

NORTH CAROLINA

Turnpike Authority

Operations Statistics Report

Triangle Expressway

2016 First Quarter Report

January - March

1 S. Wilmington Street
Raleigh, NC 27601



Last Updated:
May 3, 2016

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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 2016. The report includes data related to traffic volumes, toll system, and roadway operations and maintenance. The statistics will allow for future analysis to identify quarterly and annual trends over time, providing a quantifiable method to track performance.

Project

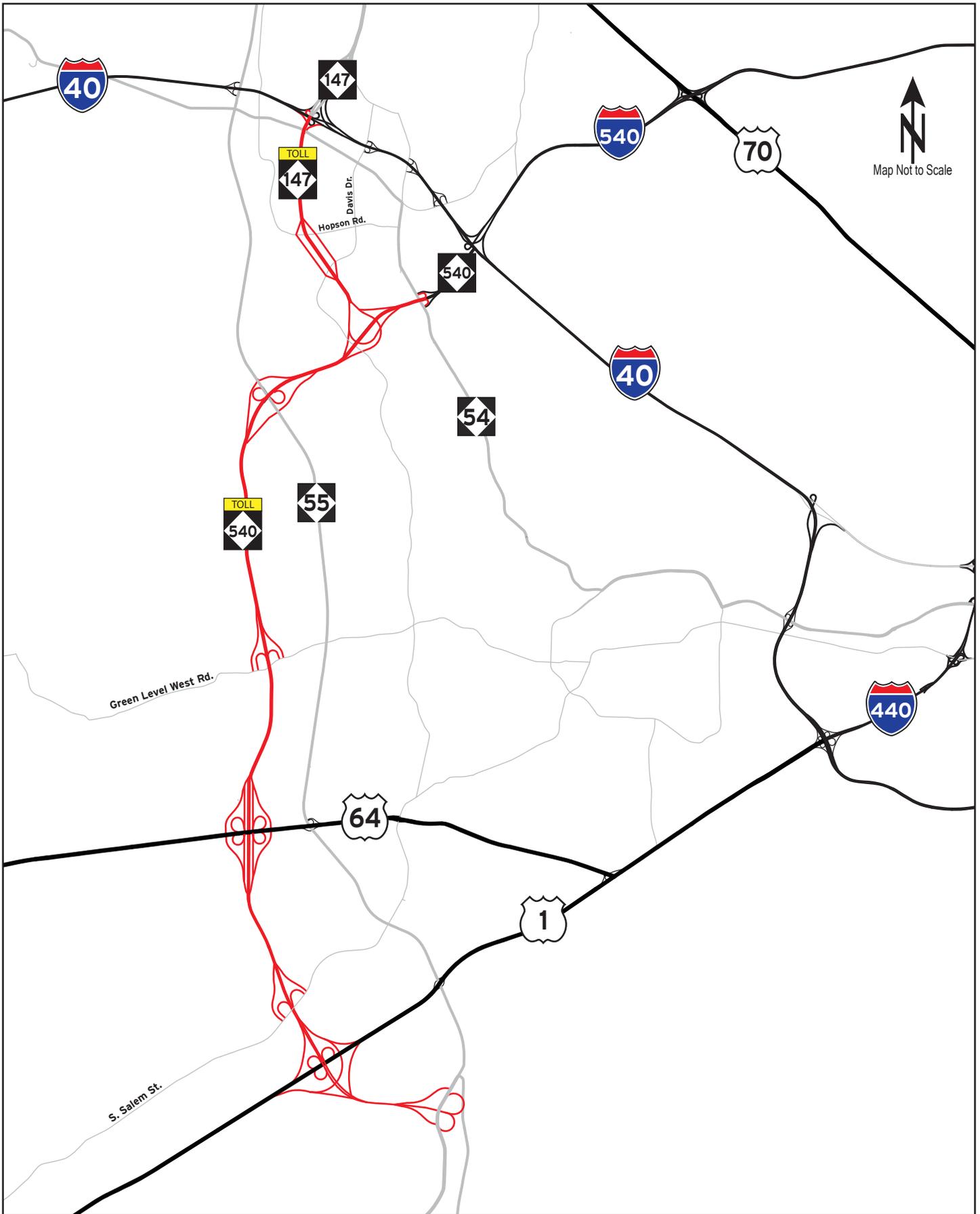
The Triangle Expressway is an 18.8-mile toll road that extends the partially complete “Outer Loop” around the greater Raleigh, North Carolina area from I-40 to NC-55 Bypass. The six-lane, controlled-access toll facility relieves congestion on NC-55, while improving access to the Research Triangle Park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

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

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

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

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



Triangle Expressway System Map

**Figure
1**

Traffic Statistics

TRAFFIC STATISTICS

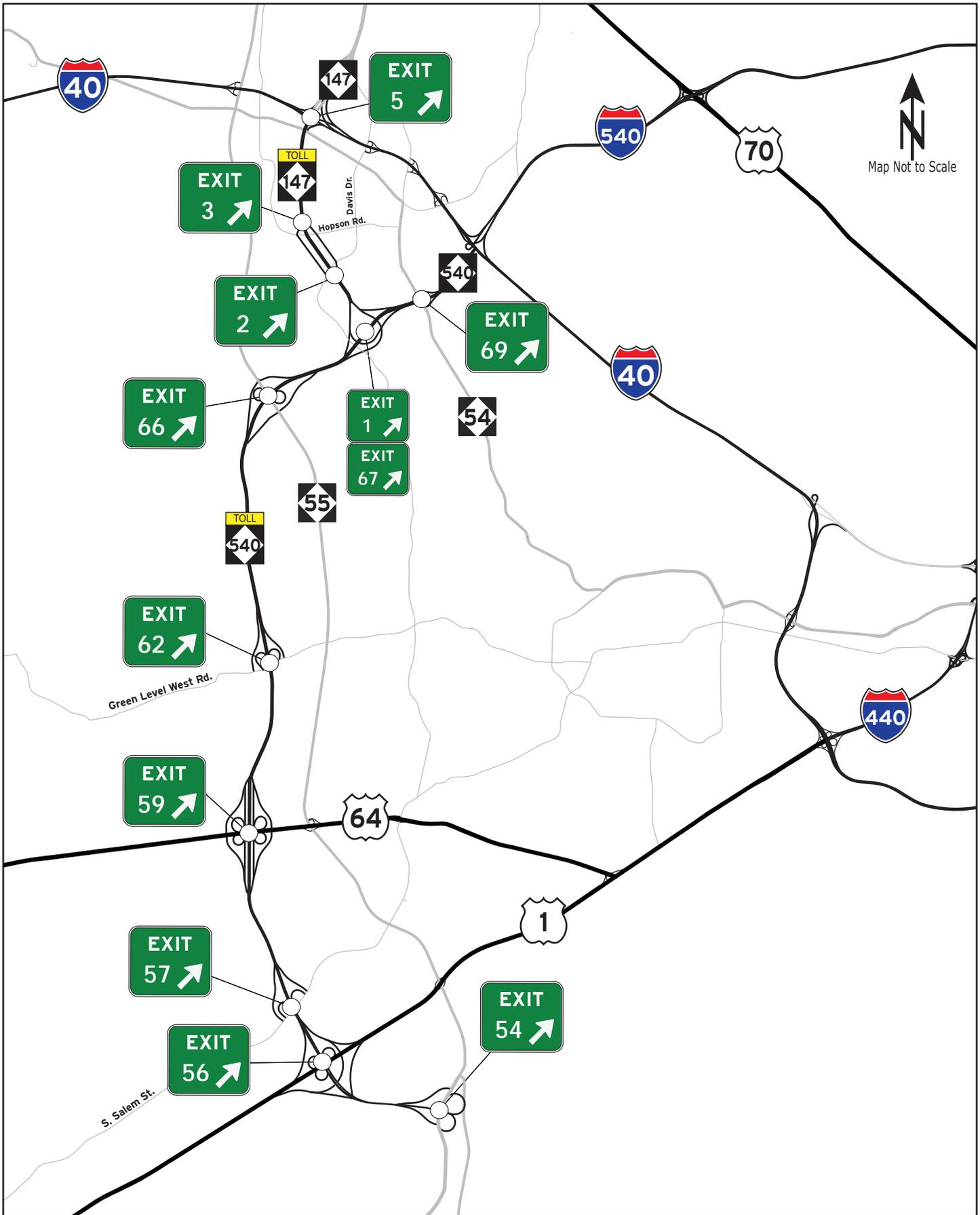
Current and historical traffic data is collected and stored through the use of roadside microwave vehicle detectors (MVD's) installed throughout the Triangle Expressway. The data provides an overview of the roadway's current utilization. The data can also be analyzed to identify trends that could more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

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

Average Weekday Traffic (AWT)

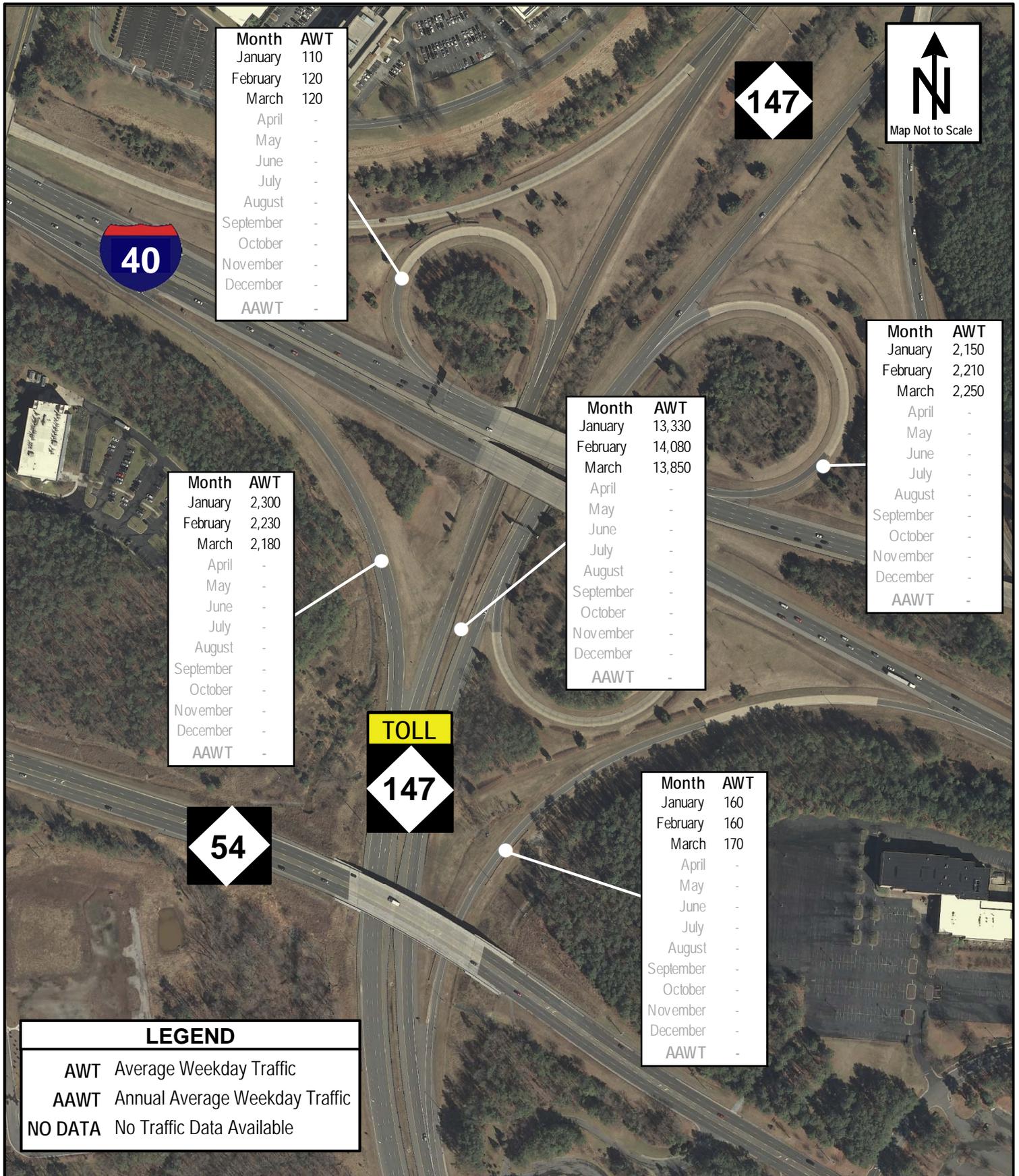
Traffic volume data is collected on all ramps and mainline segments between interchanges. The location of interchanges along the Triangle Expressway can be seen in *Figure 2*. Typically there is a large difference between peak and off-peak volumes, as well as between weekday and weekend volumes. This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

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



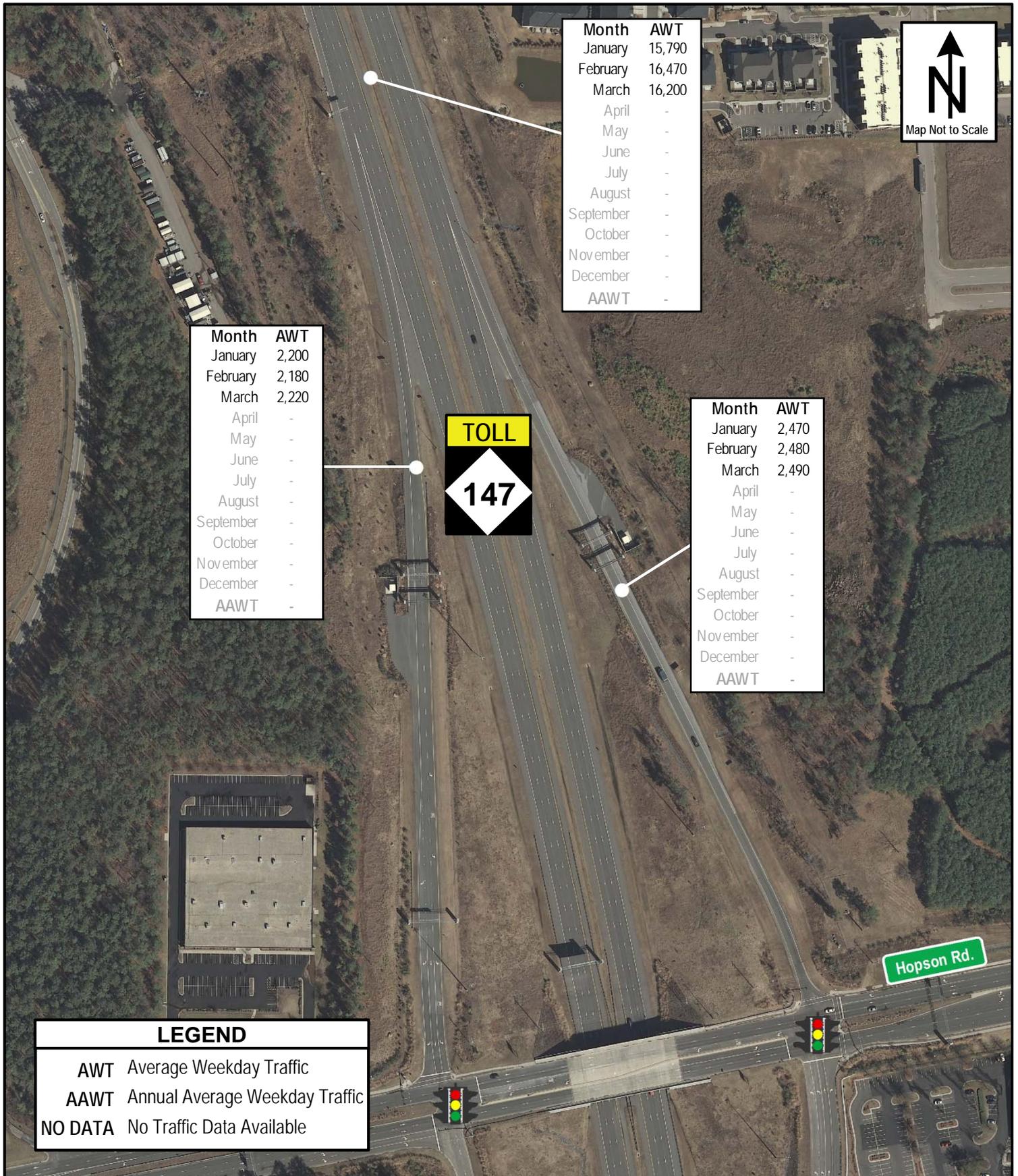
Triangle Expressway Interchange Map

Figure 2



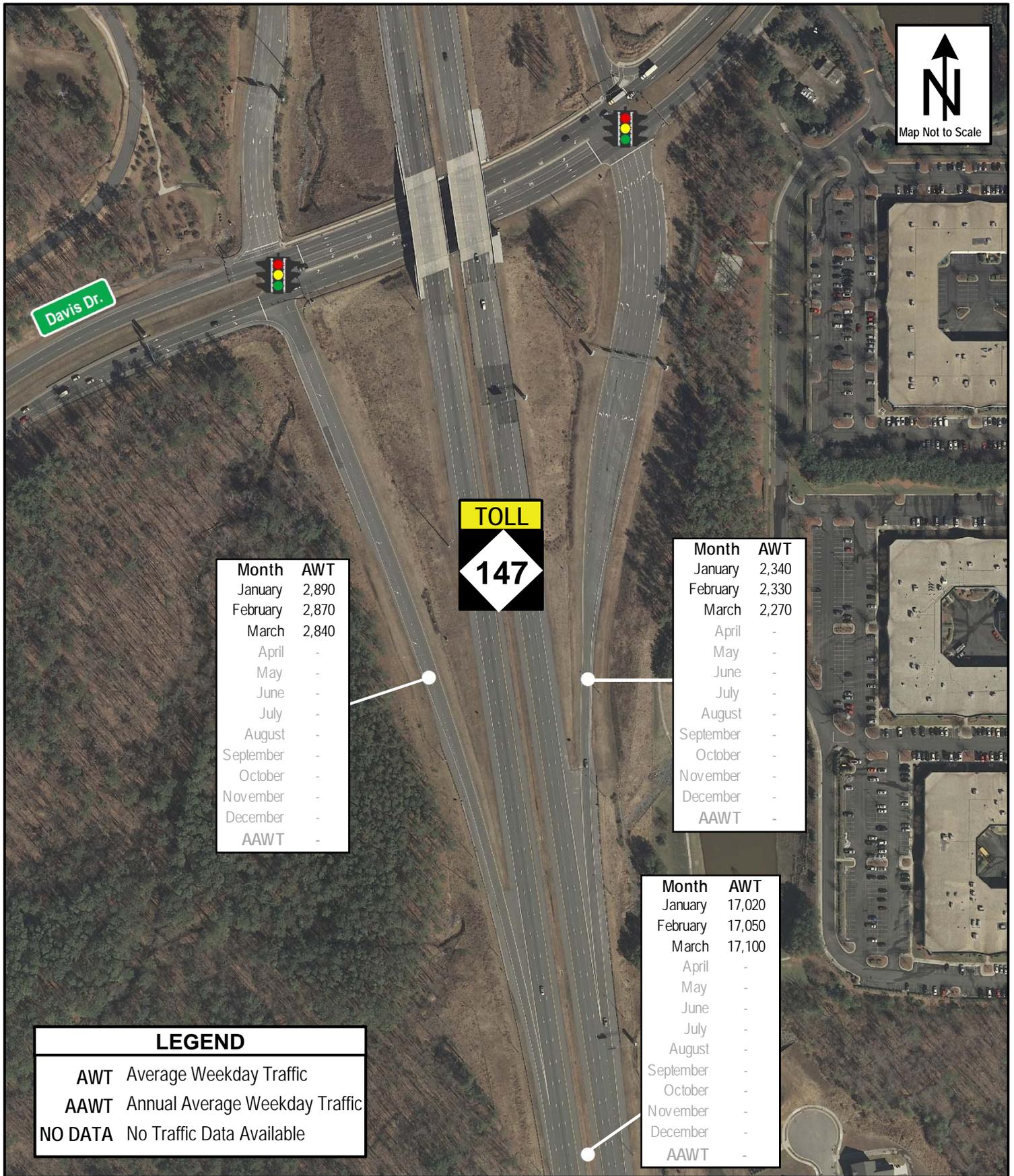
NC-147 at I-40 Interchange
2016 Average Weekday Traffic

Figure
3



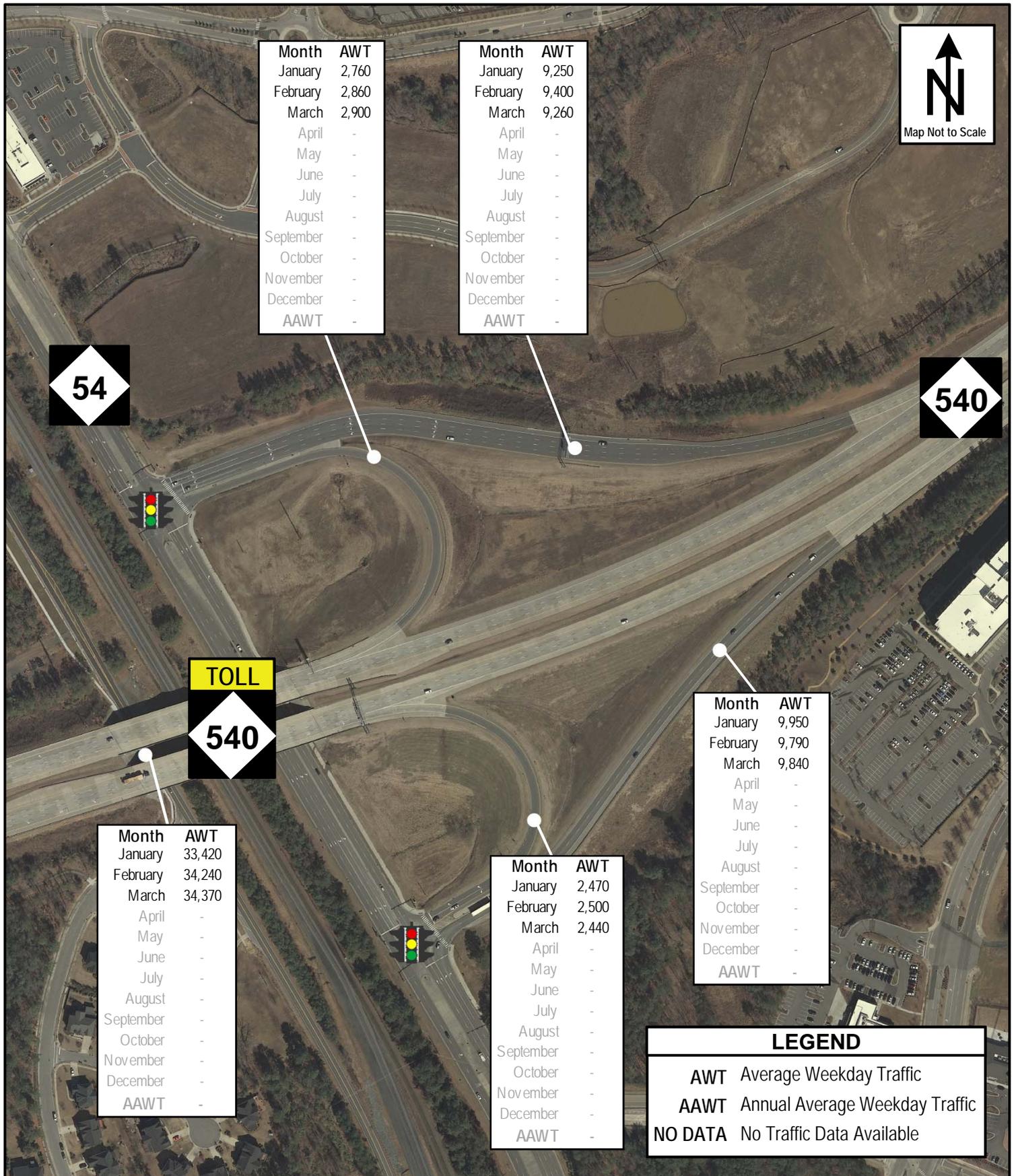
NC-147 at Hopson Rd. Interchange
2016 Average Weekday Traffic

Figure
4



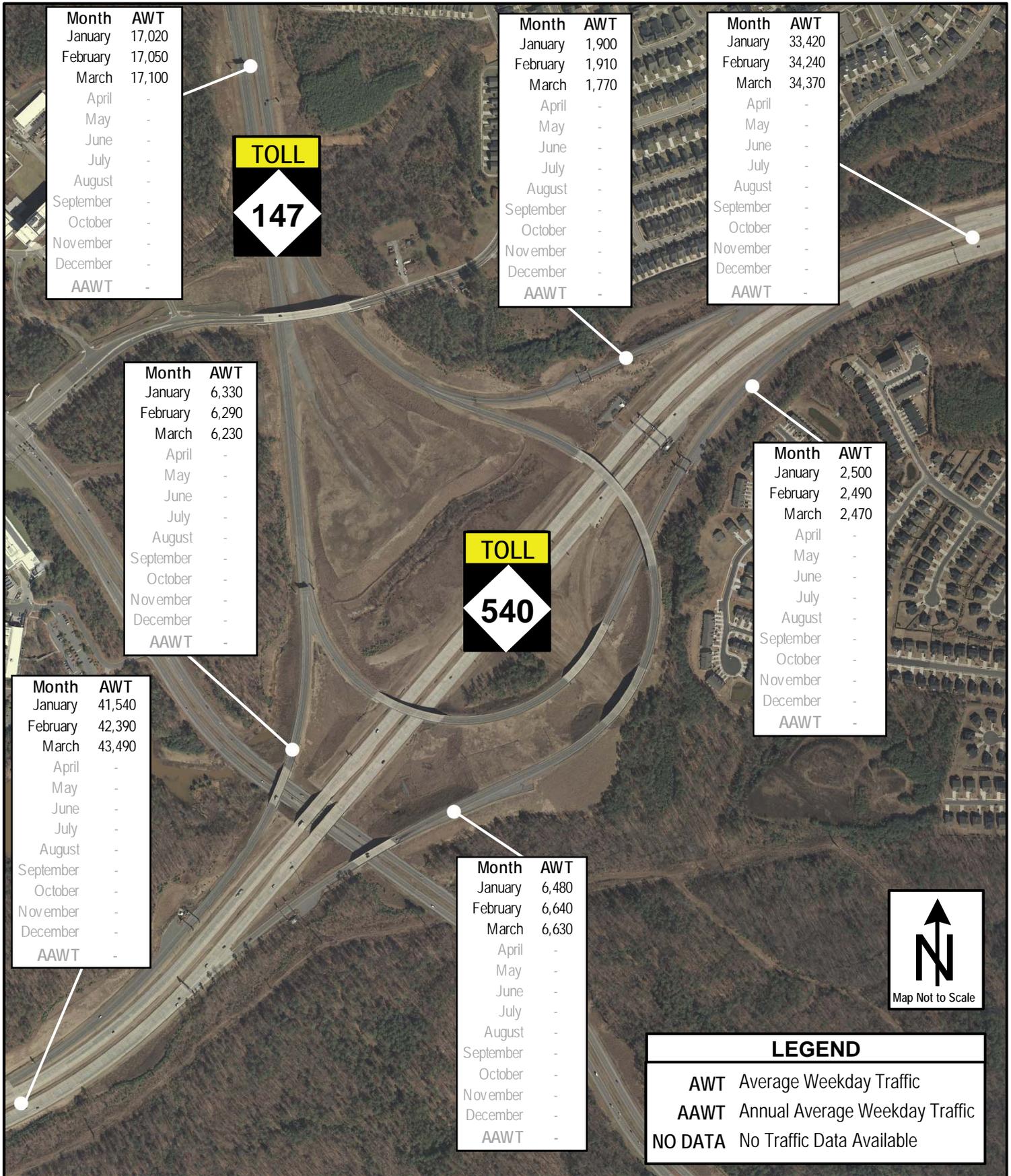
NC-147 at Davis Dr. Interchange
2016 Average Weekday Traffic

Figure 5



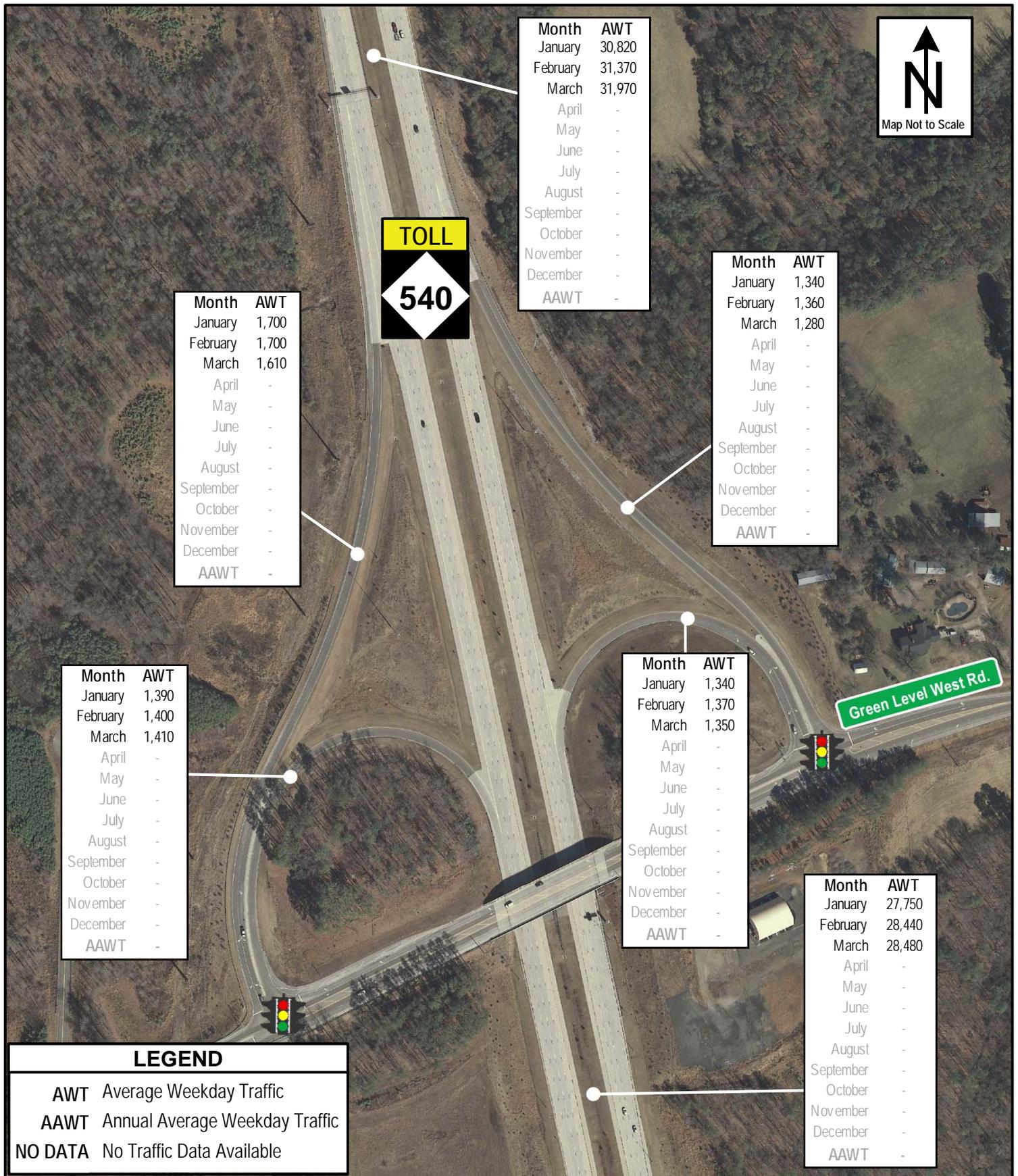
NC-540 at NC-54 Interchange
2016 Average Weekday Traffic

Figure
6



NC-540 at NC-147 Interchange
2016 Average Weekday Traffic

Figure
7

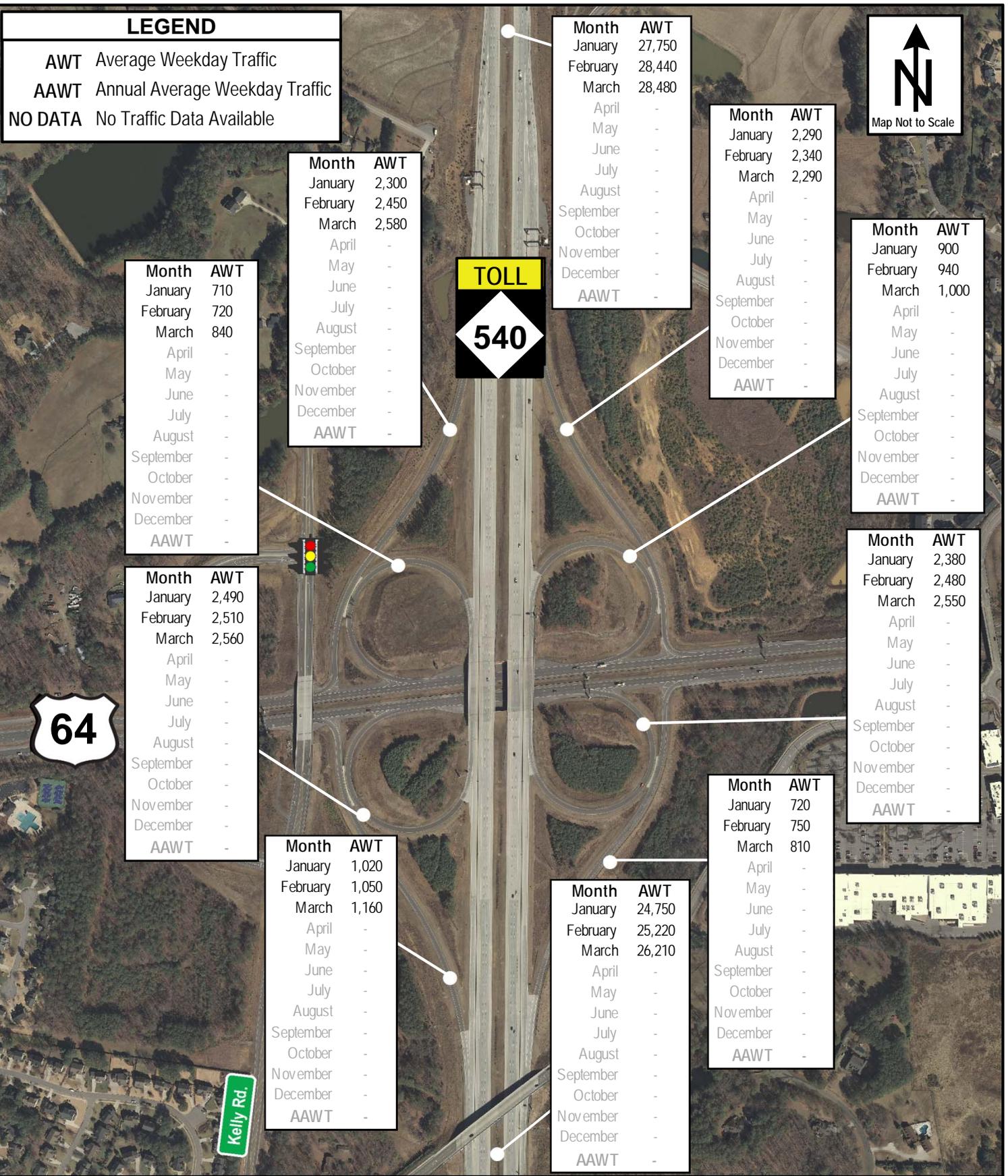


NC-540 at Green Level West Rd. Interchange
 2016 Average Weekday Traffic

Figure
9

LEGEND

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



Month	AWT
January	27,750
February	28,440
March	28,480
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	2,290
February	2,340
March	2,290
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	900
February	940
March	1,000
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	2,380
February	2,480
March	2,550
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	720
February	750
March	810
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	24,750
February	25,220
March	26,210
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	2,300
February	2,450
March	2,580
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

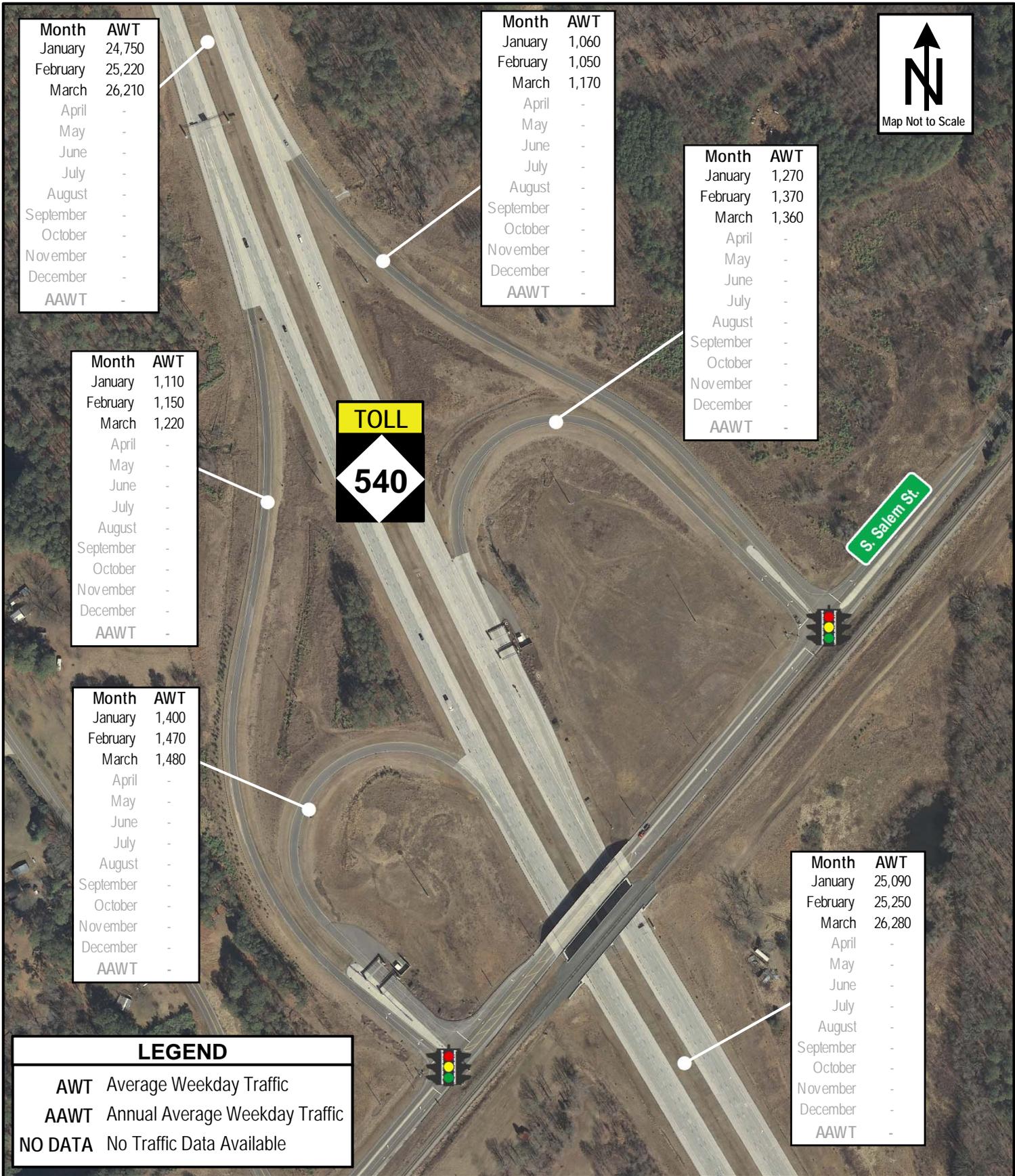
Month	AWT
January	710
February	720
March	840
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	2,490
February	2,510
March	2,560
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

Month	AWT
January	1,020
February	1,050
March	1,160
April	-
May	-
June	-
July	-
August	-
September	-
October	-
November	-
December	-
AAWT	-

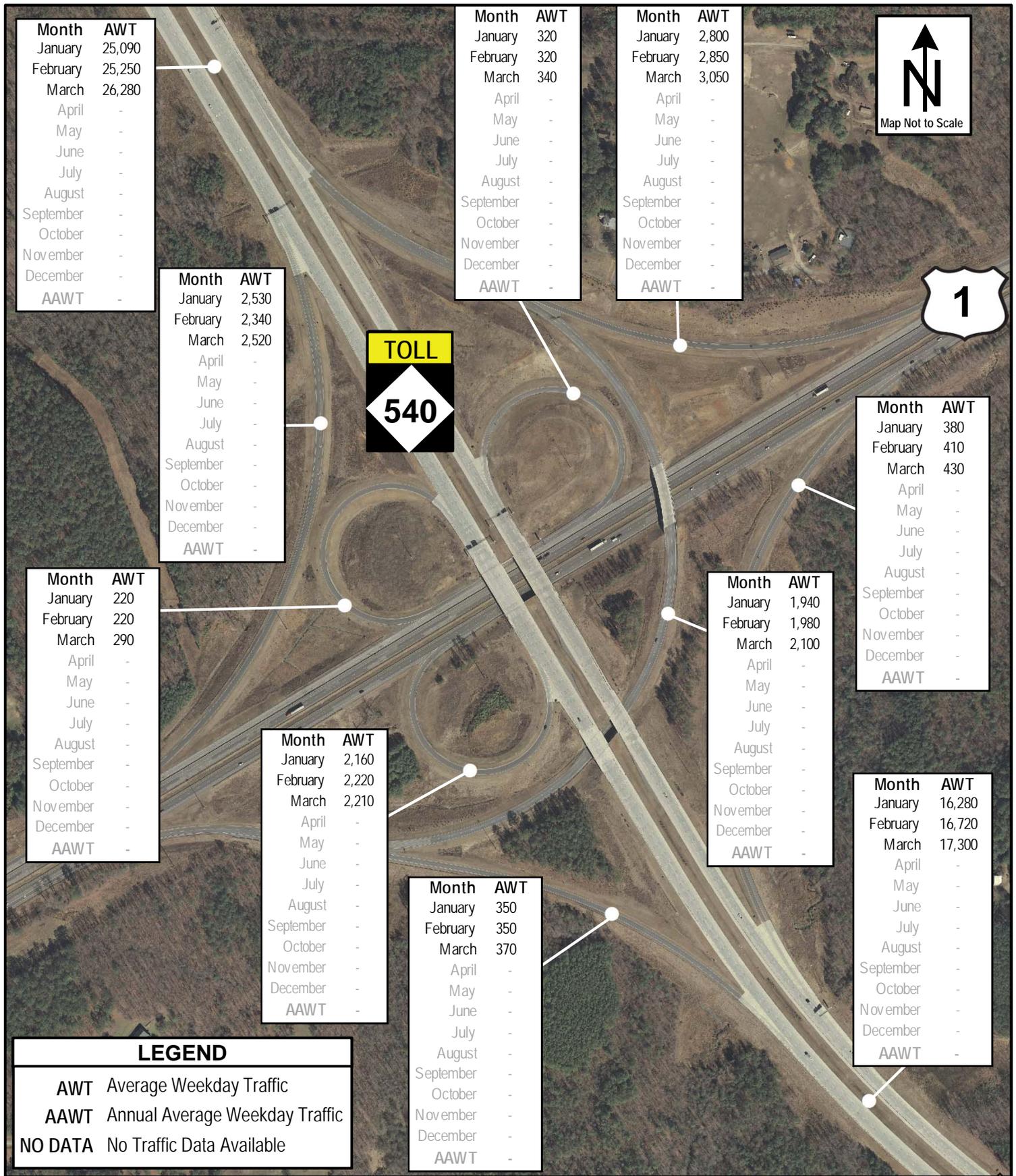
NC-540 at US-64 Interchange
 2016 Average Weekday Traffic

Figure 10



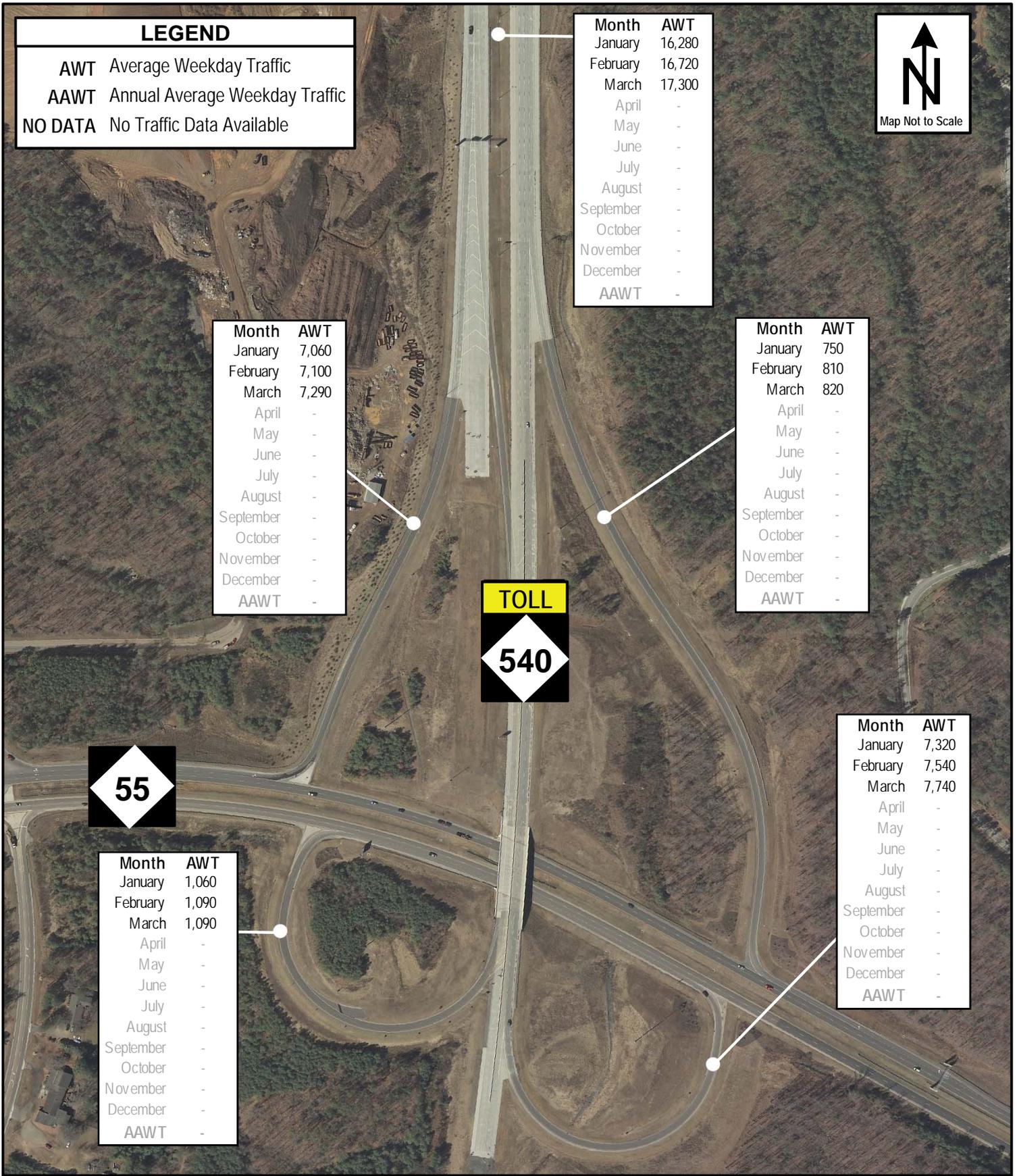
NC-540 at S. Salem St. Interchange
2016 Average Weekday Traffic

Figure 11



NC-540 at US-1 Interchange
 2016 Average Weekday Traffic

Figure 12



NC-540 at NC-55 Bypass Interchange
2016 Average Weekday Traffic

Figure 13

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

- Transactions
- Classification
- Accounts
- Transponders

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

Operations Statistics Report for the Triangle Expressway

First Quarter, January – March 2016

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

Table 1: Transactions, First Quarter by Week

Week Ending	Transponder (NC Quick Pass)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
1/3/2016*	83,371	48.7%	87,674	51.3%	171,045
1/10/2016	476,032	59.7%	320,847	40.3%	796,879
1/17/2016	473,438	59.4%	323,727	40.6%	797,165
1/24/2016**	341,117	59.6%	230,983	40.4%	572,100
1/31/2016	483,057	59.4%	330,502	40.6%	813,559
2/7/2016	498,057	59.7%	335,909	40.3%	833,966
2/14/2016	482,212	59.5%	328,226	40.5%	810,438
2/21/2016***	447,033	58.6%	315,829	41.4%	762,862
2/28/2016	493,101	59.6%	334,578	40.4%	827,679
3/6/2016	511,370	59.2%	352,538	40.8%	863,908
3/13/2016	506,416	58.4%	360,161	41.6%	866,577
3/20/2016	514,378	58.5%	365,010	41.5%	879,388
3/27/2016	484,227	58.1%	349,249	41.9%	833,476
3/31/2016****	321,833	59.5%	219,156	40.5%	540,989

*Week ending consists of three days worth of data

** Week ending includes Martin Luther King, Jr. Day

***Week ending includes President’s Day

**** Week ending consists of four 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: Transactions, First Quarter by Month

Month	Transponder (NC Quick Pass)		Video (Bill by Mail)		Total
	Transactions	% of Total	Transactions	% of Total	
January	1,857,015	58.9%	1,293,733	41.1%	3,150,748
February	2,005,542	59.5%	1,367,216	40.5%	3,372,758
March	2,253,085	58.6%	1,593,440	41.4%	3,846,525

Operations Statistics Report for the Triangle Expressway

First Quarter, January – March 2016

Figure 14 presents the total monthly transactions and NC Quick Pass utilization during 2016.

Figure 14: 2016 Transactions, YTD

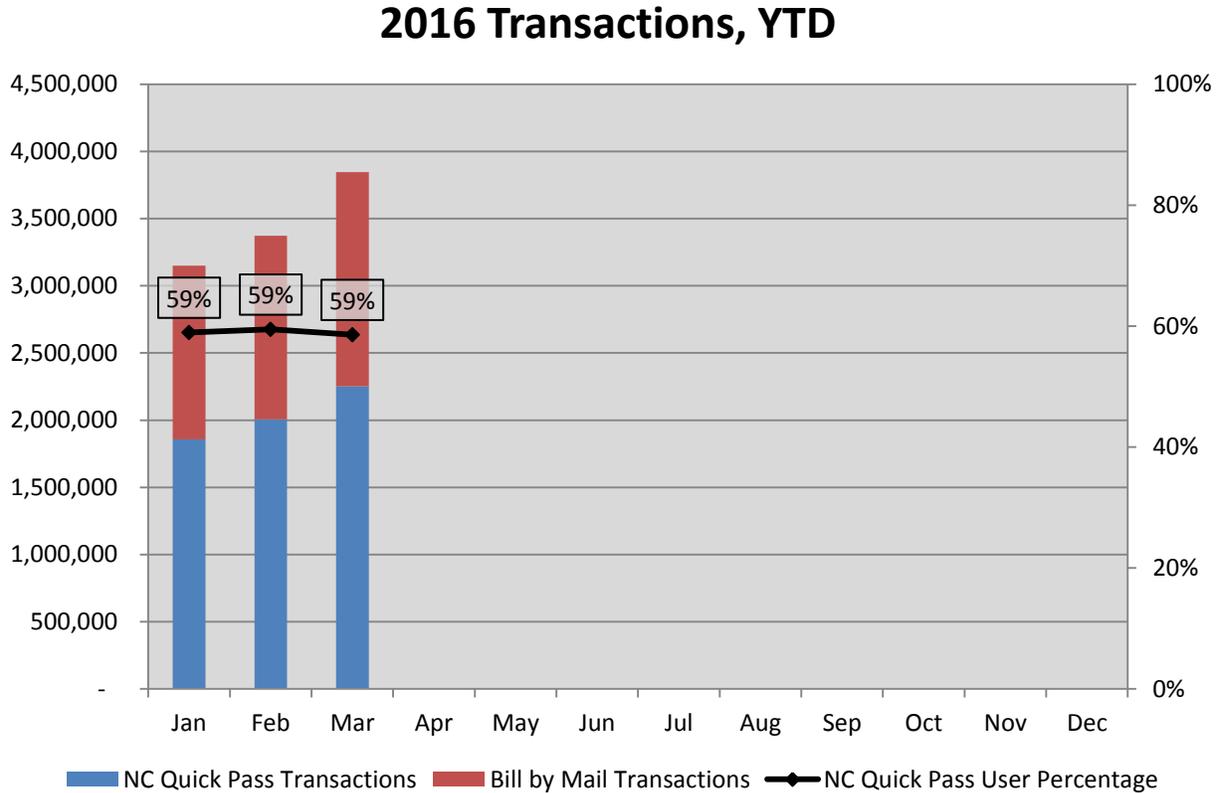


Table 3 presents a summary of the total NC Quick Pass and Bill by Mail transactions, by year. Project to date is the total number of transactions since opening the facility to toll traffic.

Table 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%	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*	6,115,642	59.0%	4,254,389	41.0%	10,370,031
Project to Date	61,985,016	57.4%	45,977,457	42.6%	107,962,473

*2016 transactions reported include three months of data (January - March).

Operations Statistics Report for the Triangle Expressway

First Quarter, January – March 2016

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

Table 4: 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
1/3/2016*	168,925	98.8%	932	0.5%	1,188	0.7%
1/10/2016	771,505	96.8%	8,546	1.1%	16,828	2.1%
1/17/2016	767,970	96.3%	9,634	1.2%	19,561	2.5%
1/24/2016**	549,719	96.1%	7,352	1.3%	15,029	2.6%
1/31/2016	791,105	97.2%	6,741	0.8%	15,713	1.9%
2/7/2016	808,719	97.0%	7,890	0.9%	17,357	2.1%
2/14/2016	784,364	96.8%	8,169	1.0%	17,905	2.2%
2/21/2016***	738,560	96.8%	7,830	1.0%	16,472	2.2%
2/28/2016	803,329	97.1%	7,711	0.9%	16,639	2.0%
3/6/2016	832,543	96.4%	10,539	1.2%	20,826	2.4%
3/13/2016	834,385	96.3%	10,696	1.2%	21,496	2.5%
3/20/2016	847,470	96.4%	10,813	1.2%	21,105	2.4%
3/27/2016	803,650	96.4%	9,940	1.2%	19,886	2.4%
3/31/2016****	517,383	95.6%	8,105	1.5%	15,501	2.9%

*Week ending consists of three days worth of data

** Week ending includes Martin Luther King, Jr. Day

***Week ending includes President’s Day

**** Week ending consists of four days worth of data

Table 5 presents a summary of the total monthly transactions by classification.

Table 5: 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	3,049,224	96.8%	33,205	1.1%	68,319	2.2%
February	3,267,339	96.9%	33,341	1.0%	72,078	2.1%
March	3,703,064	96.3%	48,352	1.3%	95,109	2.5%

Operations Statistics Report for the Triangle Expressway

First Quarter, January – March 2016

Figure 15 presents the total monthly percentage of transactions during 2016 for Class 1 (2-axle), Class 2 (3-axle) and Class 3 (4+axle) vehicles.

Figure 15: 2016 Classification, Percentage YTD

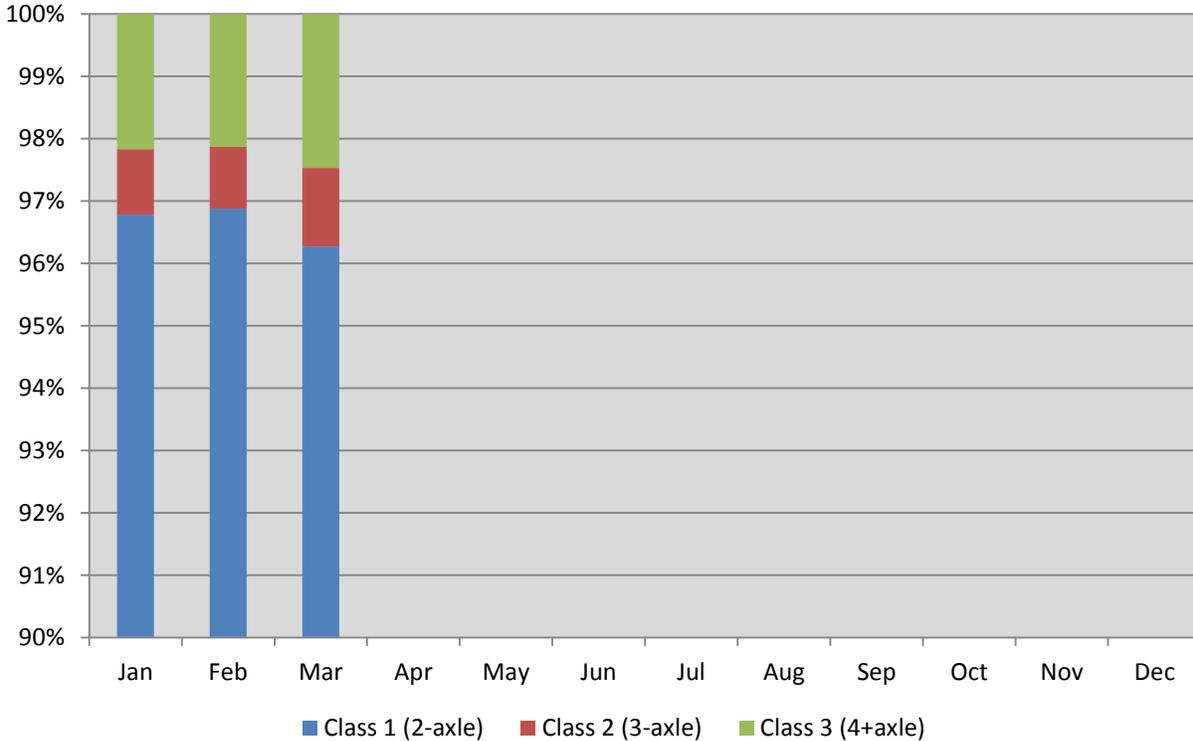


Table 6 presents a summary of the total transactions for Class 1 (2-axle), Class 2 (3-axle) and Class 3 (4+axle) vehicles, by year. Project to date is the total number of transactions since opening the facility to toll traffic.

Table 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	97.7%	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*	10,019,627	96.6%	114,898	1.1%	235,506	2.3%
Project to Date	104,444,491	96.7%	1,211,768	1.1%	2,306,214	2.1%

*2016 classification reported includes three months of data (January - March).

Operations Statistics Report for the Triangle Expressway

First Quarter, January – March 2016

Accounts

The statistics provided in this 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, First Quarter by Month

Month	NC Quick Pass	Bill by Mail	Registered Video	Non-Revenue	Government	Total
January	2,314	25,028	0	0	0	27,342
February	2,207	23,641	1	1	0	25,848
March	2,167	29,407	0	0	0	31,574

Figure 16 presents the monthly established accounts managed by the NCTA CSC during 2016. The “Other” category includes registered video, non-revenue and government accounts.

Figure 16: 2016 Established Accounts, YTD

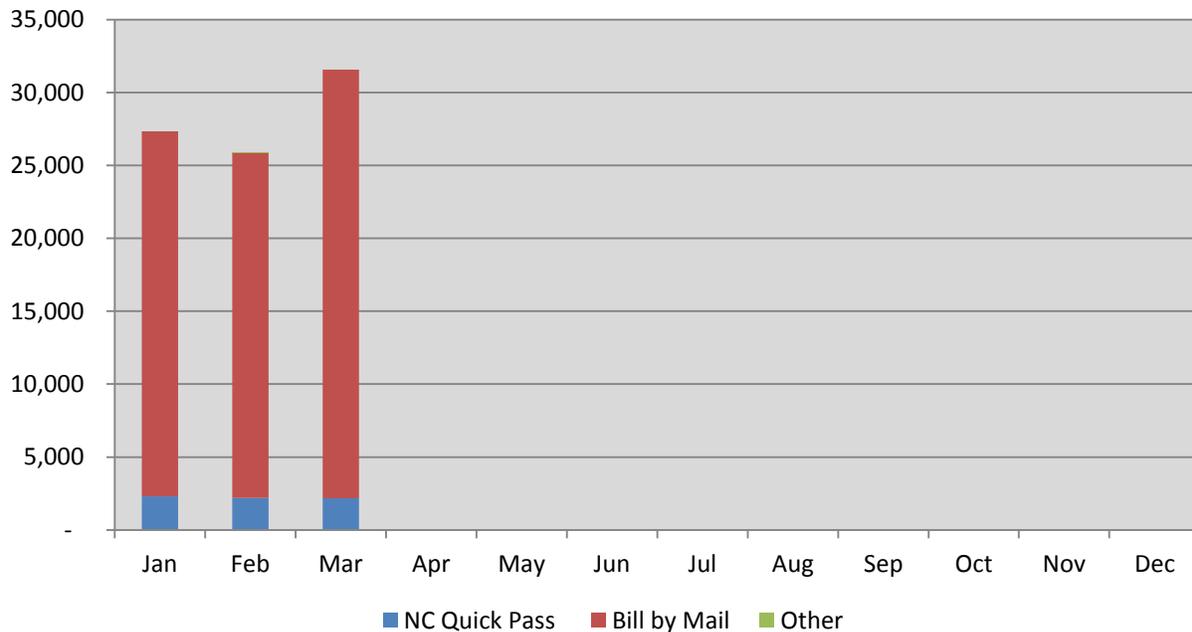


Table 8 presents a summary of the total established accounts managed by the NCTA CSC, by year. Project to date is the total number of accounts established since project opening. Numbers presented in parentheses represent a reduction in accounts.

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First Quarter, January – March 2016

Table 8: Established Accounts, by Year

Year	NC Quick Pass	Bill by Mail	Registered Video	Non-Revenue	Government	Total
2012	27,179	359,431	5	38	18	386,610
2013	24,268	306,581	(1)	19	9	330,849
2014	18,652	342,476	2	13	3	361,128
2015	24,222	380,897	0	4	0	405,119
2016*	6,688	78,076	1	1	0	84,764
Project to Date	101,009	1,467,461	7	75	30	1,568,470

*2016 established accounts reported include three months of data (January - March).

Operations Statistics Report for the Triangle Expressway

First Quarter, January – March 2016

Transponders

This section presents the volume of transponders sold.

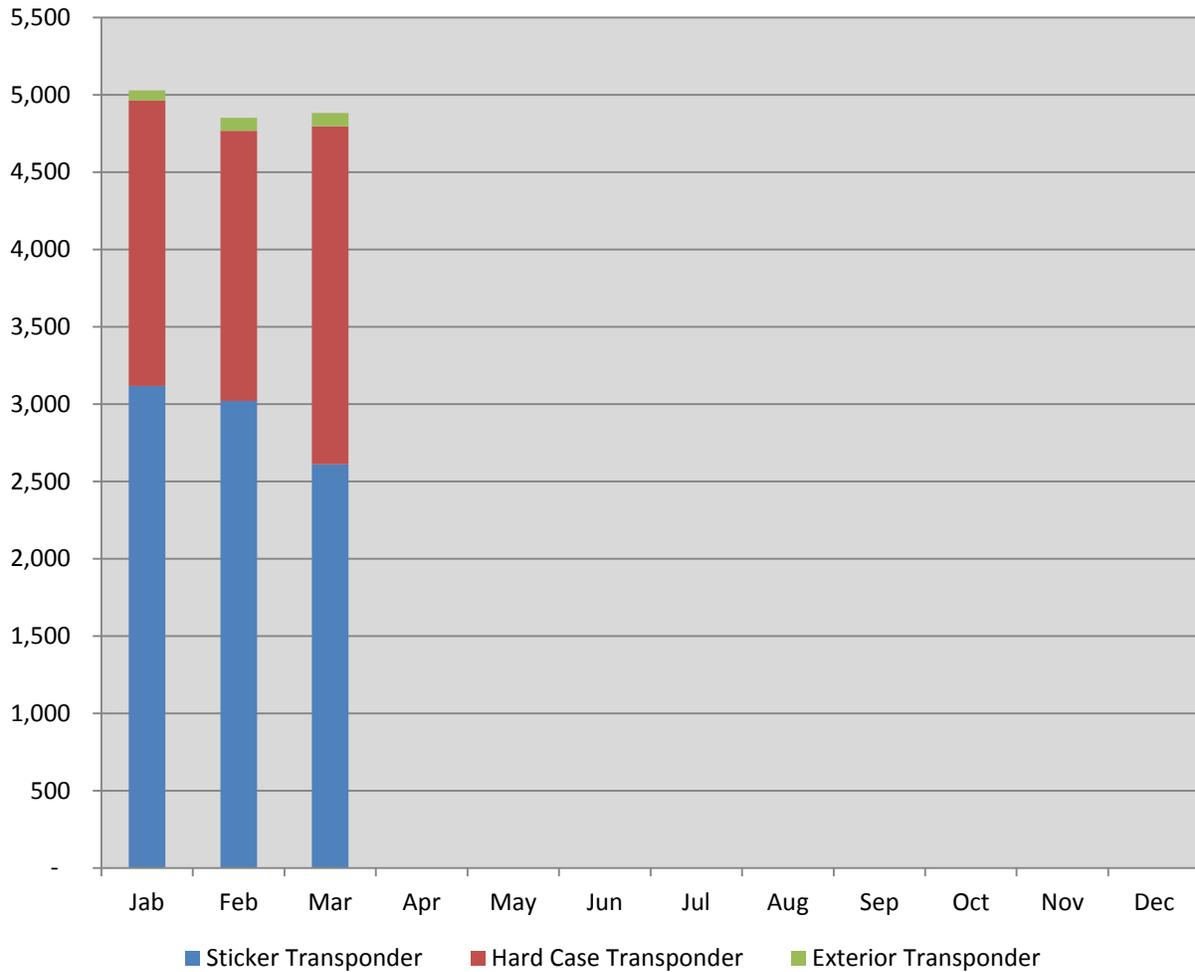
Table 9 presents a summary of the total transponders sold, by month.

Table 9: Transponders Sold, First Quarter by Month

Month	Sticker Tag	Hard Case Tag	Exterior Tag	Total
January	3,117	1,845	65	5,027
February	3,020	1,747	83	4,850
March	2,610	2,186	85	4,881

Figure 17 presents monthly transponders sold during 2016.

Figure 17: 2016 Transponders Sold, YTD



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Table 10 presents a summary of the total transponders sold, by year. In October 2011, transponders went on sale prior to the opening of the roadway to provide potential motorists sufficient time to establish their accounts. Project to date is the total number of transponders sold to date.

Table 10: Transponders Sold, by Year

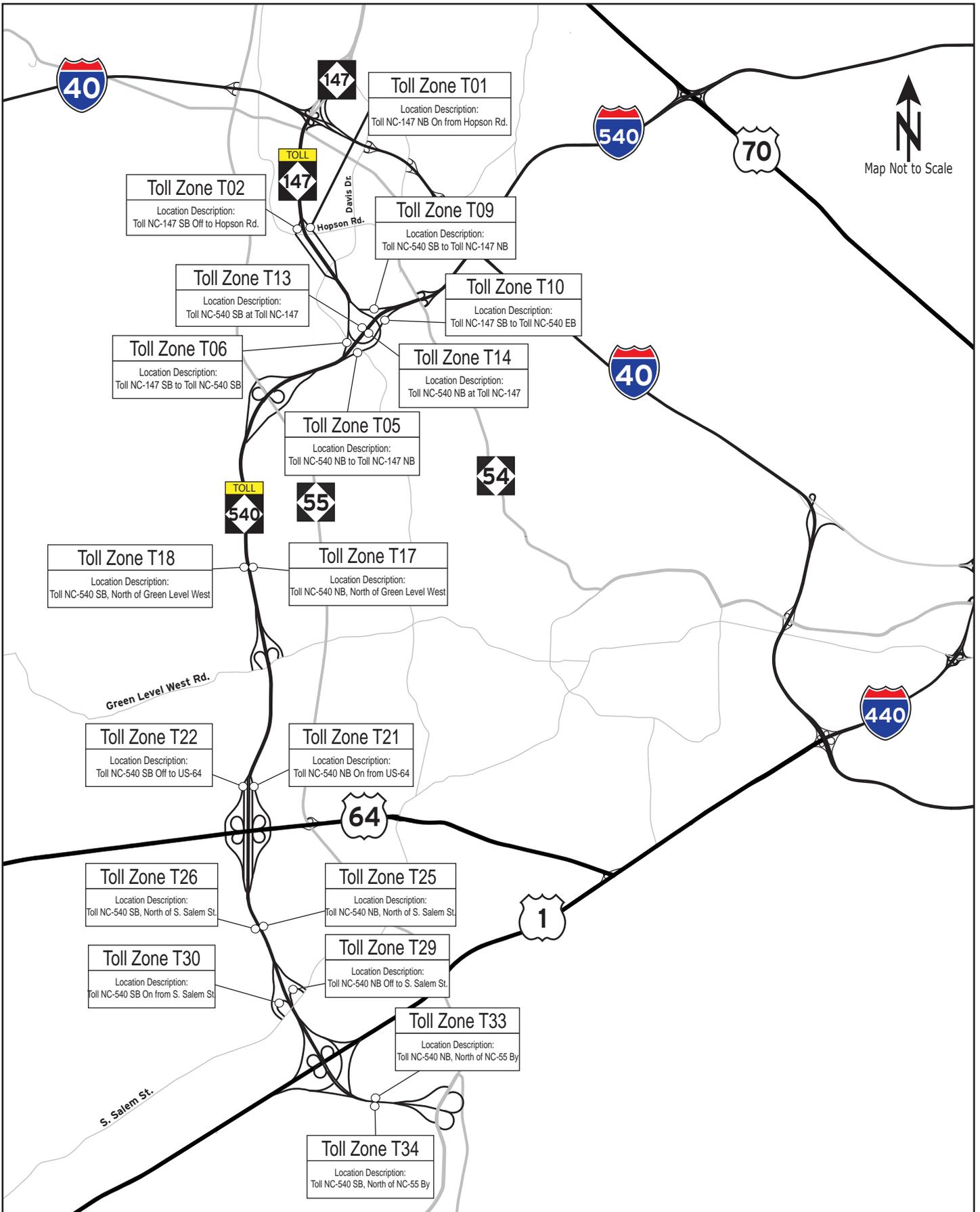
Year	Sticker Tag	Hard Case Tag	Exterior Tag	Total
2011	7,315	2,806	200	10,321
2012	35,338	6,861	250	42,449
2013	34,784	13,980	257	49,021
2014	26,066	14,778	221	41,065
2015	31,866	20,047	588	52,501
2016*	8,747	5,792	233	14,772
Project to Date	144,116	64,264	1,749	210,129

*2016 transponders sale reported include three months of data (January - March).

Toll Zone Statistics

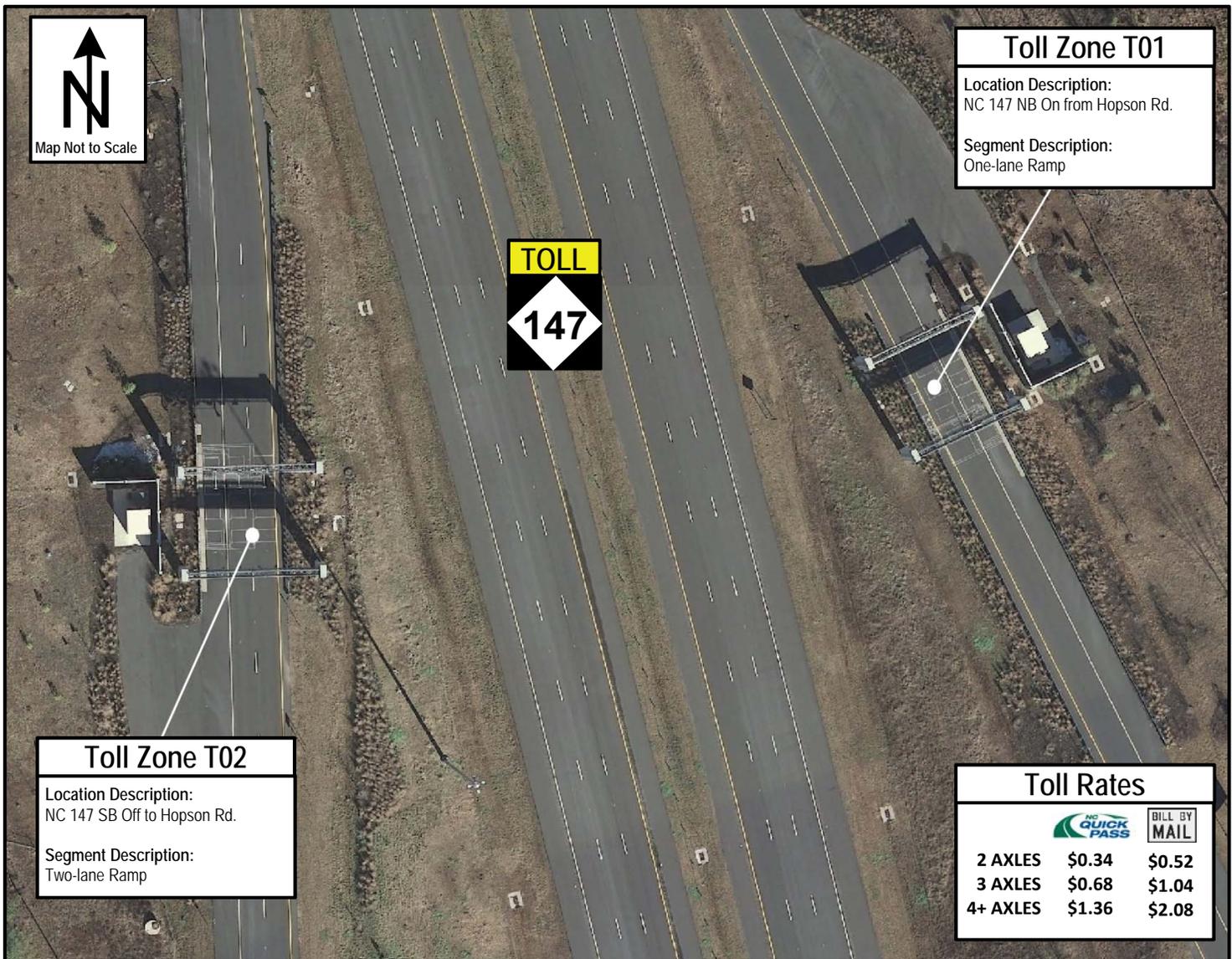
TOLL ZONE STATISTICS

The location of the toll zones along the Triangle Expressway can be seen in *Figure 18*. *Figures 19 - 27* present the average weekday transactions (excludes holidays and days of inclement weather conditions) recorded at toll zones along the facility.



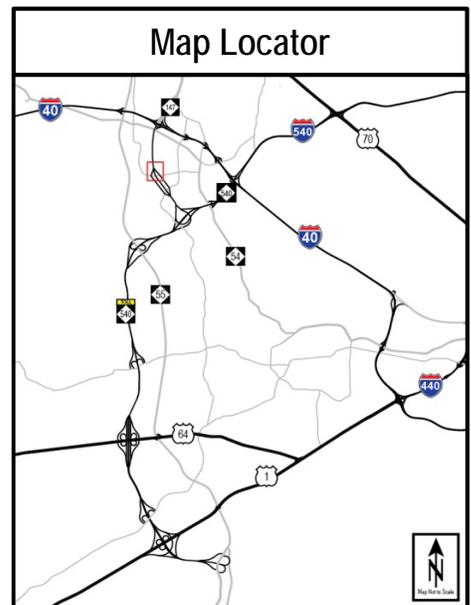
Triangle Expressway Toll Zone Map

Figure 18



Transactions by Direction		
Month	T01	T02
January	2,480	2,210
February	2,510	2,210
March	2,530	2,260
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

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



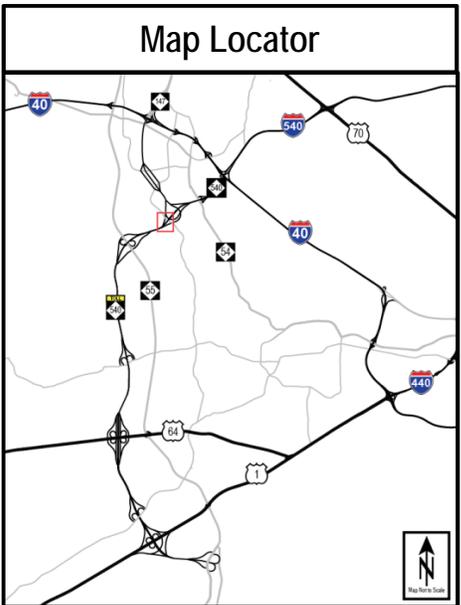
Hopson Road Ramp Toll Zones
2016 Average Weekday Toll Transactions

Figure
19



Transactions by Direction		
Month	T05	T06
January	6,480	6,380
February	6,630	6,420
March	6,780	6,470
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

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



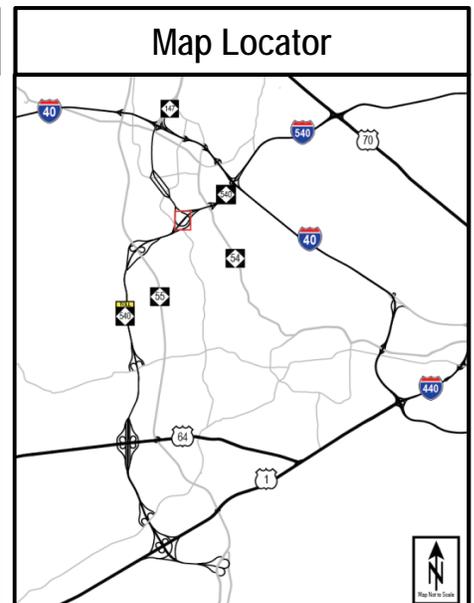
NC-147 South Ramp Toll Zones
2016 Average Weekday Toll Transactions

Figure 20



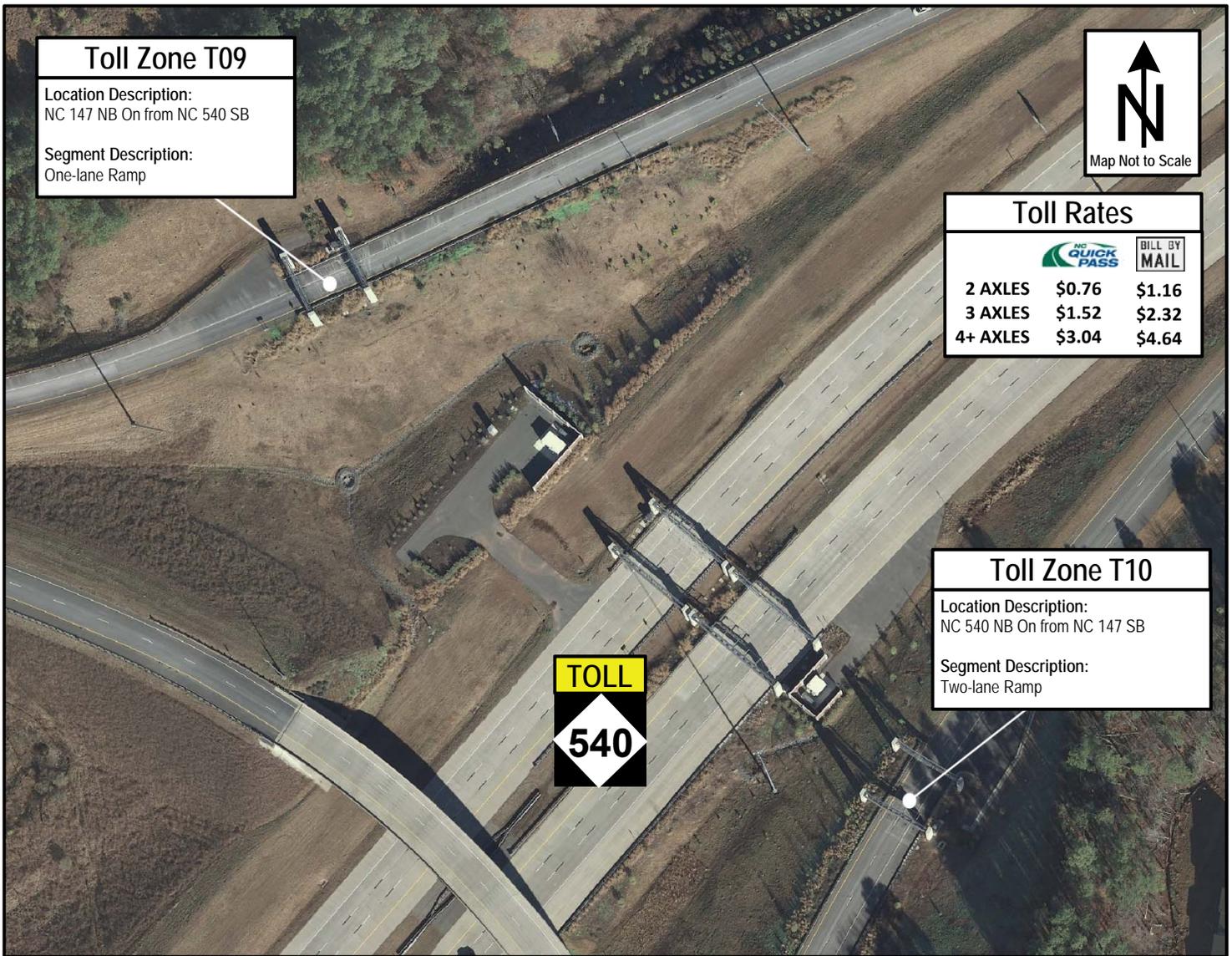
Transactions by Direction		
Month	T13	T14
January	14,400	14,270
February	14,920	14,950
March	15,390	15,470
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

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



NC-540 Morrisville Mainline Toll Zones
 2016 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

	NC QUICK PASS	BILL BY MAIL
2 AXLES	\$0.76	\$1.16
3 AXLES	\$1.52	\$2.32
4+ AXLES	\$3.04	\$4.64

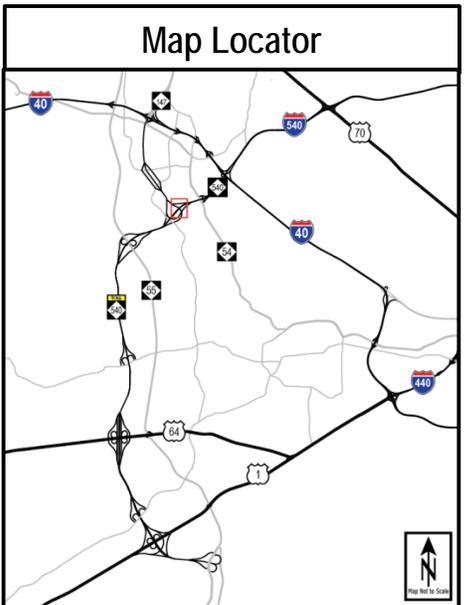
Toll Zone T10
 Location Description:
 NC 540 NB On from NC 147 SB
 Segment Description:
 Two-lane Ramp

Transactions by Direction

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

NC Quick Pass Percentage

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



NC-147 North Ramp Toll Zones
 2016 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

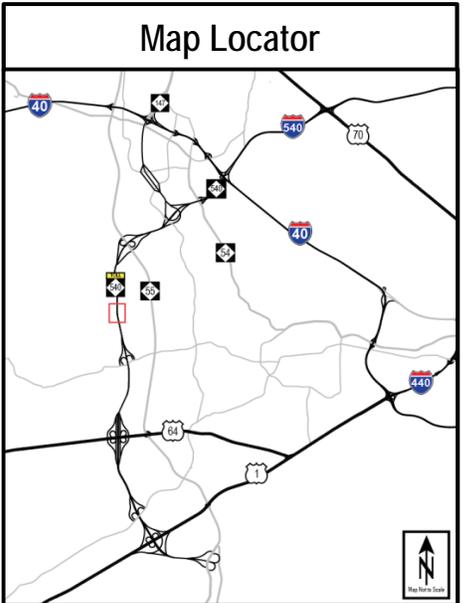
		BILL BY MAIL
2 AXLES	\$0.76	\$1.16
3 AXLES	\$1.52	\$2.32
4+ AXLES	\$3.04	\$4.64

Transactions by Direction

Month	T17	T18
January	14,980	15,720
February	15,480	16,080
March	15,800	16,360
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

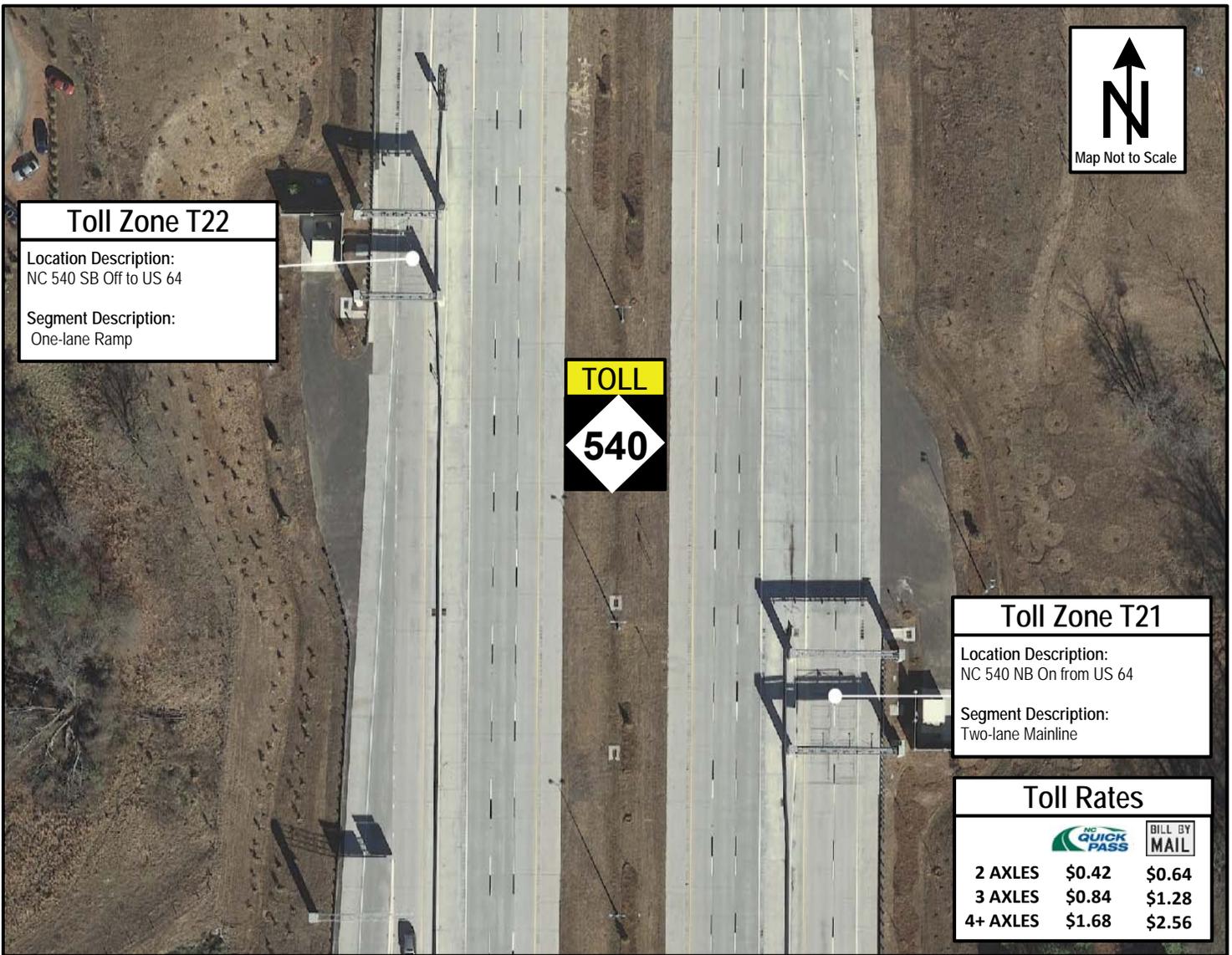
NC Quick Pass Percentage

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



NC-540 Cary Mainline Toll Zones
 2016 Average Weekday Toll Transactions

Figure 23



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

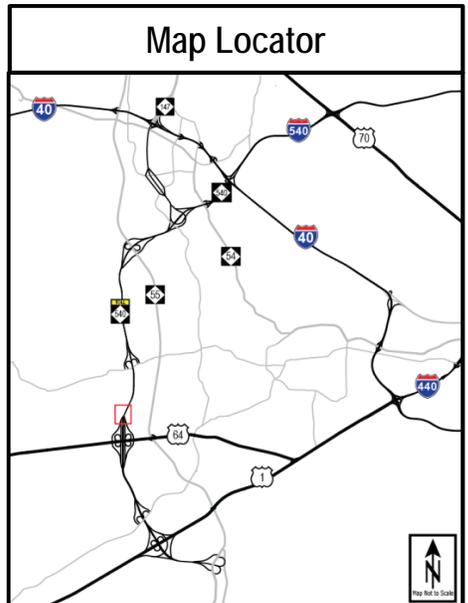
Toll Zone T21
 Location Description:
 NC 540 NB On from US 64
 Segment Description:
 Two-lane Mainline

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

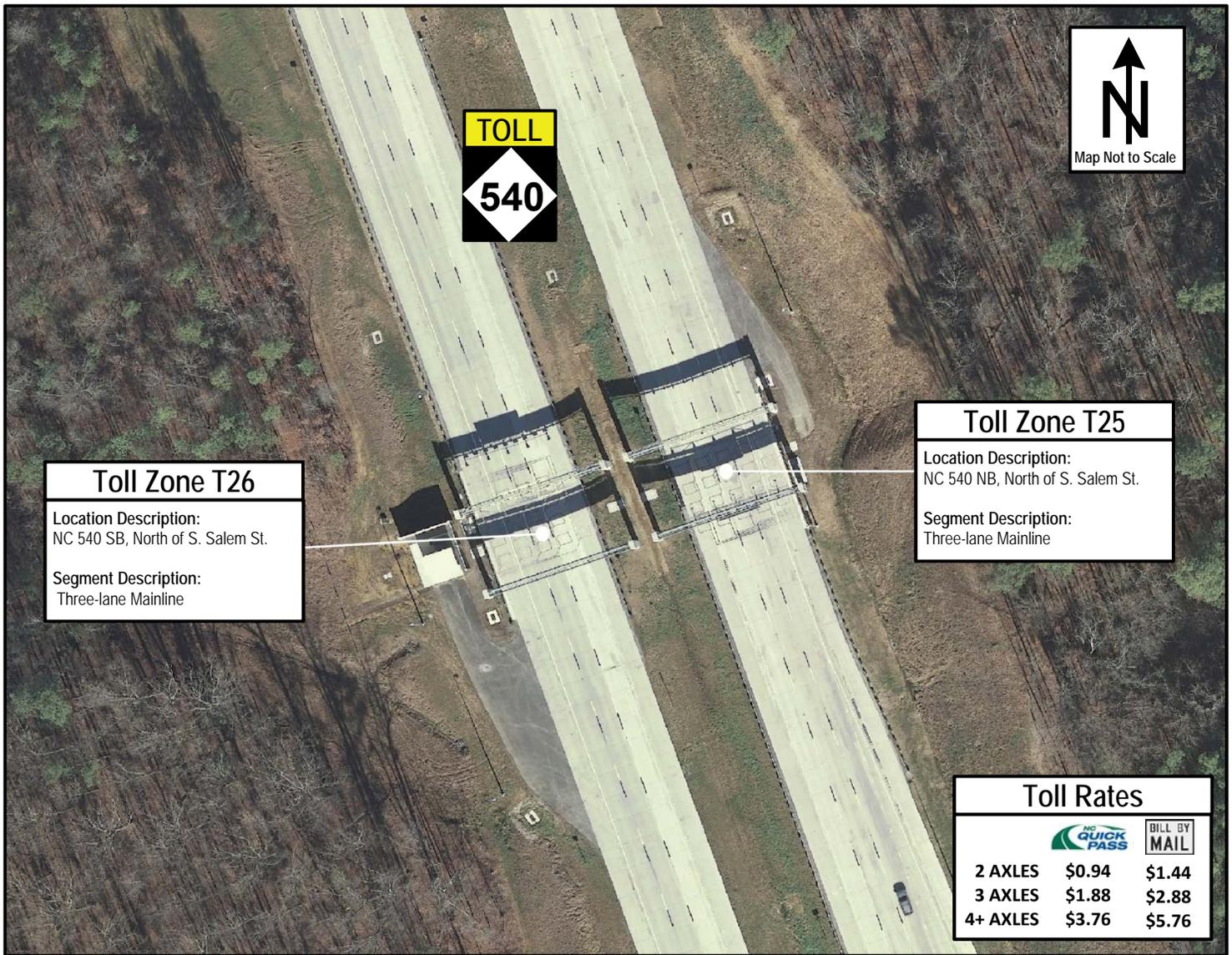
Transactions by Direction		
Month	T21	T22
January	4,680	4,860
February	4,880	5,030
March	5,020	5,250
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

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



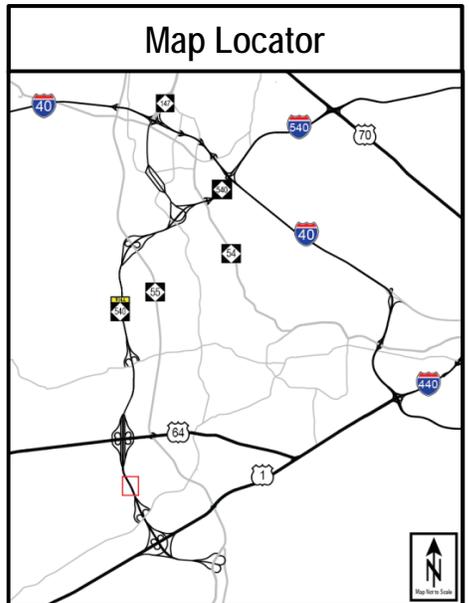
US-64 Ramp Toll Zones
 2016 Average Weekday Toll Transactions

Figure 24



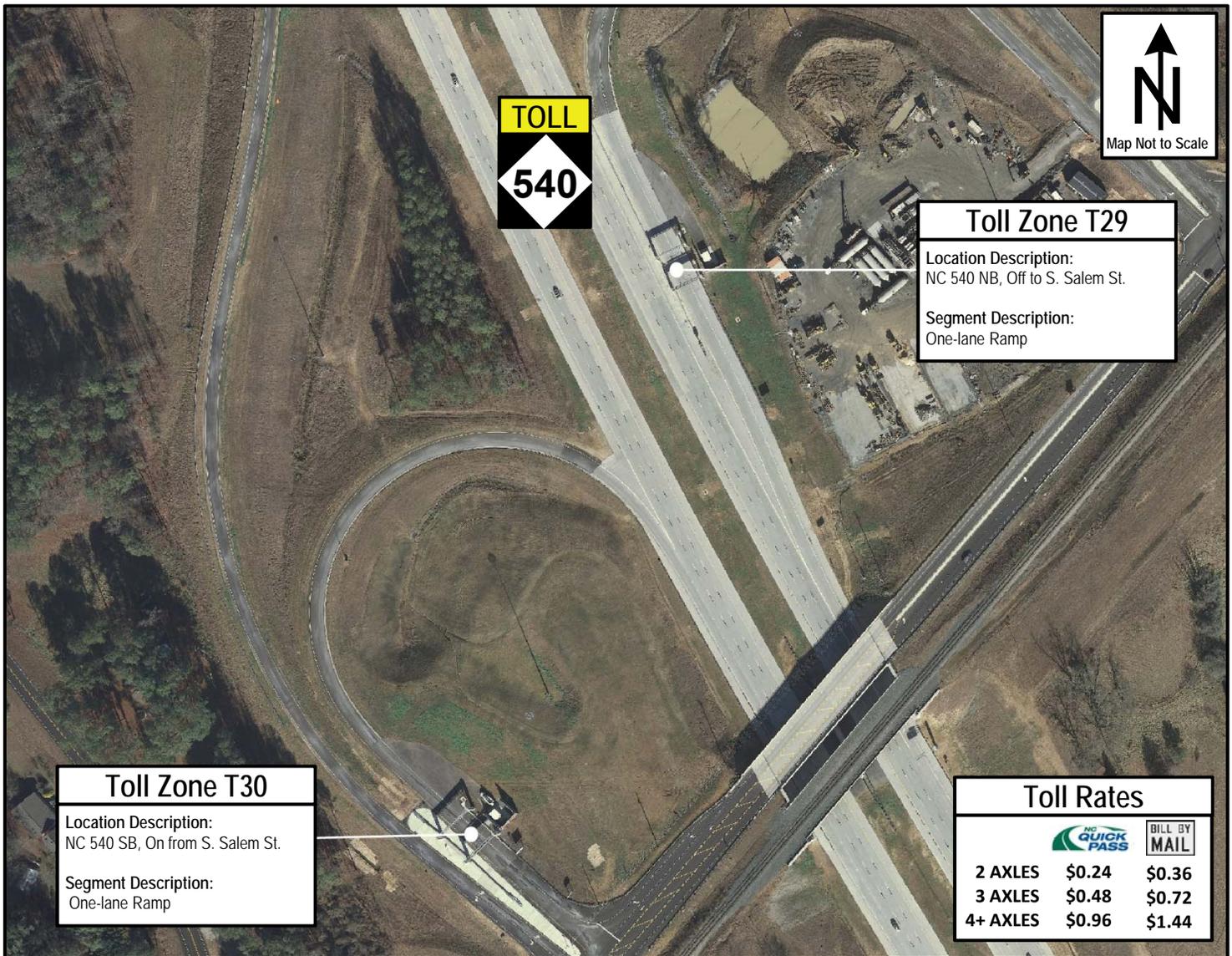
Transactions by Direction		
Month	T25	T26
January	12,080	12,210
February	12,520	12,540
March	13,050	12,960
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage		
Month	T25	T26
January	59%	59%
February	59%	59%
March	58%	58%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



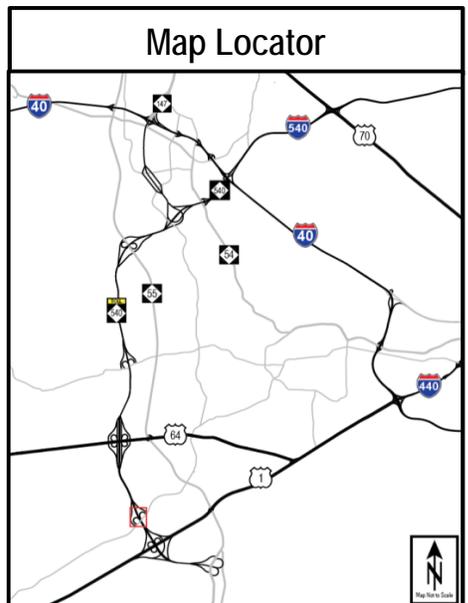
NC-540 Apex Mainline Toll Zones
2016 Average Weekday Toll Transactions

Figure
25



Transactions by Direction		
Month	T29	T30
January	1,280	1,410
February	1,400	1,490
March	1,380	1,490
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

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



South Salem Street Ramp Toll Zones
2016 Average Weekday Toll Transactions

Figure 26



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

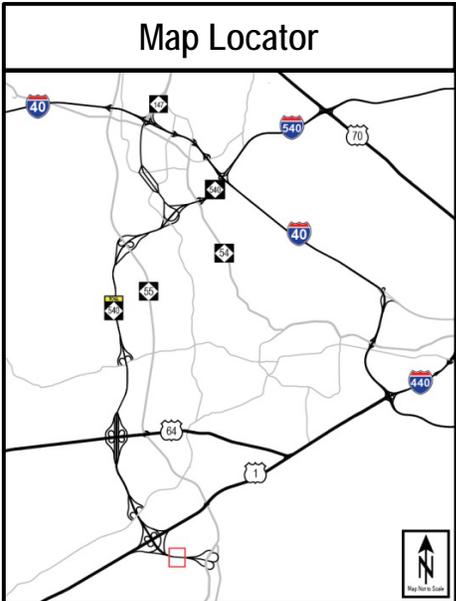


Toll Zone T34
 Location Description:
 NC 540 SB, North of NC 55 Bypass
 Segment Description:
 Two-lane Ramp

Toll Rates		
2 AXLES	\$0.39	\$0.60
3 AXLES	\$0.78	\$1.20
4+ AXLES	\$1.56	\$2.40

Transactions by Direction		
Month	T33	T34
January	8,240	8,170
February	8,530	8,360
March	8,840	8,660
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-

NC Quick Pass Percentage		
Month	T33	T34
January	64%	62%
February	64%	63%
March	62%	61%
April	-	-
May	-	-
June	-	-
July	-	-
August	-	-
September	-	-
October	-	-
November	-	-
December	-	-



NC-540 Holly Springs Mainline Toll Zones
 2016 Average Weekday Toll Transactions

Figure 27

Roadway Safety Statistics

ROADWAY SAFETY STATISTICS

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

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

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

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

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

Table 11 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 2016

Table 11: Safety Statistics, March 2013 - February 2016

Segment	Length	AADT ¹	Total Crashes	Vehicle Exposure (MVMT)	Total Crash Rate	Statewide Crash Rate ²	Critical Crash Rate	Safety Ratio
NC 147 I 40 to NC 540	3.1	10,400	35	35.37	98.94	85.41	87.98	1.12
NC 540 I 40 to NC 55	2.8	25,600	55	78.35	70.20	85.41	87.13	0.81
NC 540 NC 55 to US 64	6.7	18,600	63	136.03	46.31	85.41	86.72	0.53
NC 540 US 64 to NC 55 Bypass	5.9	13,500	40	86.64	46.17	85.41	87.05	0.53
Triangle Expressway	18.4	17,000	193	343.28	56.22	85.41	86.23	0.65

¹ AADT provided from NCDOT 2014 AADT Maps, Wake County

² Statewide Crash Rate for Interstate Facilities Applied

Roadway Operations Statistics

ROADWAY OPERATIONS STATISTICS

Operations statistics are collected by State Highway Patrol (SHP) and Incident Management Assistance Patrol (IMAP) for the NCTA Toll Safety Patrol program. This program provides one Highway Patrol officer and one IMAP responder to the facility during working hours, Monday through Friday. This section also presents response times and traffic information for incidents that occurred during the first quarter of 2016.

The NCTA 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 capture license plate images used for toll collection operations. Operators monitor the roadside technology and toll facilities, and are able to quickly dispatch appropriate 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.

SHP and IMAP personal 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

First Quarter, January – March 2016

Table 12 and Table 13 present State Highway Patrol operating statistics during 2016. “Chargeable Activities” are those SHP activities involving fines. It should be noted that the “Other Violations” category includes chargeable activities such as load and equipment violations, driver’s license violations, vehicle registration violations and littering.

Table 12: SHP Chargeable Activities

Chargeable Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Speed Violations	54	62	76										192
Alcohol Violations	0	0	0										0
Seat Belt Violations	5	4	4										13
Child Restraint Violations	0	0	0										0
Reckless Driving	1	1	1										3
Drug Violations	0	0	0										0
Other Violations	28	78	47										153
Total Charges	88	145	128										361

Table 13: SHP Non-Chargeable Activities

Non-Chargeable Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Warnings	53	40	56										149
Vehicles Towed	0	0	0										0
Crashes Investigated	4	8	5										17
Total	57	48	61										166

The IMAP assists with stranded motorists and incident clearance, thereby maintaining the flow of traffic along the roadway. *Table 14* and *Figure 28* present the monthly breakdown of IMAP assists, by type, for the Triangle Expressway during 2016. The “other” category includes the reporting categories of assist other unit, secured load, called for assistance, directions, and transported motorist.

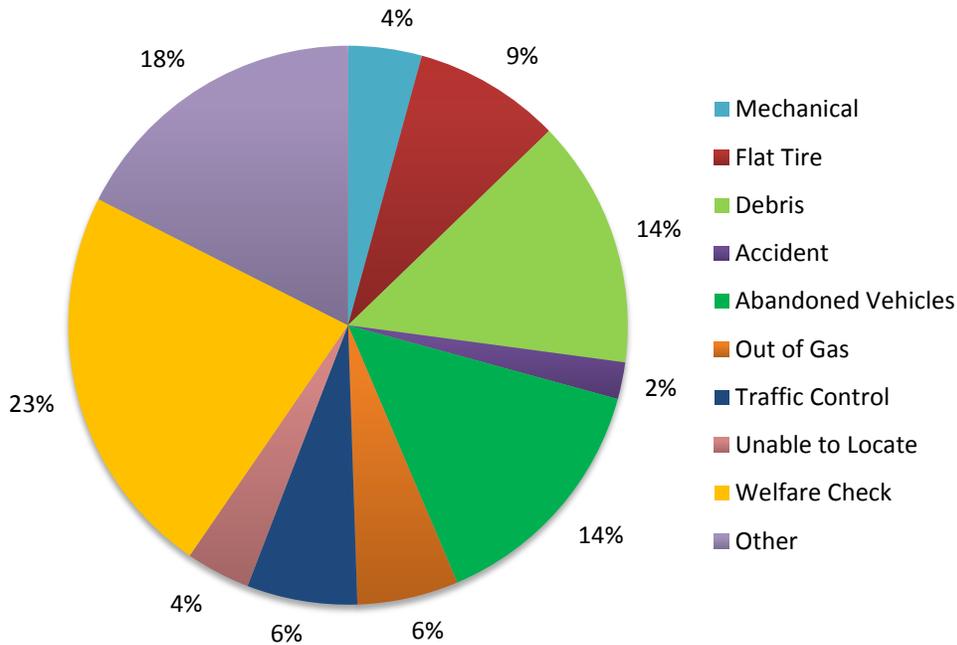
Operations Statistics Report for the Triangle Expressway

First Quarter, January – March 2016

Table 14: IMAP Assistance

Assist Type	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
Mechanical	3	2	3										8
Flat Tire	5	1	10										16
Debris	7	9	11										27
Accident	1	1	2										4
Abandoned Vehicles	12	8	7										27
Out of Gas	2	2	7										11
Traffic Control	1	2	9										12
Unable to Locate	5	2	0										7
Welfare Check	4	17	22										43
Other	13	6	14										33
Total Assist	53	50	85										188

Figure 28: 2016 YTD IMAP Assistance by Type



Operations Statistics Report for the Triangle Expressway

First Quarter, January – March 2016

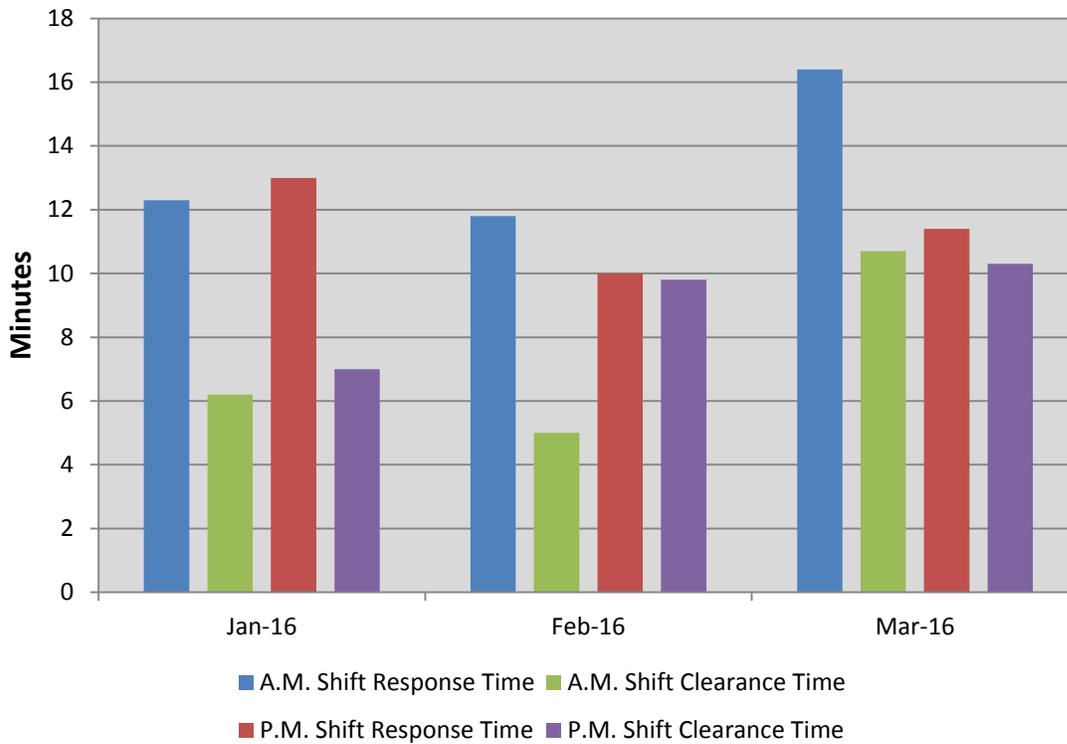
The response and clearance times for all IMAP assists are logged by IMAP and provided to the NCTA. Response time is the time from which a responder receives a call to the time they arrive on the scene. Clearance time is the time it takes the responder to clear the incident and return the roadway to normal operation. The IMAP staff's AM shift occurs from 6AM to 2PM 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 15 and Figure 29 present the average IMAP assistance response and clearance times, in minutes, for the Triangle Expressway.

Table 15: Average IMAP Assistance Response and Clearance Times (in Minutes)

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

Figure 29: Average IMAP Assistance Response and Clearance Times (in Minutes)



Roadway Maintenance Statistics

ROADWAY MAINTENANCE STATISTICS

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

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

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

Assessment Schedule

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

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

Assessment Results

Table 16 presents the 2016 quarterly and annual MRP Assessment rating. It is important to note that the Quarterly Ratings are only representative of the samples inspected during each quarter. Therefore, they are not a statistically valid representation of the assets' conditions; only the annual rating will provide a 95% confidence level in statistical sampling.

Table 16: MRP Assessment Results

Element	Q1 2016 RATING	Q2 2016 RATING	Q3 2016 RATING	Q4 2016 RATING	2016 ANNUAL RATING
Road Surface	98.3	N/A	N/A	N/A	N/A
Unpaved Shoulders and Ditches	97.7	N/A	N/A	N/A	N/A
Drainage	92.6	N/A	N/A	N/A	N/A
Roadside	92.1	N/A	N/A	N/A	N/A
Traffic Control Devices	93.5	N/A	N/A	N/A	N/A
Overall MRP Performance Rating	94.9	N/A	N/A	N/A	N/A

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