St. Interchange**  
2014 Average Weekday Traffic

**Figure**  
**11**



**NC-540 at US-1 Interchange**  
2014 Average Weekday Traffic

**Figure**  
**12**



**NC-540 at NC-55 Bypass Interchange**  
2014 Average Weekday Traffic

**Figure 13**

# Toll System Statistics

## **TOLL SYSTEM STATISTICS**

Current and historical toll system data is collected and reported through the NC Quick Pass Customer Service Center (CSC). The data provides 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 placed throughout the facility using an all-electronic tolling (AET) method. 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 combine roadway and customer service data and reflect the overall Triangle Expressway facility. Statistics have been provided for the datasets listed below:

- Transactions
- Classification
- Accounts
- Transponders

## Transactions

The statistics provided in the following section outline the volume and percentage of NCQP users compared to Bill by Mail users. NCQP users have an established account that is identified using the vehicle's onboard transponder, whereas Bill by Mail users do not have an established account and are identified using vehicle recognition software.

Table 1 presents a summary of the total weekly transactions for NC Quick Pass and Bill by Mail payment methods. Week endings begin on Monday and end on Sunday.

**Table 1: Total Weekly Transactions**

Week Ending	Transponder (NC Quick Pass)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
*1/5/2014	137,179	57%	103,049	43%	<b>240,228</b>
1/12/2014	303,600	63%	180,405	37%	<b>484,005</b>
1/19/2014	309,815	62%	190,587	38%	<b>500,402</b>
1/26/2014	291,242	62%	178,790	38%	<b>470,032</b>
2/2/2014	250,469	61%	157,480	39%	<b>407,949</b>
2/9/2014	319,736	62%	197,842	38%	<b>517,578</b>
2/16/2014	214,627	60%	141,923	40%	<b>356,550</b>
2/23/2014	322,039	61%	207,510	39%	<b>529,549</b>
3/2/2014	332,367	61%	214,194	39%	<b>546,561</b>
3/9/2014	309,365	61%	200,087	39%	<b>509,452</b>
3/16/2014	331,146	59%	226,368	41%	<b>557,514</b>
3/23/2014	320,662	59%	221,911	41%	<b>542,573</b>
3/30/2014	331,093	59%	225,846	41%	<b>556,939</b>
**3/31/2014	53,196	61%	33,605	39%	<b>86,801</b>

\*Week ending consists of five days worth of data

\*\*Week ending consists of one days worth of data

Table 2 presents a summary of the total monthly transactions for NC Quick Pass and Bill by Mail transactions.

**Table 2: Total Monthly Transactions**

Month	Transponder (NC Quick Pass)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
January	1,251,381	62%	771,331	38%	<b>2,022,712</b>
February	1,184,950	61%	756,040	39%	<b>1,940,990</b>
March	1,390,205	59%	952,226	41%	<b>2,342,431</b>

Figure 14 presents a visual summary of the total monthly transactions YTD for NC Quick Pass and Bill by Mail transactions.

**Figure 14: Total Monthly Transactions YTD**

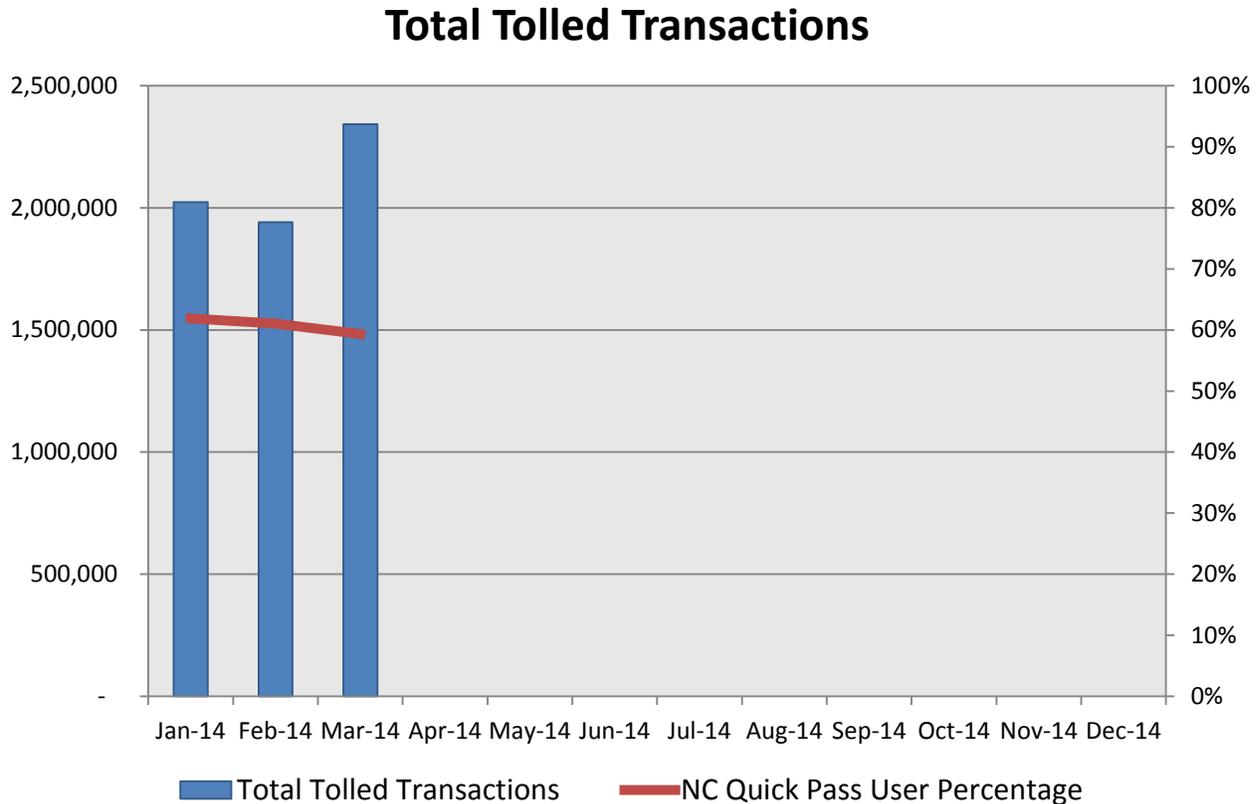


Table 3 presents a summary of the total yearly transactions for NC Quick Pass and Bill by Mail transactions. Project to date is the total number of transactions since the opening of the project.

**Table 3: Total Yearly Transactions**

Year	Transponder (NC Quick Pass)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
2012	2,803,043	49%	2,892,496	51%	5,695,539
2013	13,249,972	58%	9,792,975	42%	23,042,947
2014	3,826,536	61%	2,479,597	39%	6,306,133
<b>Project to Date</b>	<b>19,879,551</b>	<b>57%</b>	<b>15,165,068</b>	<b>43%</b>	<b>35,044,619</b>

## Classification

The statistics provided in the following section outline the volume and percentage of users based on classification. The classification system used by NCTA contains three classifications designated by the number of axles that a vehicle has.

Table 4 presents a summary of the total weekly classification for Class 1 (2-axle), Class 2 (3-axle) and Class 3 (4+axle) vehicles. Week endings begin on Monday and end on Sunday.

**Table 4: Total Weekly Classification**

Week Ending	Class 1 (2-axle)		Class 2 (3-axle)		Class 3 (4+axle)	
	Transactions	% of Total	Transactions	% of Total	Transactions	% of Total
*1/5/2014	234,195	97%	2,138	1%	3,895	2%
1/12/2014	471,163	97%	4,905	1%	7,937	2%
1/19/2014	484,956	97%	5,639	1%	9,807	2%
1/26/2014	455,737	97%	5,400	1%	8,895	2%
2/2/2014	396,288	97%	4,286	1%	7,375	2%
2/9/2014	503,825	97%	4,636	1%	9,117	2%
2/16/2014	347,588	97%	3,058	1%	5,904	2%
2/23/2014	513,560	97%	5,529	1%	10,460	2%
3/2/2014	528,248	97%	6,484	1%	11,829	2%
3/9/2014	496,366	97%	4,755	1%	8,331	2%
3/16/2014	538,207	97%	7,065	1%	12,242	2%
3/23/2014	527,393	97%	5,197	1%	9,983	2%
3/30/2014	537,922	97%	6,496	1%	12,521	2%
**3/31/2014	83,432	96%	1,180	1%	2,189	3%

\*Week ending consists of five days worth of data

\*\*Week ending consists of one days worth of data

Table 5 presents a summary of the total monthly classification for Class 1 (2-axle), Class 2 (3-axle) and Class 3 (4+axle) vehicles.

**Table 5: Total Monthly Classification**

Month	Class 1 (2-axle)		Class 2 (3-axle)		Class 3 (4+axle)	
	Transactions	% of Total	Transactions	% of Total	Transactions	% of Total
January	1,963,833	97%	21,756	1%	37,123	2%
February	1,884,228	97%	19,566	1%	37,196	2%
March	2,270,819	97%	25,446	1%	46,166	2%

Figure 15 presents a visual summary of the total monthly percentage of transactions YTD for Class 1 (2-axle) vehicles.

Figure 15: Total Monthly Class 1 Percentage YTD

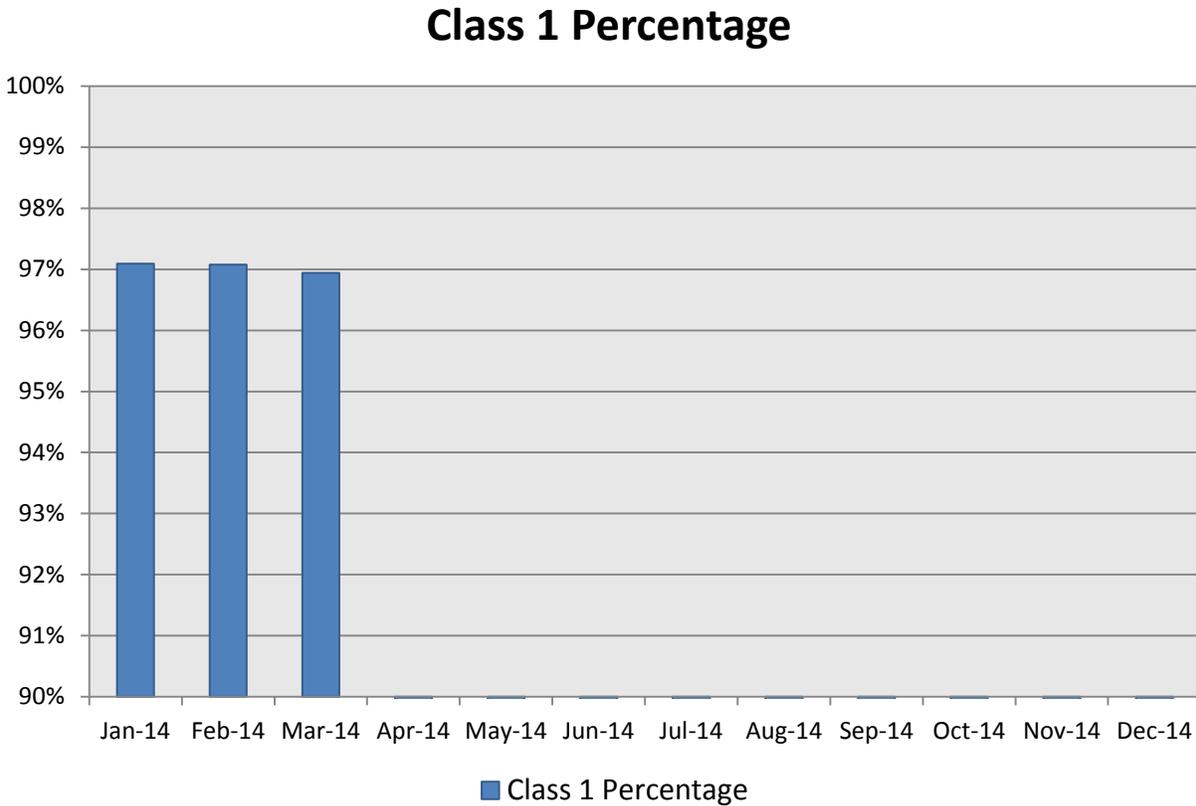


Table 6 presents a summary of the total yearly classification for Class 1 (2-axle), Class 2 (3-axle) and Class 3 (4+axle) vehicles. Project to date is the total number of transactions since the opening of the project.

Table 6: Total Yearly Classification

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%	46,935	1%	86,543	2%
2013	22,282,351	97%	267,558	1%	493,038	2%
2014	6,118,880	97%	66,768	1%	120,485	2%
<b>Project to Date</b>	<b>33,963,292</b>	<b>97%</b>	<b>381,261</b>	<b>1%</b>	<b>700,066</b>	<b>2%</b>

## Accounts

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

Table 7 presents a summary of the monthly established accounts being managed by the NCTA CSC. Numbers presented in parentheses represent a reduction in accounts.

**Table 7: Total Monthly Established Accounts by Type**

Month	Transponder (NC Quick Pass)	Bill by Mail	Registered Video	Non- Revenue	Government	Total
January	1,605	18,407	0	6	2	<b>20,020</b>
February	1,150	17,030	0	1	0	<b>18,181</b>
March	1,315	25,706	0	3	1	<b>27,025</b>

Figure 16 presents a visual summary of the monthly established accounts YTD being managed by the NCTA CSC. The “Other” category includes registered video, non-revenue and government accounts.

**Figure 16: Monthly Established Accounts YTD**

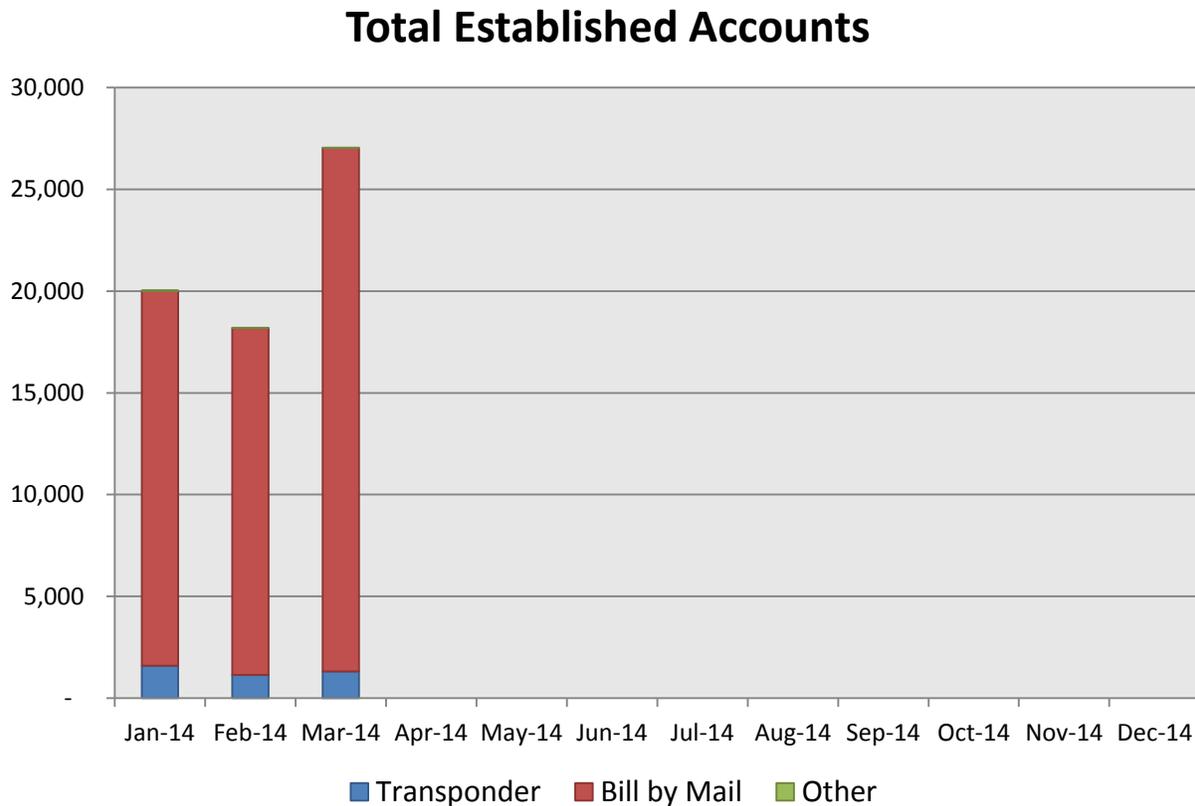


Table 8 presents a summary of the total yearly established accounts being managed by the NCTA CSC. Project to date is the total number of accounts established since the opening of the project. Numbers presented in parentheses represent a reduction in accounts.

**Table 8: Total Yearly Established Accounts by Type**

Year	Transponder (NC Quick Pass)	Bill by Mail	Registered Video	Non- Revenue	Government	Total
2012	27,179	359,431	5	38	18	386,671
2013	24,268	306,581	(1)	19	9	330,876
2014	4,070	61,143	0	10	3	65,226
<b>Project to Date</b>	<b>55,517</b>	<b>727,155</b>	<b>4</b>	<b>67</b>	<b>30</b>	<b>782,773</b>

## Transponders

The statistics provided in the following section outline the volume of transponders sold by the NC Quick Pass CSC.

Table 9 presents a summary of the total monthly transponders sold.

**Table 9: Total Monthly Transponders Sold by Type**

Month	Sticker Tag	Hard Case Tag	Exterior Tag	Total
January	2,246	1,169	12	<b>3,427</b>
February	1,696	1,005	11	<b>2,712</b>
March	2,215	962	15	<b>3,192</b>

Figure 17 presents a visual summary of the monthly transponders sold YTD.

**Figure 17: Total Monthly Transponders Sold by Type YTD**

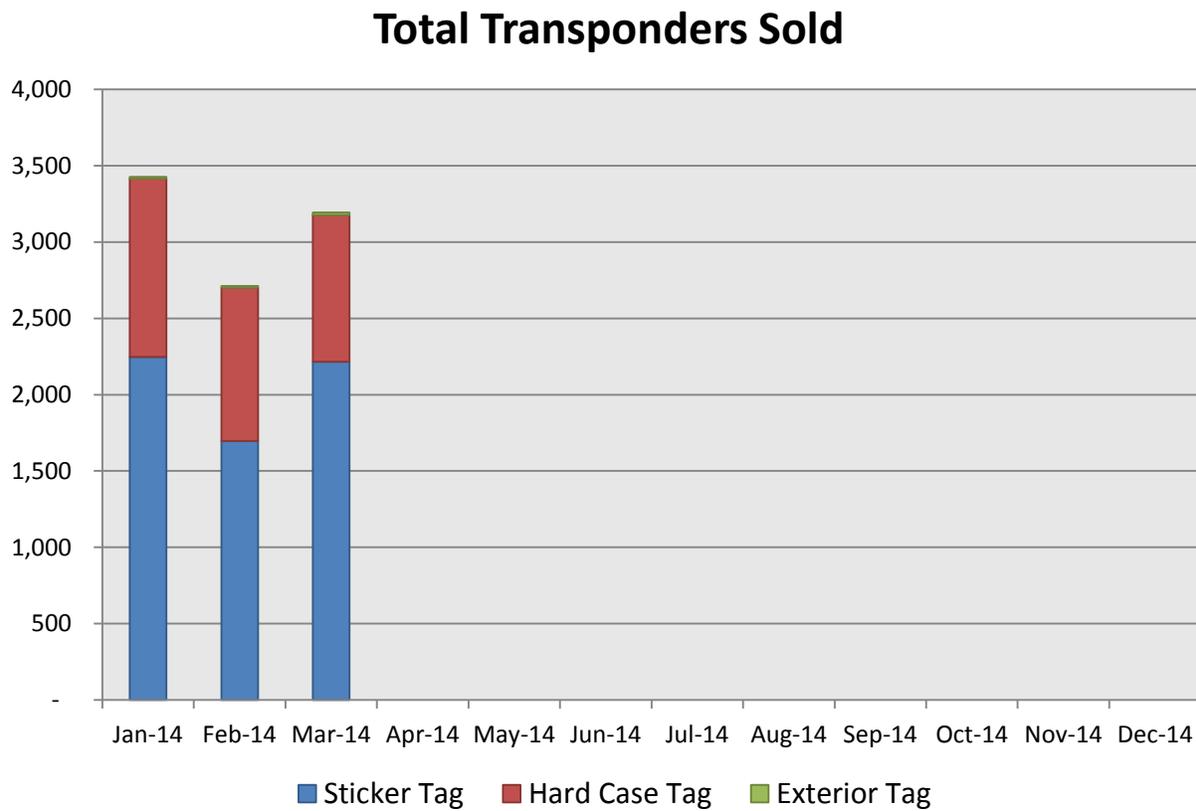


Table 10 presents a summary of the total yearly transponders sold. Transponders went on sale prior to the opening of the roadway to provide potential motorists sufficient time to establish their accounts. Project to date is the total number of transponders sold since the opening of the project and includes these transponders sold prior to the opening of the roadway to traffic.

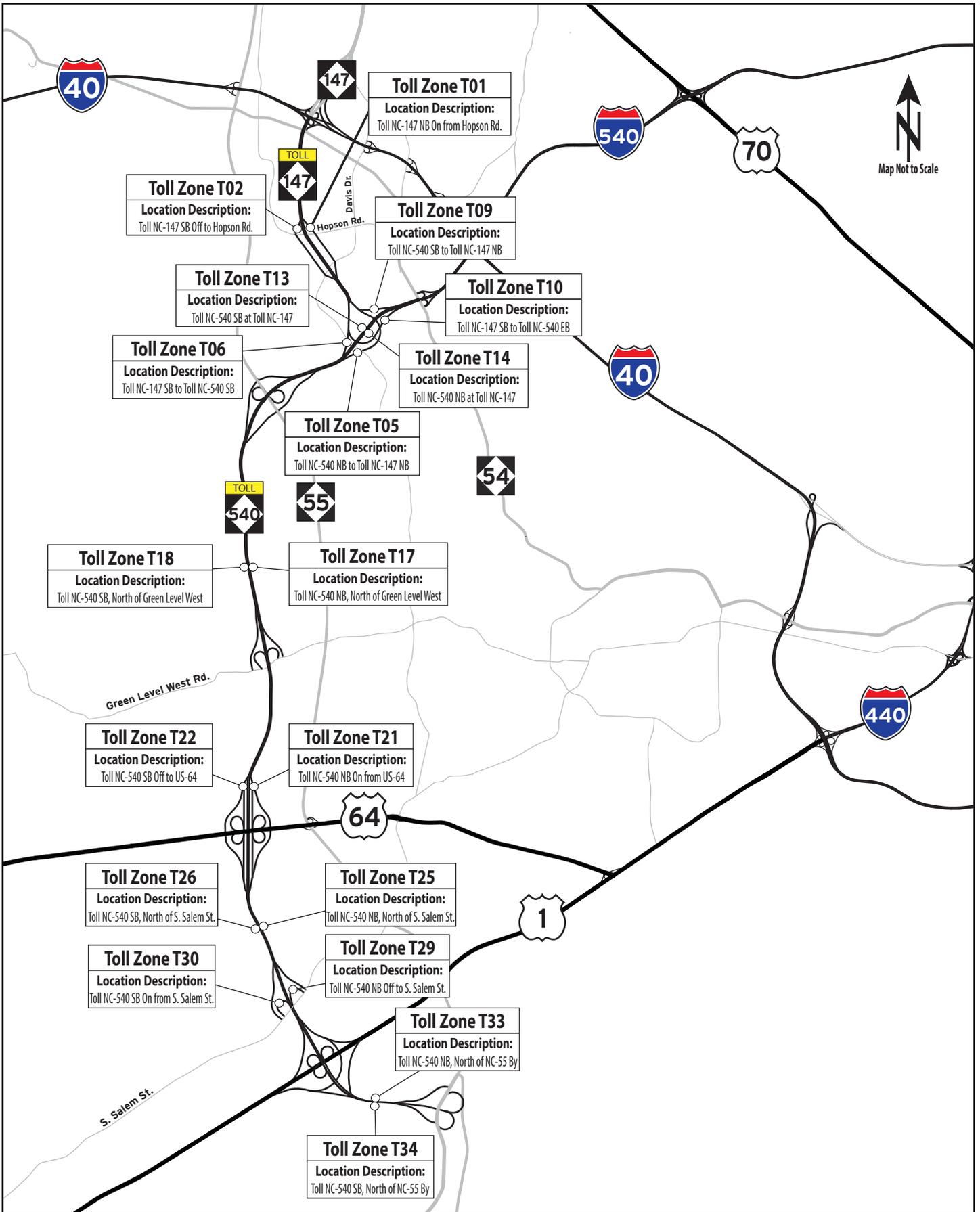
**Table 10: Total Yearly Transponders Sold by Type**

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	6,157	3,136	38	9,331
<b>Project to Date</b>	<b>83,594</b>	<b>26,783</b>	<b>745</b>	<b>111,122</b>

# Toll Zone Statistics

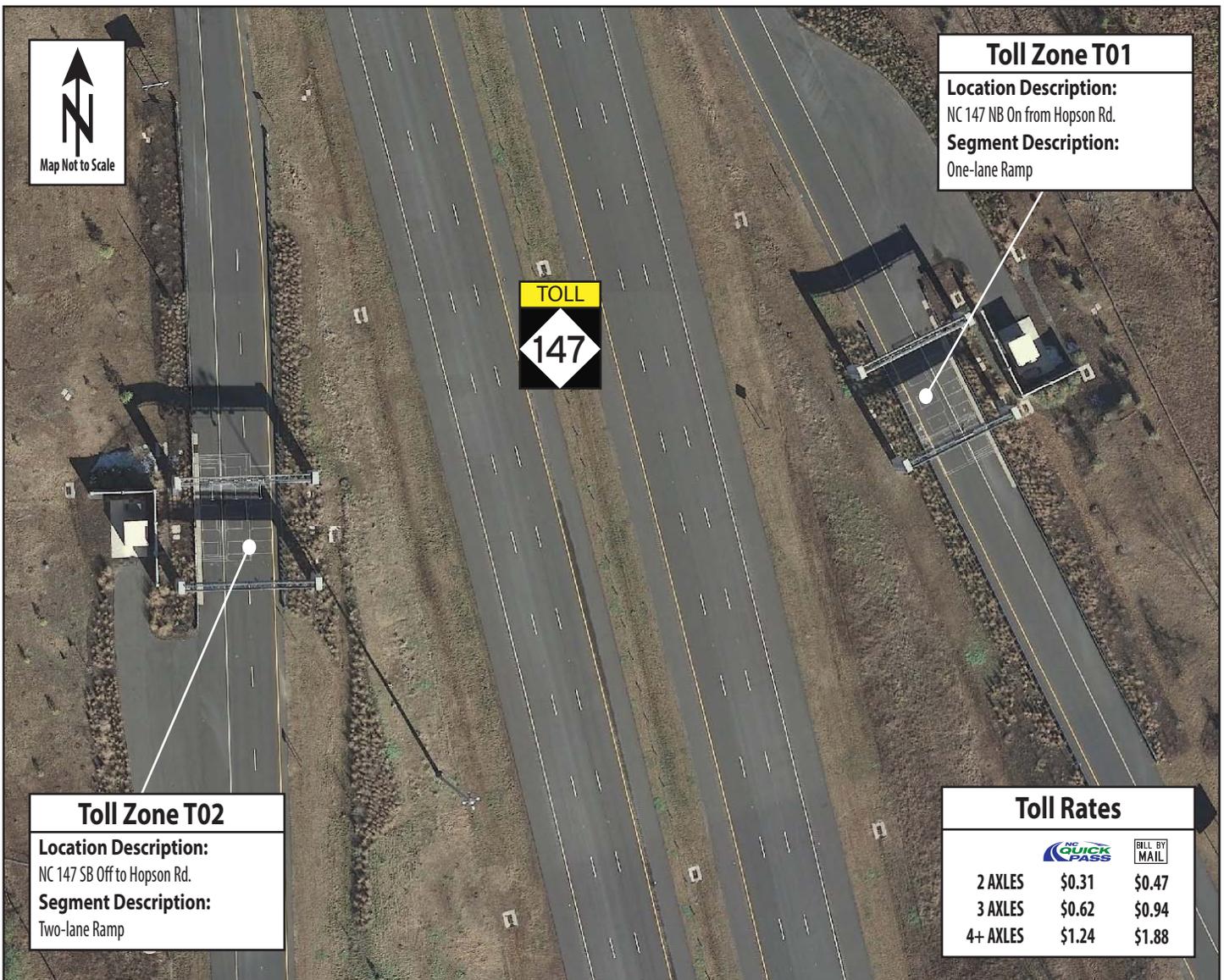
## TOLL ZONE STATISTICS

The following pages contain visual representations of transactions that have occurred for all toll zones along the facility. The location of the toll zones in relation to the entire Triangle Expressway can be seen on the following page in *Figure 18*.



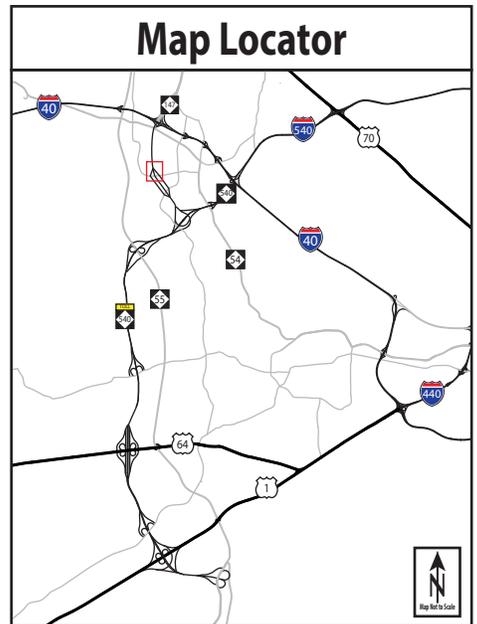
**Triangle Expressway Toll Zone Map**

**Figure 18**



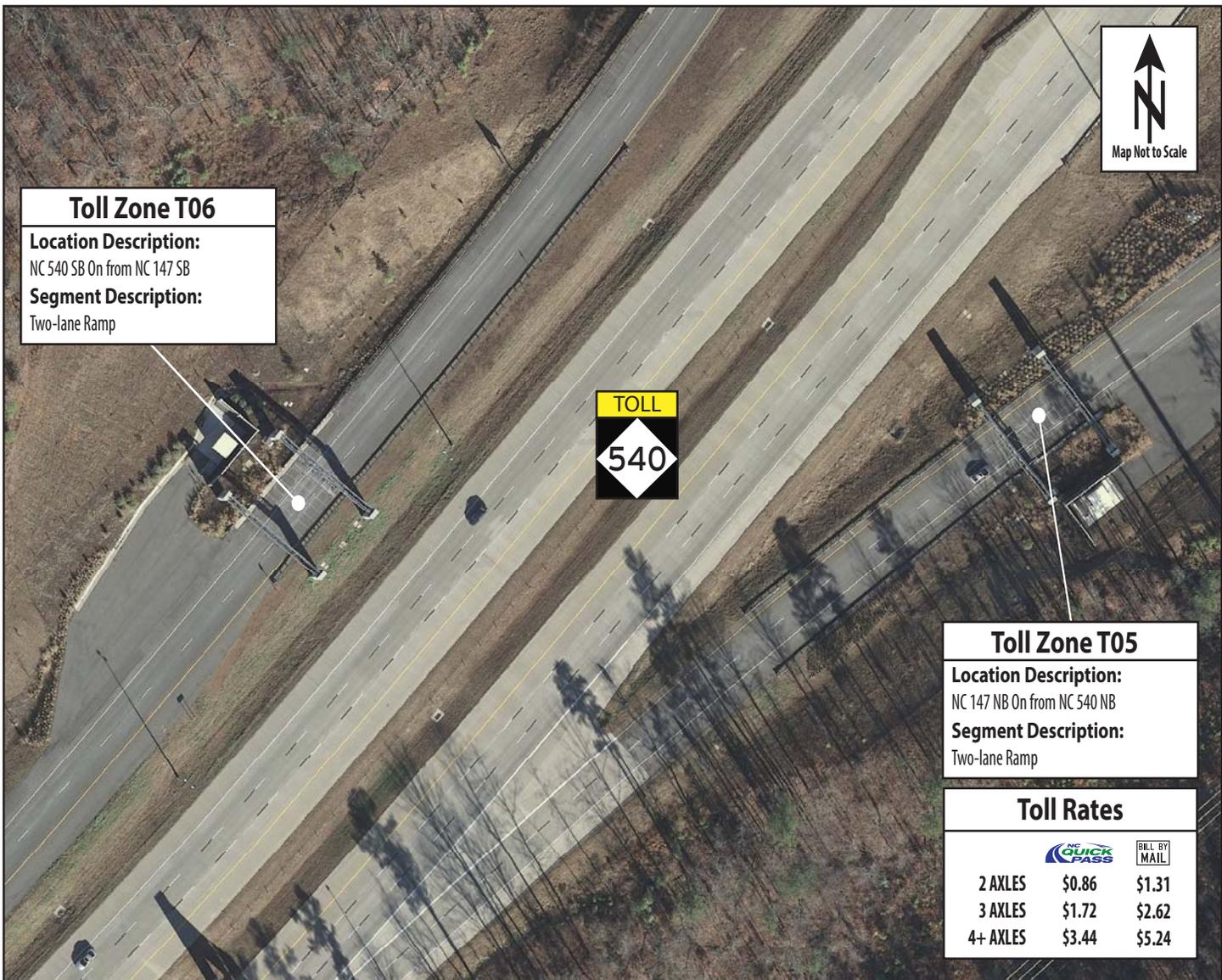
Month	T01	T02
January	1,580	1,510
February	1,740	1,670
March	1,710	1,630
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

Month	T01	T02
January	65%	65%
February	63%	64%
March	62%	63%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**Hopson Road Ramp Toll Zones**  
 2014 Average Weekday Toll Transactions

**Figure 19**



**Toll Zone T06**  
**Location Description:**  
 NC 540 SB On from NC 147 SB  
**Segment Description:**  
 Two-lane Ramp

**Toll Zone T05**  
**Location Description:**  
 NC 147 NB On from NC 540 NB  
**Segment Description:**  
 Two-lane Ramp

**Toll Rates**

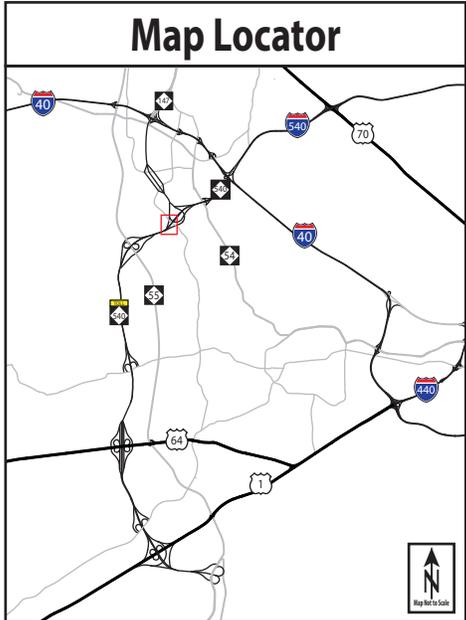
	QUICK PASS	BILL BY MAIL
2 AXLES	\$0.86	\$1.31
3 AXLES	\$1.72	\$2.62
4+ AXLES	\$3.44	\$5.24

**Transactions by Direction**

Month	T05	T06
January	4,100	3,880
February	4,480	4,280
March	4,360	4,200
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

**NC Quick Pass Percentage**

Month	T05	T06
January	67%	68%
February	67%	68%
March	64%	66%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**NC-147 South Ramp Toll Zones**  
 2014 Average Weekday Toll Transactions

**Figure 20**



**Toll Zone T14**  
**Location Description:**  
 NC 540 SB Mainline at NC 147  
**Segment Description:**  
 Three-lane Mainline

**Toll Zone T13**  
**Location Description:**  
 NC 540 NB Mainline at NC 147  
**Segment Description:**  
 Three-lane Mainline

**Toll Rates**

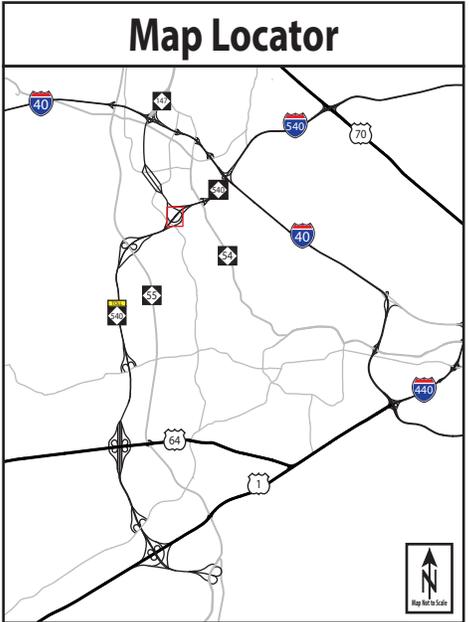
2 AXLES	\$0.55	\$0.84
3 AXLES	\$1.10	\$1.68
4+ AXLES	\$2.20	\$3.36

**Transactions by Direction**

Month	T13	T14
January	9,620	10,010
February	10,580	11,030
March	10,650	11,070
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

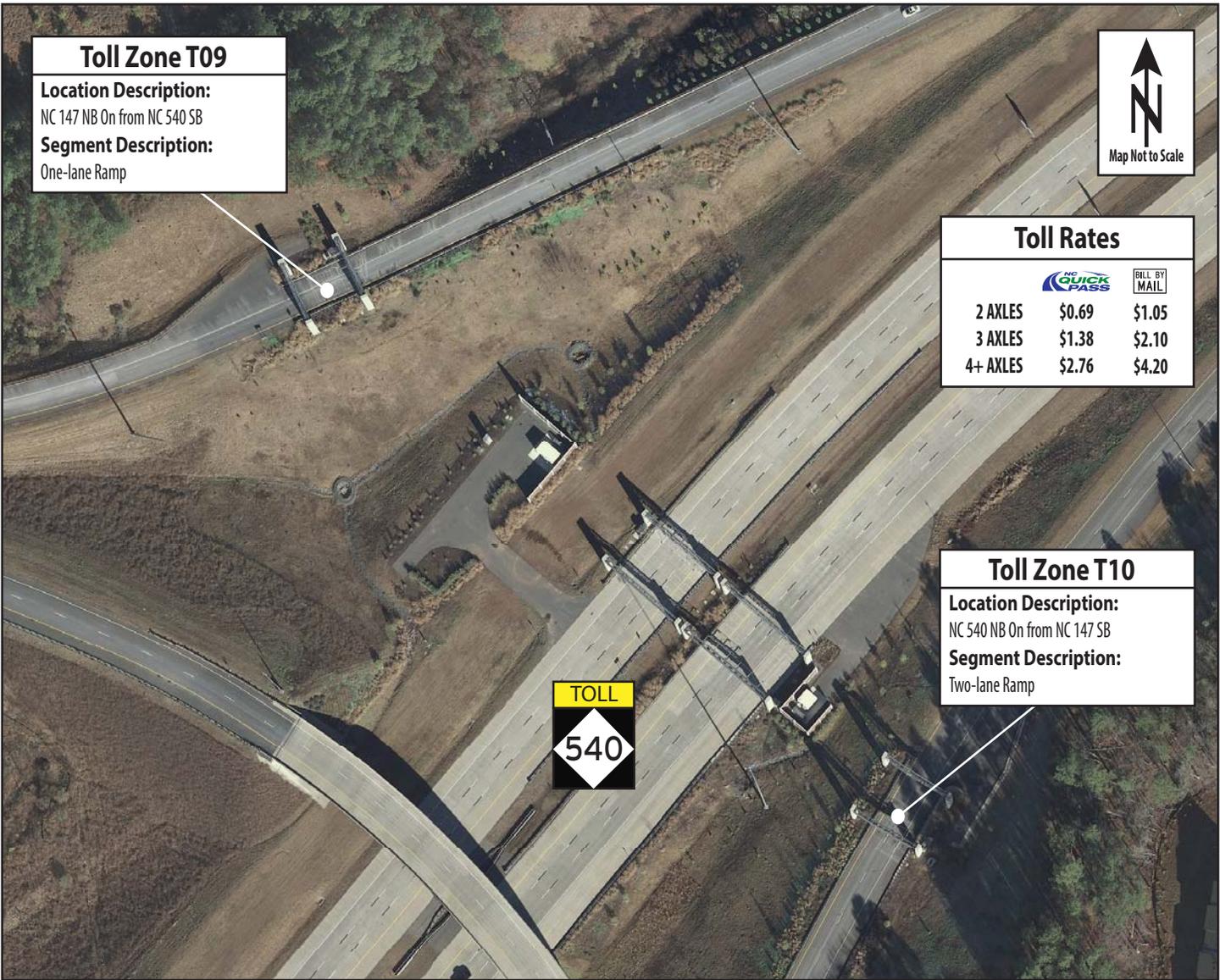
**NC Quick Pass Percentage**

Month	T13	T14
January	63%	62%
February	62%	61%
March	61%	61%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**NC-540 Morrisville Mainline Toll Zones**  
 2014 Average Weekday Toll Transactions

**Figure 21**



**Toll Zone T09**  
**Location Description:**  
 NC 147 NB On from NC 540 SB  
**Segment Description:**  
 One-lane Ramp

**Toll Rates**

2 AXLES	\$0.69	\$1.05
3 AXLES	\$1.38	\$2.10
4+ AXLES	\$2.76	\$4.20

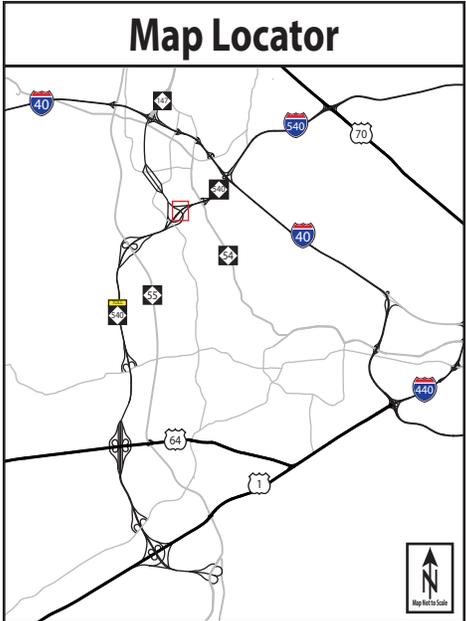
**Toll Zone T10**  
**Location Description:**  
 NC 540 NB On from NC 147 SB  
**Segment Description:**  
 Two-lane Ramp

**Transactions by Direction**

Month	T09	T10
January	960	1,080
February	1,130	1,270
March	1,130	1,290
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

**NC Quick Pass Percentage**

Month	T09	T10
January	60%	64%
February	59%	63%
March	59%	60%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**NC-147 North Ramp Toll Zones**  
 2014 Average Weekday Toll Transactions

**Figure 22**



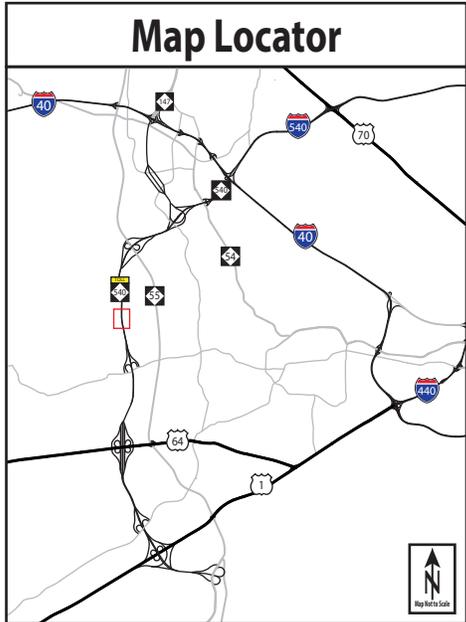
**Toll Zone T18**  
**Location Description:**  
 NC 540 SB, North of Green Level West  
**Segment Description:**  
 Three-lane Mainline

**Toll Zone T17**  
**Location Description:**  
 NC 540 NB, North of Green Level West  
**Segment Description:**  
 Three-lane Mainline

Toll Rates		
2 AXLES	\$0.69	\$1.05
3 AXLES	\$1.38	\$2.10
4+ AXLES	\$2.76	\$4.20

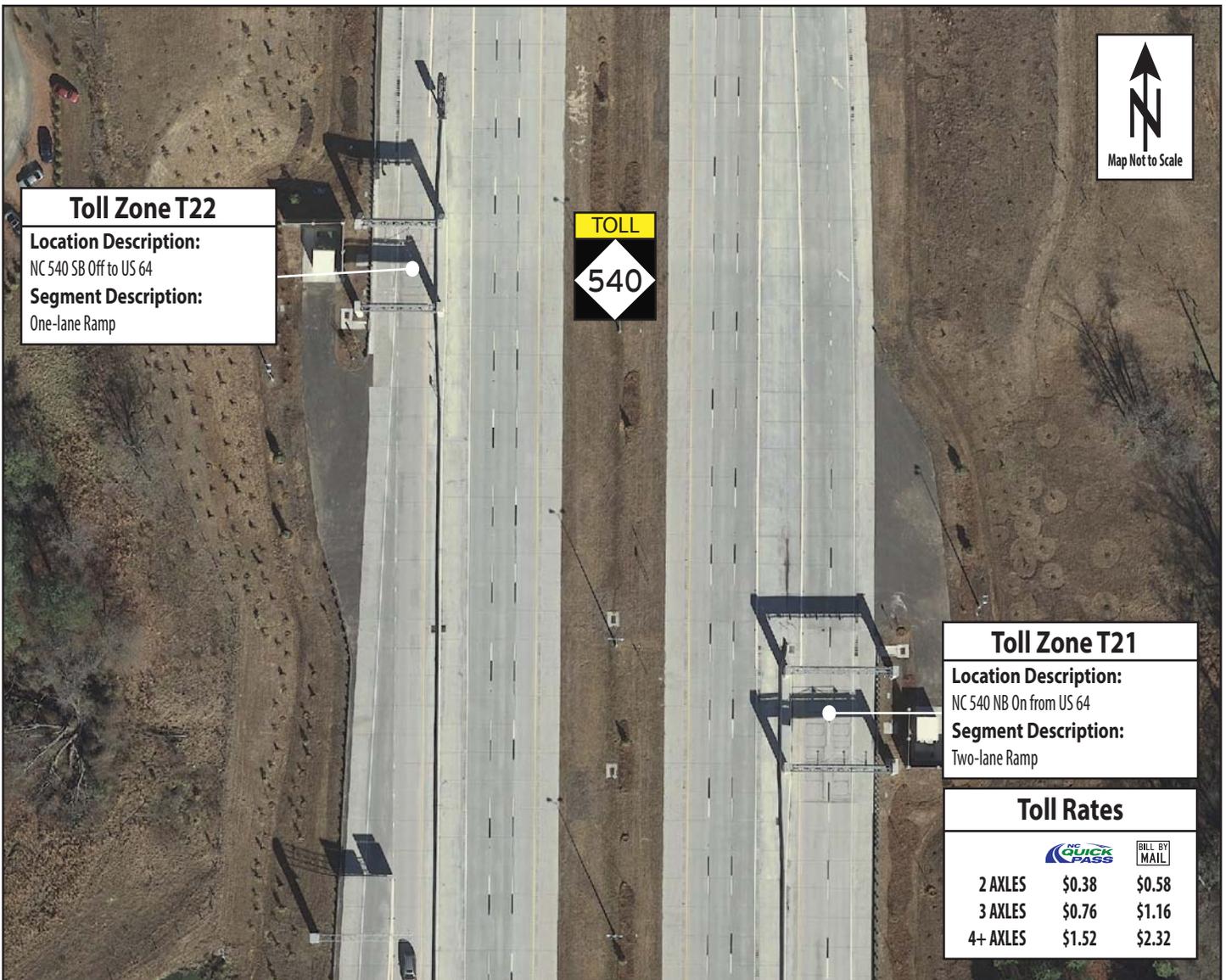
Transactions by Direction		
Month	T17	T18
January	8,760	8,810
February	9,650	9,730
March	9,820	9,940
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage		
Month	T17	T18
January	61%	65%
February	60%	64%
March	58%	63%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**NC-540 Cary Mainline Toll Zones**  
 2014 Average Weekday Toll Transactions

**Figure 23**



**Toll Zone T22**  
**Location Description:**  
 NC 540 SB Off to US 64  
**Segment Description:**  
 One-lane Ramp



**Toll Zone T21**  
**Location Description:**  
 NC 540 NB On from US 64  
**Segment Description:**  
 Two-lane Ramp

**Toll Rates**

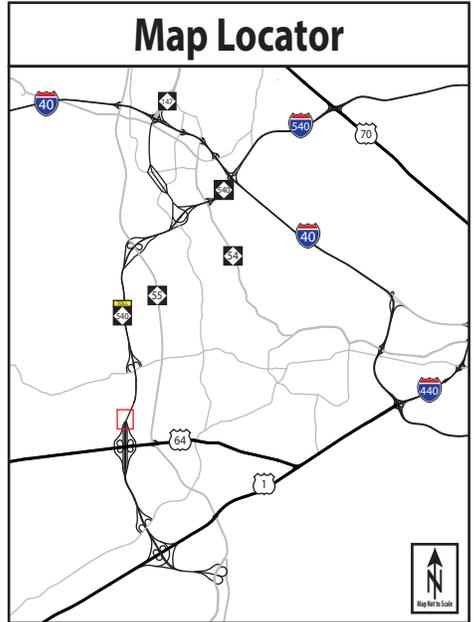
		
2 AXLES	\$0.38	\$0.58
3 AXLES	\$0.76	\$1.16
4+ AXLES	\$1.52	\$2.32

**Transactions by Direction**

Month	T21	T22
January	2,920	2,940
February	3,170	3,220
March	3,210	3,270
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

**NC Quick Pass Percentage**

Month	T21	T22
January	66%	67%
February	66%	66%
March	64%	65%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



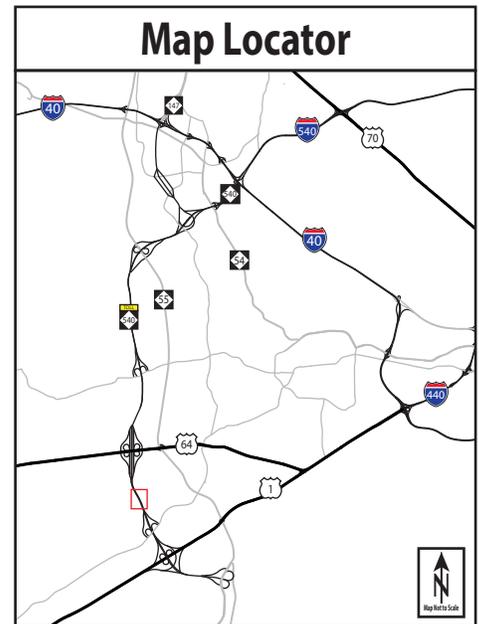
**US-64 Ramp Toll Zones**  
 2014 Average Weekday Toll Transactions

**Figure 24**



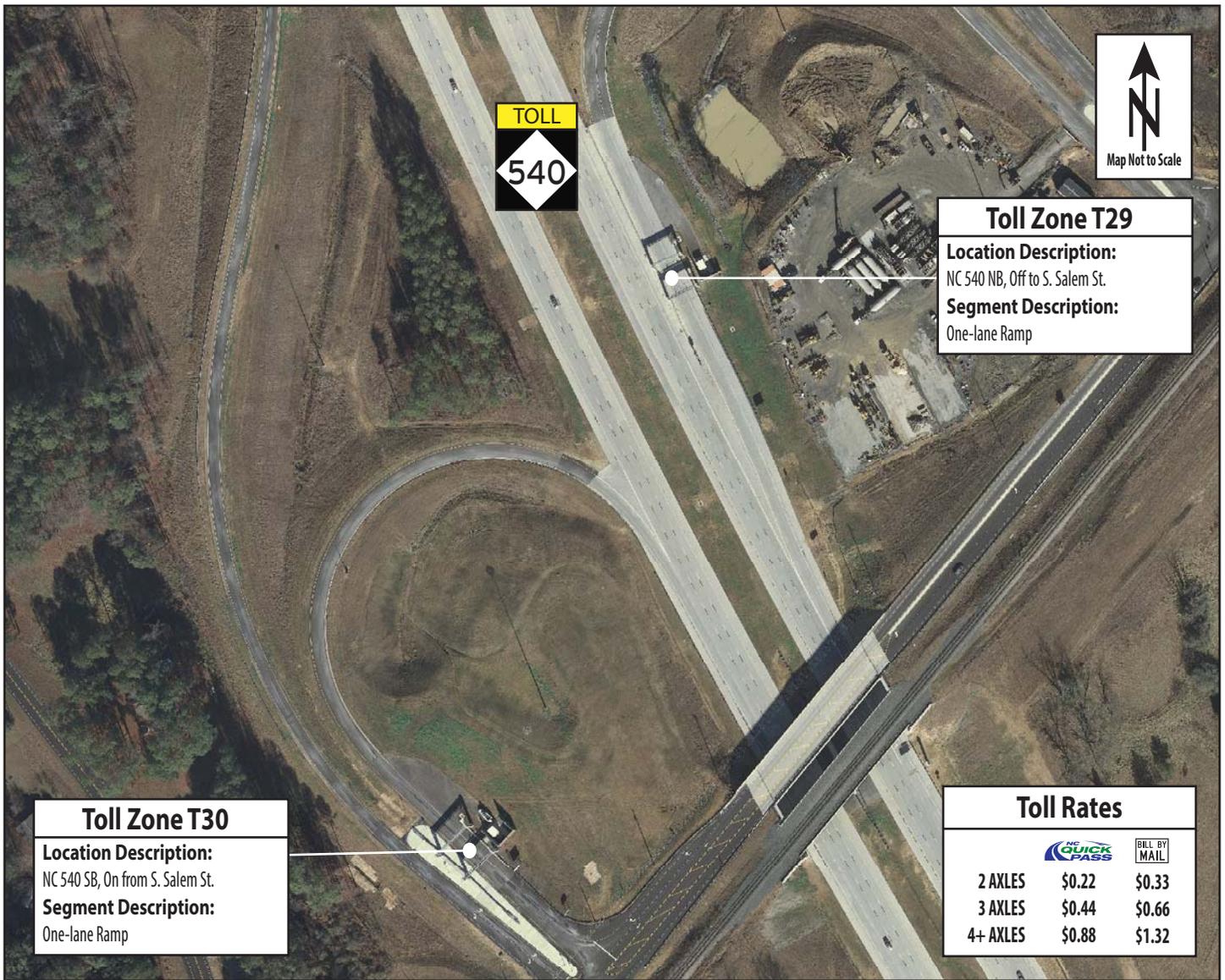
<b>Transactions by Direction</b>		
Month	T25	T26
January	6,800	6,570
February	7,540	7,290
March	7,680	7,440
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

<b>NC Quick Pass Percentage</b>		
Month	T25	T26
January	62%	63%
February	62%	62%
March	60%	60%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



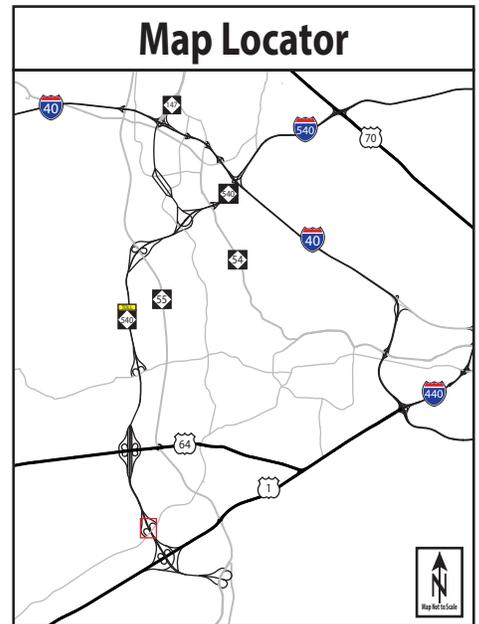
**NC-540 Apex Mainline Toll Zones**  
2014 Average Weekday Toll Transactions

**Figure 25**



Transactions by Direction		
Month	T29	T30
January	600	660
February	680	730
March	680	740
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

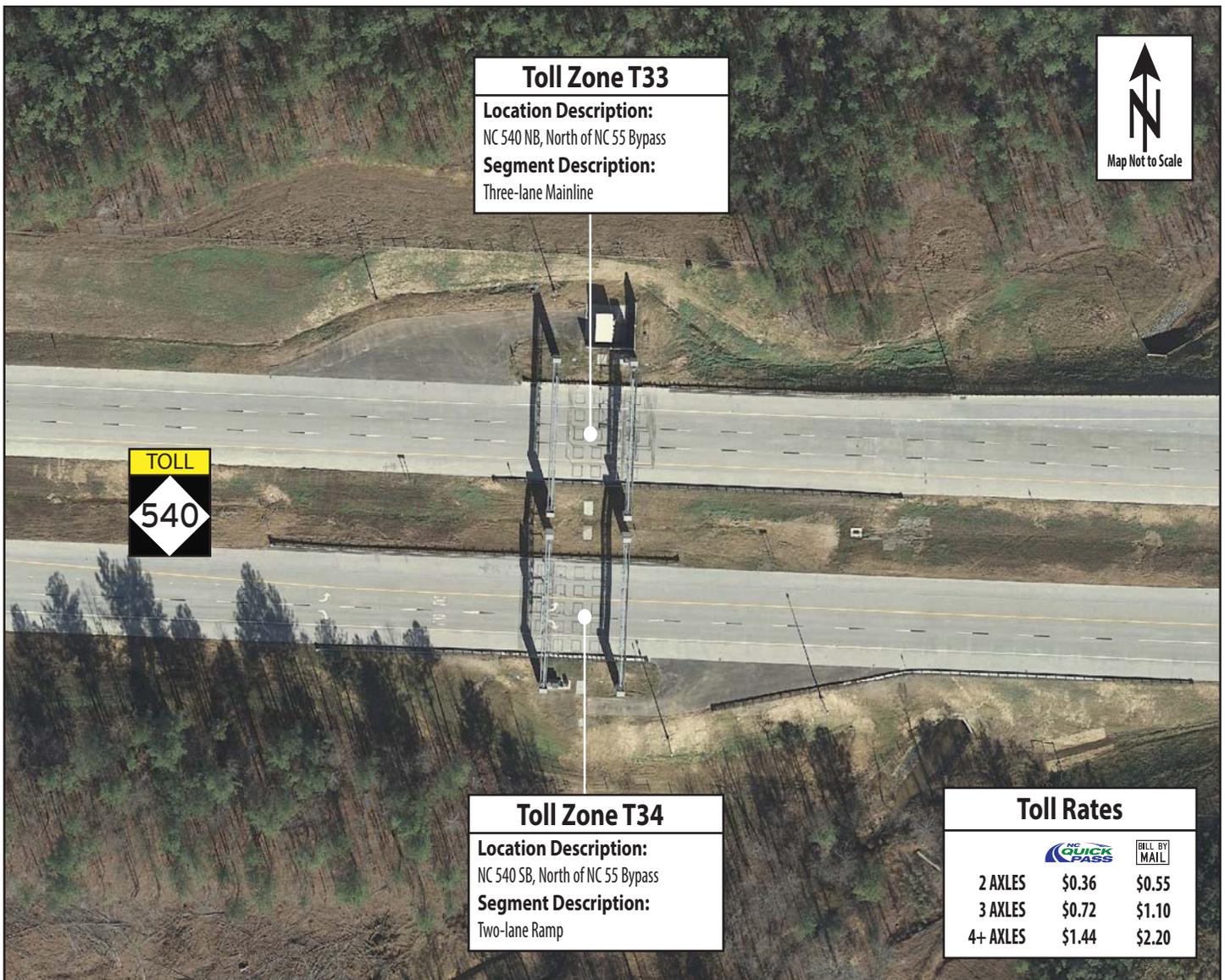
NC Quick Pass Percentage		
Month	T29	T30
January	73%	71%
February	74%	73%
March	72%	72%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



South Salem Street Ramp Toll Zones

2014 Average Weekday Toll Transactions

Figure 26



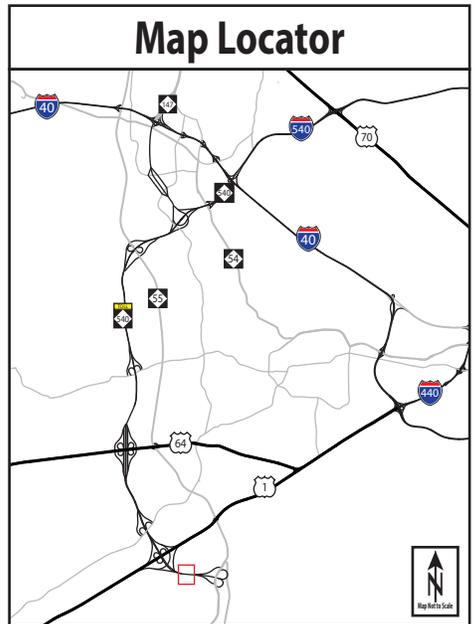
**Toll Zone T33**  
**Location Description:**  
 NC 540 NB, North of NC 55 Bypass  
**Segment Description:**  
 Three-lane Mainline

**Toll Zone T34**  
**Location Description:**  
 NC 540 SB, North of NC 55 Bypass  
**Segment Description:**  
 Two-lane Ramp

Toll Rates		
2 AXLES	\$0.36	\$0.55
3 AXLES	\$0.72	\$1.10
4+ AXLES	\$1.44	\$2.20

Transactions by Direction		
Month	T33	T34
January	5,010	4,810
February	5,550	5,270
March	5,610	5,340
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage		
Month	T33	T34
January	66%	66%
February	65%	65%
March	64%	63%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**NC-540 Holly Springs Mainline Toll Zones**  
 2014 Average Weekday Toll Transactions

**Figure 27**

# Roadway Operations Statistics

## ROADWAY OPERATIONS STATISTICS

Operations statistics are collected by NCTA State Highway Patrol (SHP) and Incident Management Assistance Patrol (IMAP) for the NCTA Toll Safety Patrol program. This program consists of dedicated State Highway Patrol and Incident Management Assistance Patrol, which provides one patrolman and one IMAP responder to the facility at all times from Monday through Friday. This section also presents response and traffic information for incidents that occurred during the first quarter of 2014.

The Turnpike Authority manages traffic and activities along the Triangle Expressway at the state-of-the-art Traffic Management Center located in the North Carolina National Guard's Joint Force Headquarters in Raleigh.

Highly trained operators monitor the entire length of the Triangle Expressway via closed-circuit TV, microwave speed detectors and interoperable 800MHz radio dispatch from local 911 and statewide Highway Patrol communications, as well as the Turnpike Authority's security cameras and Roadway Weather Information System.

More than 200 cameras are located along the Expressway to monitor traffic operations, ensure security of the toll gantries and collect license plate images used for Bill-by-Mail toll collection. Operators monitor the roadside technology and toll facilities and are able to quickly dispatch maintenance personnel to address any equipment issues or roadway traffic incidents.

Roadway updates are provided to motorists via 10 full-color Dynamic Message Boards (the first full-color message boards in the state), as well as through NCDOT's 511 system and Traveler Information Management System (TIMS) website.

The Triangle Expressway also has contracted Highway Patrol officers and a dedicated Incident Management Assistance Patrol (IMAP) that can be dispatched to respond to any incidents that occur, ranging from disabled motorists and debris to major traffic wrecks that could be detrimental to both motorist safety and toll collection.

Table 11 presents operating statistics for the State Highway Patrol.

**Table 11: SHP Statistics**

Charge	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Speed Violations	74	52	78										204
Alcohol Violations	0	0	0										0
Seat Belt Violations	3	11	5										19
Child Restraint Violations	0	0	1										1
Other Violations	43	53	74										170
<b>Total Charges</b>	<b>120</b>	<b>116</b>	<b>158</b>										<b>394</b>
Warnings	128	99	123										350
Vehicles Towed	0	0	0										0
Crashes Investigated	7	7	8										22

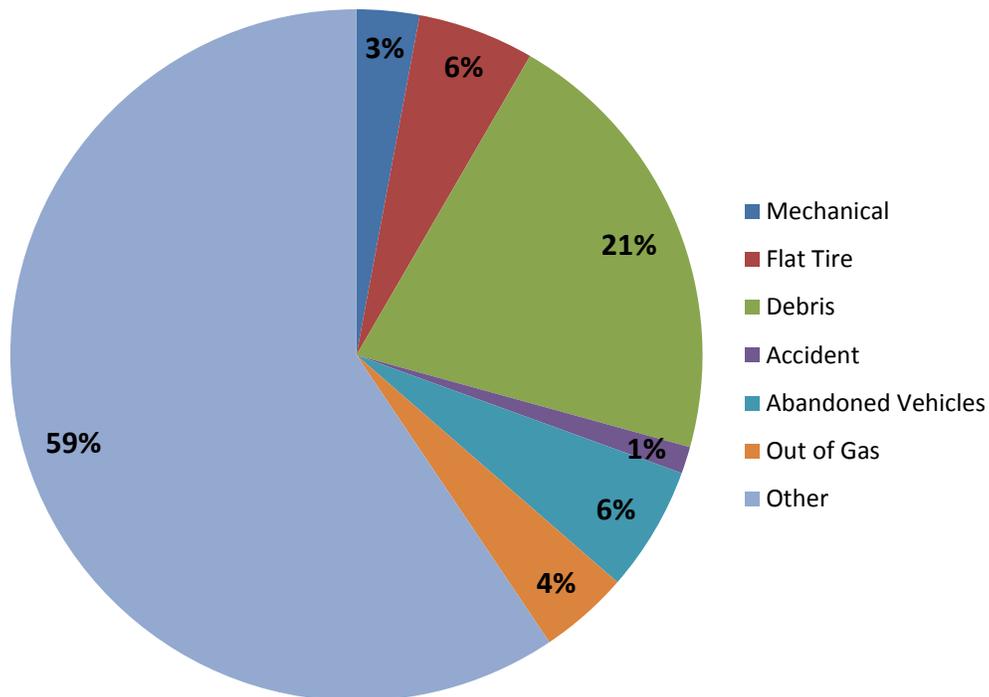
The IMAP assists with stranded motorists and incident clearance, thereby maintaining the flow of traffic along the roadway. *Table 12* and *Figure 28* present the monthly IMAP assists, by type, for the Triangle Expressway. The “other” category includes the reporting categories of traffic control, assist other unit, secured load, called for assistance, directions, transported, unable to locate and no assistance.

**Table 12: Monthly IMAP Assistance by Type**

Assist Type	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Mechanical	2	1	4										7
Flat Tire	3	3	7										13
Debris	18	14	18										50
Accident	0	3	0										3
Abandoned Vehicles	9	4	1										14
Out of Gas	3	4	3										10
Other	40	47	55										142
<b>Total Charges</b>	<b>75</b>	<b>76</b>	<b>88</b>										<b>239</b>

**Figure 28: 2014 YTD IMAP Assistance by Type**

### 2014 YTD IMAP Assistance by Type



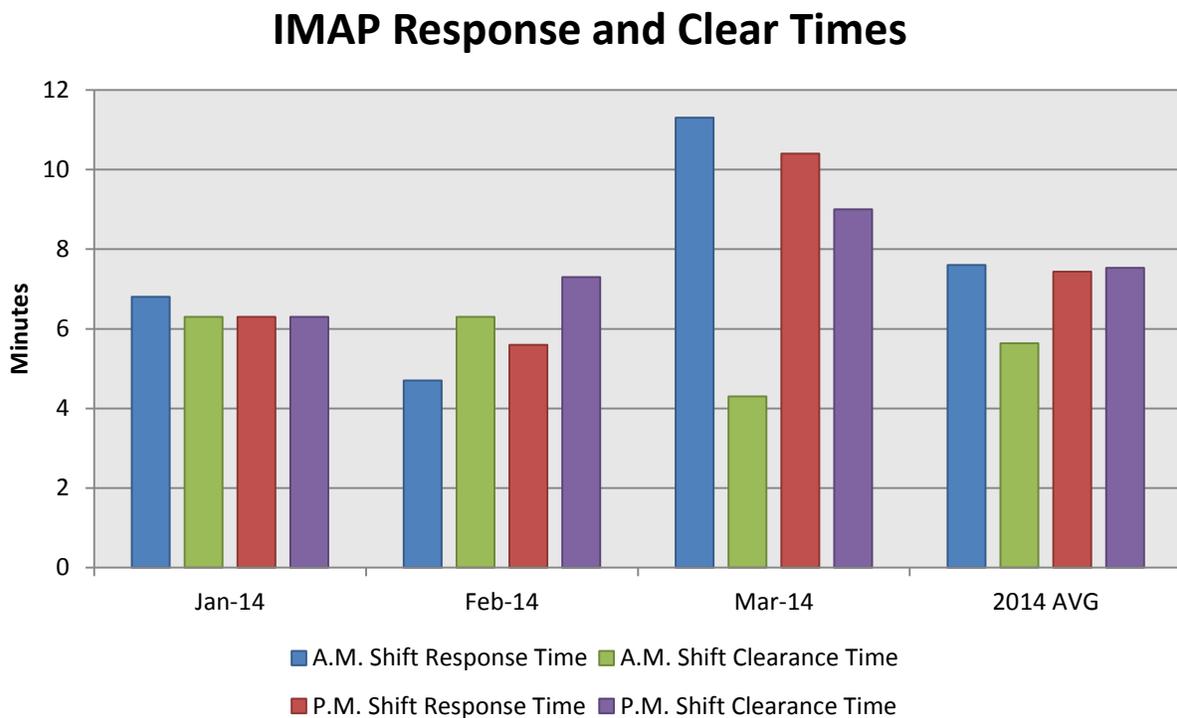
The response and clear times for all IMAP assists are logged by IMAP and provided to the NCTA. Response time is the time from which a responder receives a call to the time they arrive on the scene. Clear time is the time from which it takes the responder to clear the incident and return the roadway to normal operation. The IMAP staff AM shift occurs from 6AM to 2PM and 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 13 and Figure 29 present the average IMAP assistance response and clear times, in minutes, for the Triangle Expressway.

**Table 13: Monthly Average IMAP Assistance Response and Clear Times (in Minutes)**

Response Type	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2014 Average
A.M. Shift Response	7	5	11										8
A.M. Shift Clearance	6	6	10										7
P.M. Shift Response	6	6	4										6
P.M. Shift Clearance	6	7	9										8

**Figure 29: Average IMAP Assistance Response and Clear 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 on the NCTA system. 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 survey 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 relationship 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 changes in assets during the various seasons. 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

A table consisting of the Quarterly and 2014 Annual MRP Assessment results is provided below in *Table 14*. The rating provided for the 2014 Annual Rating for each of the elements is a weighted average of the quarters rather than a simple average to balance the occasional uneven sample sizes.

**Table 14: MRP Assessment Results**

Element	Q1 2014 RATING	Q2 2014 RATING	Q3 2014 RATING	Q4 2014 RATING	2014 ANNUAL RATING
Road Surface	87.6				87.6
Unpaved Shoulders	91.5				91.5
Drainage	91.2				91.2
Roadside	94.6				94.6
Traffic Control Devices	94.4				94.4
<b>Overall MRP Performance Rating</b>	<b>91.9</b>				<b>91.9</b>