

NORTH CAROLINA

**Turnpike Authority**

## **Operations Statistics Report**

Triangle Expressway

### **2018 First Quarter Report**

January - March

1 S. Wilmington Street  
Raleigh, NC 27601



Last Updated:  
April 27, 2018

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## INTRODUCTION

### Purpose

The North Carolina Turnpike Authority (NCTA) presents the operations statistics for the Triangle Expressway during the first quarter (January – March) of 2018. The report includes data related to traffic volumes, customer service center operations, 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

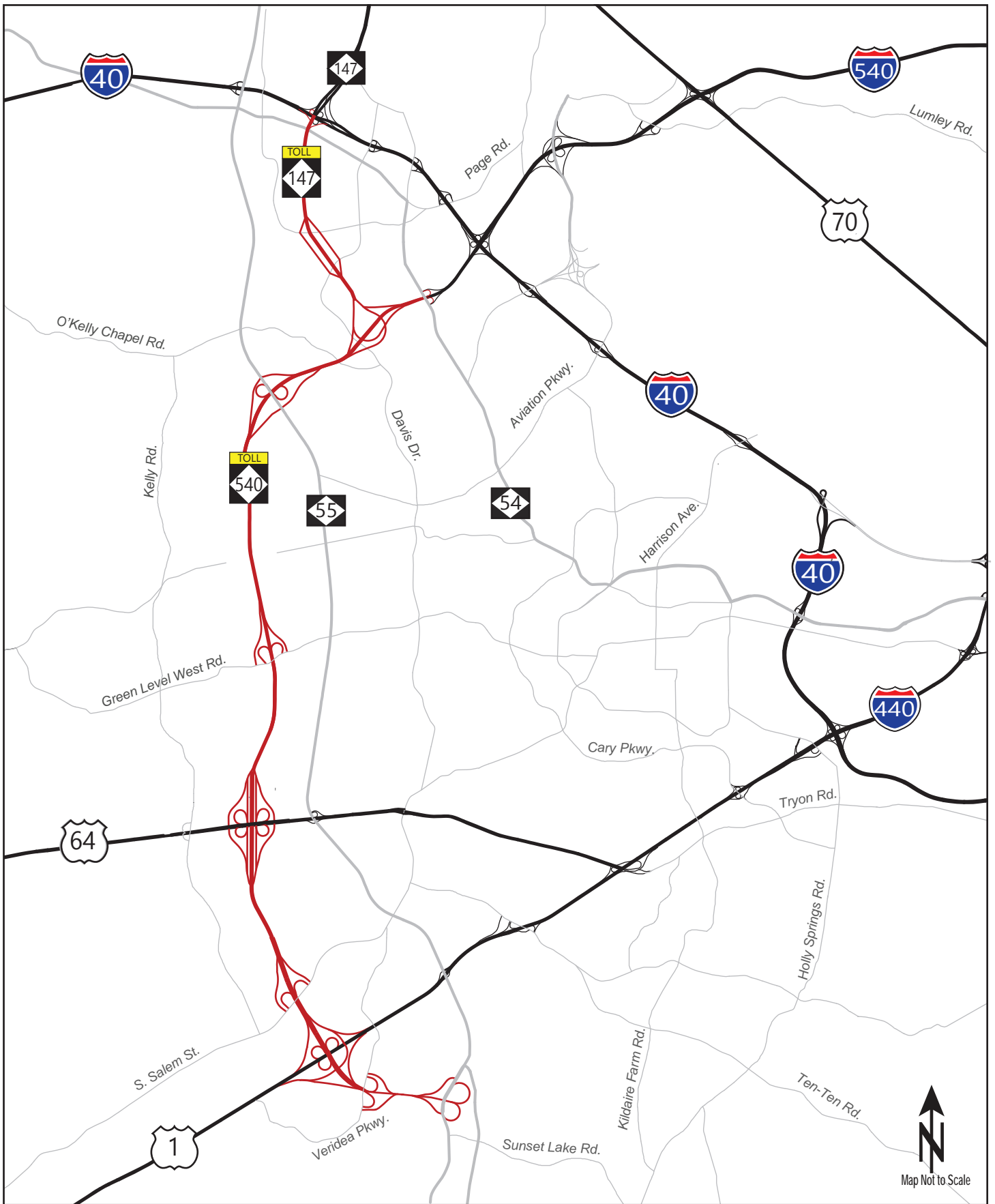
The Triangle Expressway is an 18.8-mile toll road that extends the partially completed “Outer Loop” around the greater Raleigh, North Carolina area from I-40 to NC-55 Bypass. The six-lane, controlled-access toll facility relieves congestion on NC-55 while improving access to the Research Triangle Park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

NC-147 includes 3.4 miles of toll road between I-40 and 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.

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 opened to general traffic (toll-free) on August 1, 2012, and toll collection started on August 2, 2012. This section includes interchanges at NC-54, NC-55, Green Level West Road, and US-64. The section from US-64 to NC-55 Bypass opened to general traffic (toll-free) on December 20, 2012, and toll collection started on January 2, 2013. This section includes interchanges at S. Salem Street, US-1, and NC-55 Bypass. On April 3, 2017, a new interchange at Veridea Parkway was opened in this last section of NC-540.

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<sup>®</sup> 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

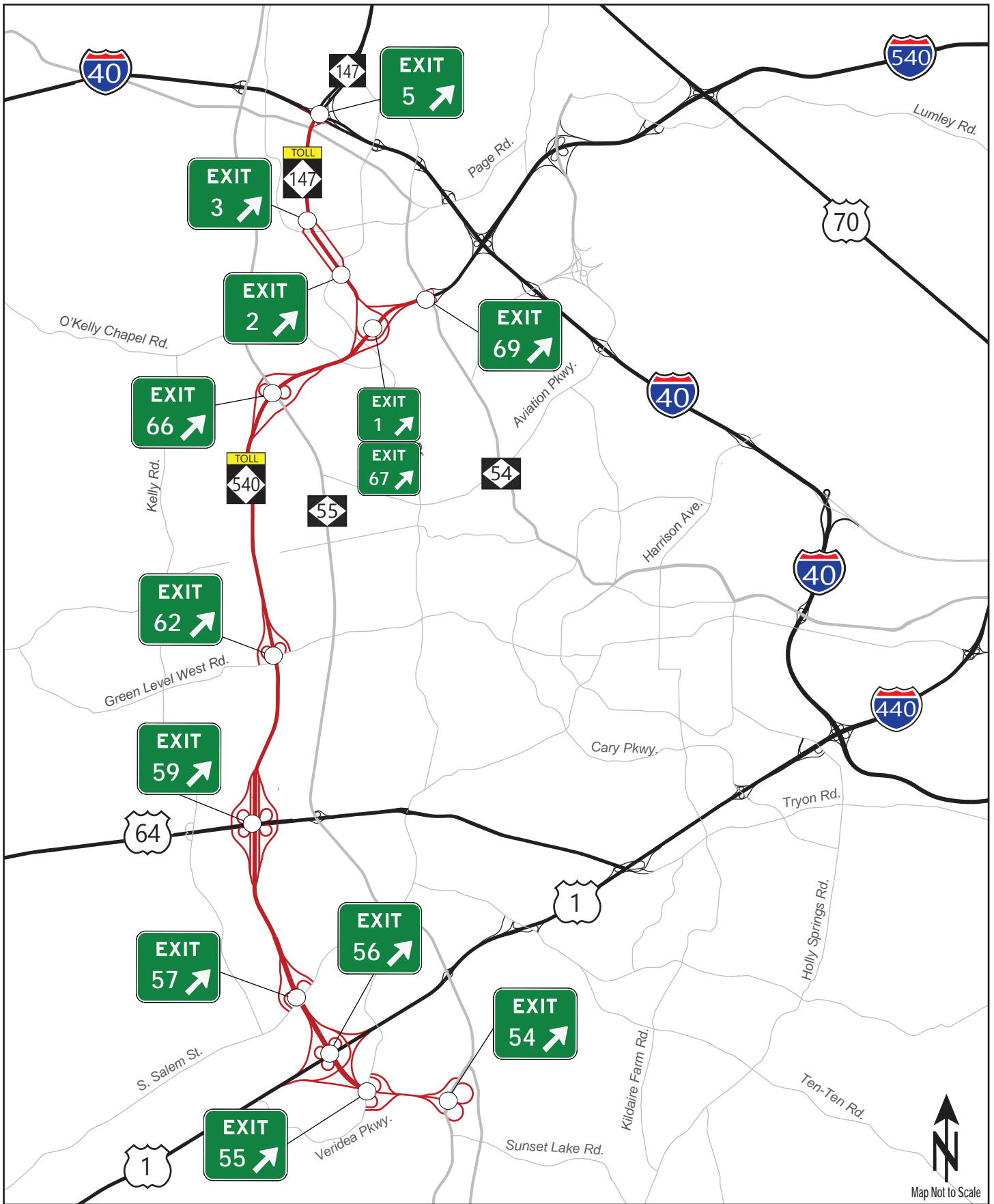
Current and historical traffic data is collected and stored using roadside microwave vehicle detectors (MVDs) installed throughout the Triangle Expressway. The data provides an overview of the roadway's current utilization. The data can also be analyzed to identify trends that could more accurately predict 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 2018.

### **Average Weekday Traffic (AWT)**

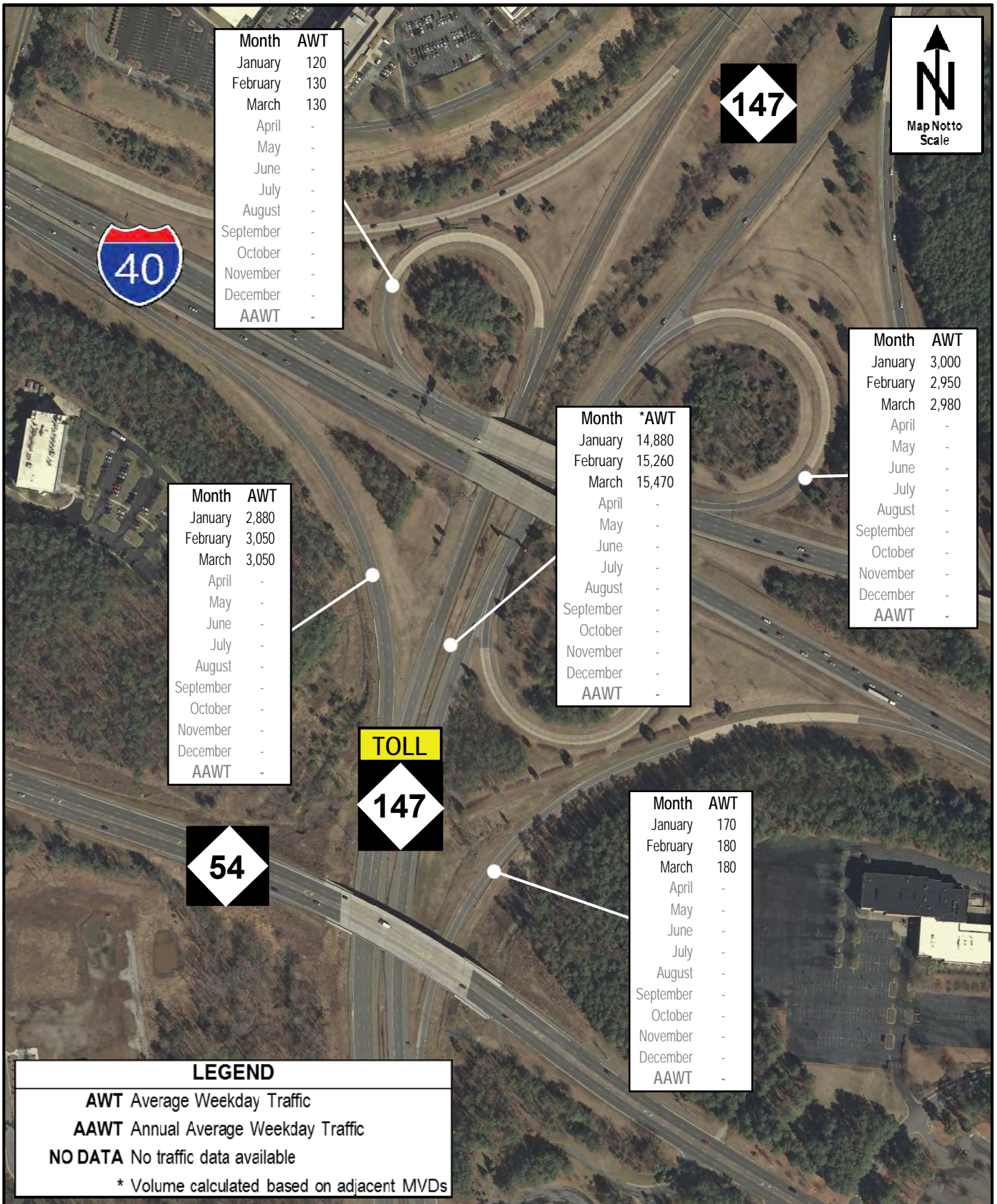
Traffic volume data is collected at all ramps and mainline segments between interchanges. The location of interchanges along the Triangle Expressway can be seen in *Figure 2*. Typically, there is a large difference between peak and off-peak volumes, as well as between weekday and weekend volumes. This 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 14* 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**

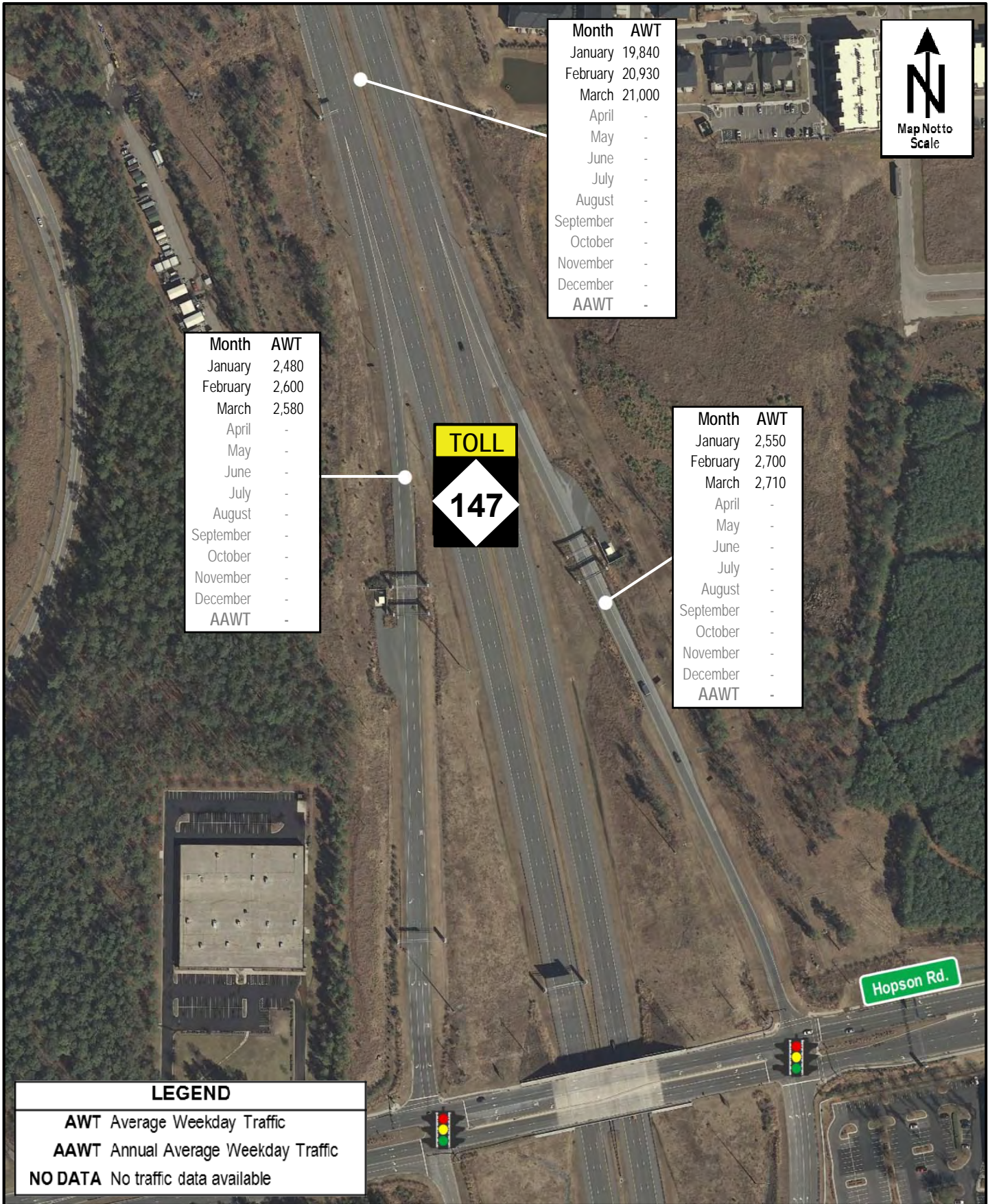
**Figure 2**



**NC-147 at I-40 Interchange**  
 2018 Average Weekday Traffic

**Figure**  
**3**

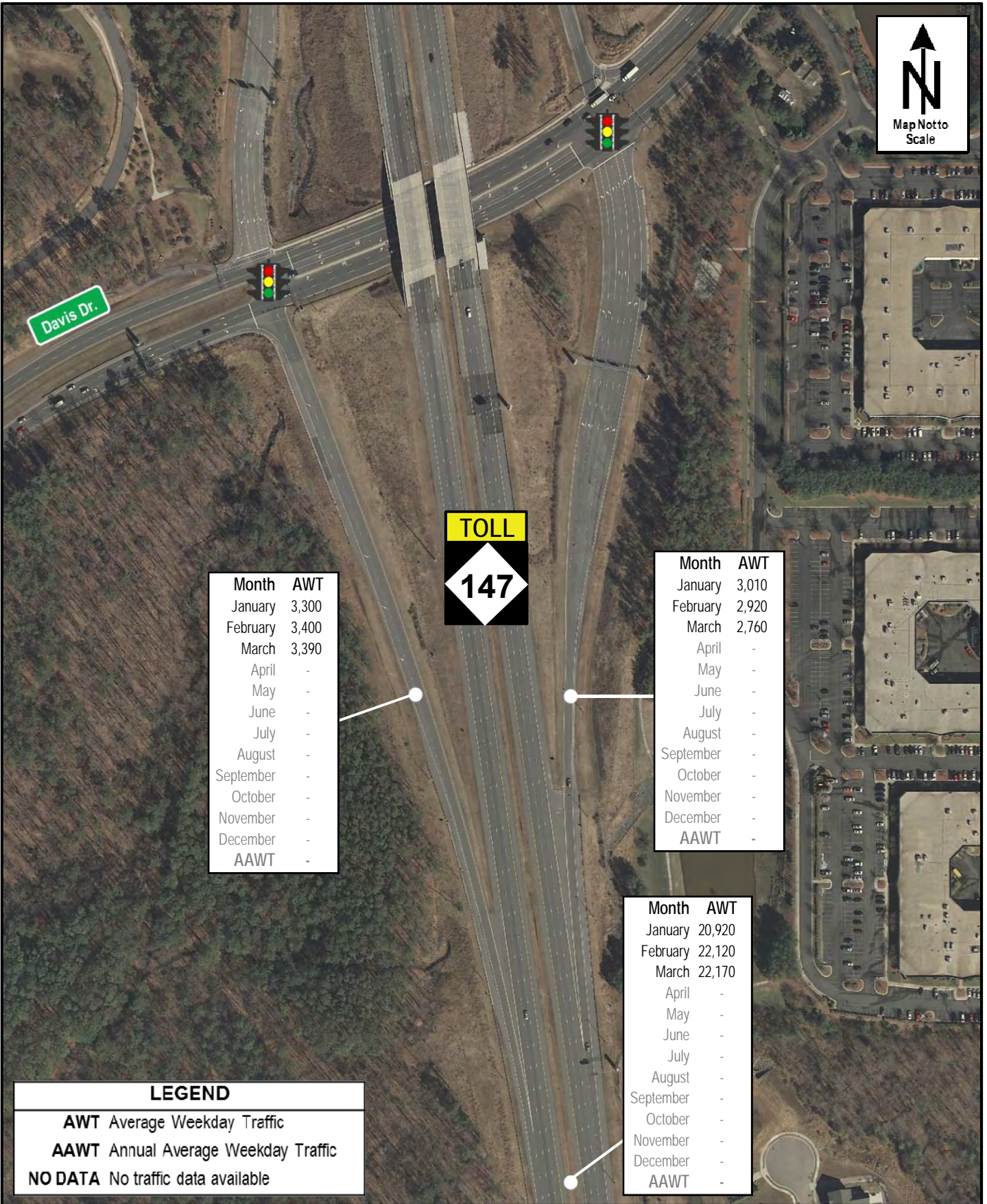




**NC-147 at Hopson Rd. Interchange**  
2018 Average Weekday Traffic

**Figure**  
**4**





Month	AWT
January	3,300
February	3,400
March	3,390
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	3,010
February	2,920
March	2,760
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

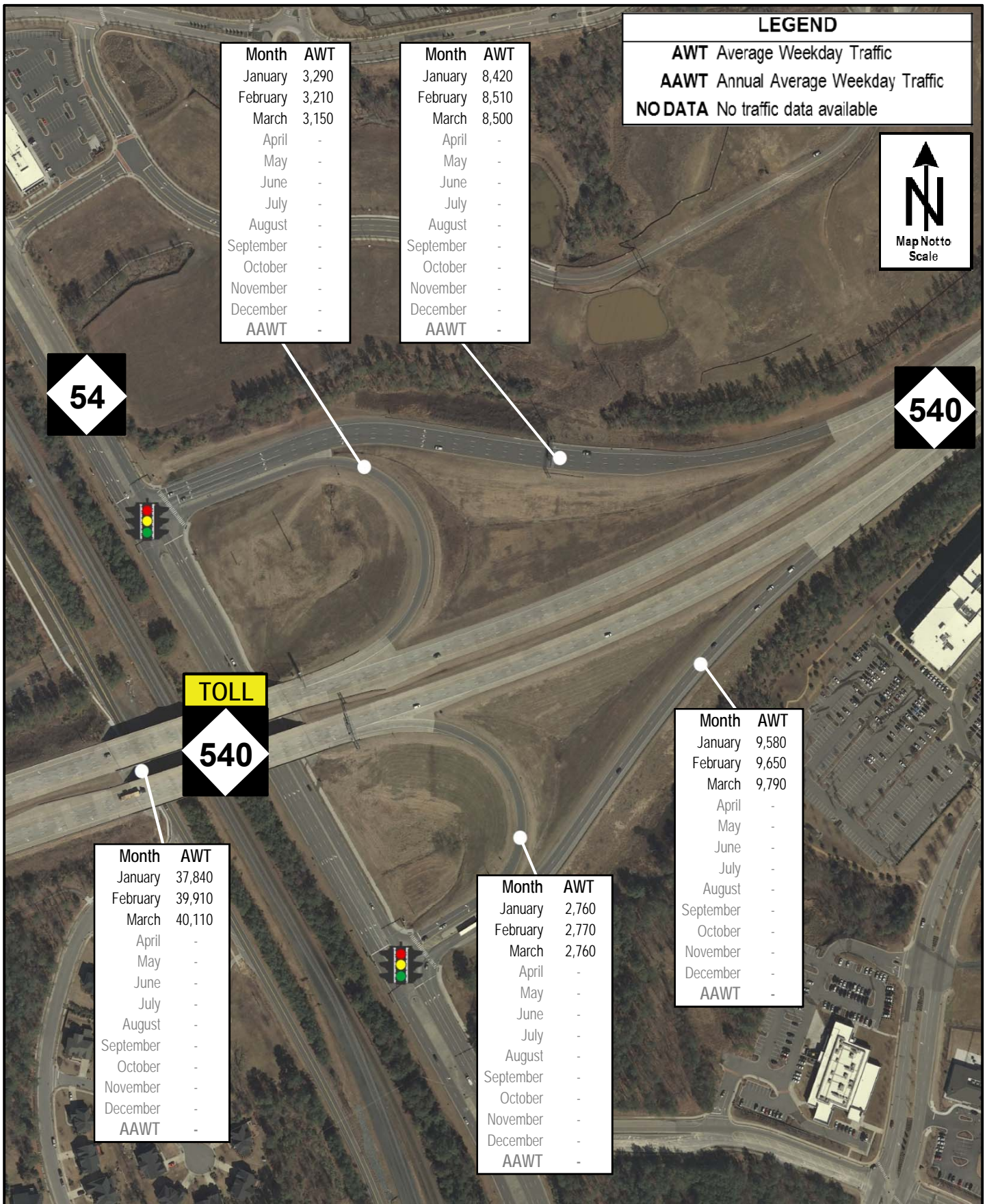
Month	AWT
January	20,920
February	22,120
March	22,170
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

LEGEND	
<b>AWT</b>	Average Weekday Traffic
<b>AAWT</b>	Annual Average Weekday Traffic
<b>NO DATA</b>	No traffic data available

**NC-147 at Davis Dr. Interchange**  
2018 Average Weekday Traffic

**Figure**  
**5**

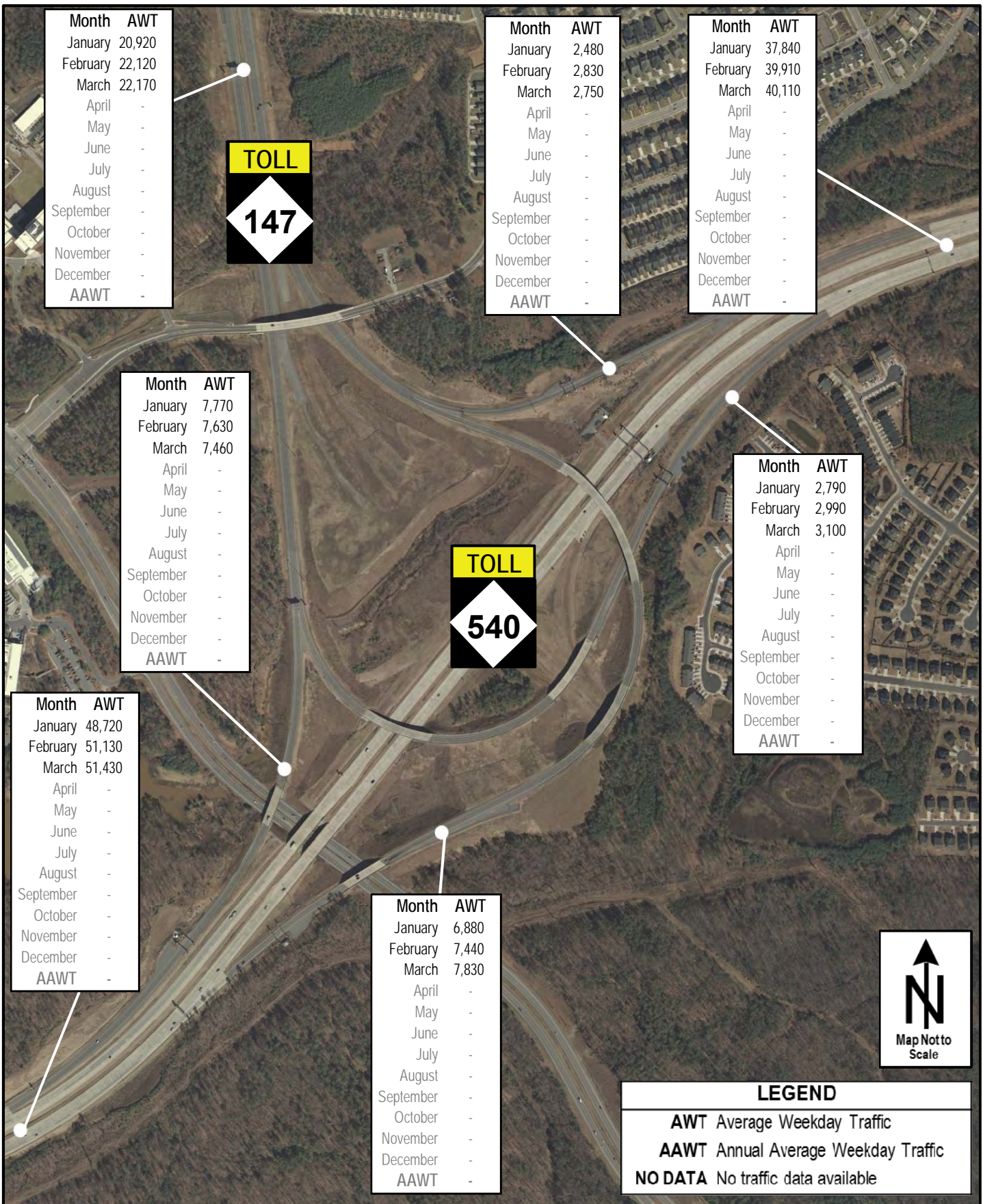




**NC-540 at NC-54 Interchange**  
 2018 Average Weekday Traffic

**Figure**  
**6**

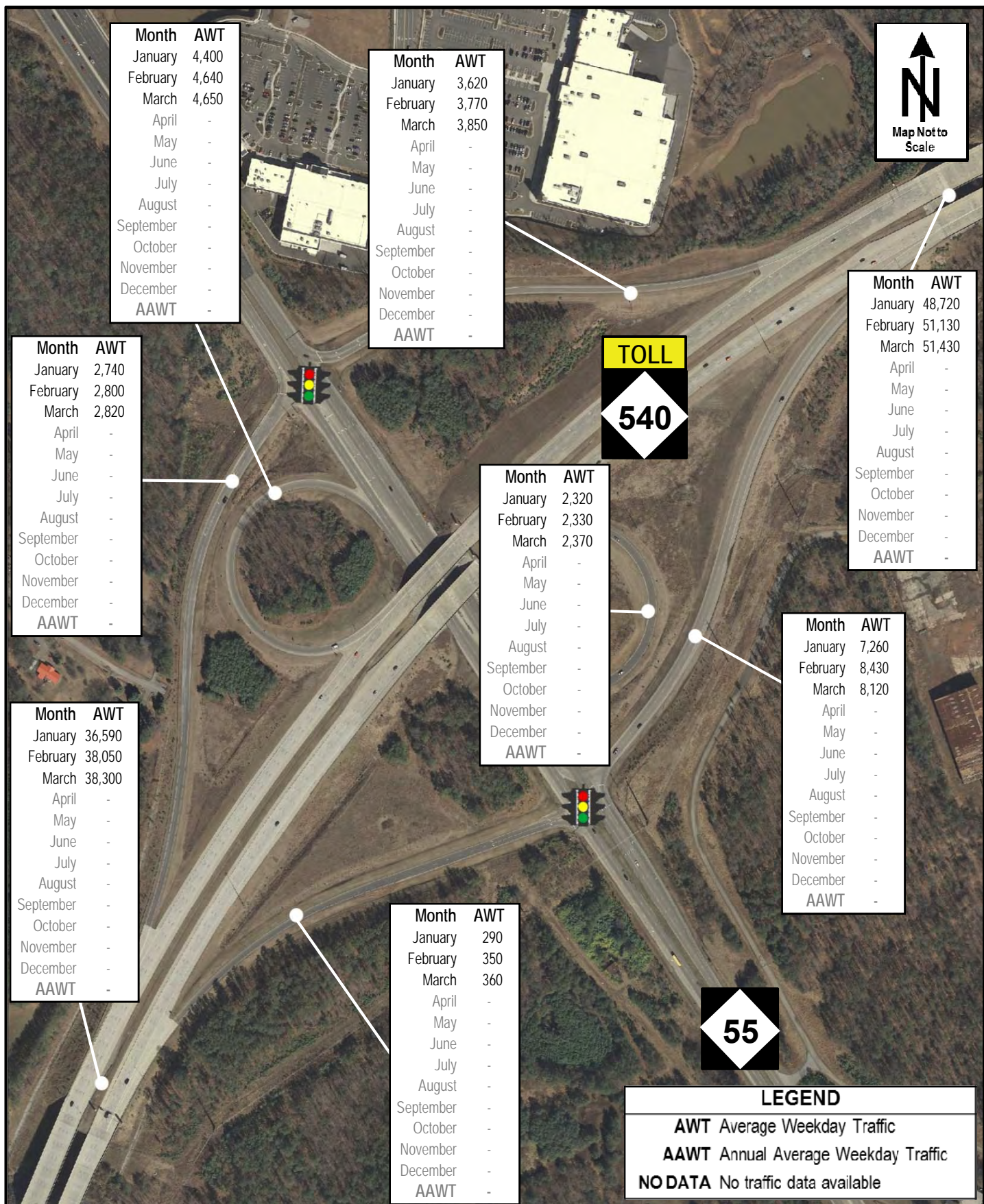




**NC-540 at NC-147 Interchange**  
2018 Average Weekday Traffic

**Figure**  
**7**

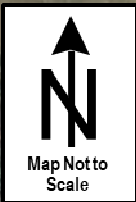
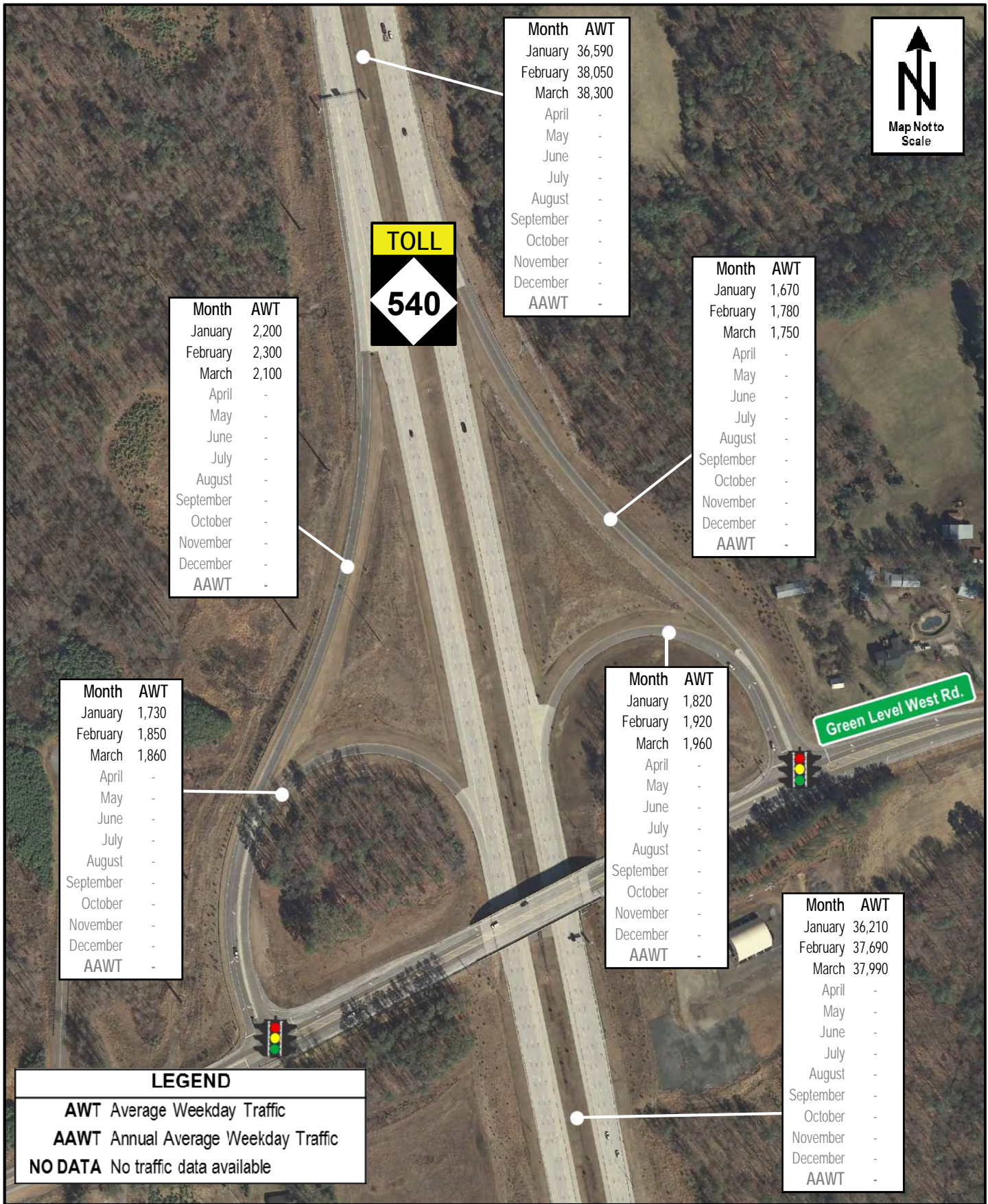




**NC-540 at NC-55 Interchange**  
2018 Average Weekday Traffic

**Figure**  
**8**

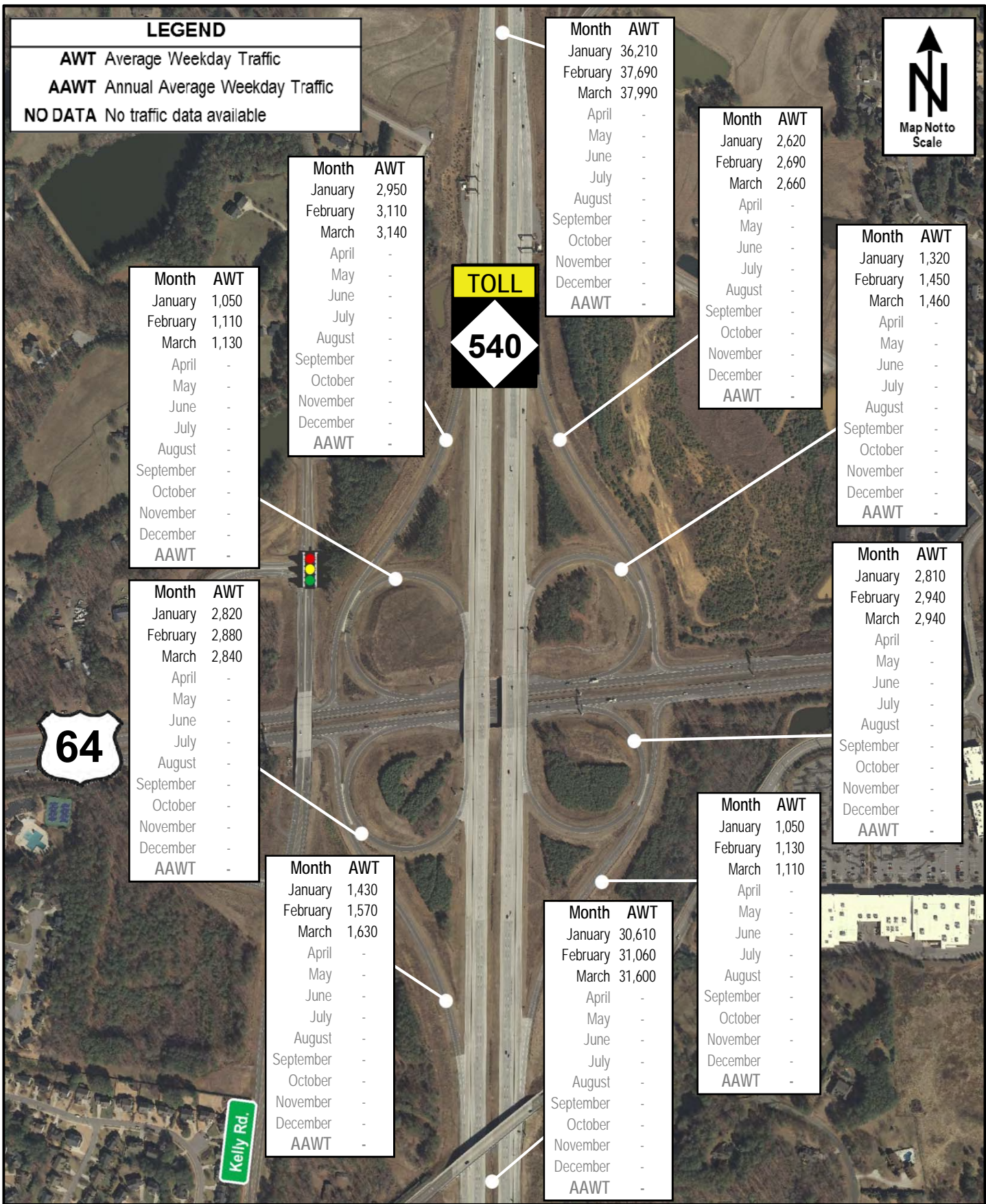




**NC-540 at Green Level West Rd. Interchange**

**Figure 9**

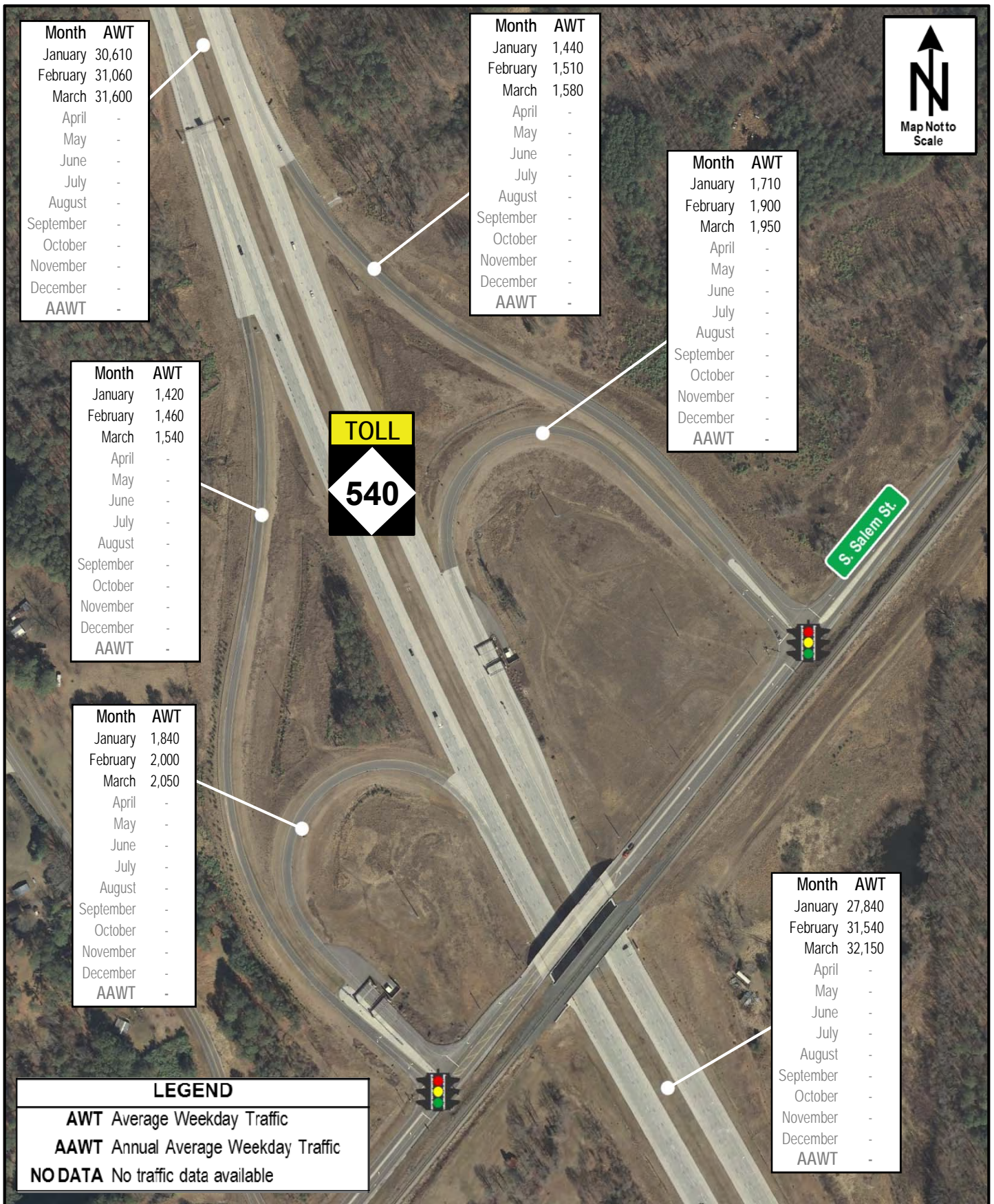




**NC-540 at US-64 Interchange**  
 2018 Average Weekday Traffic

**Figure**  
**10**

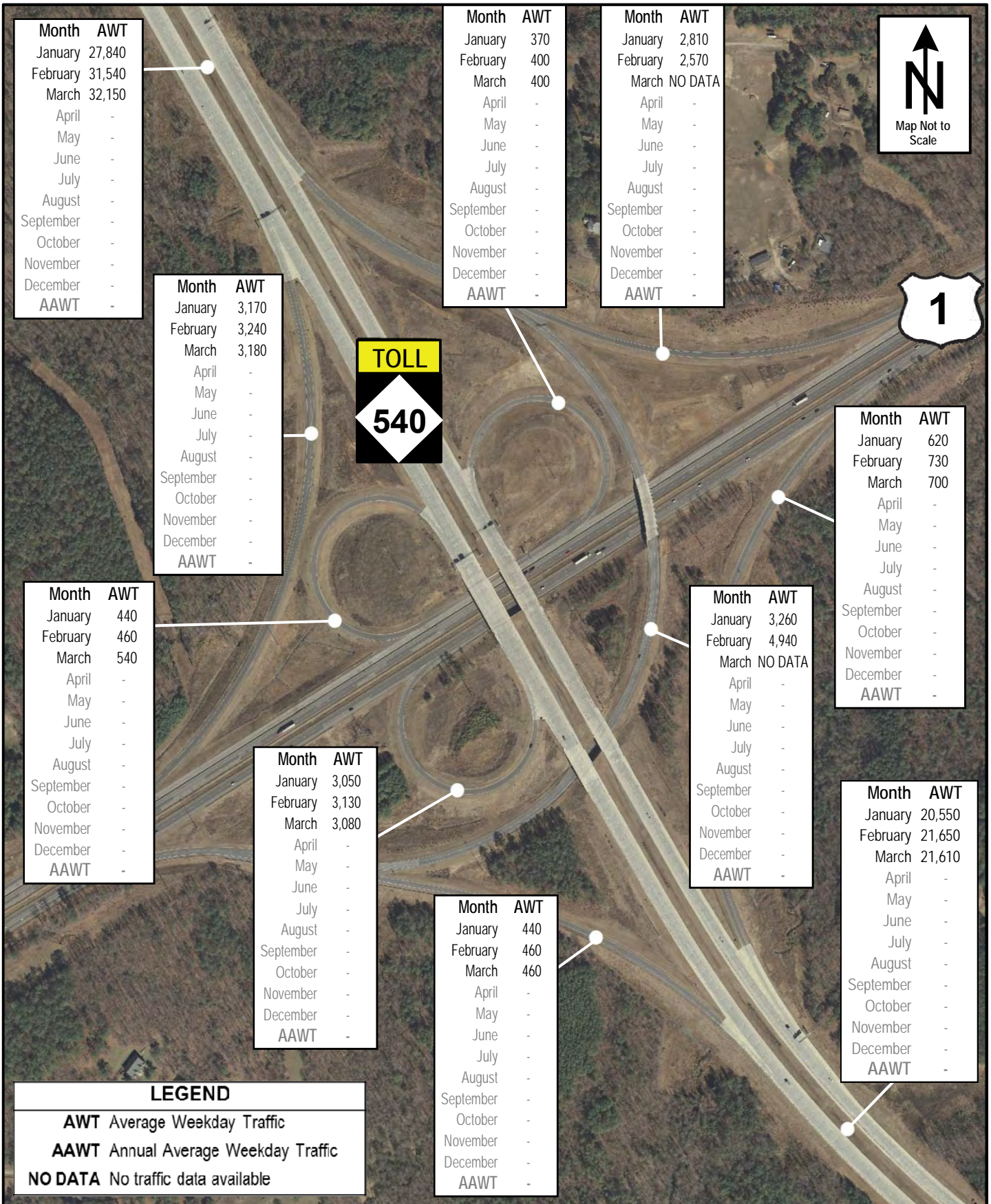




**NC-540 at S. Salem St. Interchange**  
 2018 Average Weekday Traffic

**Figure**  
**11**

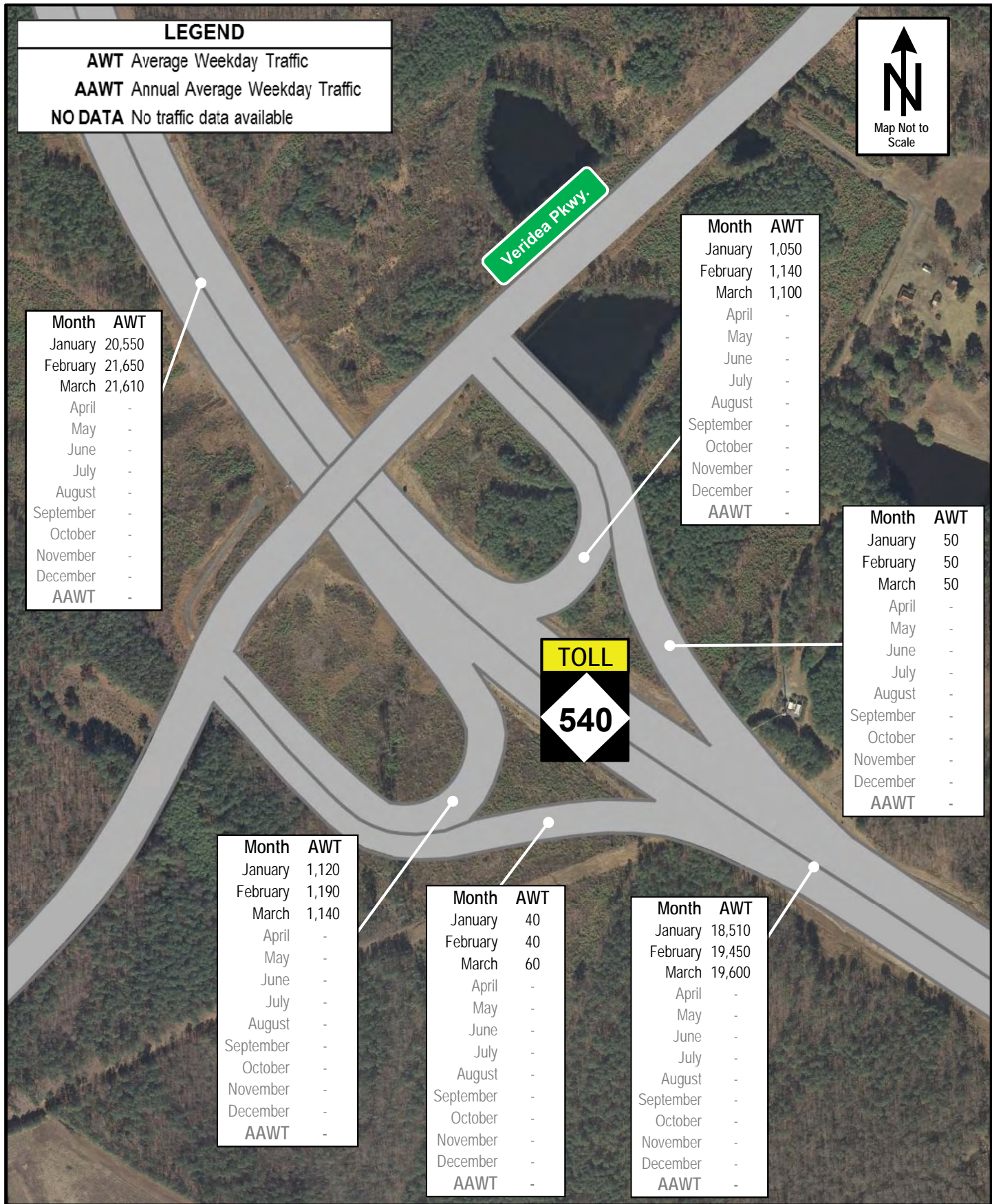




**NC-540 at US-1 Interchange**  
2018 Average Weekday Traffic

**Figure**  
**12**

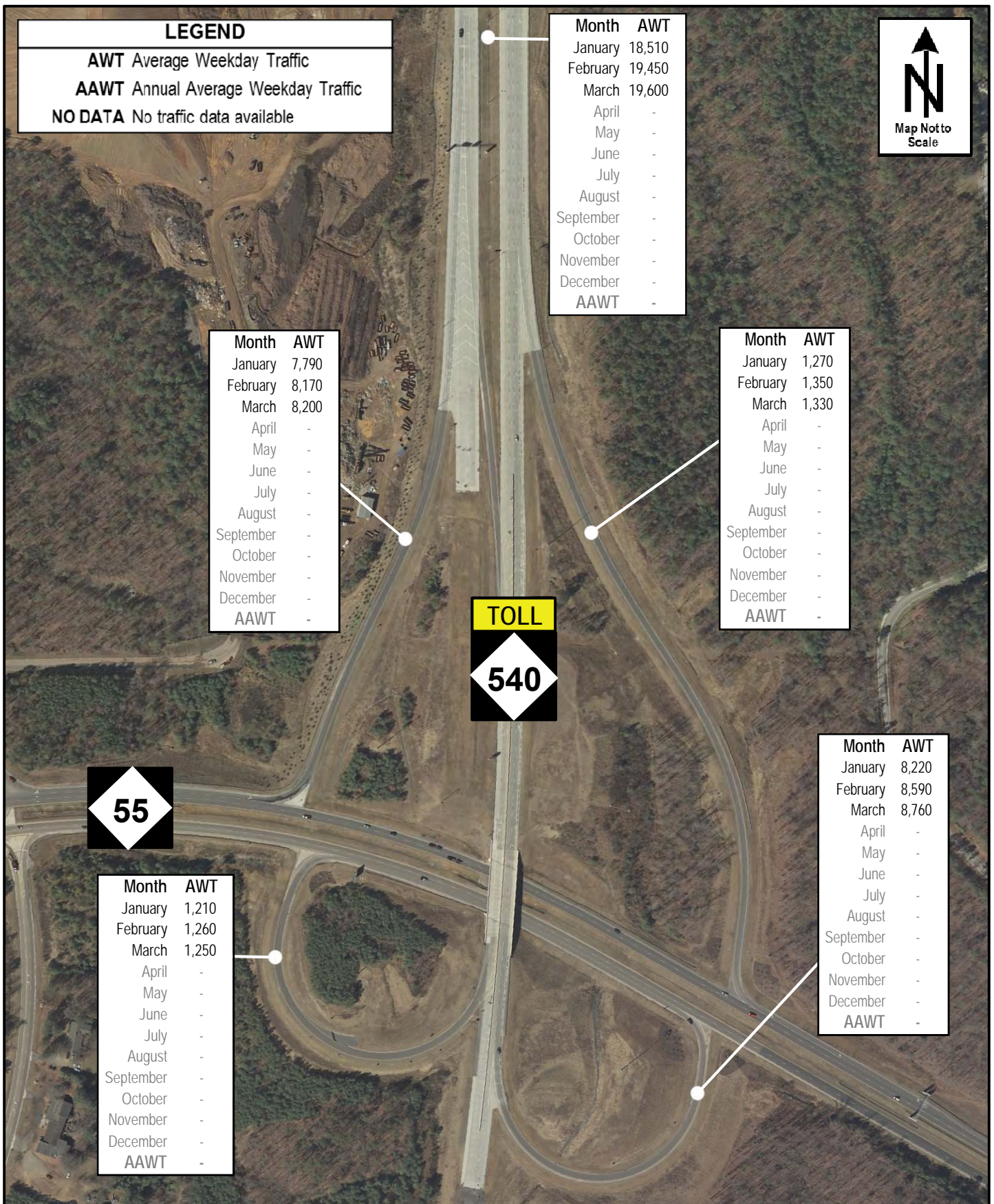




**NC-540 at Veridea Pkwy. Interchange**  
 2018 Average Weekday Traffic

**Figure 13**





**NC-540 at NC-55 Bypass Interchange**  
 2018 Average Weekday Traffic

**Figure**  
**14**

# **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, customer calls, and walk-in services. The CSC also provides support services such as a 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 the 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.



**Operations Statistics Report for the Triangle Expressway**

**First Quarter, January – March 2018**

**Customer Calls by Reason**

This section presents the number of calls handled by customer service representatives (CSRs) from the NC Quick Pass® CSC. The number of calls presented in this section are broken down by pre-determined calling reason categories including Bill by Mail Payment, Bill by Mail Inquiry, NC Quick Pass® Inquiry, Registration Hold Inquiry, Registration Hold Removal, Vehicle/Account Information Update, and License Plate Mismatch Dispute. The “Other” category encompasses calling reasons other than the pre-determined categories.

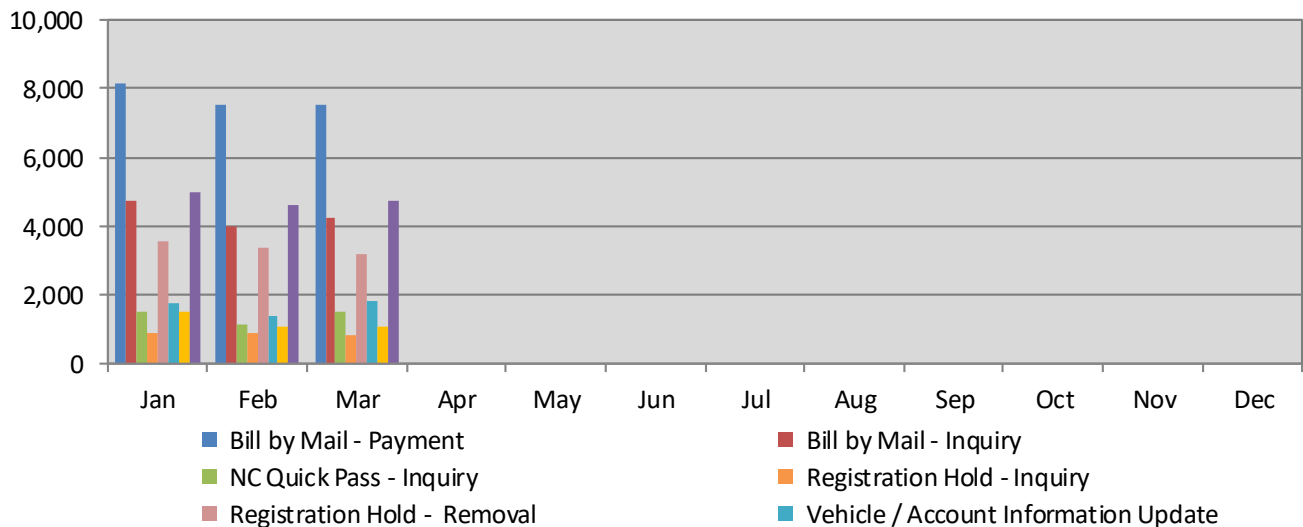
Table 1 presents a summary of the total monthly number of customer calls handled by CSRs, by reason.

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

Month	January	February	March
Bill by Mail - Payment	8,137	7,541	7,544
Bill by Mail - Inquiry	4,713	4,001	4,240
NC Quick Pass® - Inquiry	1,499	1,113	1,510
Registration Hold - Inquiry	901	888	845
Registration Hold - Removal	3,554	3,402	3,162
Vehicle / Account Information Update	1,758	1,381	1,801
License Plate Mismatch Dispute	1,517	1,093	1,068
Other	4,992	4,591	4,755
<b>Total</b>	<b>26,621</b>	<b>24,778</b>	<b>26,151</b>

Figure 15 presents the total monthly number of customer calls handled by CSRs during 2018, by reason.

**Figure 15: 2018 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, Interactive Voice Response (IVR), and Walk-in. It should be noted that in December 2017, NCTA transferred the invoice coupon payment processing services to an external lockbox provider. Invoices in late December began being mailed out with an updated payment coupon mailing address, which routed customer payments to the lockbox provider instead of the CSC.

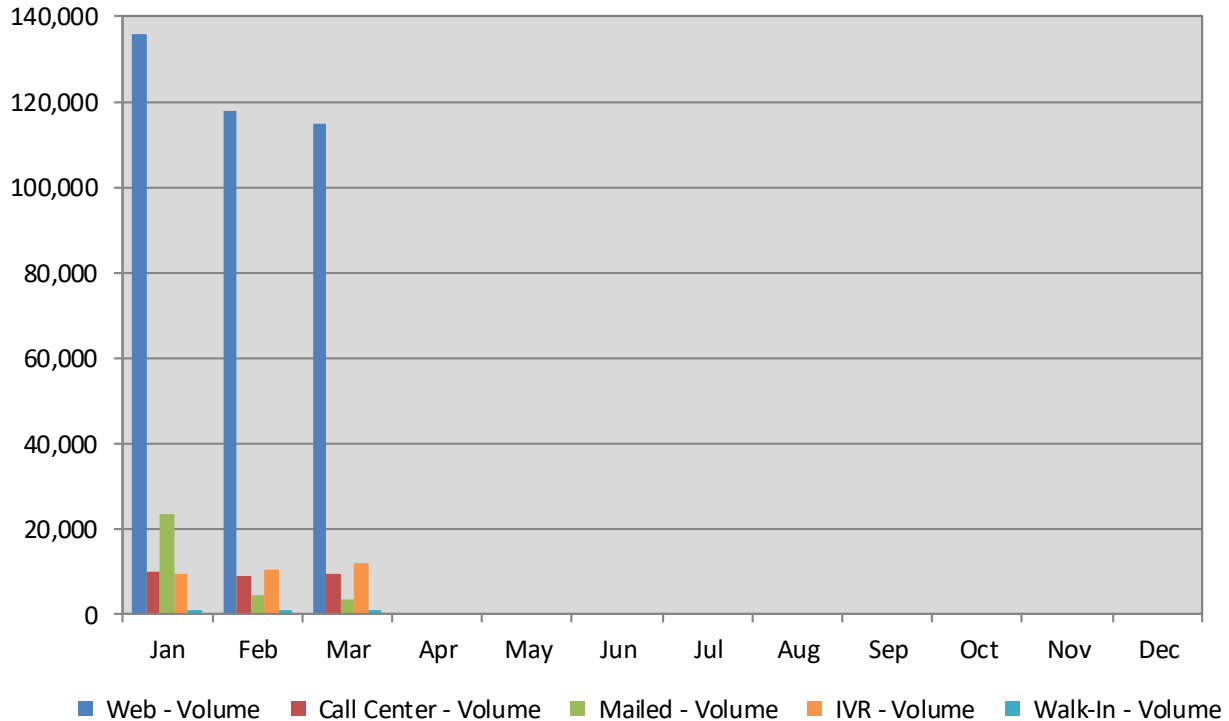
Table 2 presents a summary of the total monthly payments processed by the NC Quick Pass® CSC, by payment channel.

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

Month	Web Volume	Call Center Volume	Mailed Volume	IVR Volume	Walk-In Volume	Total
January	135,970	9,685	23,162	9,581	818	<b>179,216</b>
February	117,723	9,071	4,388	10,404	821	<b>142,407</b>
March	114,675	9,305	3,190	11,871	1,003	<b>140,044</b>

Figure 16 presents the total monthly payments processed by the NC Quick Pass® CSC during 2018, by payment channel.

**Figure 16: 2018 NC Quick Pass® CSC Payments Processed by Channel, YTD**



**Walk-in Customers**

This section presents the number of customers who visited the NC Quick Pass® CSC Walk-In Center.

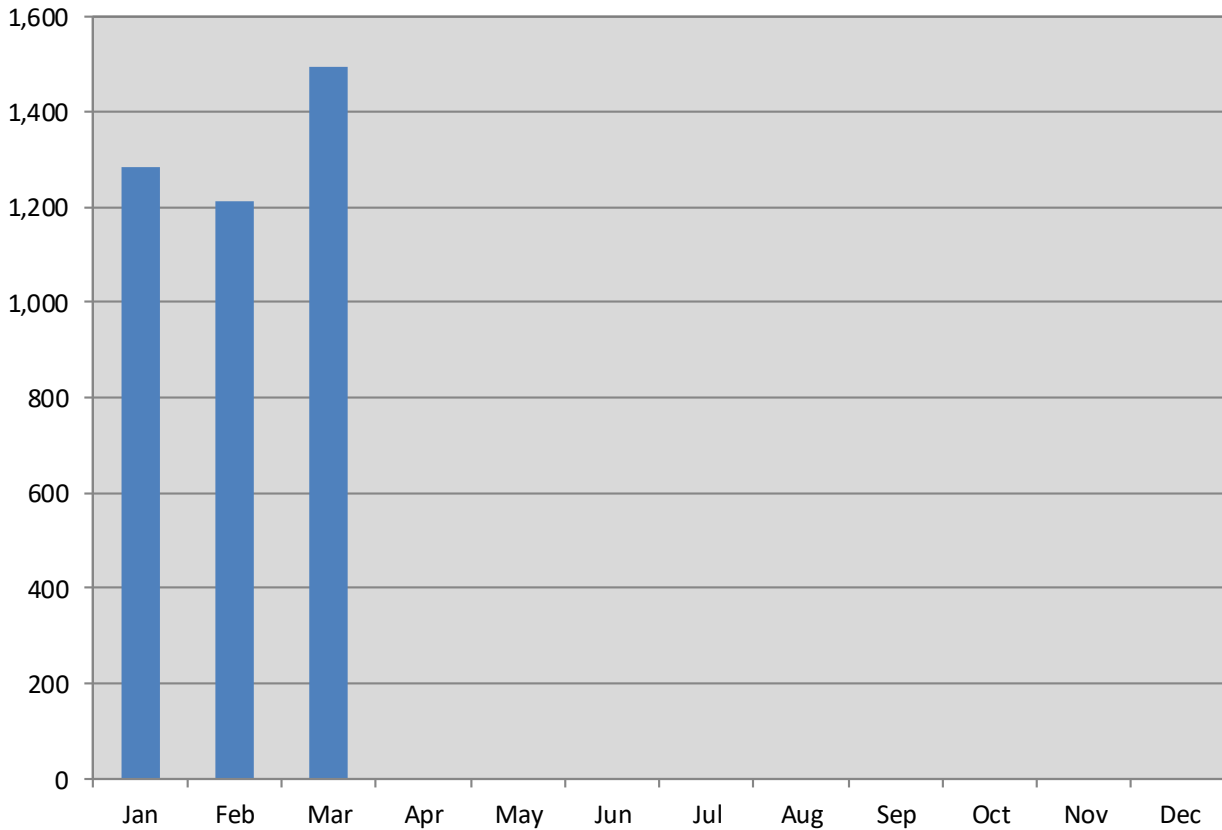
Table 3 presents a summary of the total monthly number of walk-in customers serviced in the NC Quick Pass® CSC Walk-In Center.

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

Month	Number of Walk-In Customers
January	1,282
February	1,214
March	1,495

Figure 17 depicts the number of walk-in customers that were serviced in the NC Quick Pass® CSC Walk-In Center during 2018.

**Figure 17: 2018 NC Quick Pass® CSC Walk-in Customers, YTD**



**Operations Statistics Report for the Triangle Expressway**

**First Quarter, January – March 2018**

**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, First Quarter by Week**

Week Ending	Transponder (NC Quick Pass®)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
1/7/2018 <sup>1</sup>	393,997	58.5%	280,033	41.5%	674,030
1/14/2018	592,614	60.4%	388,046	39.6%	980,660
1/21/2018 <sup>2</sup>	374,520	59.2%	257,641	40.8%	632,161
1/28/2018	625,131	61.5%	391,899	38.5%	1,017,030
2/4/2018	601,894	61.4%	378,418	38.6%	980,312
2/11/2018	593,315	60.7%	384,573	39.3%	977,888
2/18/2018	616,518	61.5%	385,490	38.5%	1,002,008
2/25/2018 <sup>3</sup>	603,604	60.7%	390,411	39.3%	994,015
3/4/2018	629,287	61.0%	402,149	39.0%	1,031,436
3/11/2018	623,764	61.2%	396,055	38.8%	1,019,819
3/18/2018	602,378	60.5%	393,684	39.5%	996,062
3/25/2018	613,770	61.0%	392,447	39.0%	1,006,217
3/31/2018 <sup>4</sup>	558,845	60.7%	362,025	39.3%	920,870

<sup>1</sup> Week ending includes New Year’s Day

<sup>2</sup> Week ending includes Martin Luther King Jr. Day

<sup>3</sup> Week ending includes Presidents’ Day

<sup>4</sup> Week ending consists of six days of data

Table 5 presents a summary of the total monthly transactions for NC Quick Pass® and Bill by Mail users. This monthly transaction data was compiled 6 business days after the end of each month.

**Table 5: Transactions, First Quarter by Month**

Month	Transponder (NC Quick Pass®)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
January	2,295,663	60.6%	1,493,650	39.4%	3,789,313
February	2,428,877	61.0%	1,553,023	39.0%	3,981,900
March	2,705,097	60.6%	1,756,198	39.4%	4,461,295

**Operations Statistics Report for the Triangle Expressway**

**First Quarter, January – March 2018**

Figure 18 presents the total monthly transactions and NC Quick Pass® utilization during 2018.

**Figure 18: 2018 Transactions, YTD**

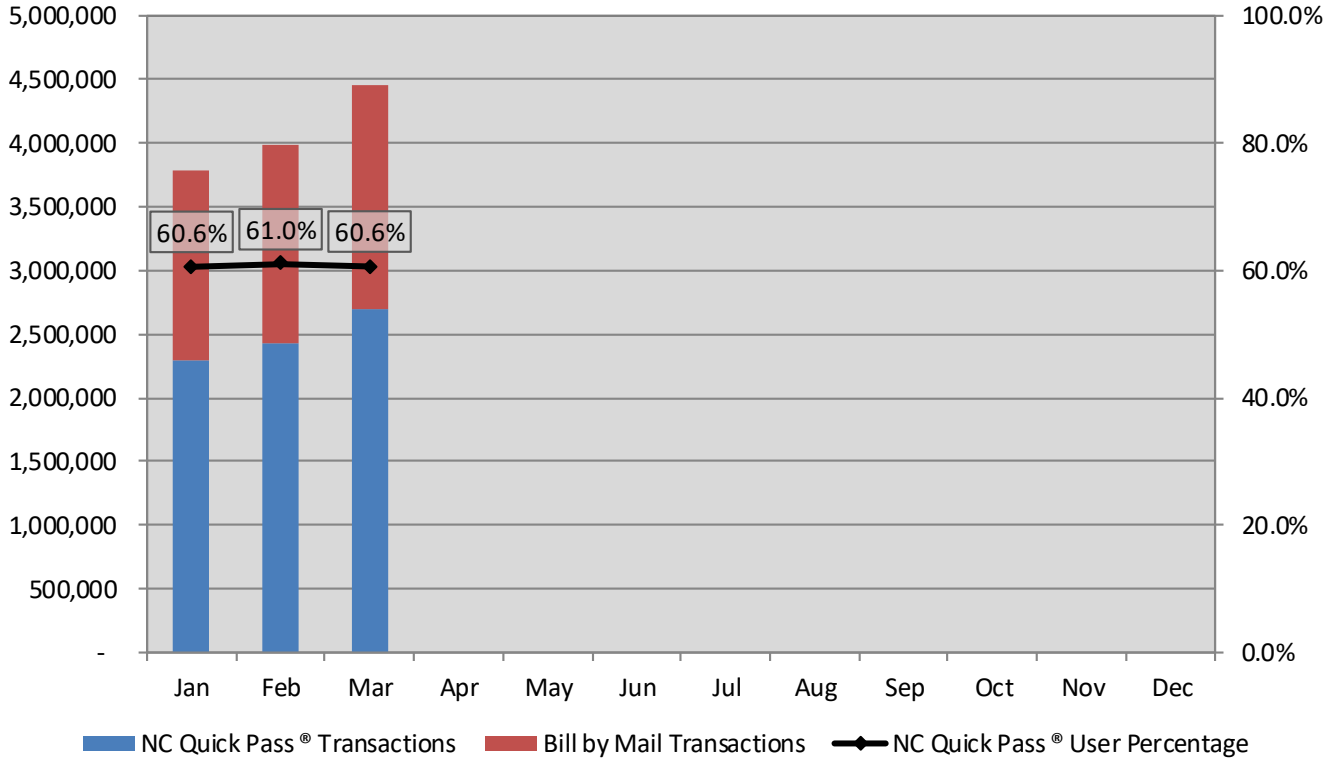


Table 6 presents a summary of the total NC Quick Pass® and Bill by Mail transactions, by year. Project to date is the total number of transactions since opening the facility to toll traffic. It should be noted that total annual transaction is calculated by adding the total monthly transactions recorded throughout the year, which are compiled 6 business days after the end of each month.

**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	26,360,672	58.3%	18,883,195	41.7%	45,243,867
2017	29,015,941	58.7%	20,440,241	41.3%	49,456,182
2018 <sup>1</sup>	7,429,637	60.7%	4,802,871	39.3%	12,232,508
<b>Project to Date</b>	<b>118,675,624</b>	<b>58.0%</b>	<b>85,849,375</b>	<b>42.0%</b>	<b>204,524,999</b>

<sup>1</sup>2018 transactions reported include three months of data (January – March).

## Operations Statistics Report for the Triangle Expressway

First Quarter, January – March 2018

### 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, First 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
1/7/2018 <sup>1</sup>	657,233	97.5%	4,986	0.7%	11,811	1.8%
1/14/2018	947,423	96.6%	9,993	1.0%	23,244	2.4%
1/21/2018 <sup>2</sup>	611,126	96.7%	6,453	1.0%	14,582	2.3%
1/28/2018	980,906	96.4%	11,357	1.1%	24,767	2.4%
2/4/2018	947,731	96.7%	9,556	1.0%	23,025	2.3%
2/11/2018	943,386	96.5%	11,268	1.2%	23,234	2.4%
2/18/2018	967,874	96.6%	10,504	1.0%	23,630	2.4%
2/25/2018 <sup>3</sup>	955,851	96.2%	12,378	1.2%	25,786	2.6%
3/4/2018	997,528	96.7%	10,145	1.0%	23,763	2.3%
3/11/2018	980,554	96.1%	12,175	1.2%	27,090	2.7%
3/18/2018	961,186	96.5%	10,474	1.1%	24,402	2.4%
3/25/2018	970,848	96.5%	10,898	1.1%	24,471	2.4%
3/31/2018 <sup>4</sup>	881,625	95.7%	12,653	1.4%	26,592	2.9%

<sup>1</sup> Week ending includes New Year's Day

<sup>2</sup> Week ending includes Martin Luther King Jr. Day

<sup>3</sup> Week ending includes Presidents' Day

<sup>4</sup> Week ending consists of six days of data

Table 8 presents a summary of the total monthly transactions by classification. This monthly transaction data was compiled 6 business days after the end of each month.

**Table 8: Classification, First 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
January	3,665,323	96.7%	37,682	1.0%	86,308	2.3%
February	3,839,878	96.4%	44,538	1.1%	97,484	2.4%
March	4,298,070	96.3%	50,620	1.1%	112,605	2.5%

**Operations Statistics Report for the Triangle Expressway**

**First Quarter, January – March 2018**

Figure 19 presents the total monthly percentage of transactions during 2018 for Class 1 (2-axle), Class 2 (3-axle), and Class 3 (4+axle) vehicles.

**Figure 19: 2018 Classification, Percentage YTD**

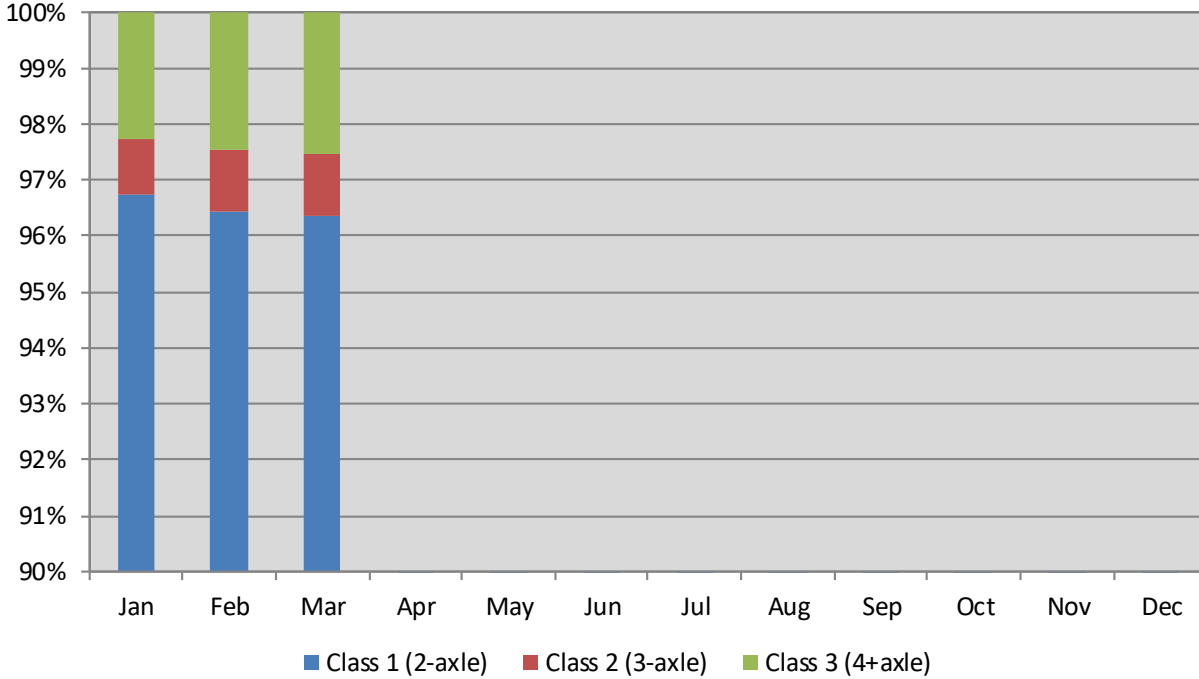


Table 9 presents a summary of the total transactions for Class 1 (2-axle), Class 2 (3-axle), and Class 3 (4+axle) vehicles, by year. Project to date is the total number of transactions since opening the facility to toll traffic. It should be noted that total annual transaction is calculated by adding the total monthly transactions recorded throughout the year, which is compiled 6 business days after the end of each month.

**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	43,567,844	96.3%	566,221	1.3%	1,109,803	2.5%
2017	47,596,172	96.2%	601,957	1.2%	1,258,053	2.5%
2018 <sup>1</sup>	11,803,271	96.5%	132,840	1.1%	296,397	2.4%
<b>Project to Date</b>	<b>197,392,151</b>	<b>96.5%</b>	<b>2,397,888</b>	<b>1.2%</b>	<b>4,734,961</b>	<b>2.3%</b>

<sup>1</sup>2018 transactions reported include three months of data (January – March).

**Operations Statistics Report for the Triangle Expressway**

**First Quarter, January – March 2018**

**Accounts**

The statistics provided in this section outline the volume of accounts established and managed by the NC Quick Pass® CSC.

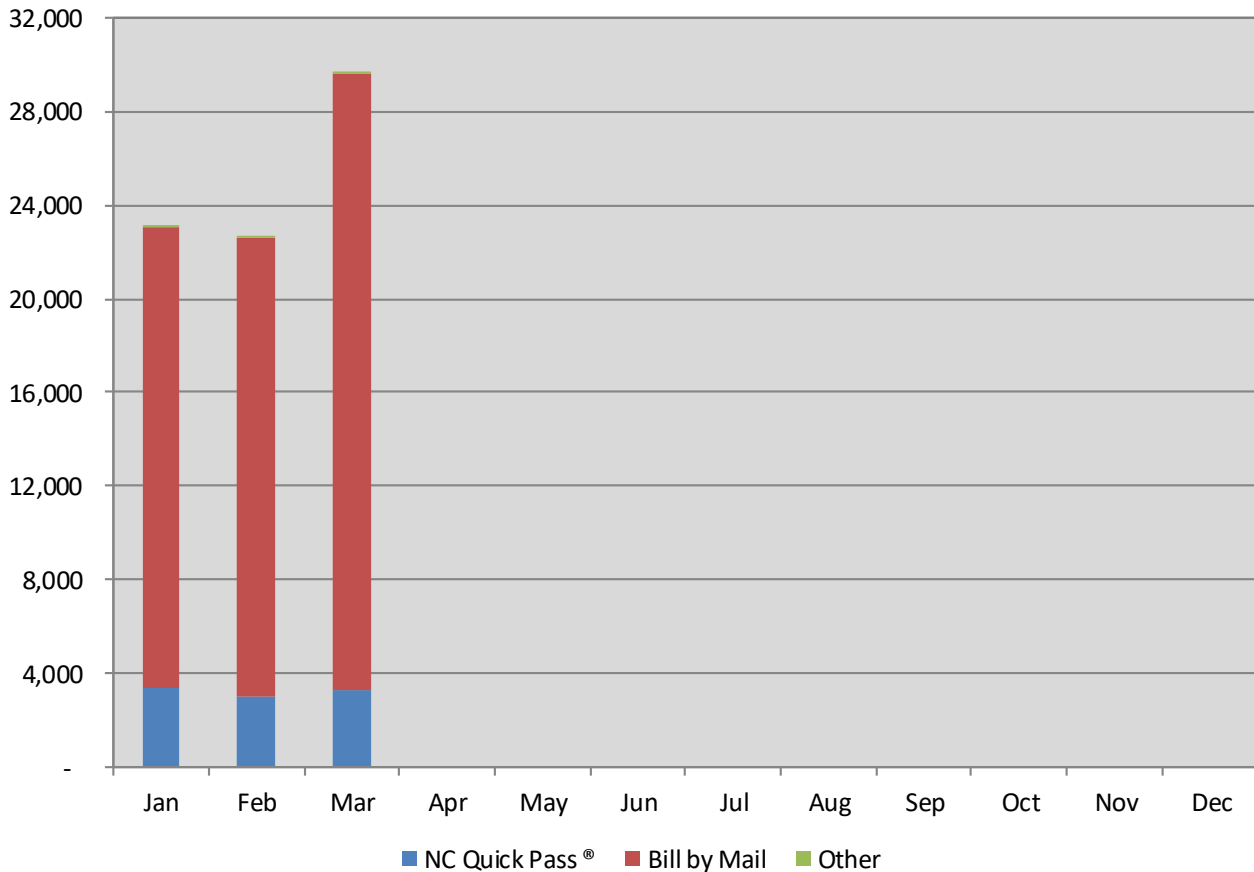
Table 10 presents a summary of the monthly established accounts being managed by the NC Quick Pass® CSC. Numbers presented in parentheses represent a reduction in accounts.

**Table 10: Established Accounts, First Quarter by Month**

Month	NC Quick Pass®	Bill by Mail	Registered Video	Non-Revenue	Government	Total
January	3,411	19,645	0	0	1	<b>23,057</b>
February	3,033	19,555	0	0	2	<b>22,590</b>
March	3,296	26,316	0	0	2	<b>29,614</b>

Figure 20 presents the monthly established accounts managed by the NC Quick Pass® CSC during 2018. The “Other” category includes registered video, non-revenue, and government accounts.

**Figure 20: 2018 Established Accounts, YTD**





**Operations Statistics Report for the Triangle Expressway**

**First Quarter, January – March 2018**

*Table 11* presents a summary of the total established accounts managed by the NC Quick Pass® 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**

<b>Year</b>	<b>NC Quick Pass®</b>	<b>Bill by Mail</b>	<b>Registered Video</b>	<b>Non-Revenue</b>	<b>Government</b>	<b>Total</b>
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
2015	24,222	380,897	0	4	0	405,123
2016	31,358	348,654	1	4	0	380,017
2017	36,240	346,421	3	4	(1)	382,667
2018 <sup>1</sup>	9,740	65,516	0	0	5	75,261
<b>Project to Date</b>	<b>171,659</b>	<b>2,149,976</b>	<b>10</b>	<b>82</b>	<b>34</b>	<b>2,321,761</b>

<sup>1</sup>2018 established accounts reported include three months of data (January – March).

**Operations Statistics Report for the Triangle Expressway**

**First Quarter, January – March 2018**

**Transponders**

The statistics provided in this section present the volume of transponders sold by the NC Quick Pass® CSC.

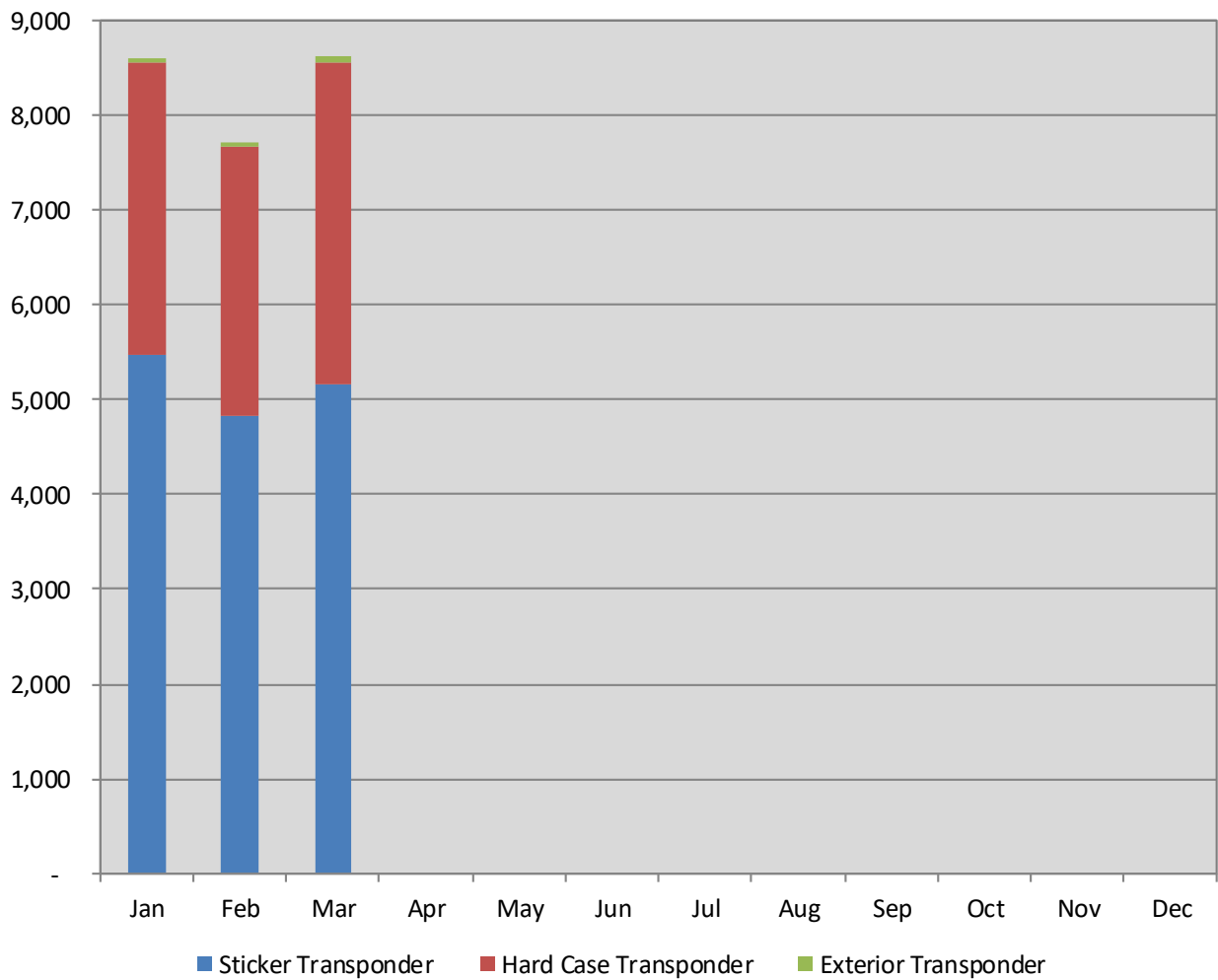
Table 12 presents a summary of the total transponders sold, by month.

**Table 12: Transponders Sold, First Quarter by Month**

Month	Sticker Transponder	Hard Case Transponder	Exterior Transponder	Total
January	5,472	3,079	59	<b>8,610</b>
February	4,840	2,823	54	<b>7,717</b>
March	5,170	3,378	77	<b>8,625</b>

Figure 21 presents monthly transponders sold during 2018.

**Figure 21: 2018 Transponders Sold, YTD**



**Operations Statistics Report for the Triangle Expressway**

**First Quarter, January – March 2018**

*Table 13* presents a summary of the total transponders sold, by year. Project to date is the total number of transponders sold to date. It should be noted that transponders went on sale in October of 2011, prior to the opening of the roadway to provide potential motorists sufficient time to establish their accounts. Also, on August 30<sup>th</sup>, 2017 transponder prices were reduced.

**Table 13: Transponders Sold, by Year**

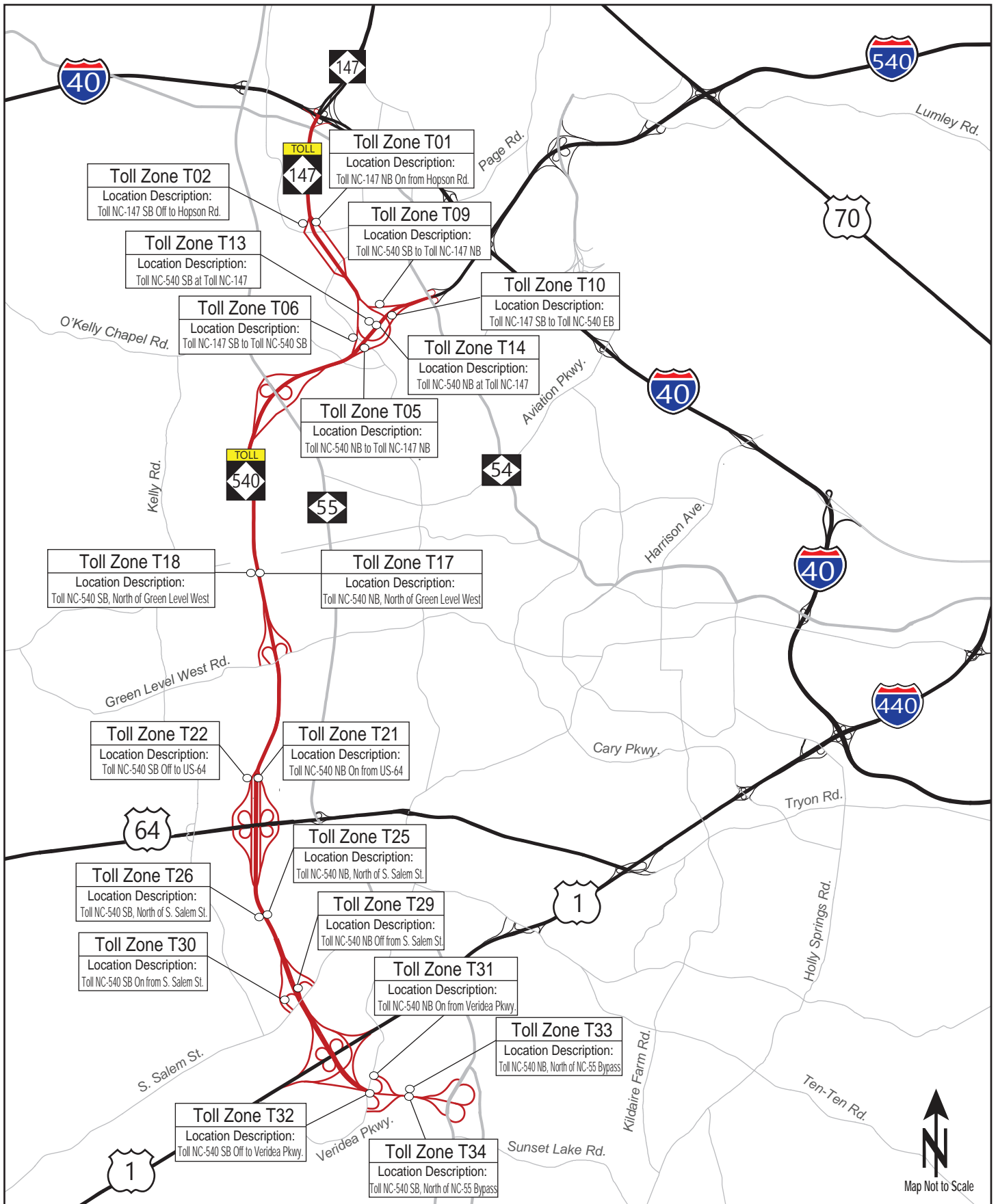
<b>Year</b>	<b>Sticker Transponder</b>	<b>Hard Case Transponder</b>	<b>Exterior Transponder</b>	<b>Total</b>
2011	7,315	2,806	200	10,321
2012	35,338	6,861	250	42,449
2013	34,784	13,980	257	49,021
2014	26,066	14,778	221	41,065
2015	31,866	20,047	588	52,501
2016	29,287	36,969	822	67,078
2017	42,375	39,771	808	82,954
2018 <sup>1</sup>	15,482	9,280	190	24,952
<b>Project to Date</b>	<b>222,513</b>	<b>144,492</b>	<b>3,336</b>	<b>370,341</b>

<sup>1</sup>2018 transponders sold reported include three months of data (January – March).

# Toll Zone Statistics

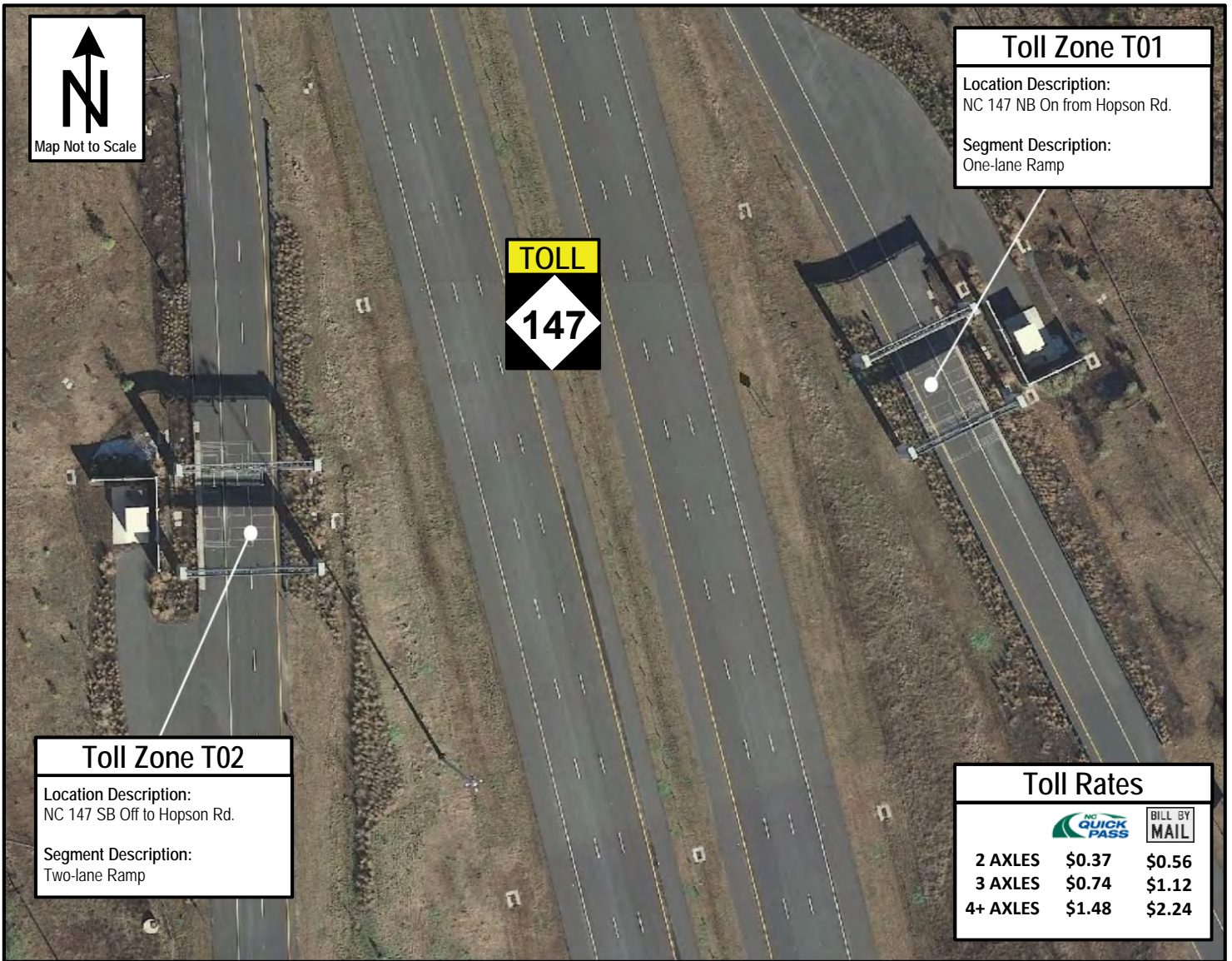
## TOLL ZONE STATISTICS

The location of the toll zones along the Triangle Expressway can be seen in *Figure 22*. *Figures 23 - 32* 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 22**



**Toll Zone T01**  
 Location Description:  
 NC 147 NB On from Hopson Rd.  
 Segment Description:  
 One-lane Ramp

**Toll Zone T02**  
 Location Description:  
 NC 147 SB Off to Hopson Rd.  
 Segment Description:  
 Two-lane Ramp

**Toll Rates**

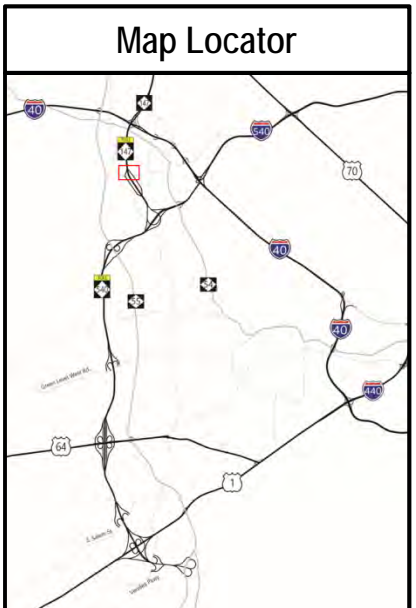
	NC QUICK PASS	BILL BY MAIL
2 AXLES	\$0.37	\$0.56
3 AXLES	\$0.74	\$1.12
4+ AXLES	\$1.48	\$2.24

**Transactions by Direction**

Month	T01	T02
January	2,690	2,490
February	2,820	2,620
March	2,840	2,610
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

**NC Quick Pass Percentage**

Month	T01	T02
January	62%	62%
February	61%	63%
March	61%	63%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**Hopson Road Ramp Toll Zones**  
 2018 Average Weekday Toll Transactions

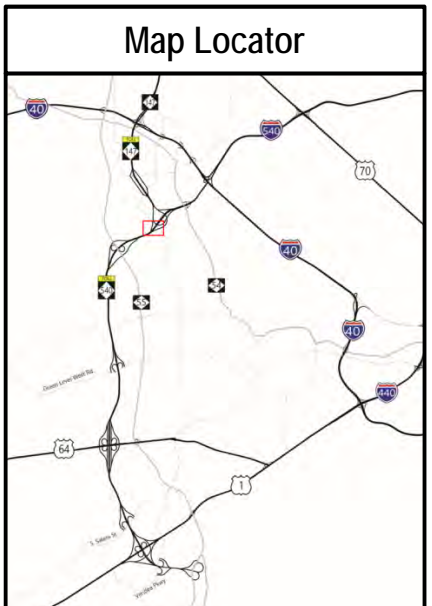
**Figure 23**





Transactions by Direction		
Month	T05	T06
January	7,830	7,890
February	8,130	8,260
March	8,180	8,300
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

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



**NC-147 South Ramp Toll Zones**  
 2018 Average Weekday Toll Transactions

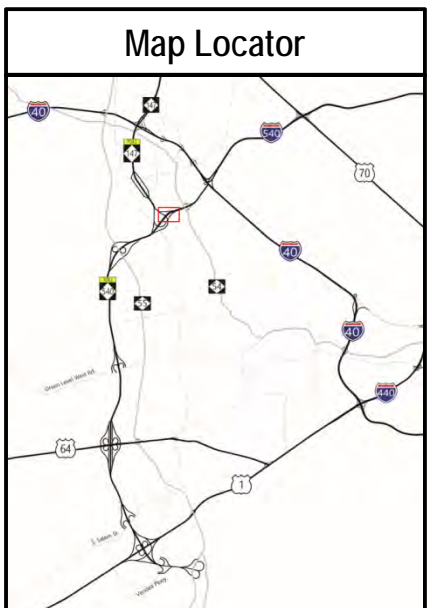
**Figure 24**





Transactions by Direction		
Month	T13	T14
January	16,250	15,920
February	17,020	16,750
March	17,130	16,930
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

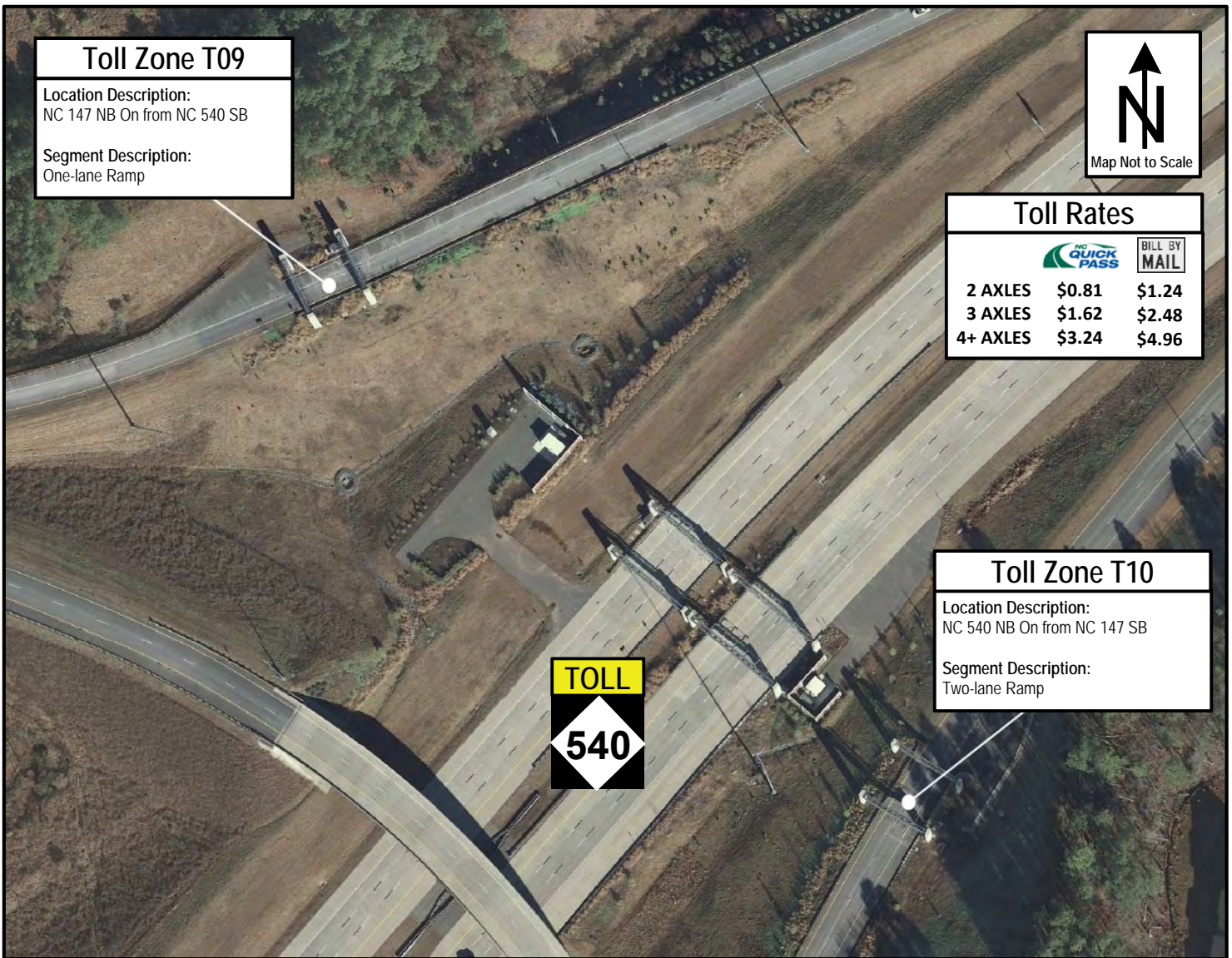
NC Quick Pass Percentage		
Month	T13	T14
January	57%	63%
February	62%	62%
March	62%	62%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**NC-540 Morrisville Mainline Toll Zones**  
2018 Average Weekday Toll Transactions

**Figure 25**





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



**Toll Rates**

		<b>BILL BY MAIL</b>
2 AXLES	\$0.81	\$1.24
3 AXLES	\$1.62	\$2.48
4+ AXLES	\$3.24	\$4.96

**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	2,510	2,790
February	2,900	2,990
March	2,790	3,130
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

**NC Quick Pass Percentage**

Month	T09	T10
January	59%	64%
February	55%	63%
March	57%	61%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**NC-147 North Ramp Toll Zones**  
 2018 Average Weekday Toll Transactions

**Figure 26**





**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**

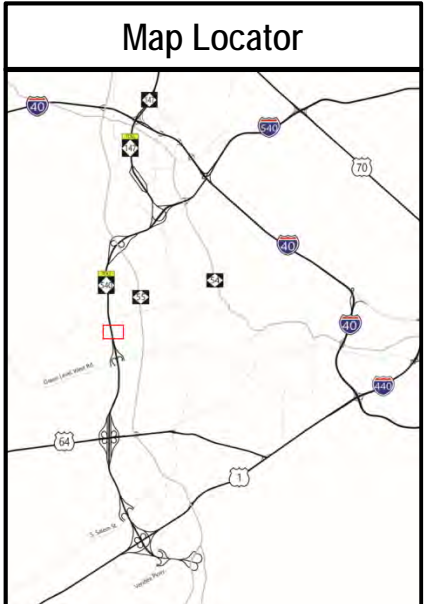
		BILL BY MAIL
2 AXLES	\$0.81	\$1.24
3 AXLES	\$1.62	\$2.48
4+ AXLES	\$3.24	\$4.96

**Transactions by Direction**

Month	T17	T18
January	17,870	18,840
February	18,650	19,590
March	18,750	19,760
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

**NC Quick Pass Percentage**

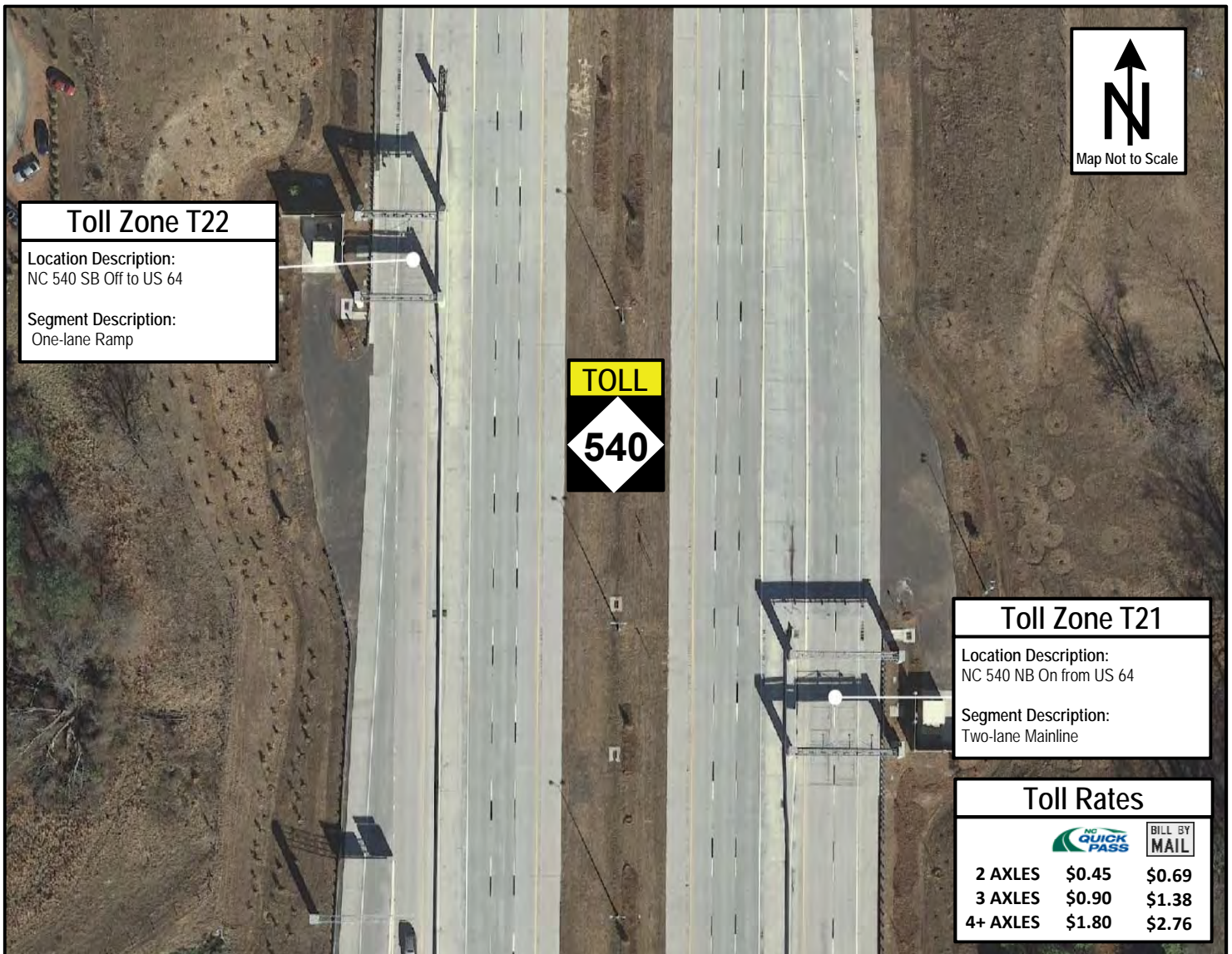
Month	T17	T18
January	62%	63%
February	60%	63%
March	61%	62%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**NC-540 Cary Mainline Toll Zones**  
2018 Average Weekday Toll Transactions

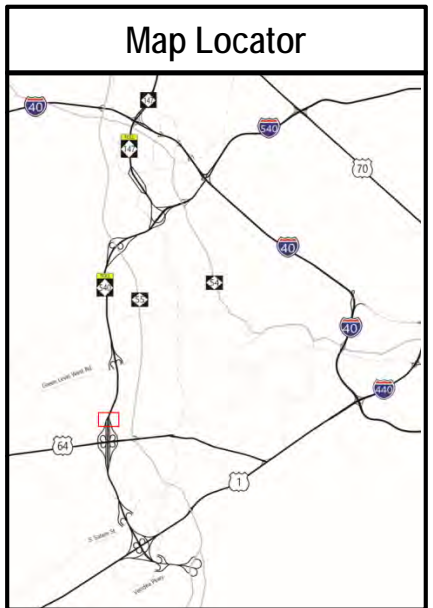
**Figure 27**





Transactions by Direction		
Month	T21	T22
January	5,450	5,780
February	5,650	6,000
March	5,510	6,020
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage		
Month	T21	T22
January	65%	64%
February	65%	64%
March	64%	64%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**US-64 Ramp Toll Zones**  
2018 Average Weekday Toll Transactions

**Figure 28**





**Toll Zone T26**  
 Location Description:  
 NC 540 SB, North of S. Salem St.  
 Segment Description:  
 Three-lane Mainline

**Toll Zone T25**  
 Location Description:  
 NC 540 NB, North of S. Salem St.  
 Segment Description:  
 Three-lane Mainline

**Toll Rates**

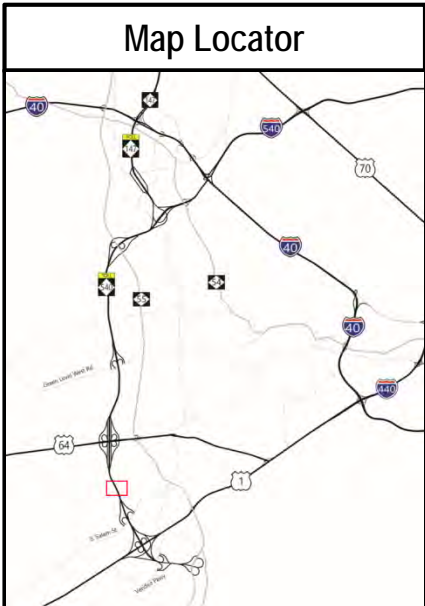
2 AXLES	\$1.01	\$1.54
3 AXLES	\$2.02	\$3.08
4+ AXLES	\$4.04	\$6.16

**Transactions by Direction**

Month	T25	T26
January	15,060	15,080
February	15,850	15,840
March	16,010	16,010
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

**NC Quick Pass Percentage**

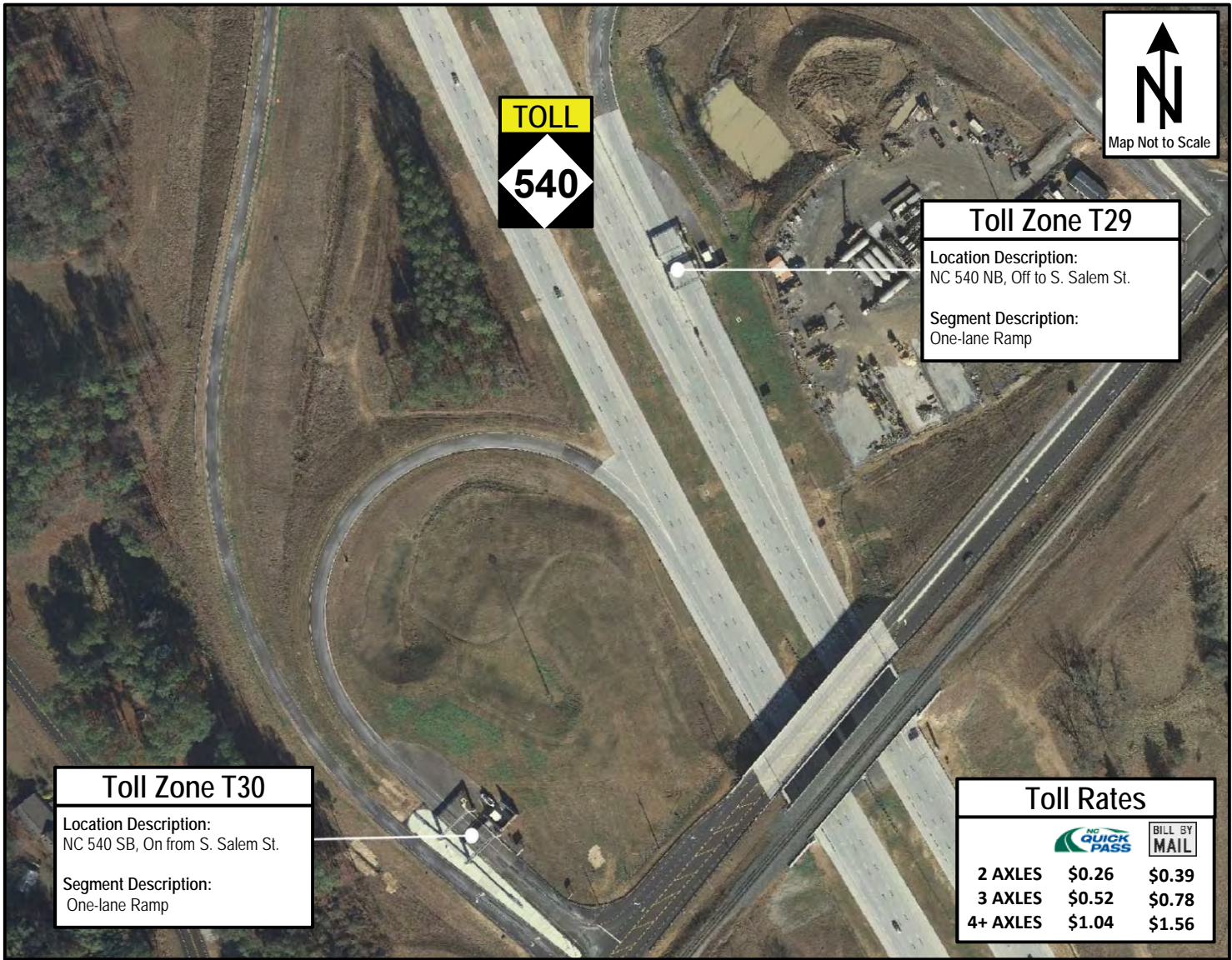
Month	T25	T26
January	58%	61%
February	60%	61%
March	60%	61%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**NC-540 Apex Mainline Toll Zones**  
 2018 Average Weekday Toll Transactions

**Figure**  
**29**





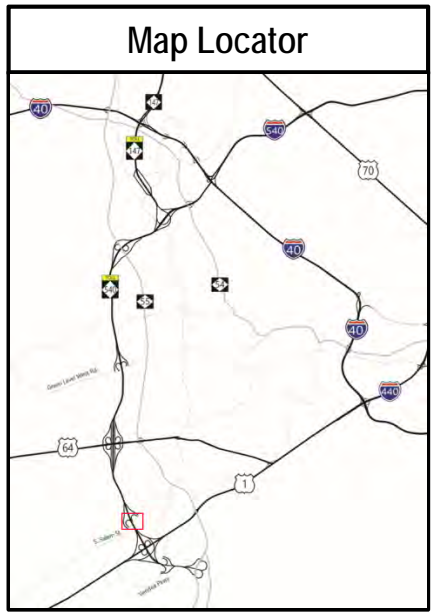
**Toll Zone T29**  
 Location Description:  
 NC 540 NB, Off to S. Salem St.  
 Segment Description:  
 One-lane Ramp

**Toll Zone T30**  
 Location Description:  
 NC 540 SB, On from S. Salem St.  
 Segment Description:  
 One-lane Ramp

Toll Rates		
2 AXLES	\$0.26	\$0.39
3 AXLES	\$0.52	\$0.78
4+ AXLES	\$1.04	\$1.56

Transactions by Direction		
Month	T29	T30
January	1,750	1,890
February	1,920	2,010
March	1,990	2,060
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

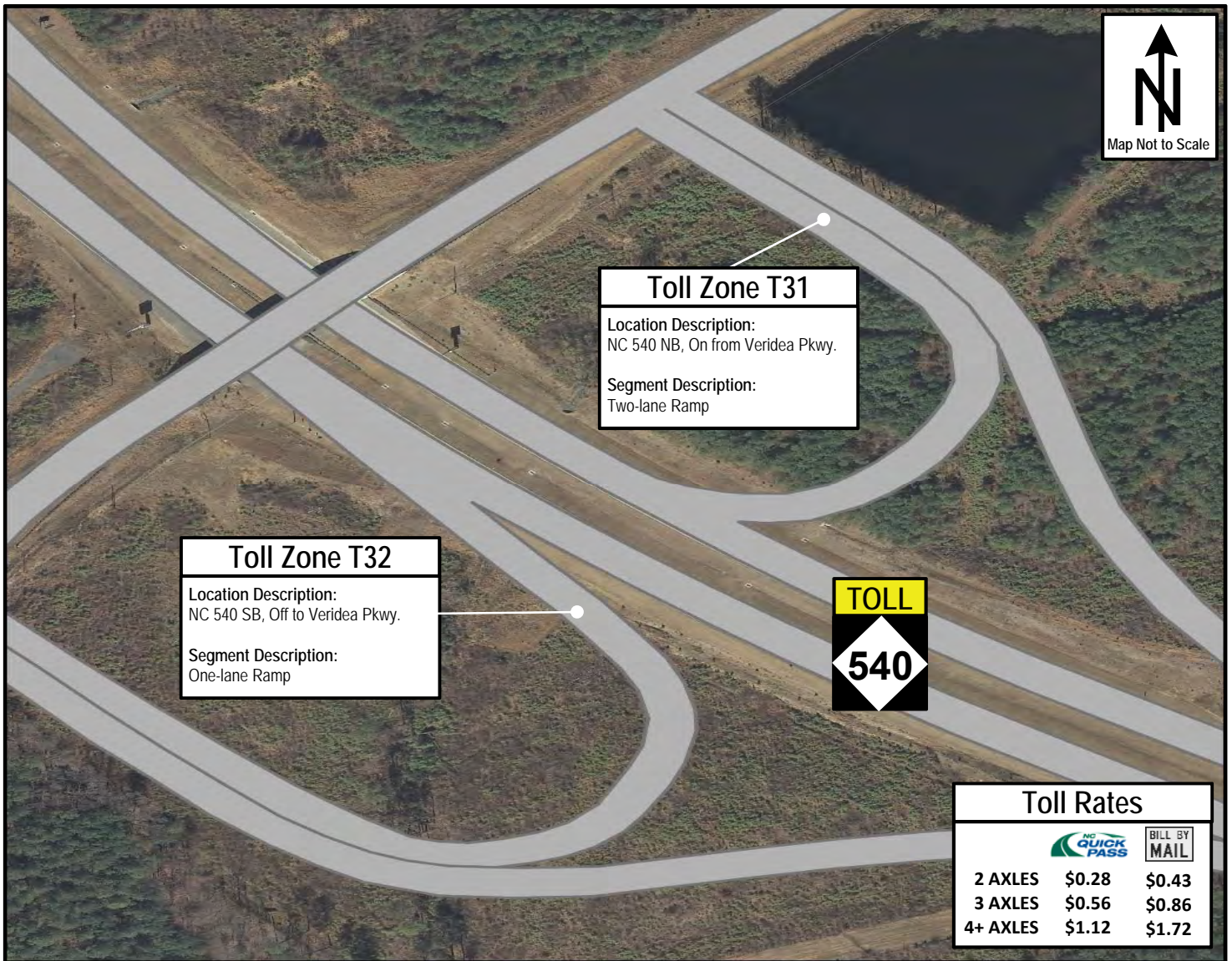
NC Quick Pass Percentage		
Month	T29	T30
January	71%	71%
February	70%	72%
March	70%	71%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**South Salem Street Ramp Toll Zones**  
 2018 Average Weekday Toll Transactions

**Figure 30**





Transactions by Direction		
Month	T31	T32
January	1,040	1,130
February	1,140	1,190
March	1,100	1,160
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage		
Month	T31	T32
January	71%	73%
February	71%	72%
March	71%	72%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



**Toll NC 540 Ramps at Veridea Parkway**  
 2018 Average Weekday Toll Transactions

**Figure 31**





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

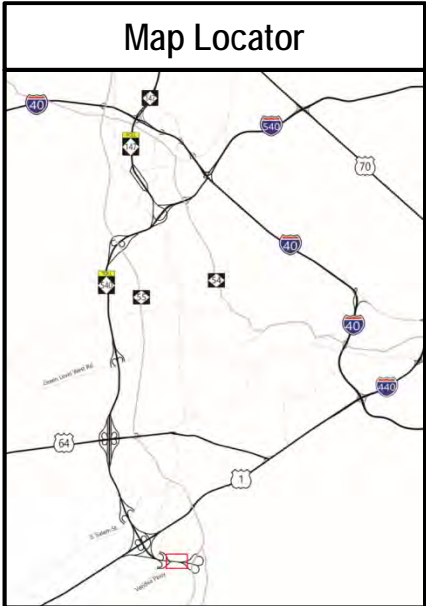


**Toll Zone T34**  
 Location Description:  
 NC 540 SB, North of NC 55 Bypass  
 Segment Description:  
 Two-lane Ramp

Toll Rates		
	NC QUICK PASS	BILL BY MAIL
2 AXLES	\$0.42	\$0.64
3 AXLES	\$0.84	\$1.28
4+ AXLES	\$1.68	\$2.56

Transactions by Direction		
Month	T33	T34
January	9,490	9,050
February	9,980	9,500
March	10,050	9,590
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

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



**NC-540 Holly Springs Mainline Toll Zones**  
 2018 Average Weekday Toll Transactions

**Figure 32**



# **Roadway Safety Statistics**

## ROADWAY SAFETY STATISTICS

Traffic crashes are often related to deficiencies in the safety and capacity characteristics of a transportation facility. 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, from 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 each of the four segments selected, as well as for the entire facility. These crash rates can then be compared to the Critical Crash Rates.

Total 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 first quarter, the Total Crash Rates of the four segments selected and the entire facility were calculated based on the roadway segment length, the average annual daily traffic (AADT) and the number of crashes recorded from March 2015 through February 2018 for each segment. The AADT used for this quarter analysis was collected from the NCDOT 2016 Wake County AADT Map. The Statewide Crash Rate (109.14 crashes per 100 MVMT) used for comparison purposes in this analysis was collected from the 2013-2015 NCDOT Statewide Total Crash Rates for urban interstate facilities, as the Triangle Expressway operates more like an 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 element of chance and randomness. They are used as a reference to determine if the Total Crash Rate, at a location, is significantly higher than a predetermined average rate for locations with similar characteristics.

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

**Operations Statistics Report for the Triangle Expressway**

**First Quarter, January – March 2018**

**Table 14: Safety Statistics, March 2015 - February 2018**

<b>Segment</b>	<b>Length</b>	<b>AADT <sup>1</sup></b>	<b>Total Crashes</b>	<b>Vehicle Exposure (MVMT)</b>	<b>Total Crash Rate</b>	<b>Statewide Crash Rate <sup>2</sup></b>	<b>Critical Crash Rate</b>
NC 147 I 40 to NC 540	3.1	13,000	39	44.22	88.20	109.14	136.11
NC 540 I 40 to NC 55	2.8	36,200	58	110.79	52.35	109.14	125.92
NC 540 NC 55 to US 64	6.7	28,200	89	206.24	43.15	109.14	121.35
NC 540 US 64 to NC 55 Bypass	5.9	20,700	58	132.85	43.66	109.14	124.43
<b>Triangle Expressway</b>	<b>18.4</b>	<b>24,500</b>	<b>244</b>	<b>494.73</b>	<b>49.32</b>	<b>109.14</b>	<b>116.97</b>

<sup>1</sup> AADT provided from NCDOT 2016 AADT Maps, Wake County

<sup>2</sup> Statewide Crash Rate for Urban 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 vehicle detectors (MVD), toll zone security cameras, and a Roadway Weather Information System (RWIS). Additionally, they monitor roadside toll 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 NCDOT's 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, in the event of incidents on the facility, they can use interoperable 800MHz radio frequency dispatch from local 911 and statewide Highway Patrol communications to dispatch Incident Management Assistance Patrol (IMAP).

The NCTA Toll Safety Patrol program consists of dedicated SHP and IMAP services provided on the 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 first quarter of 2018. It includes driver violations and warnings issued 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 2018. "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.

**Operations Statistics Report for the Triangle Expressway**

First Quarter, January – March 2018

**Table 15: 2018 SHP Chargeable Activities, YTD**

Chargeable Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Speed Violations	43	33	35										<b>111</b>
Alcohol Violations	1	1	0										<b>2</b>
Seat Belt Violations	9	9	6										<b>24</b>
Child Restraint Violations	1	1	1										<b>3</b>
Reckless Driving	8	8	4										<b>20</b>
Drug Violations	0	0	0										<b>0</b>
Obstructed Plates	2	8	2										<b>12</b>
Other Violations	41	45	38										<b>124</b>
<b>Total Charges</b>	<b>105</b>	<b>105</b>	<b>86</b>										<b>296</b>

**Table 16: 2018 SHP Non-Chargeable Activities, YTD**

Non-Chargeable Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Warnings	78	56	46										<b>180</b>
Vehicles Towed	5	2	1										<b>8</b>
Crashes Investigated	37	1	2										<b>40</b>
<b>Total</b>	<b>120</b>	<b>59</b>	<b>49</b>										<b>228</b>

The IMAP assists with stranded motorists and incident clearance, thereby maintaining the flow of traffic along the roadway. *Table 17* and *Figure 33* present the monthly breakdown of IMAP services, by type, for the Triangle Expressway during 2018. The “other” category includes extinguish fire service, first aid service, and other rare miscellaneous services.



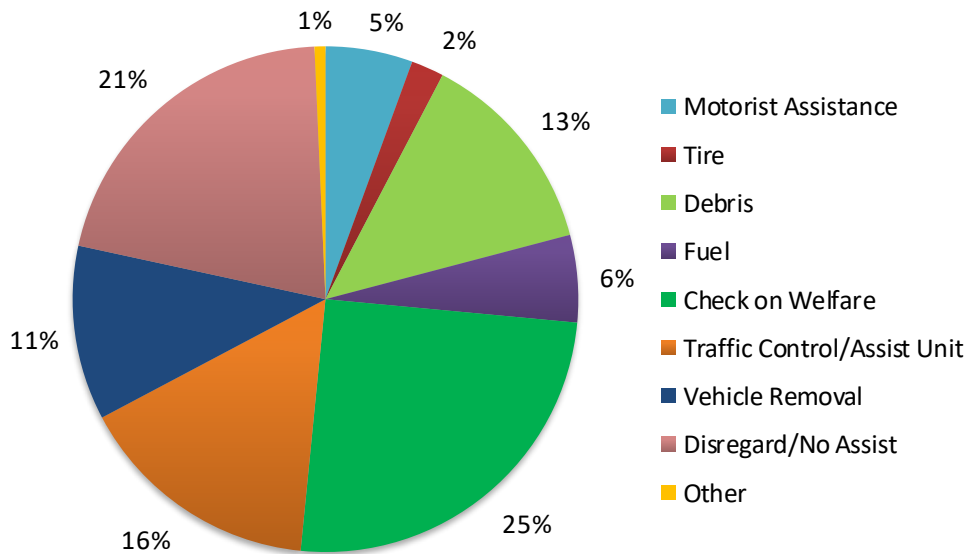
Operations Statistics Report for the Triangle Expressway

First Quarter, January – March 2018

Table 17: 2018 IMAP Services, YTD

Assist Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Motorist Assistance	5	4	7										16
Tire	1	1	4										6
Debris	13	3	22										38
Fuel	5	3	8										16
Check on Welfare	27	15	30										72
Traffic Control/Assist Unit	23	5	17										45
Vehicle Removal	13	5	14										32
Disregard/No Assist	32	13	15										60
Other	0	1	1										2
<b>Total Charges</b>	<b>119</b>	<b>50</b>	<b>118</b>										<b>287</b>

Figure 33: 2018 IMAP Services by Type, YTD



**Operations Statistics Report for the Triangle Expressway**

**First Quarter, January – March 2018**

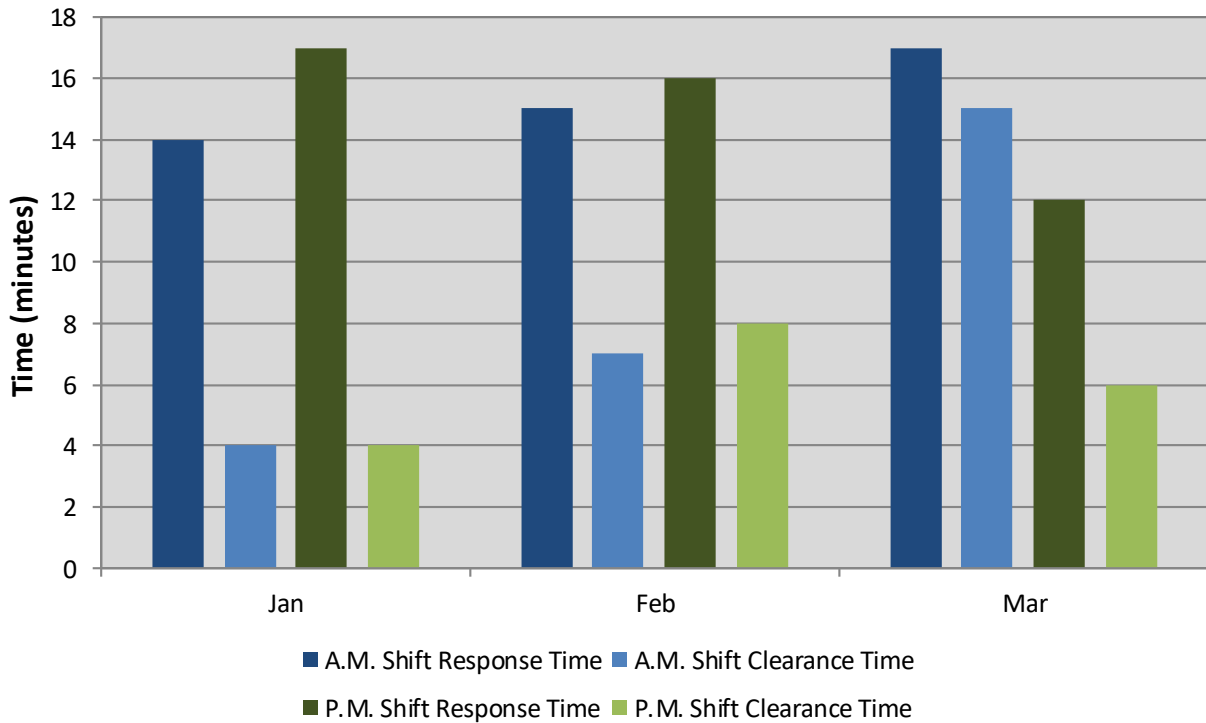
The response and clearance times for all IMAP assists are logged by IMAP and provided to the NCTA. Response time is the time from which a responder receives a call to the time they arrive on the scene. Clearance time is the time it takes the responder to clear the incident and return the roadway to normal operation. The IMAP staff’s A.M. shift occurs from 6AM to 2PM, while the P.M. 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 34 present the average IMAP assistance response and clearance times, in minutes, for the Triangle Expressway.

**Table 18: 2018 Average IMAP Assistance Response and Clearance Times (Minutes), YTD**

Response Type	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	2018 Average
A.M. Shift Response	14	15	17										15
A.M. Shift Clearance	4	7	15										9
P.M. Shift Response	17	16	12										15
P.M. Shift Clearance	4	8	6										6

**Figure 34: Average IMAP Assistance Response and Clearance Times (Minutes), First Quarter by Month**



# 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 using 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 is scheduled for each newly opened roadway section soon after opening to toll collection. The baseline assessments include a complete inventory data collection and assessment on 100% of the roadway assets. With the recent opening of the Veridea Parkway interchange, a baseline assessment of the interchange was completed in March of 2018.

After the baseline assessment is completed, future assessments for that segment switch 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 using 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 2018 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 2018 Rating	Q2 2018 Rating	Q3 2018 Rating	Q4 2018 Rating	2018 Annual Rating
Road Surface	98.5	N/A	N/A	N/A	N/A
Unpaved Shoulders and Ditches	97.8	N/A	N/A	N/A	N/A
Drainage	87.7	N/A	N/A	N/A	N/A
Roadside	92.2	N/A	N/A	N/A	N/A
Traffic Control Devices	83.8	N/A	N/A	N/A	N/A
<b>Overall MRP Performance Rating</b>	<b>91.3</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

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