



NORTH CAROLINA

**Turnpike Authority**

## **Operations Statistics Report**

Triangle Expressway

### **2014 Fourth Quarter and Annual Report**

1 S. Wilmington Street  
Raleigh, NC 27601



Last Updated:  
March 2, 2015

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## 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 year 2014. The summarized data will provide a general overview of traffic statistics, toll system statistics, roadway operations and maintenance operations for the entire facility that will allow for a comparison of monthly and annual statistical trends over time to show the progression of the roadway.

### Project

#### ***The Triangle Expressway***

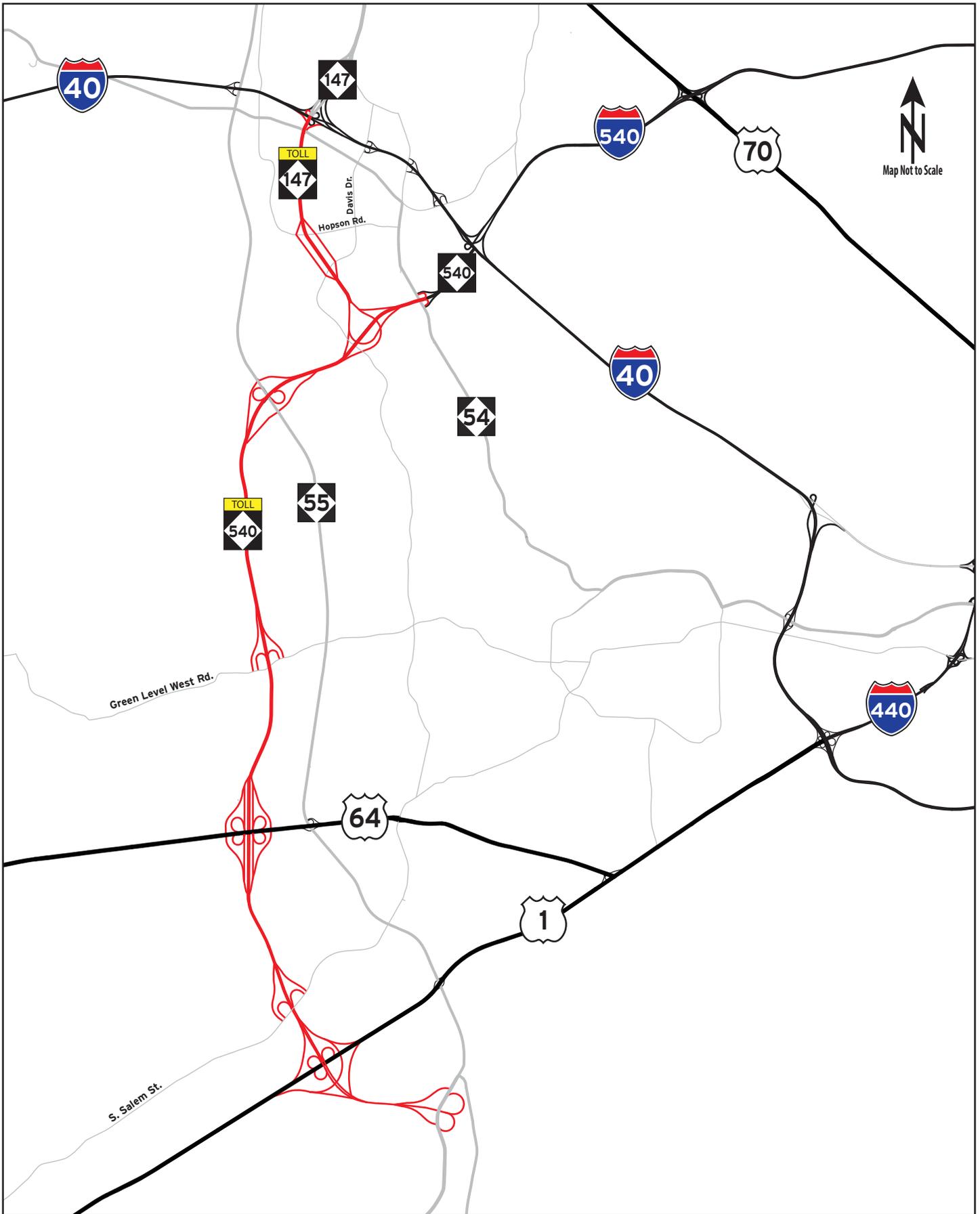
The Triangle Expressway is an 18.8 mile toll road that extends the partially complete “Outer Loop” around the greater Raleigh, North Carolina area from I-40 to NC-55 Bypass in Holly Springs. The six-lane controlled access toll facility relieves congestion on the paralleling NC-55 facility, while improving 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. It 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 a 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 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. 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 during the year 2014 the Triangle Expressway continued 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 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 2017.

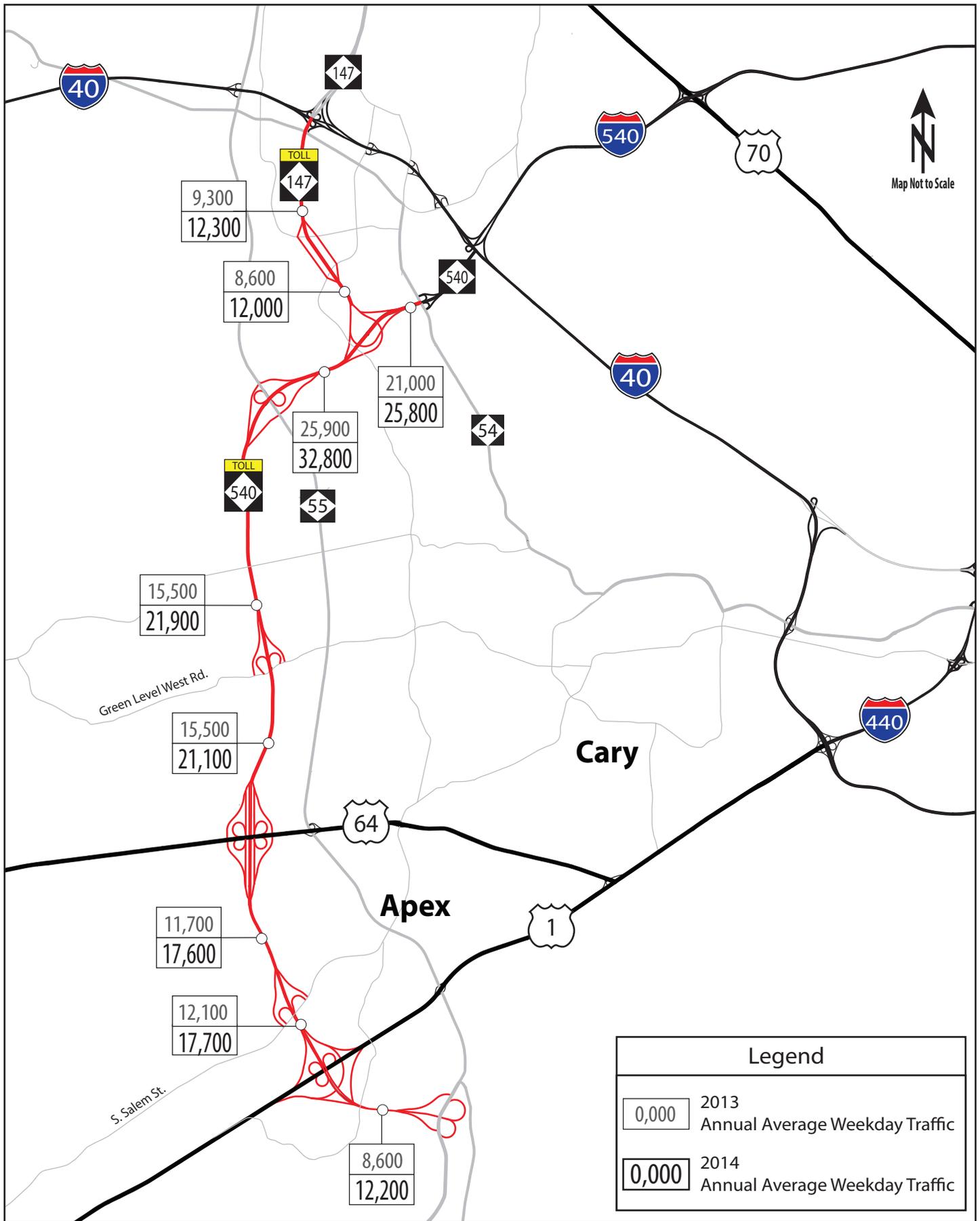
### Average Weekday Traffic (AWT)

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 significantly 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.

### Annual Average Weekday Traffic (AAWT)

AAWT is a measure of the average daily volumes collected on a typical Monday through Friday over an entire year. Adjustment factors for raw AWT data were calculated monthly, based on the ratio of weekday to weekend traffic, and applied to the monthly averages to calculate the annual average weekday traffic. It is necessary to normalize the variations in monthly traffic to allow for a valid comparison between counts taken at different times of the year. This allows the normalized monthly values to be combined together to form a single AAWT for each location.

*Figure 2* contains a visual representation of AAWT recorded during the years 2013 and 2014 at all mainline segments along the Triangle Expressway.



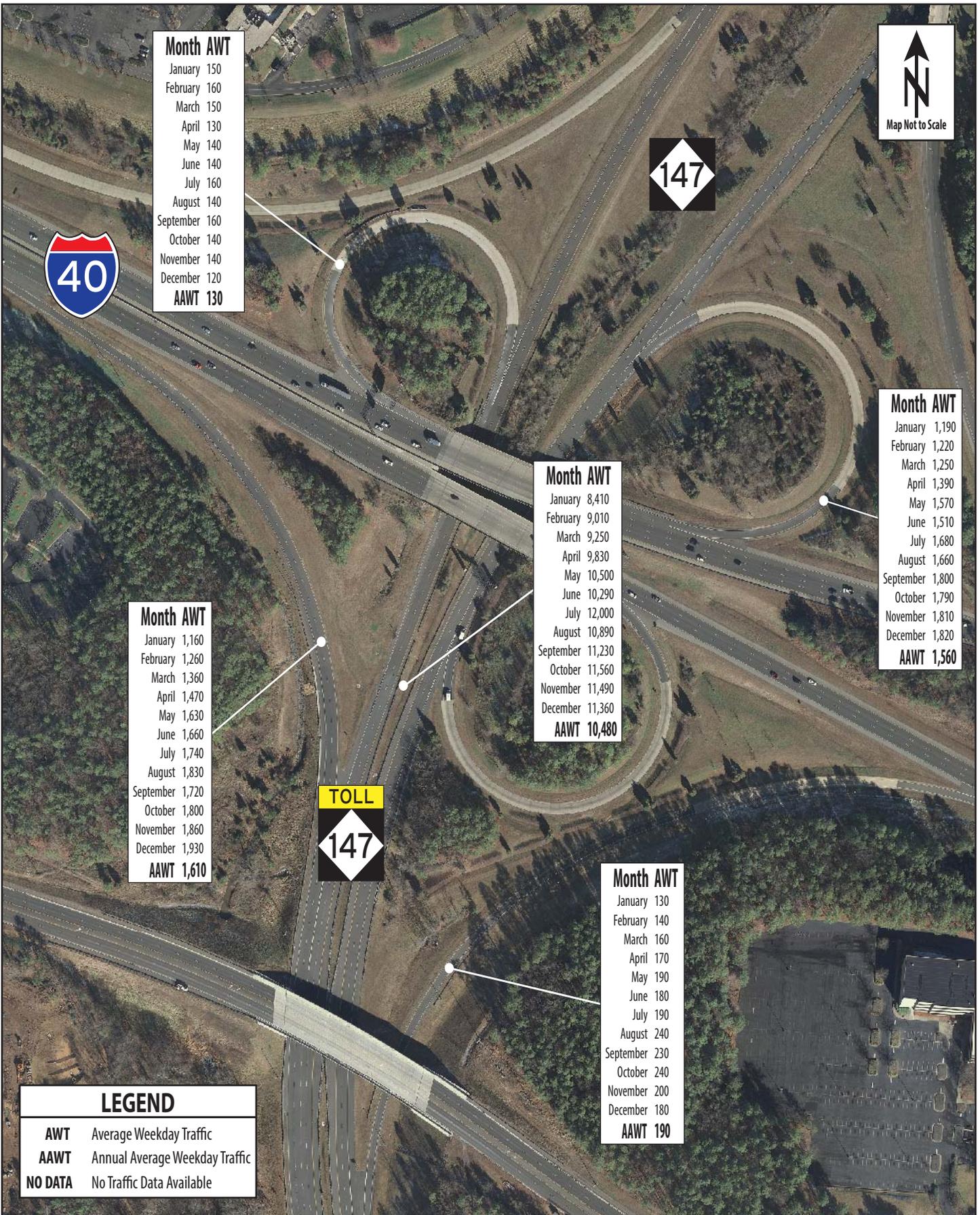
**Triangle Expressway AAWT Map**

**Figure  
2**

### **Interchange Statistics**

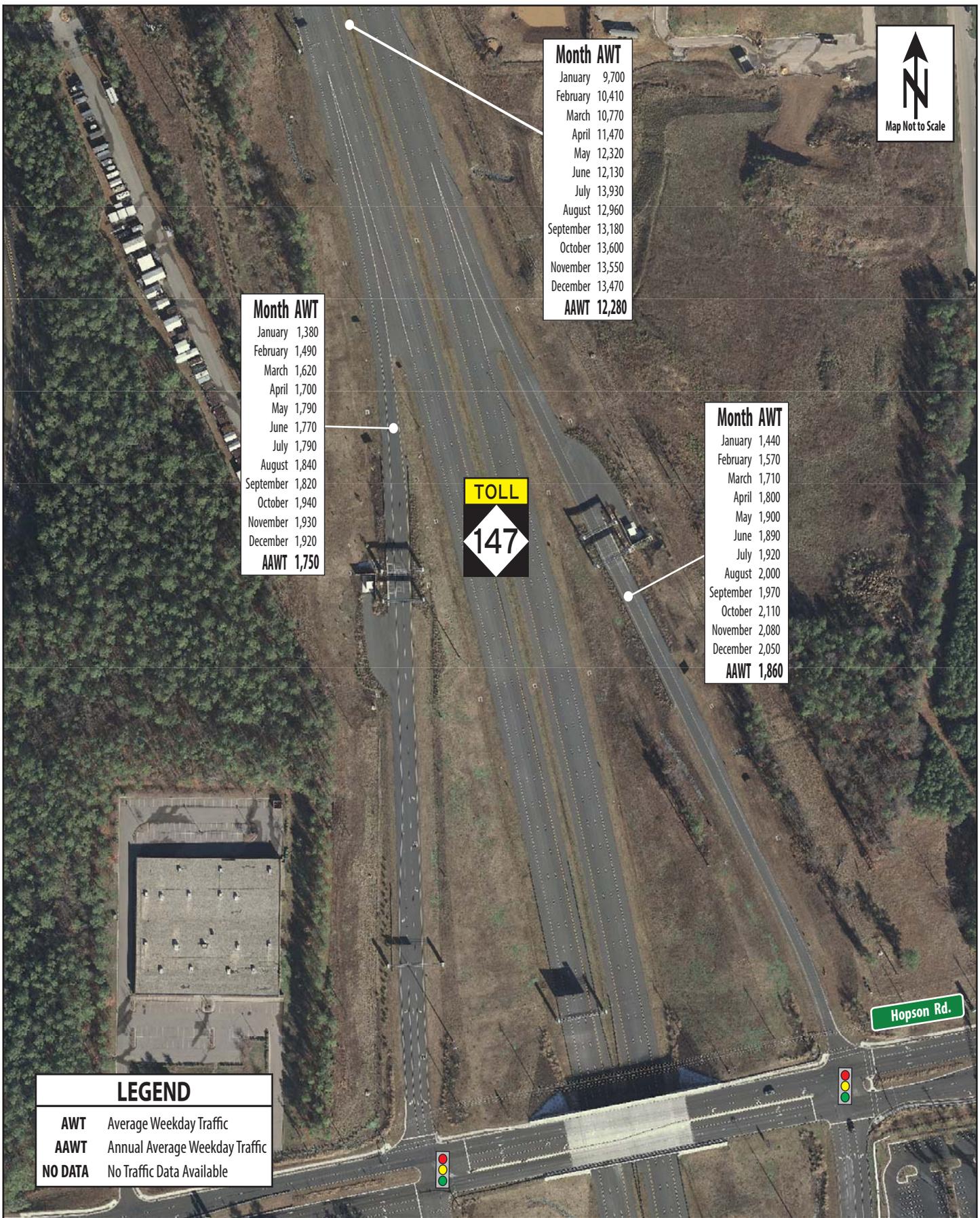
The following pages contain visual representations of AWT and AAWT for all interchanges along the facility and are representative of NCTA's 2014 MVD data.

It should be noted that if there are not enough reliable days (5) of MVD data for a particular month to report an AWT, then that MVD will report "NO DATA." Due to equipment malfunction, this year three detectors reported "NO DATA" during the months of August, September and October. These detectors have been fixed and are now recording accurate data.



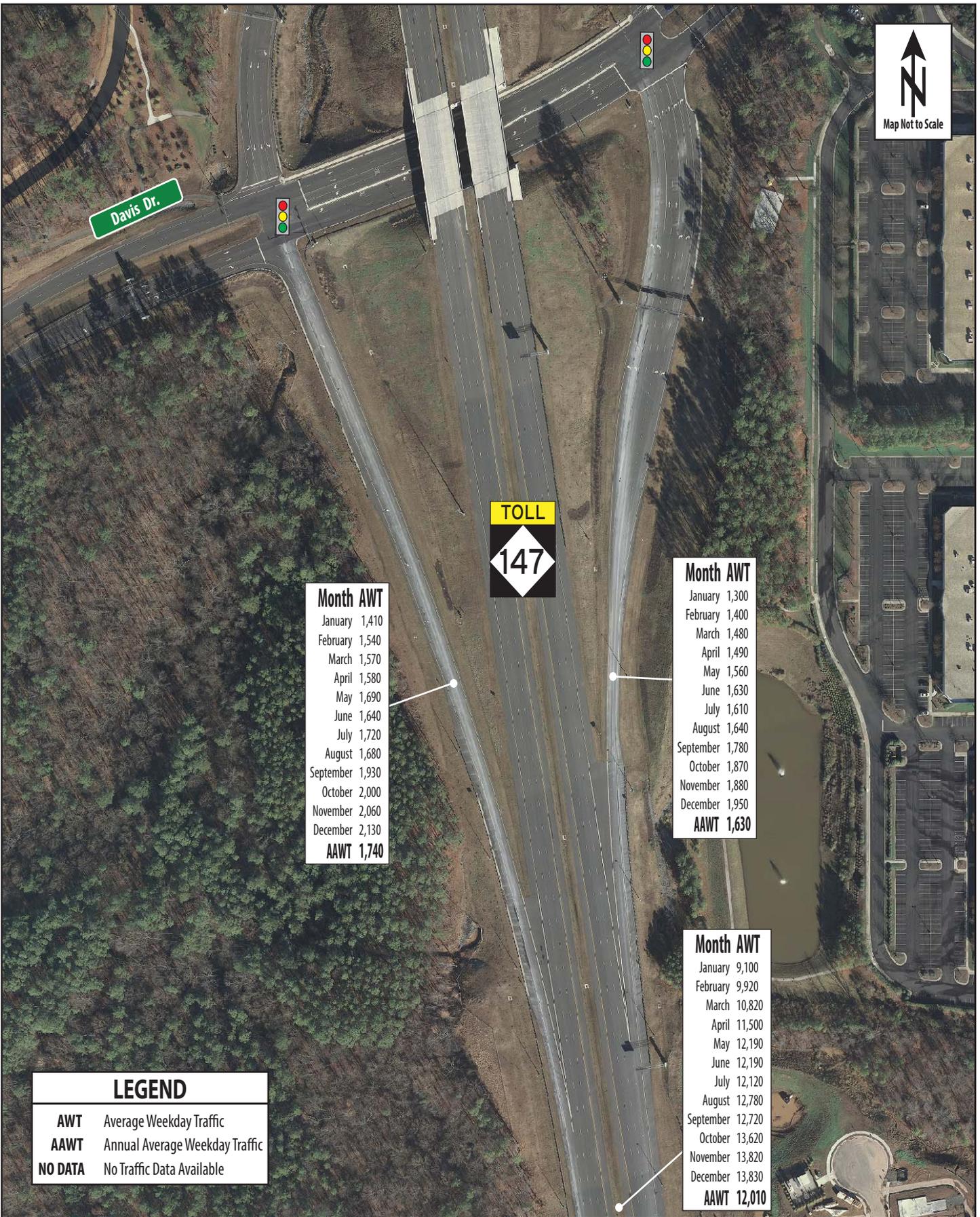
**NC-147 at I-40 Interchange**  
2014 Annual Average Weekday Traffic

**Figure**  
**3**



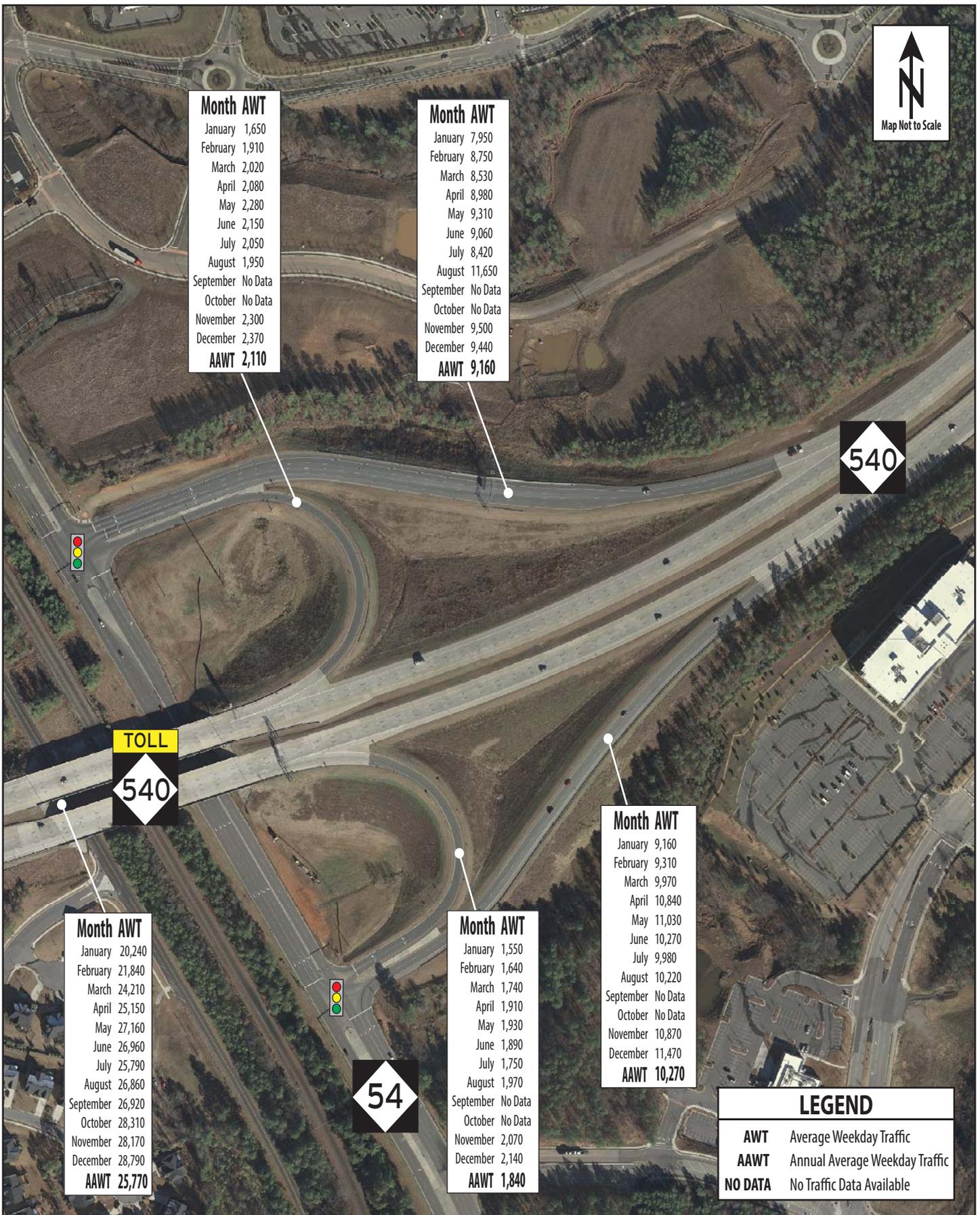
**NC-147 at Hopson Rd. Interchange**  
2014 Annual Average Weekday Traffic

**Figure**  
**4**



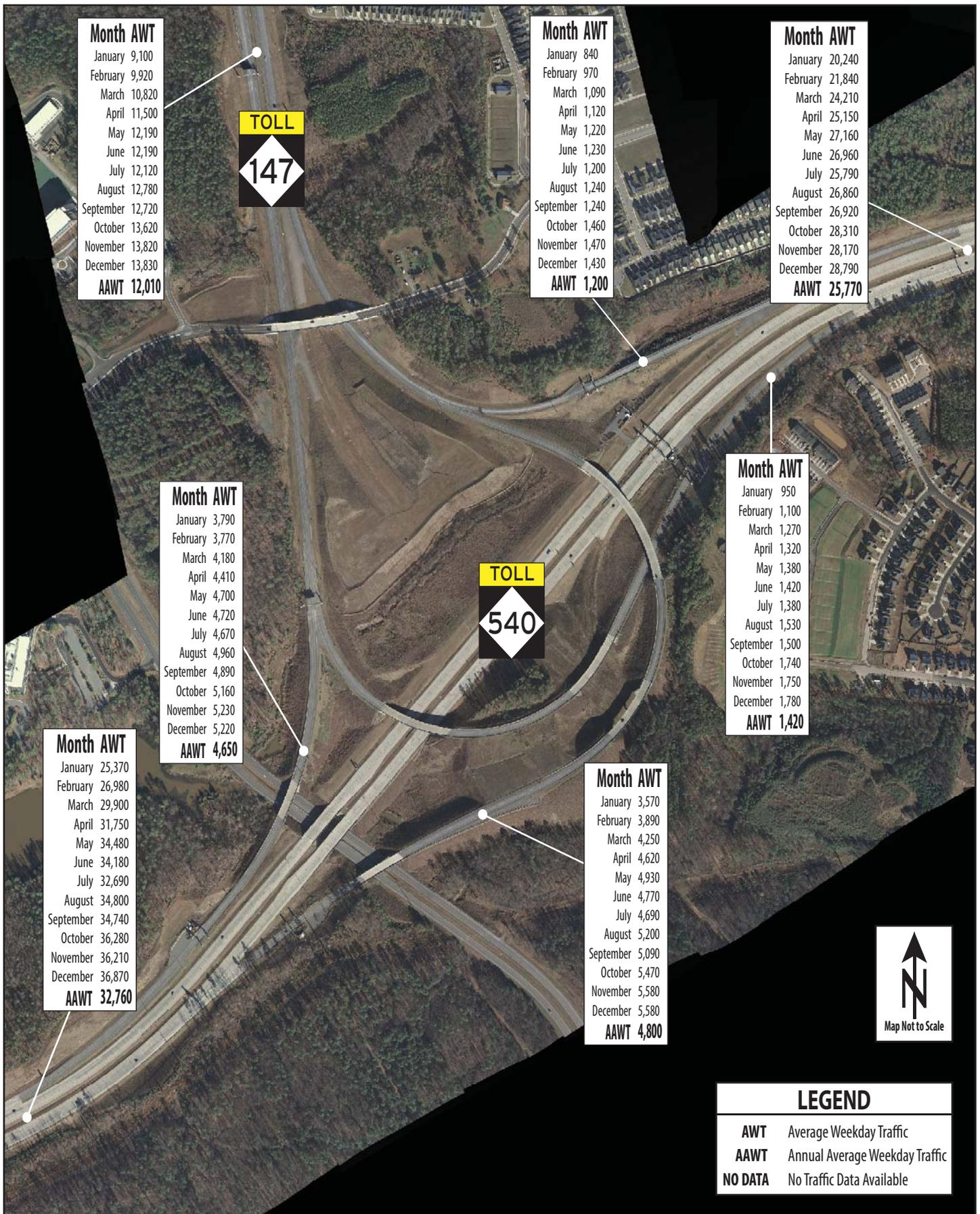
**NC-147 at Davis Dr. Interchange**  
2014 Annual Average Weekday Traffic

**Figure**  
**5**



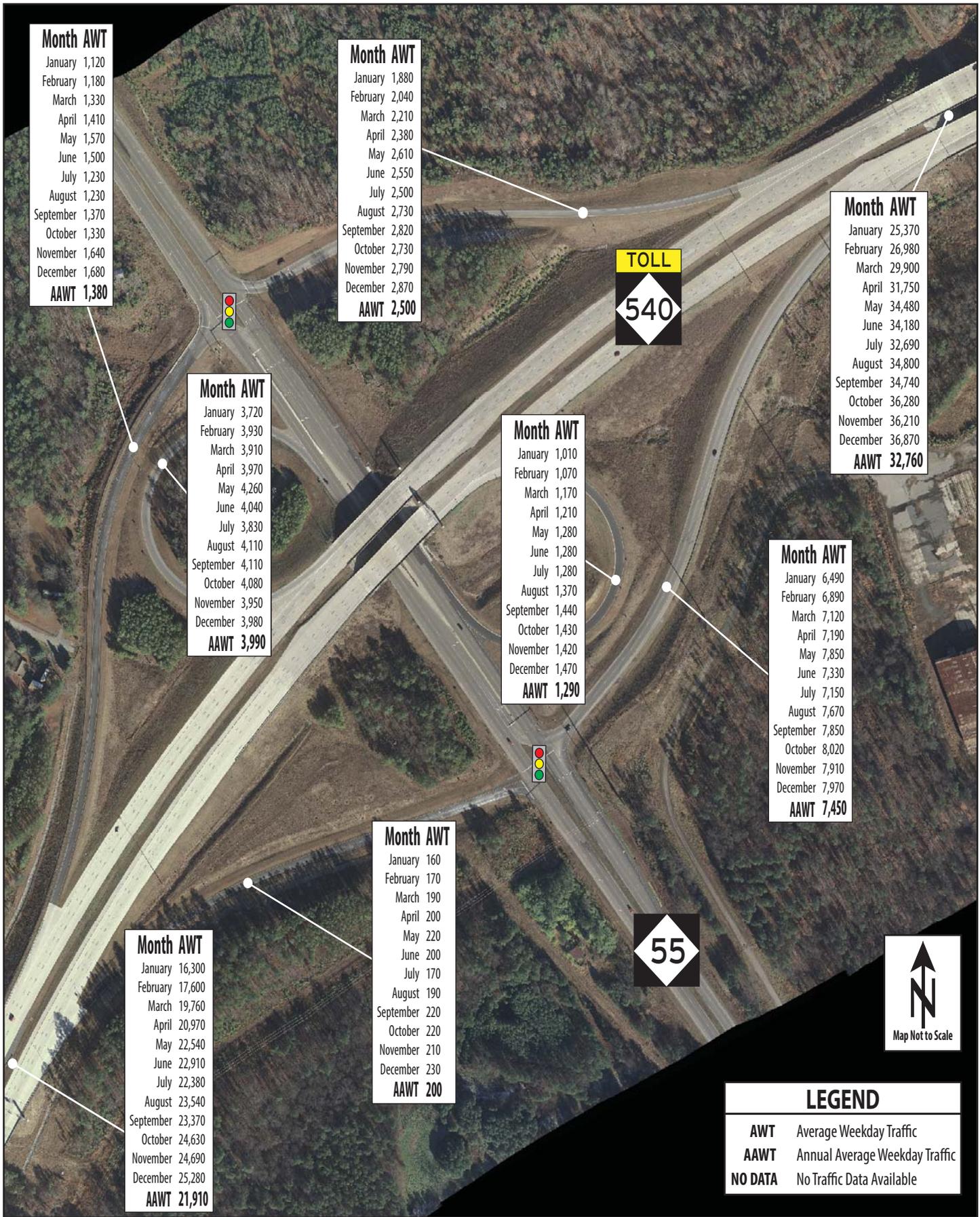
**NC-540 at NC-54 Interchange**  
2014 Annual Average Weekday Traffic

**Figure**  
**6**



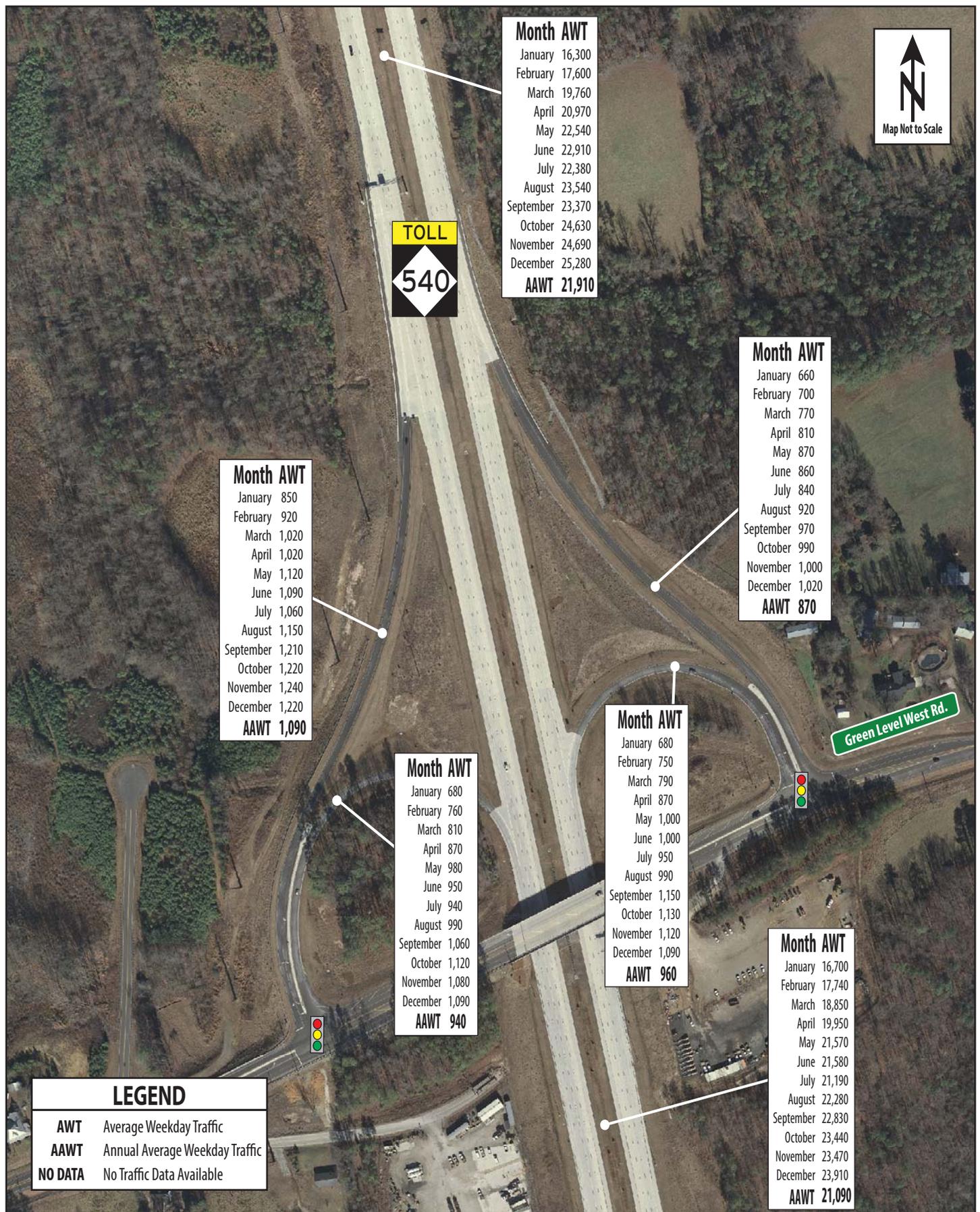
**NC-540 at NC-147 Interchange**  
2014 Annual Average Weekday Traffic

**Figure**  
**7**



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

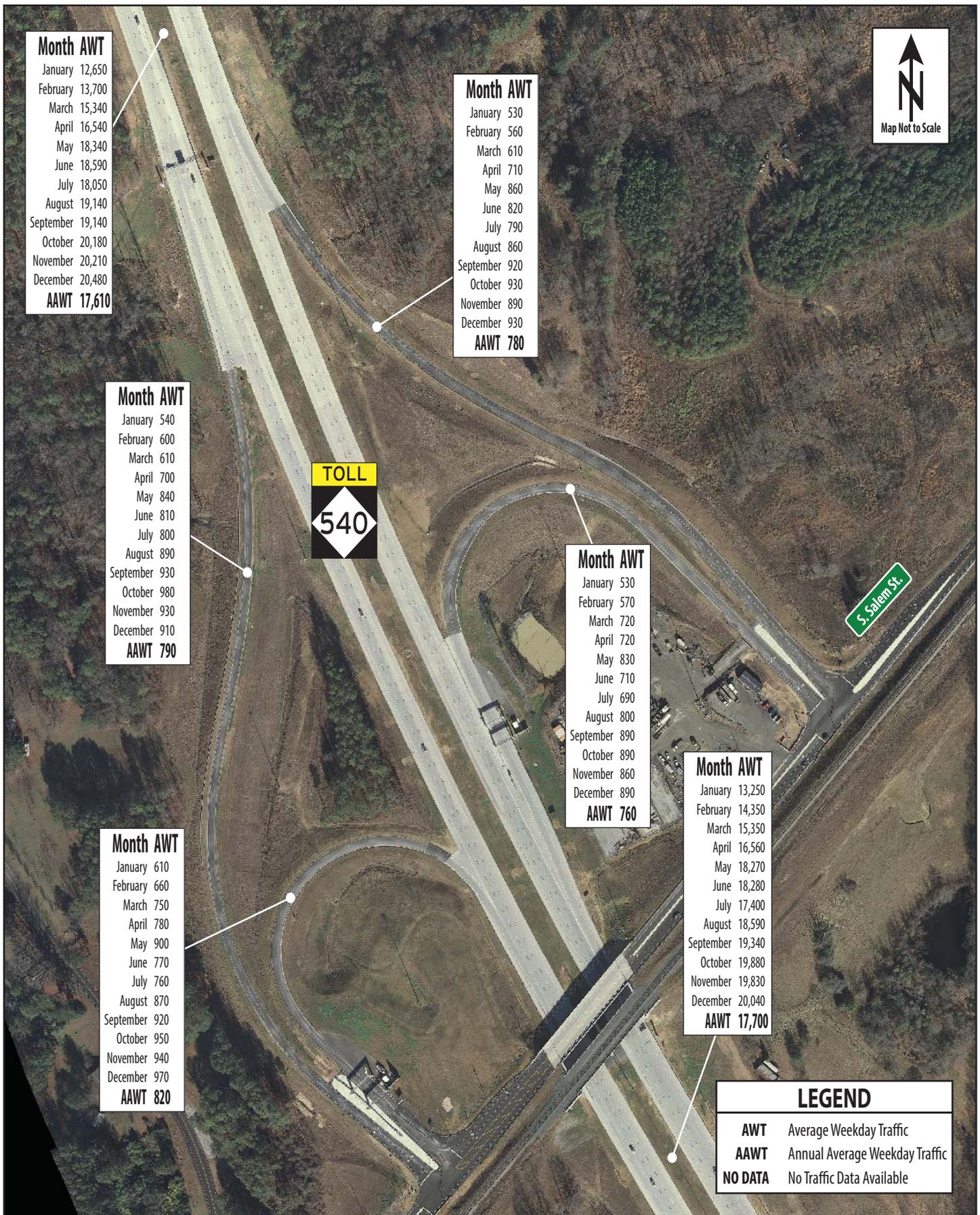
**Figure**  
**8**



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

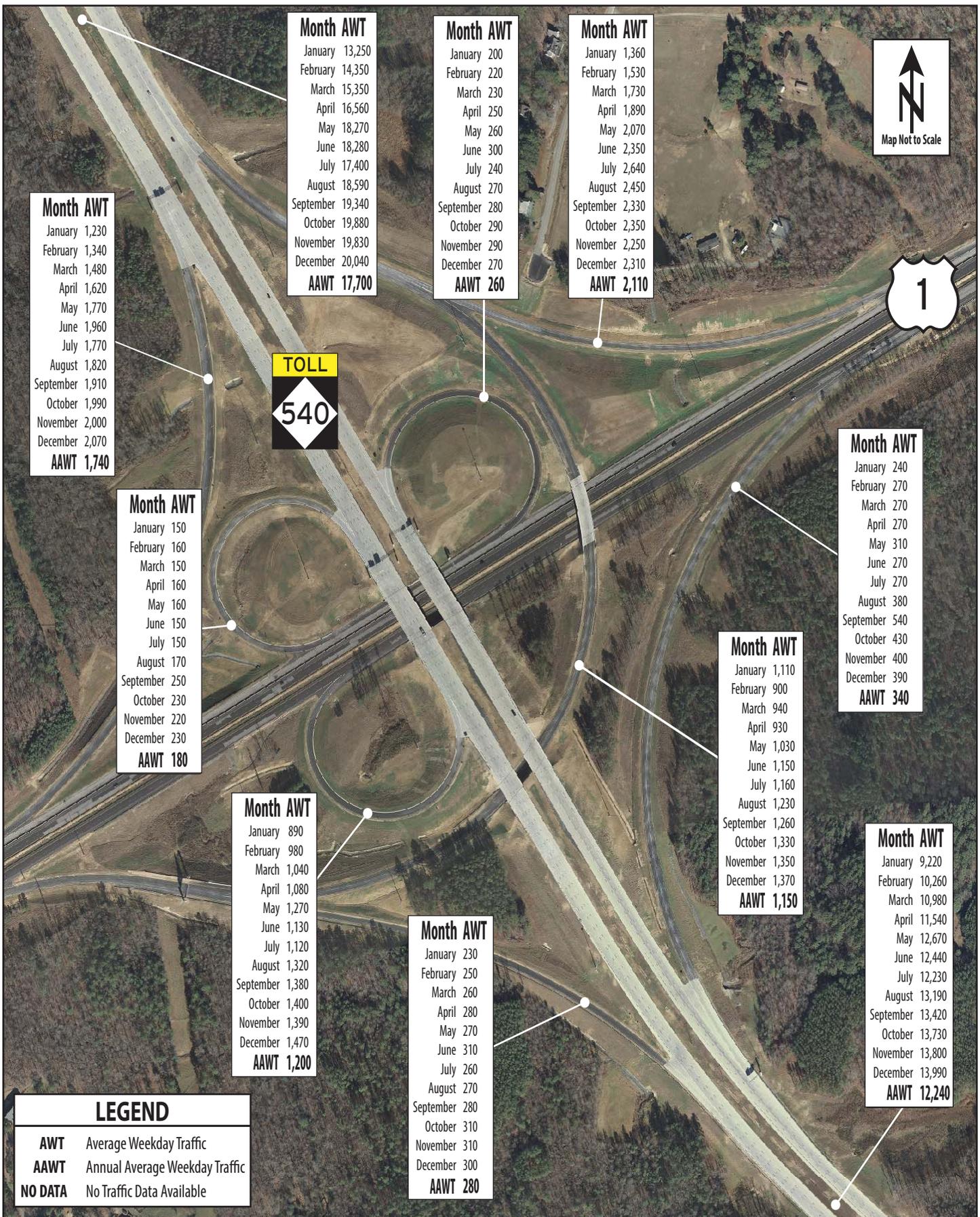
**Figure**  
**9**





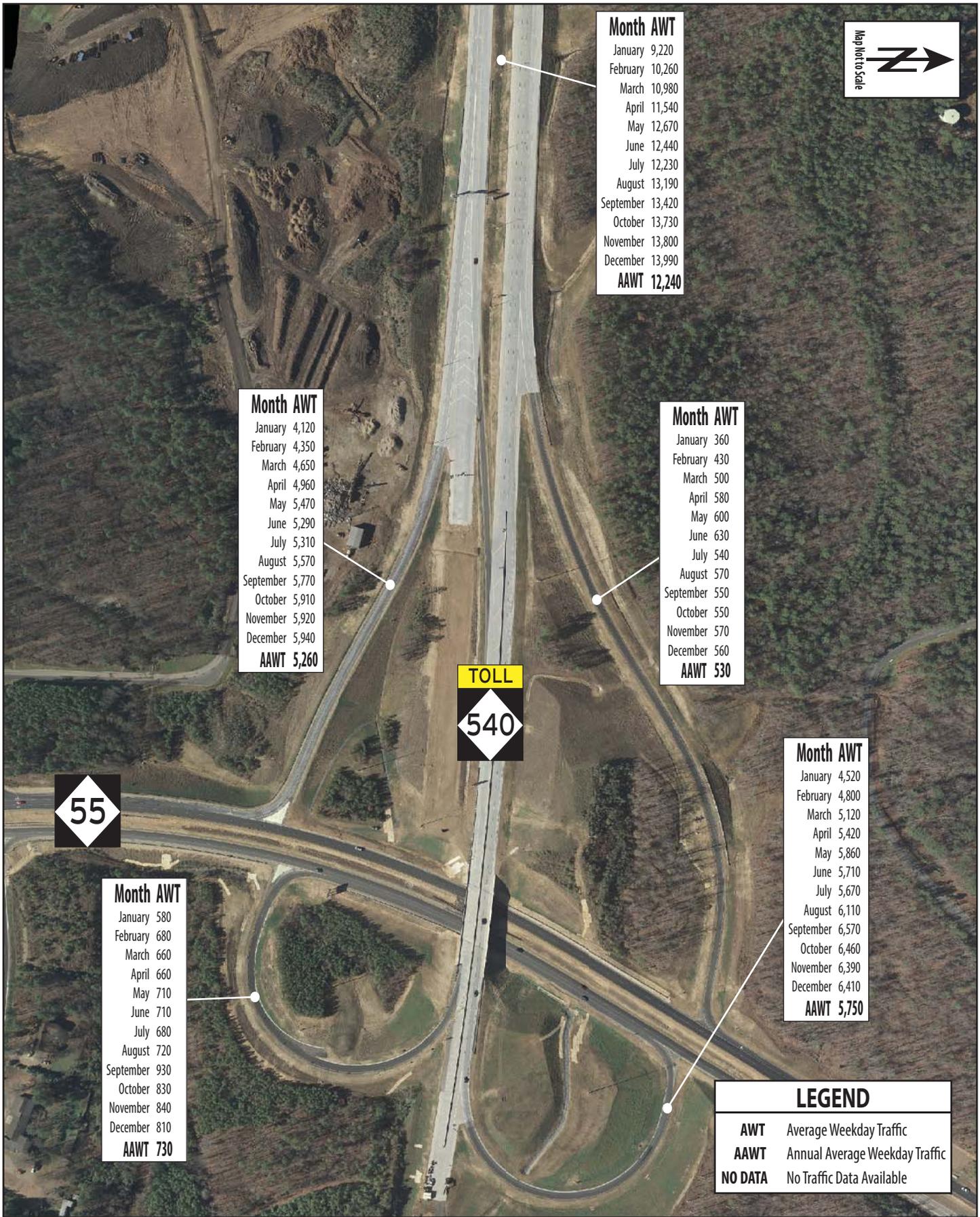
**NC-540 at S. Salem St. Interchange**  
2014 Annual Average Weekday Traffic

**Figure**  
**11**



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

**Figure**  
**12**



**NC-540 at NC-55 Bypass Interchange**  
2014 Annual 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 Annual 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

It should be noted that the percentages of total provided in this section might not sum to 100% due to rounding.

**Operations Statistics Report for the Triangle Expressway**

**2014 Fourth Quarter and Annual Report**

**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. All weeks begin on Monday and end on Sunday.

**Table 1: Transactions, Fourth Quarter by Week**

Week Ending	Transponder (NC Quick Pass)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
10/5/2014*	253,243	56%	199,669	44%	452,912
10/12/2014	395,221	59%	279,961	41%	675,182
10/19/2014	391,936	59%	273,312	41%	665,248
10/26/2014	385,752	58%	282,711	42%	668,463
11/2/2014	389,778	59%	270,227	41%	660,005
11/9/2014	399,078	59%	273,715	41%	672,793
11/16/2014	395,870	59%	274,658	41%	670,528
11/23/2014	397,860	59%	273,683	41%	671,543
11/30/2014**	277,471	54%	237,250	46%	514,721
12/7/2014	403,179	60%	274,308	40%	677,487
12/14/2014	406,940	58%	290,336	42%	697,276
12/21/2014	397,311	58%	290,028	42%	687,339
12/28/2014***	224,486	51%	213,690	49%	438,176
12/31/2014****	129,309	55%	103,836	45%	233,145

\*Week ending consists of five days worth of data

\*\*Week ending includes Thanksgiving

\*\*\*Week ending includes Christmas

\*\*\*\*Week ending consist of three days worth of data and includes New Year’s Eve

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

**Table 2: Transactions, Fourth Quarter by Month**

Month	Transponder (NC Quick Pass)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
October	1,699,339	58%	1,209,265	42%	2,908,604
November	1,522,280	58%	1,110,865	42%	2,633,145
December	1,561,225	57%	1,172,198	43%	2,733,423

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**2014 Fourth Quarter and Annual Report**

Figure 14 presents a visual summary of the total monthly transactions during 2014 for NC Quick Pass and Bill by Mail transactions.

**Figure 14: 2014 Transactions**

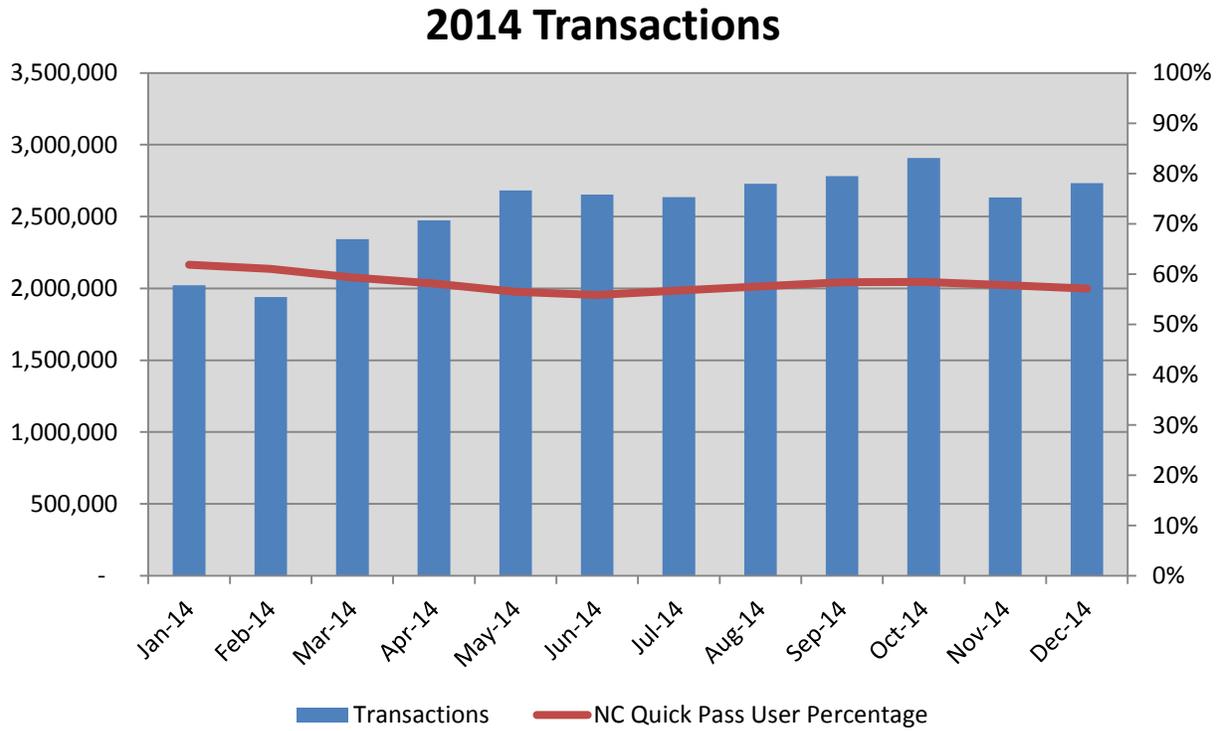


Table 3 presents a summary of the total yearly transactions for NC Quick Pass and Bill by Mail transactions. Project to date is the total number of transactions since the opening of the project.

**Table 3: Transactions, by Year**

Year	Transponder (NC Quick Pass)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
2012	2,803,043	49%	2,892,496	51%	5,695,539
2013	13,249,972	58%	9,792,975	42%	23,042,947
2014	17,733,089	58%	12,802,237	42%	30,535,326
<b>Project to Date</b>	<b>33,786,104</b>	<b>57%</b>	<b>25,487,708</b>	<b>43%</b>	<b>59,273,812</b>

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**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. All weeks begin on Monday and end on Sunday.

**Table 4: Classification, Fourth 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
10/5/2014*	437,462	97%	5,428	1%	10,022	2%
10/12/2014	650,876	96%	8,497	1%	15,809	2%
10/19/2014	645,188	97%	6,766	1%	13,294	2%
10/26/2014	645,159	97%	8,333	1%	14,971	2%
11/2/2014	637,990	97%	8,005	1%	14,010	2%
11/9/2014	650,983	97%	7,695	1%	14,115	2%
11/16/2014	647,648	97%	8,283	1%	14,597	2%
11/23/2014	651,476	97%	7,157	1%	12,910	2%
11/30/2014**	502,735	98%	4,524	1%	7,462	1%
12/7/2014	654,007	97%	8,163	1%	15,317	2%
12/14/2014	675,748	97%	7,633	1%	13,895	2%
12/21/2014	666,092	97%	7,212	1%	14,035	2%
12/28/2014***	430,024	98%	3,092	1%	5,060	1%
12/31/2014****	226,379	97%	2,399	1%	4,367	2%

\*Week ending consists of five days worth of data

\*\*Week ending includes Thanksgiving

\*\*\*Week ending includes Christmas

\*\*\*\*Week ending consist of three days worth of data and includes New Year's Eve

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: Classification, Fourth 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
October	2,809,116	97%	34,803	1%	64,685	2%
November	2,554,958	97%	28,315	1%	49,872	2%
December	2,652,250	97%	28,499	1%	52,674	2%

Figure 15 presents a visual summary of the total monthly percentage of transactions during 2014 for Class 1 (2-axle) vehicles.

Figure 15: 2014 Classification, Class 1 Percentage

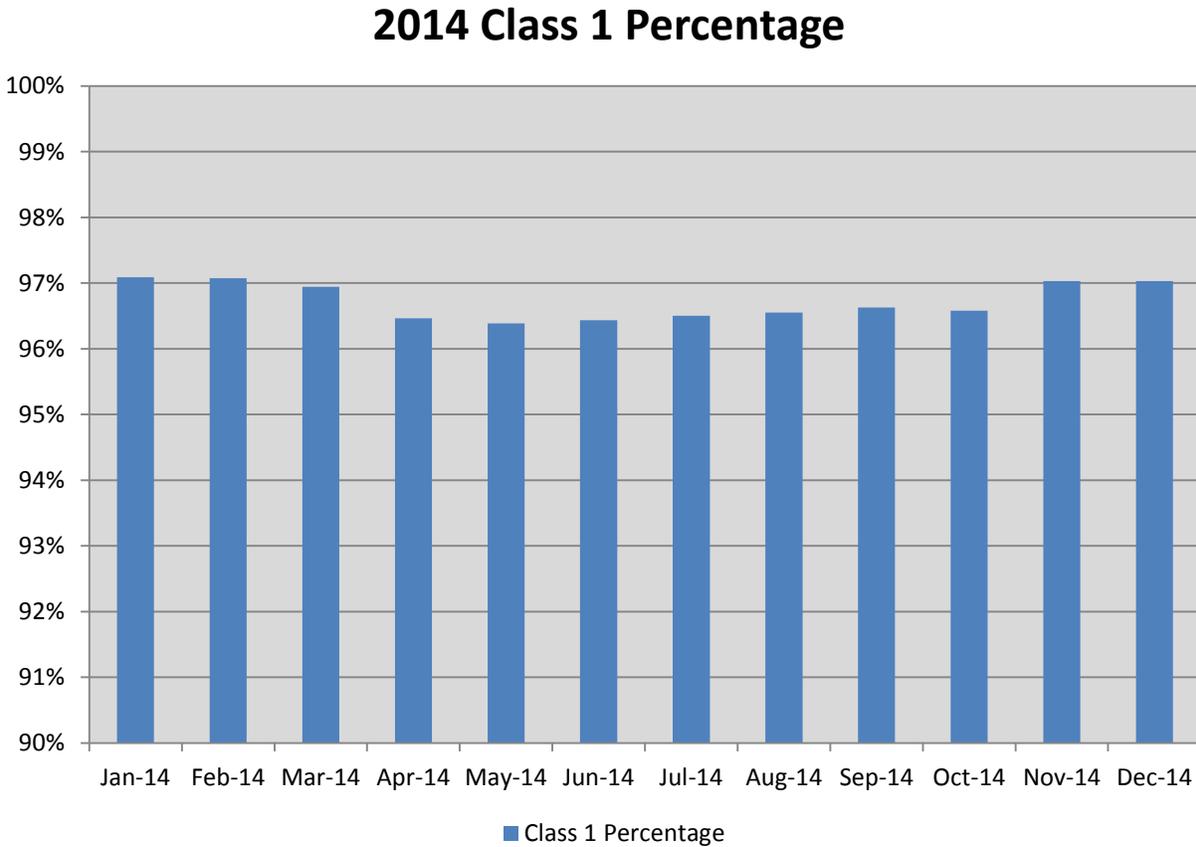


Table 6 presents a summary of the total yearly classification for Class 1 (2-axle), Class 2 (3-axle) and Class 3 (4+axle) vehicles. Project to date is the total number of transactions since the opening of the project.

Table 6: 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%	46,935	1%	86,543	2%
2013	22,282,351	97%	267,558	1%	493,038	2%
2014	29,530,077	97%	355,721	1%	649,528	2%
<b>Project to Date</b>	<b>57,374,489</b>	<b>97%</b>	<b>670,214</b>	<b>1%</b>	<b>1,229,109</b>	<b>2%</b>

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**Accounts**

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

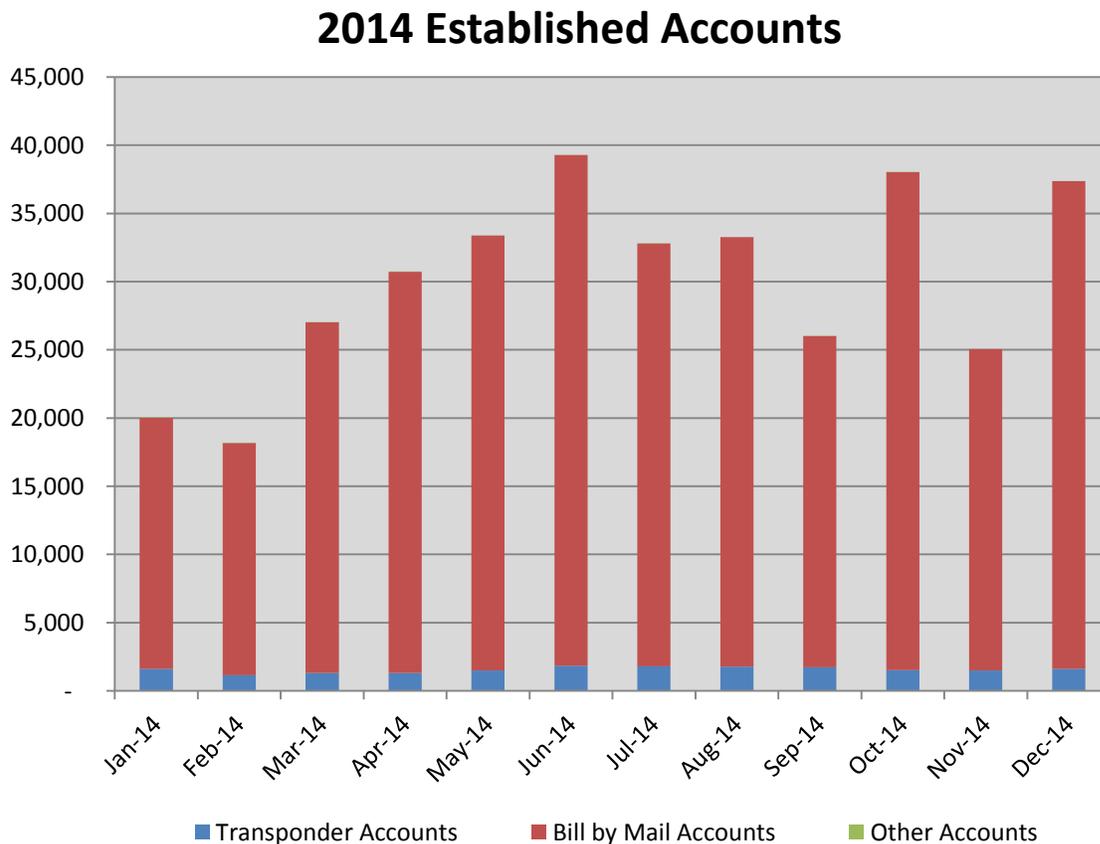
Table 7 presents a summary of the monthly established accounts being managed by the NCTA CSC. Numbers presented in parentheses represent a reduction in accounts.

**Table 7: Established Accounts, Fourth Quarter by Month**

Month	Transponder (NC Quick Pass)	Bill by Mail	Registered Video	Non-Revenue	Government	Total
October	1,515	36,497	0	1	0	<b>38,013</b>
November	1,501	23,543	0	0	0	<b>25,044</b>
December	1,618	35,760	0	0	0	<b>37,378</b>

Figure 16 presents a visual summary of the monthly established accounts during 2014 being managed by the NCTA CSC. The “Other” category includes registered video, non-revenue and government accounts.

**Figure 16: 2014 Established Accounts**



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2014 Fourth Quarter and Annual Report

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: Established Accounts, by Year

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	18,652	342,476	2	13	3	361,146
<b>Project to Date</b>	<b>70,099</b>	<b>1,008,488</b>	<b>6</b>	<b>70</b>	<b>30</b>	<b>1,078,693</b>

**Transponders**

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

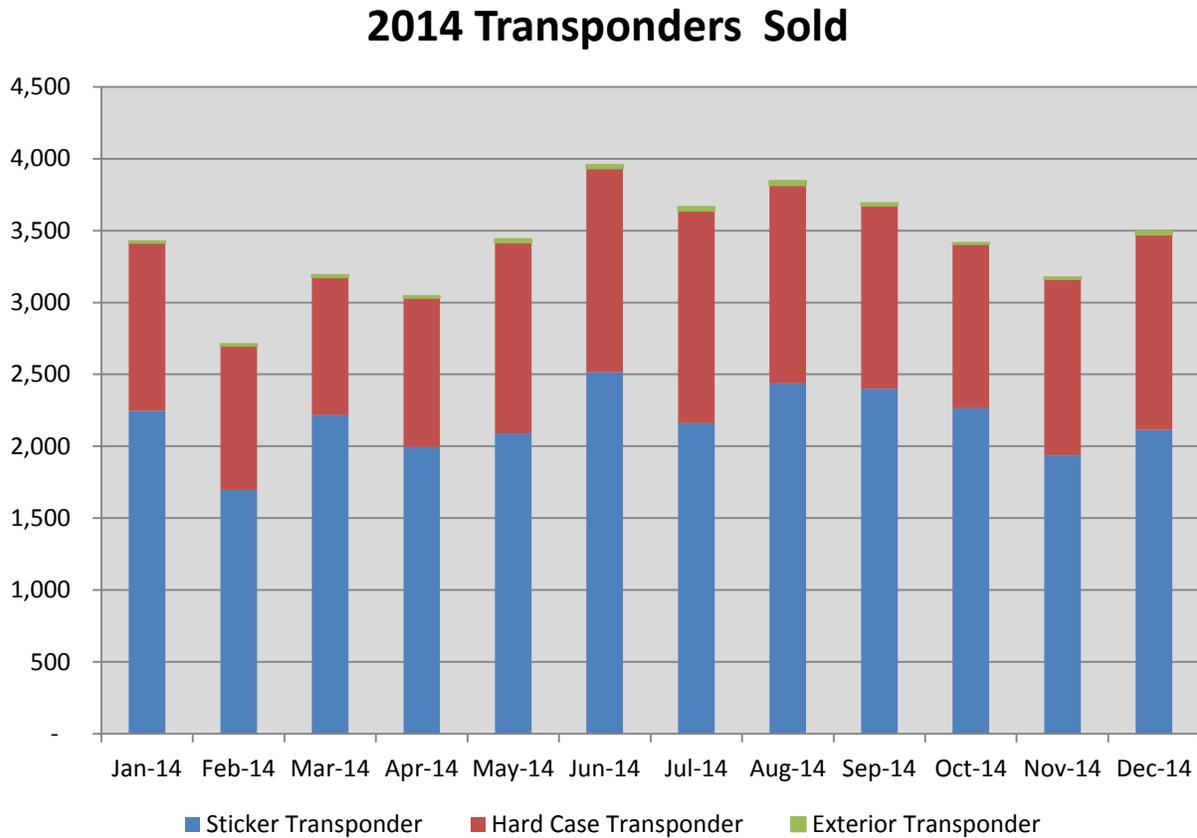
Table 9 presents a summary of the total monthly transponders sold.

**Table 9: Transponders Sold, Fourth Quarter by Month**

Month	Sticker Tag	Hard Case Tag	Exterior Tag	Total
October	2,264	1,142	10	<b>3,416</b>
November	1,937	1,226	14	<b>3,177</b>
December	2,113	1,359	24	<b>3,496</b>

Figure 17 presents a visual summary of the monthly transponders sold during 2014.

**Figure 17: 2014 Transponders Sold**



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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.

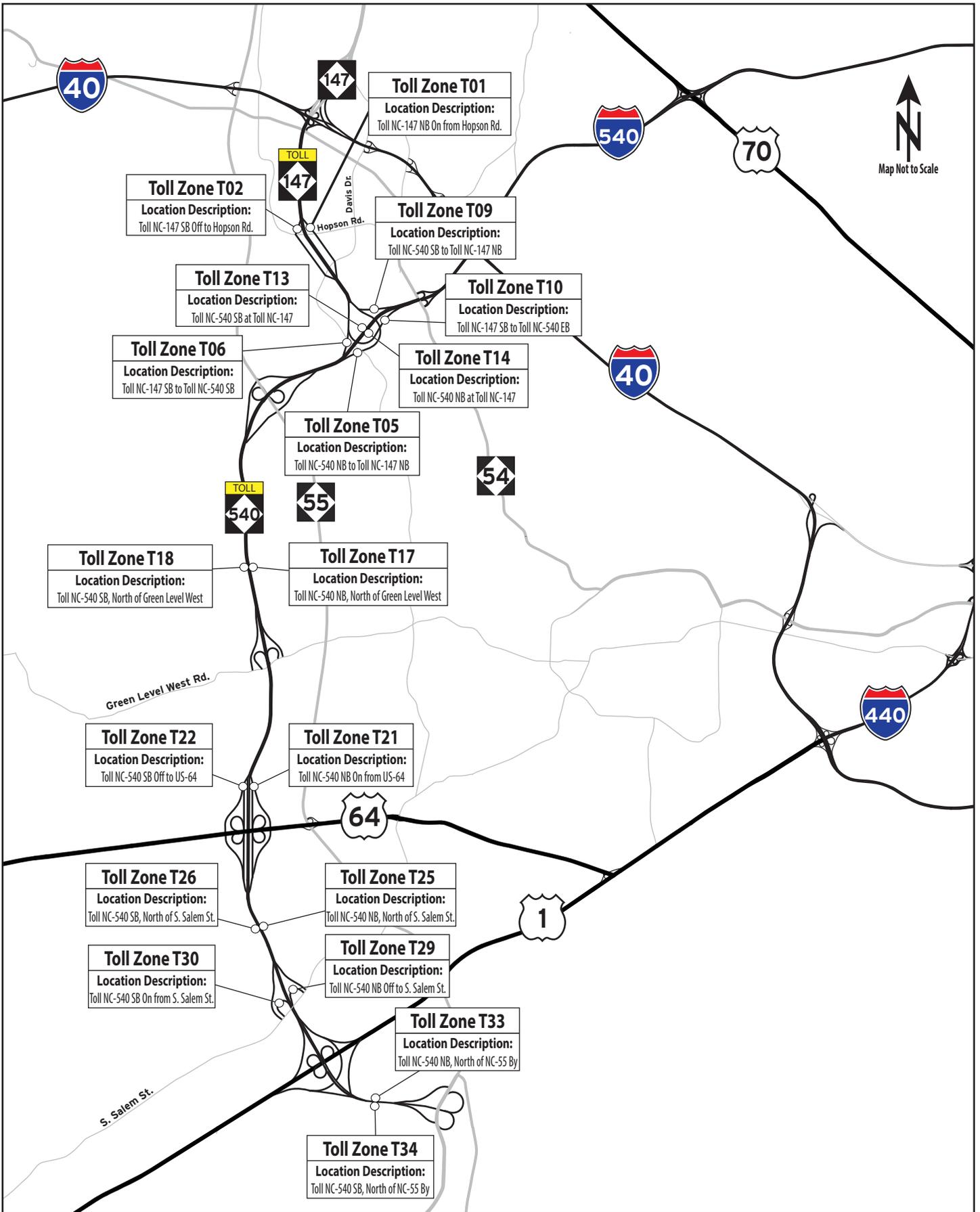
Table 10: Transponders Sold, by Year

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
<b>Project to Date</b>	<b>103,503</b>	<b>38,425</b>	<b>928</b>	<b>142,856</b>

# Toll Zone Statistics

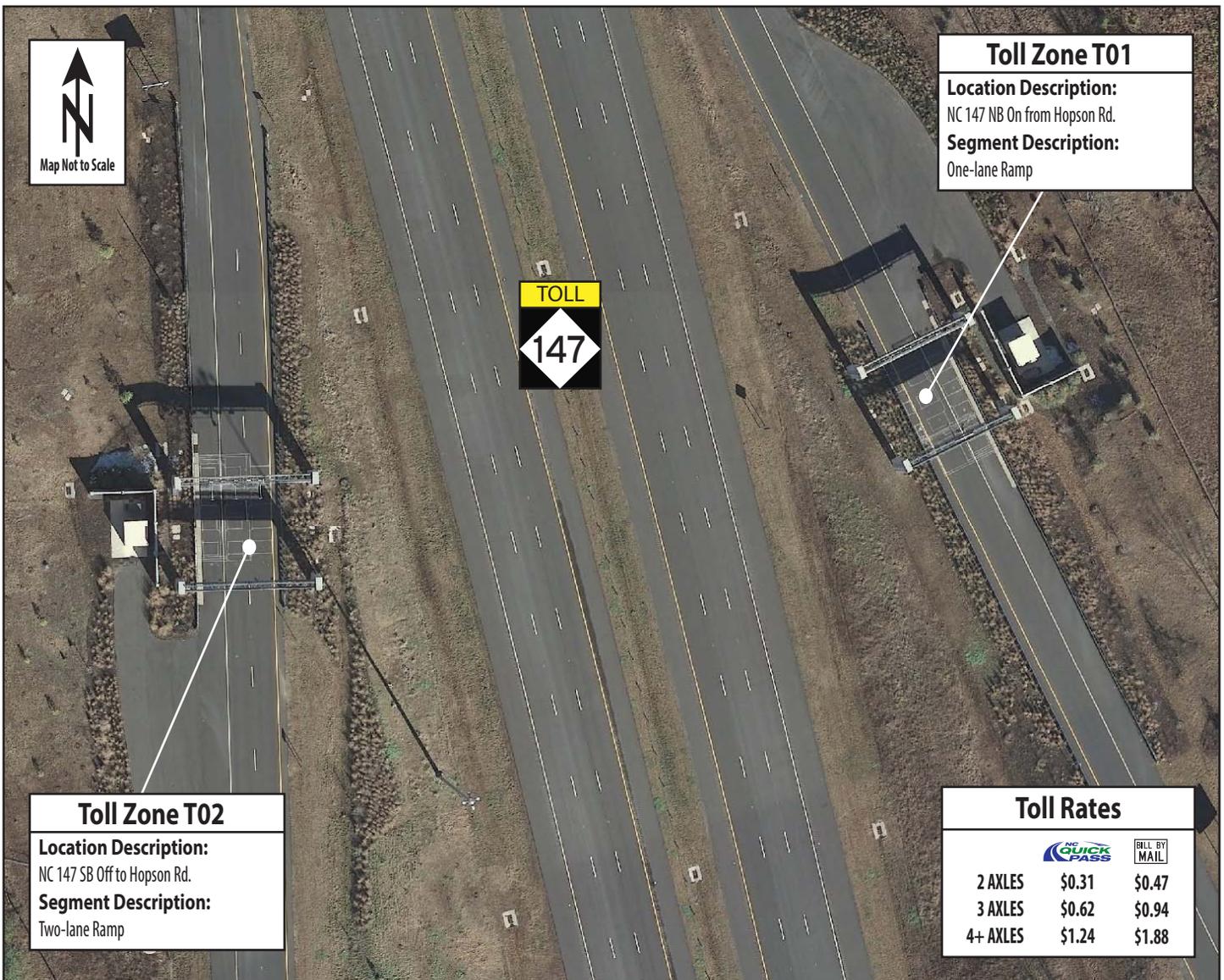
## TOLL ZONE STATISTICS

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*.



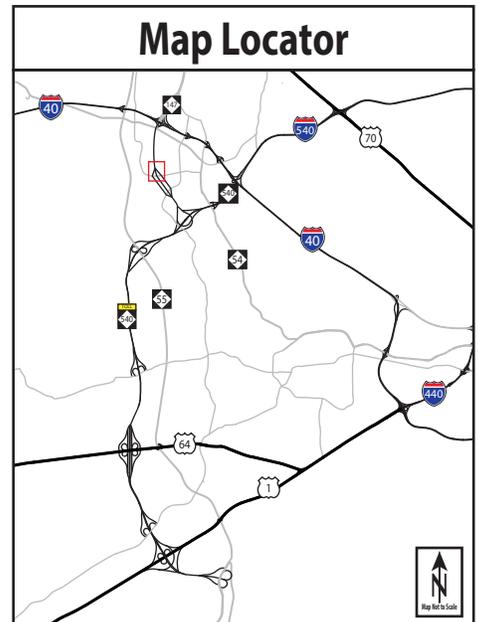
**Triangle Expressway Toll Zone Map**

**Figure 18**



Transactions by Direction		
Month	T01	T02
January	1,580	1,510
February	1,740	1,670
March	1,710	1,630
April	1,800	1,700
May	1,900	1,800
June	1,900	1,790
July	1,930	1,790
August	2,020	1,850
September	1,970	1,830
October	2,120	1,940
November	2,080	1,930
December	2,060	1,930

NC Quick Pass Percentage		
Month	T01	T02
January	65%	65%
February	63%	64%
March	62%	63%
April	61%	61%
May	59%	59%
June	58%	59%
July	58%	59%
August	59%	59%
September	60%	61%
October	58%	60%
November	59%	60%
December	60%	60%



**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**

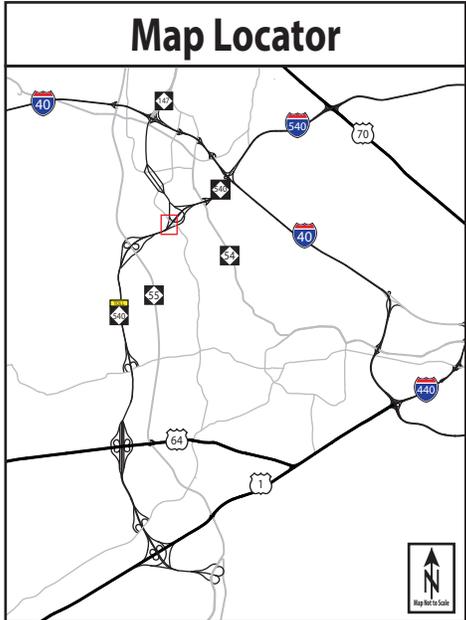
	QUICK PASS	BILL BY MAIL
2 AXLES	\$0.86	\$1.31
3 AXLES	\$1.72	\$2.62
4+ AXLES	\$3.44	\$5.24

**Transactions by Direction**

Month	T05	T06
January	4,100	3,880
February	4,480	4,280
March	4,360	4,200
April	4,750	4,480
May	5,060	4,780
June	5,160	4,840
July	5,080	4,790
August	5,320	5,050
September	5,290	5,010
October	5,520	5,250
November	5,560	5,300
December	5,560	5,300

**NC Quick Pass Percentage**

Month	T05	T06
January	67%	68%
February	67%	68%
March	64%	66%
April	63%	65%
May	62%	63%
June	61%	62%
July	62%	62%
August	62%	63%
September	63%	64%
October	63%	64%
November	62%	63%
December	62%	62%



**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**

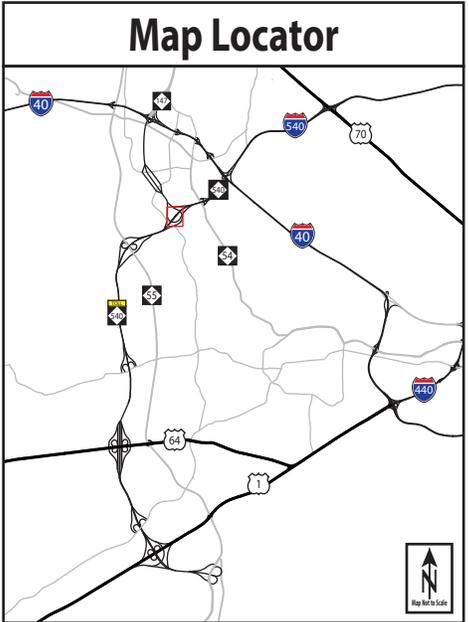
2 AXLES	\$0.55	\$0.84
3 AXLES	\$1.10	\$1.68
4+ AXLES	\$2.20	\$3.36

**Transactions by Direction**

Month	T13	T14
January	9,620	10,010
February	10,580	11,030
March	10,650	11,070
April	11,160	11,490
May	12,140	12,180
June	12,140	12,360
July	11,530	11,720
August	12,150	12,450
September	11,980	12,290
October	12,000	12,620
November	12,380	12,580
December	12,660	12,890

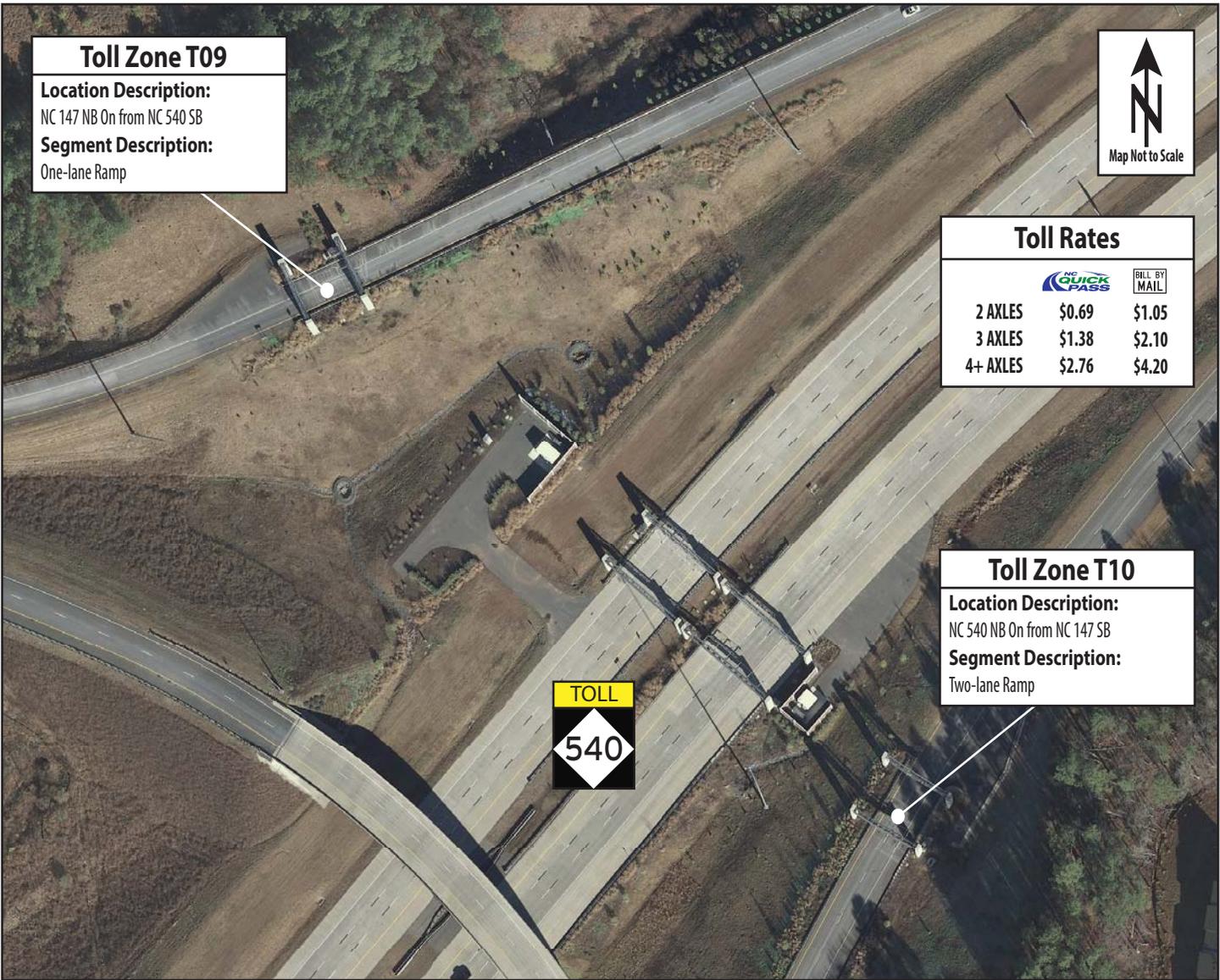
**NC Quick Pass Percentage**

Month	T13	T14
January	63%	62%
February	62%	61%
March	61%	61%
April	60%	60%
May	58%	58%
June	57%	57%
July	58%	59%
August	59%	59%
September	60%	60%
October	56%	60%
November	60%	60%
December	59%	60%



**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

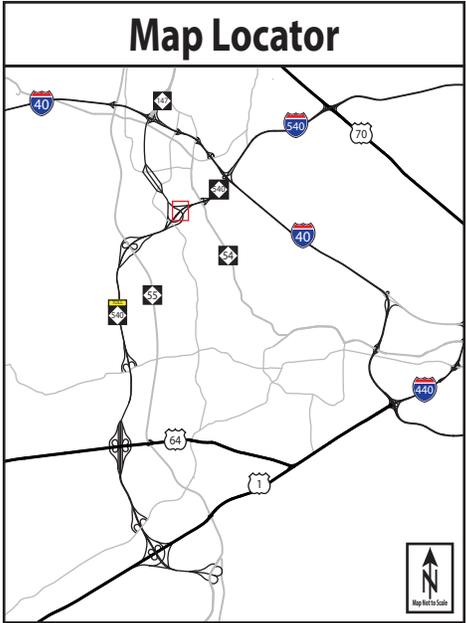
**Toll Zone T10**  
**Location Description:**  
 NC 540 NB On from NC 147 SB  
**Segment Description:**  
 Two-lane Ramp

**Transactions by Direction**

Month	T09	T10
January	960	1,080
February	1,130	1,270
March	1,130	1,290
April	1,160	1,360
May	1,230	1,430
June	1,230	1,430
July	1,210	1,430
August	1,240	1,520
September	1,250	1,490
October	1,470	1,730
November	1,480	1,740
December	1,430	1,780

**NC Quick Pass Percentage**

Month	T09	T10
January	60%	64%
February	59%	63%
March	59%	60%
April	58%	59%
May	54%	57%
June	54%	55%
July	55%	55%
August	56%	57%
September	58%	58%
October	56%	58%
November	56%	58%
December	59%	58%



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

**Figure 22**



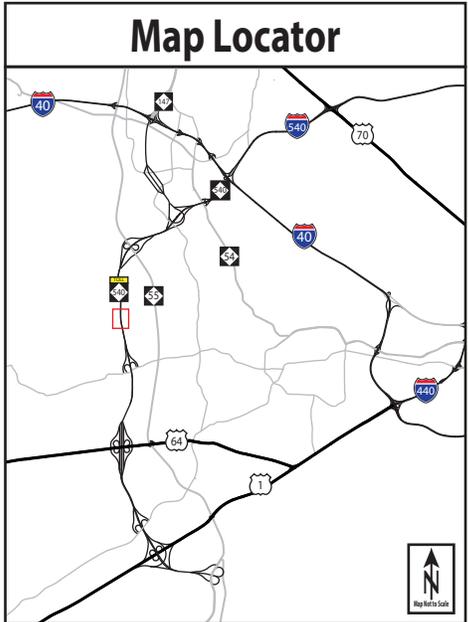
**Toll Zone T18**  
**Location Description:**  
 NC 540 SB, North of Green Level West  
**Segment Description:**  
 Three-lane Mainline

**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

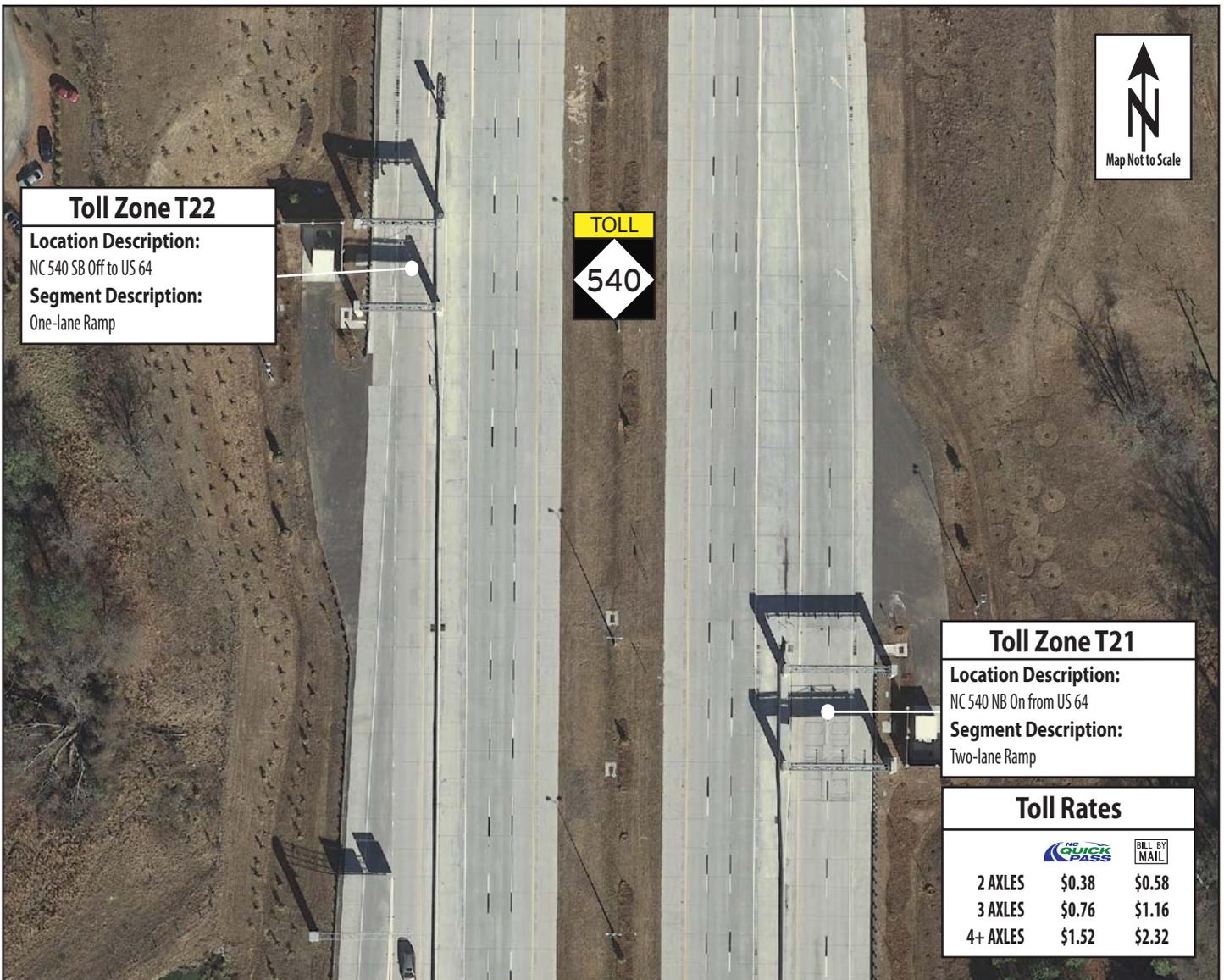
Transactions by Direction		
Month	T17	T18
January	8,760	8,810
February	9,650	9,730
March	9,820	9,940
April	10,460	10,530
May	11,110	11,380
June	11,490	11,640
July	11,090	11,330
August	11,620	11,820
September	11,610	11,720
October	12,130	12,400
November	12,150	12,450
December	12,410	12,680

NC Quick Pass Percentage		
Month	T17	T18
January	61%	65%
February	60%	64%
March	58%	63%
April	56%	61%
May	55%	59%
June	55%	58%
July	56%	59%
August	58%	60%
September	61%	61%
October	61%	61%
November	61%	61%
December	60%	60%



**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**

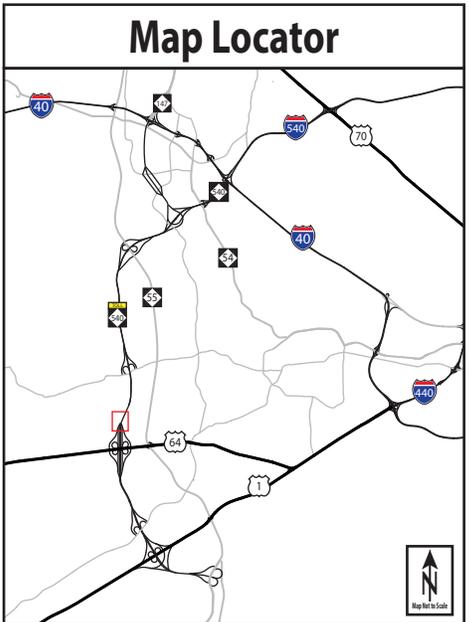
		BILL BY MAIL
2 AXLES	\$0.38	\$0.58
3 AXLES	\$0.76	\$1.16
4+ AXLES	\$1.52	\$2.32

**Transactions by Direction**

Month	T21	T22
January	2,920	2,940
February	3,170	3,220
March	3,210	3,270
April	3,370	3,470
May	3,550	3,680
June	3,570	3,660
July	3,540	3,620
August	3,630	3,760
September	3,620	3,690
October	3,810	3,910
November	3,780	3,890
December	3,910	4,040

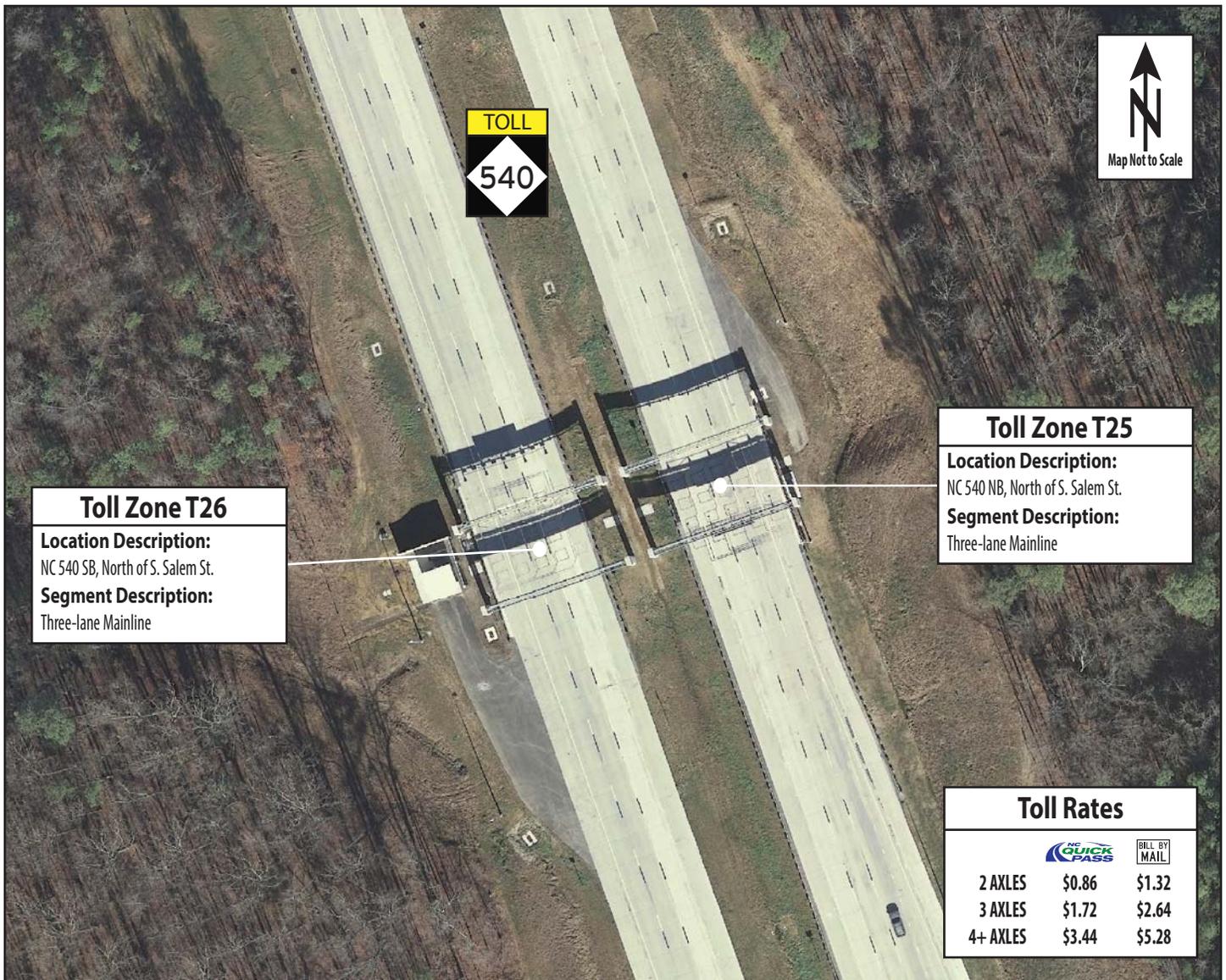
**NC Quick Pass Percentage**

Month	T21	T22
January	66%	67%
February	66%	66%
March	64%	65%
April	62%	63%
May	60%	61%
June	59%	61%
July	59%	60%
August	59%	61%
September	61%	62%
October	61%	62%
November	61%	62%
December	60%	58%



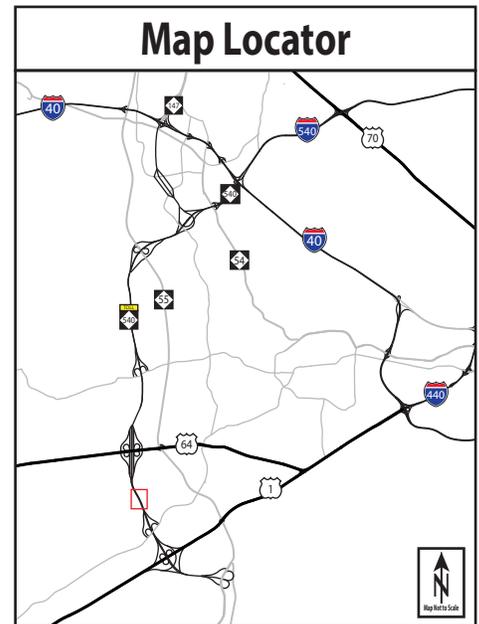
**US-64 Ramp Toll Zones**  
 2014 Average Weekday Toll Transactions

**Figure 24**



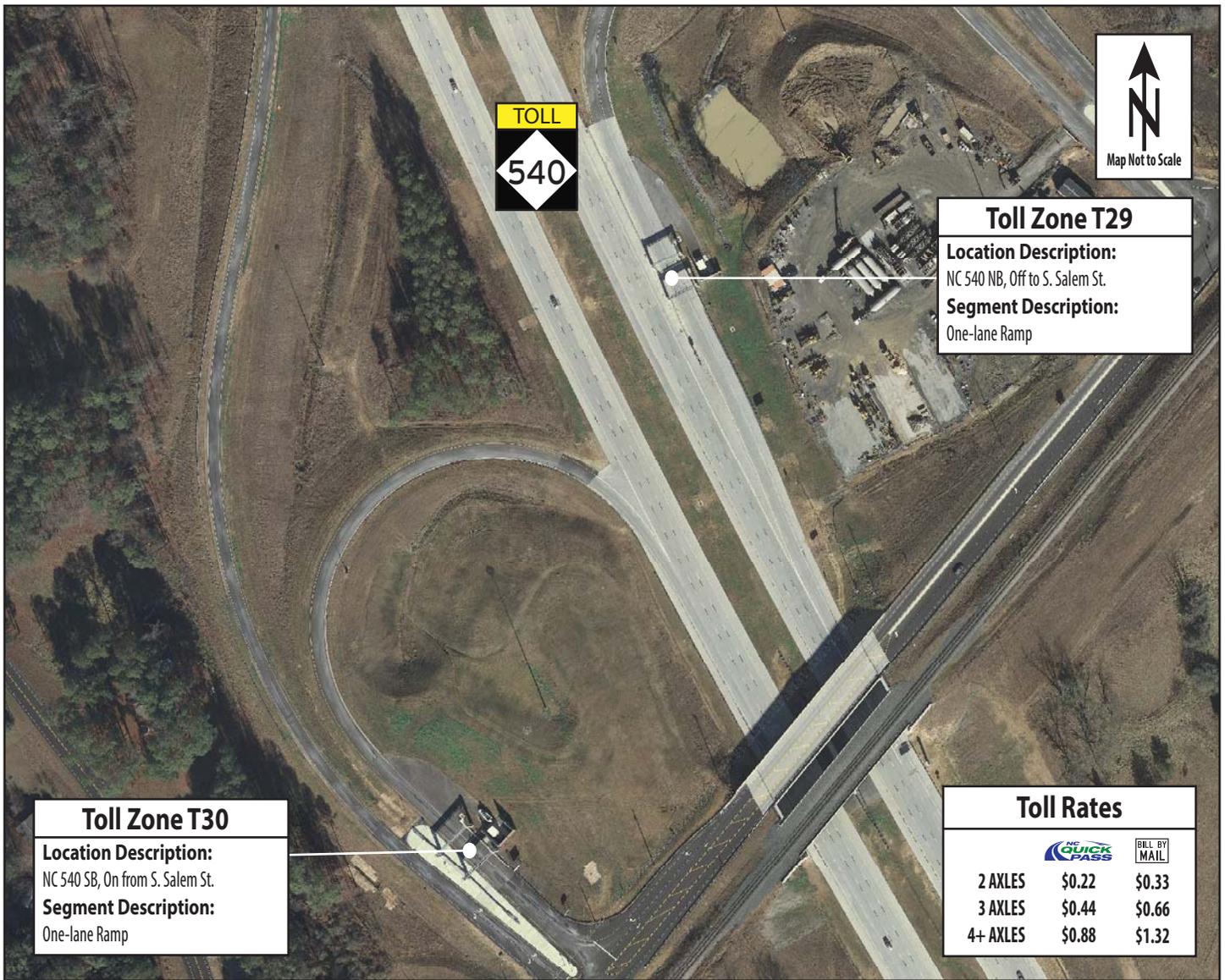
Transactions by Direction		
Month	T25	T26
January	6,800	6,570
February	7,540	7,290
March	7,680	7,440
April	8,320	8,010
May	9,130	8,930
June	9,470	9,190
July	9,020	8,850
August	9,470	9,270
September	9,480	9,230
October	9,930	9,770
November	9,950	9,760
December	10,070	9,860

NC Quick Pass Percentage		
Month	T25	T26
January	62%	63%
February	62%	62%
March	60%	60%
April	59%	59%
May	58%	58%
June	56%	56%
July	57%	57%
August	58%	58%
September	57%	59%
October	59%	59%
November	59%	59%
December	58%	58%



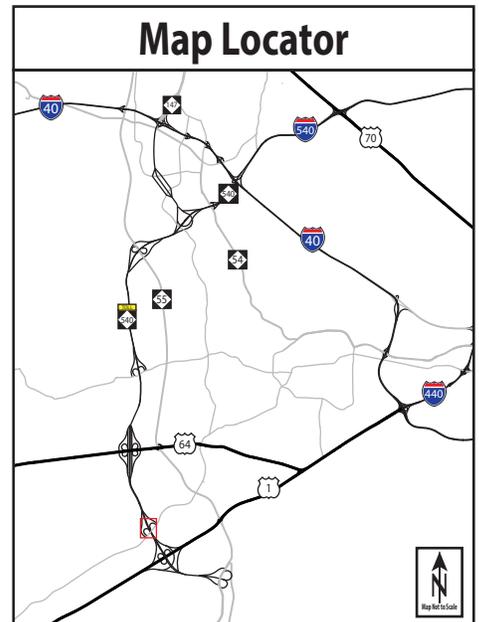
**NC-540 Apex Mainline Toll Zones**  
 2014 Average Weekday Toll Transactions

**Figure 25**



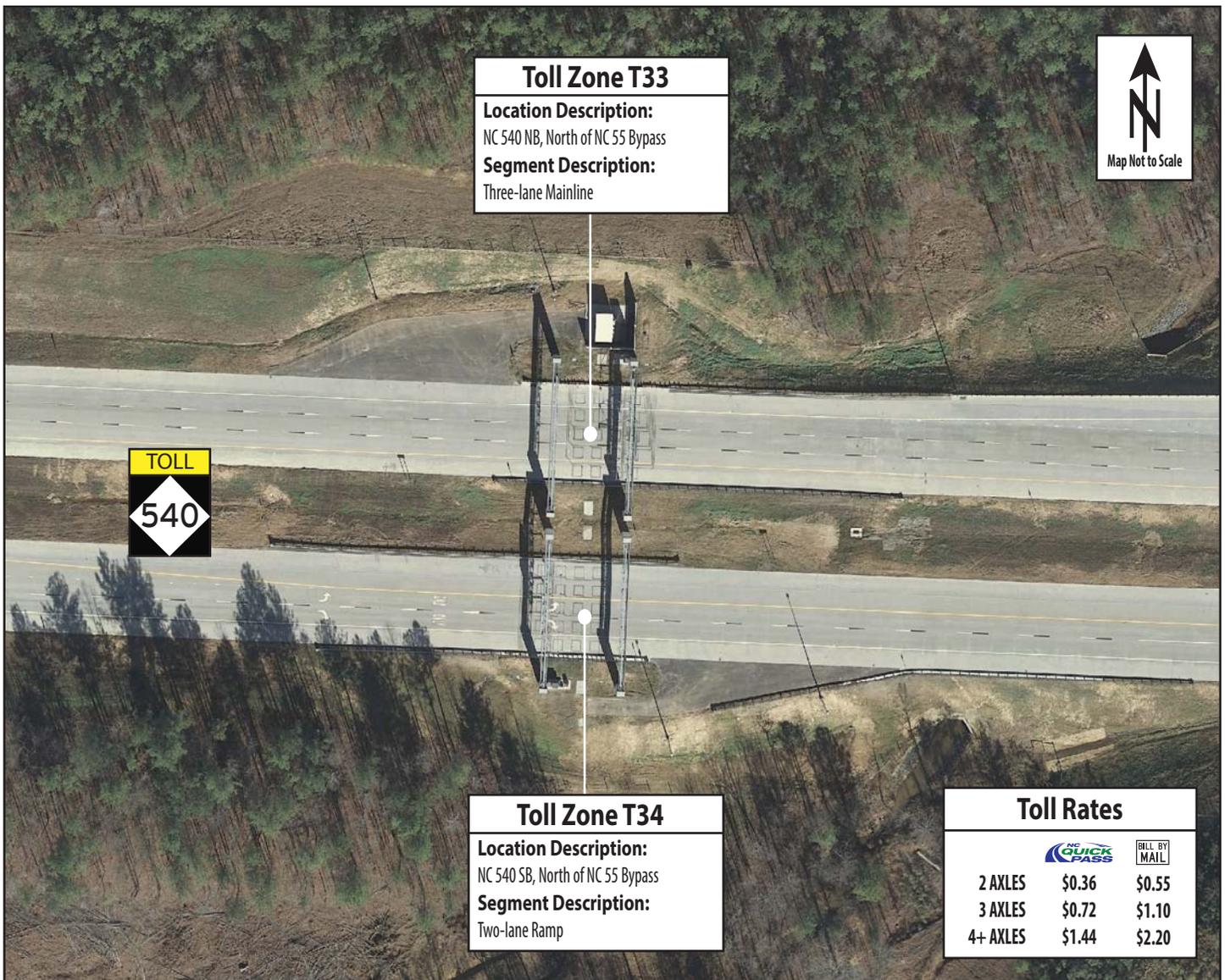
<b>Transactions by Direction</b>		
Month	T29	T30
January	600	660
February	680	730
March	680	740
April	720	780
May	830	910
June	720	780
July	690	760
August	800	870
September	880	920
October	910	950
November	890	940
December	900	970

<b>NC Quick Pass Percentage</b>		
Month	T29	T30
January	73%	71%
February	74%	73%
March	72%	72%
April	71%	71%
May	69%	68%
June	67%	68%
July	67%	68%
August	69%	69%
September	72%	71%
October	71%	72%
November	72%	71%
December	71%	70%



**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**

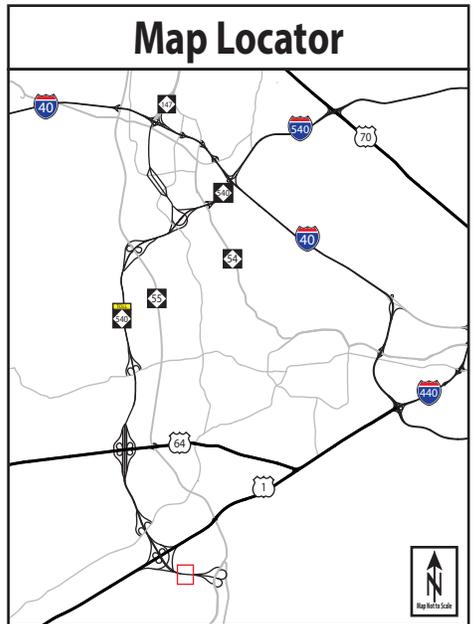
		BILL BY MAIL
2 AXLES	\$0.36	\$0.55
3 AXLES	\$0.72	\$1.10
4+ AXLES	\$1.44	\$2.20

**Transactions by Direction**

Month	T33	T34
January	5,010	4,810
February	5,550	5,270
March	5,610	5,340
April	5,930	5,670
May	6,440	6,230
June	6,380	6,040
July	6,000	6,080
August	6,750	6,350
September	6,970	6,450
October	7,110	6,790
November	7,060	6,770
December	7,050	6,770

**NC Quick Pass Percentage**

Month	T33	T34
January	66%	66%
February	65%	65%
March	64%	63%
April	63%	62%
May	61%	61%
June	61%	60%
July	61%	61%
August	62%	61%
September	63%	58%
October	63%	59%
November	63%	62%
December	62%	62%



**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 Highway Patrol officer 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 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.

**Operations Statistics Report for the Triangle Expressway**  
**2014 Fourth Quarter and Annual Report**

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	90	100	96	100	74	78	104	98	67	<b>1,011</b>
Alcohol Violations	0	0	0	0	0	0	0	1	0	0	0	1	<b>2</b>
Seat Belt Violations	3	11	5	8	15	14	9	10	8	11	9	18	<b>121</b>
Child Restraint Violations	0	0	1	0	0	0	1	0	0	2	0	2	<b>6</b>
Other Violations	43	53	74	51	53	49	73	60	36	80	78	56	<b>706</b>
<b>Total Charges</b>	<b>120</b>	<b>116</b>	<b>158</b>	<b>149</b>	<b>168</b>	<b>159</b>	<b>183</b>	<b>145</b>	<b>122</b>	<b>197</b>	<b>185</b>	<b>144</b>	<b>1,846</b>
Warnings	128	99	123	163	180	147	141	198	139	183	98	108	<b>1,707</b>
Vehicles Towed	0	0	0	0	0	0	0	0	0	0	0	0	<b>0</b>
Crashes Investigated	7	7	8	7	5	4	9	3	11	7	7	9	<b>84</b>

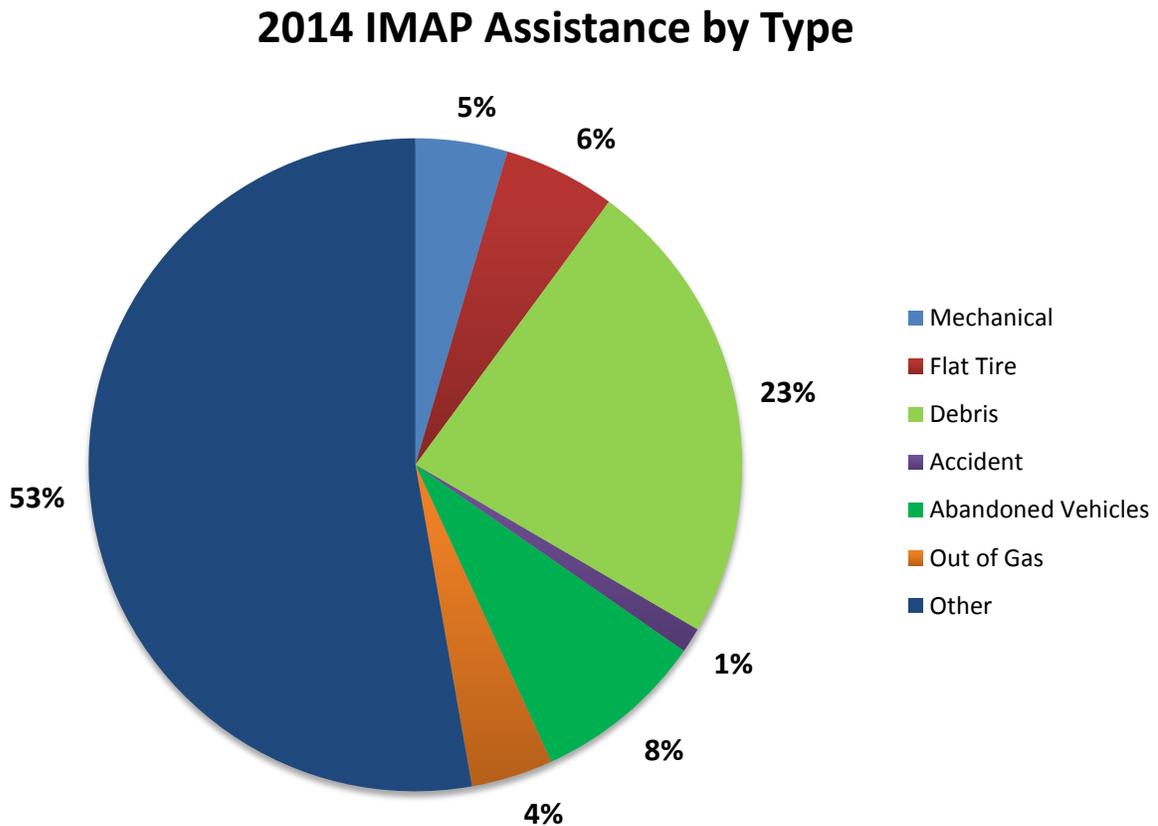
The IMAP assists with stranded motorists and incident clearance, thereby maintaining the flow of traffic along the roadway. Table 12 and Figure 28 present the monthly and annual IMAP assists, by type, for the Triangle Expressway. The “other” category includes the reporting categories of traffic control,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

**Operations Statistics Report for the Triangle Expressway**  
**2014 Fourth Quarter and Annual Report**

**Table 12: IMAP Assistance**

Assist Type	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Mechanical	2	1	4	2	8	7	4	6	3	4	3	11	<b>55</b>
Flat Tire	3	3	7	4	3	10	9	7	4	7	1	9	<b>67</b>
Debris	18	14	18	28	21	26	19	28	14	35	30	31	<b>282</b>
Accident	0	3	0	0	0	0	0	0	5	2	2	3	<b>15</b>
Abandoned Vehicles	9	4	1	6	11	11	6	13	10	11	12	9	<b>103</b>
Out of Gas	3	4	3	4	2	1	6	7	7	3	6	3	<b>49</b>
Other	40	47	55	50	51	60	55	45	54	74	46	61	<b>638</b>
<b>Total Charges</b>	<b>75</b>	<b>76</b>	<b>88</b>	<b>94</b>	<b>96</b>	<b>115</b>	<b>99</b>	<b>106</b>	<b>97</b>	<b>136</b>	<b>100</b>	<b>127</b>	<b>1209</b>

**Figure 28: 2014 YTD IMAP Assistance**



**Operations Statistics Report for the Triangle Expressway**

**2014 Fourth Quarter and Annual Report**

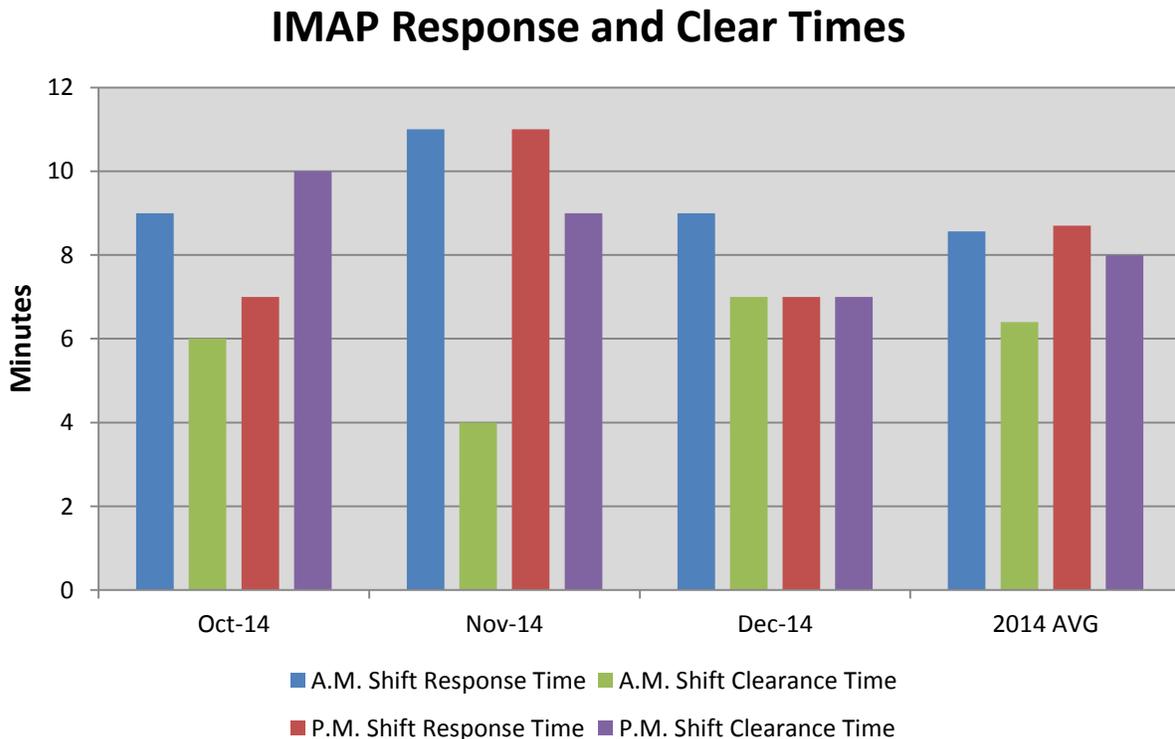
The response and clear times for all IMAP assists are logged by IMAP and provided to the NCTA. Response time is the time from which a responder receives a call to the time they arrive on the scene. Clear time is the time from which it takes the responder to clear the incident and return the roadway to 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: 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	9	11	6	10	7	8	9	11	9	9
A.M. Shift Clearance	6	6	4	6	5	8	7	9	8	6	4	7	6
P.M. Shift Response	6	6	10	10	10	9	8	11	9	7	11	7	9
P.M. Shift Clearance	6	7	9	7	9	9	7	8	7	10	9	7	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 (*Table 14*). In order to balance the occasional uneven sample sizes, 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. 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 2014 Annual Rating provides a 95% confidence level in statistical sampling.

**Table 14: MRP Assessment Results**

<b>Element</b>	<b>Q1 2014 RATING</b>	<b>Q2 2014 RATING</b>	<b>Q3 2014 RATING</b>	<b>Q4 2014 RATING</b>	<b>2014 ANNUAL RATING</b>
<b>Road Surface</b>	87.6	96.8	89.9	93.3	91.9
<b>Unpaved Shoulders</b>	91.5	87.6	92.9	94.6	91.6
<b>Drainage</b>	91.2	93.3	91.3	82.5	89.6
<b>Roadside</b>	94.6	84.7	87.6	83.2	87.5
<b>Traffic Control Devices</b>	94.4	86.1	85.0	82.1	86.9
<b>Overall MRP Performance Rating</b>	<b>91.9</b>	<b>89.8</b>	<b>88.6</b>	<b>86.8</b>	<b>89.3</b>