



# **NC 150 IMPROVEMENTS**

**NC 16 TO WEST OF US 21/NC 150 INTERCHANGE**

**CATAWBA AND IREDELL COUNTIES**

**STIP PROJECT No. R-2307/I-5717**

**WBS No. 37944.1.1**



## **TRAFFIC FORECAST REPORT**



PREPARED FOR:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS

PREPARED BY:

PATRIOT TRANSPORTATION ENGINEERING, PLLC  
STANTEC CONSULTING SERVICES, INC.



MAY 2015

## TABLE OF CONTENTS

<b>1.</b>	<b>Project Background</b> .....	<b>1</b>
1.1	Project Request Information.....	1
1.2	Forecast History.....	1
1.3	Project Description.....	1
1.4	Area Information.....	1
1.5	Route Information.....	2
1.6	Future Area Roadway Improvements – Fiscal Constraint.....	6
<b>2.</b>	<b>Sources of Information and Data</b> .....	<b>7</b>
2.1	Related Forecasts.....	7
2.2	Historic AADT.....	7
2.3	Field Data Collection.....	7
2.4	Field Investigation.....	12
2.5	Information from Local Planners.....	13
2.6	Other Sources.....	13
<b>3.</b>	<b>Base Year 2015 No-Build Traffic Forecast</b> .....	<b>14</b>
3.1	Methodology.....	14
3.2	Design Factors.....	14
3.2.1	Truck Percentages.....	14
3.2.2	Directional Distribution.....	16
3.2.3	Peak Hour Factor.....	17
3.3	Traffic Forecast Volumes.....	18
<b>4.</b>	<b>Model Data</b> .....	<b>19</b>
<b>5.</b>	<b>Base Year 2015 Build Traffic Forecast</b> .....	<b>20</b>
5.1	Assumptions.....	20
5.2	Methodology.....	20
5.3	Design Factors.....	20
5.4	Traffic Forecast Volumes.....	20
<b>6.</b>	<b>Future Year 2040 No-Build Traffic Forecast</b> .....	<b>22</b>
6.1	Assumptions.....	22
6.2	Methodology.....	22
6.3	Design Factors.....	22
6.4	Traffic Forecast Volumes.....	23
<b>7.</b>	<b>Future Year 2040 Build Traffic Forecast</b> .....	<b>25</b>
7.1	Assumptions.....	25
7.2	Methodology.....	25
7.3	Design Factors.....	25
7.4	Traffic Forecast Volumes.....	25

## LIST OF TABLES

Table 2-1: Collected Traffic Count Locations.....	11
Table C1: 2015 Base Year No-Build Traffic Volumes.....	C-3
Table C2: 2015 Base Year No-Build Design Data – Truck Percentages.....	C-7
Table C3: 2015 Base Year No-Build Design Data – Directional Distribution.....	C-11
Table C4: 2015 Base Year No-Build Design Data – Peak Hour Factor.....	C-15
Table C5: Model Validation.....	C-19
Table C6: 2015 Build Traffic Volumes.....	C-21
Table C7: 2040 No-Build Traffic Volumes.....	C-24
Table C8: 2040 Build Traffic Volumes.....	C-28

## LIST OF FIGURES

Figure 1-1: Project Vicinity Map.....	3
Figure 2-1: NCDOT Historic AADT Locations.....	8

## LIST OF APPENDICES

- Appendix A: Historic AADT Count Data
- Appendix B: Local Representative Questionnaires
- Appendix C: Traffic Forecast Tables

# 1. PROJECT BACKGROUND

Stantec Consulting Services, Inc. (Stantec) and Patriot Transportation Engineering, PLLC (Patriot) have been contracted by the North Carolina Department of Transportation (NCDOT) to develop base and future year traffic forecasts for NCDOT State Transportation Improvement Program (STIP) Project Numbers R-2307 and I-5717; NC 150 Improvements in Catawba and Iredell Counties.

## 1.1 PROJECT REQUEST INFORMATION

The traffic forecast request for this project was requested by Zahid Baloch in the Project Development and Environmental Analysis (PDEA) branch of NCDOT in support of an Environmental Assessment (EA) for the project. The scope of work for the traffic forecast, prepared by Stantec, was finalized in March 2015.

For the purposes of the environmental document, it was decided through project scoping with NCDOT that Base Year scenarios would use 2015 and Future Year scenarios would use 2040. The 2015 Base Year traffic forecast includes both a No-Build and Build scenario. The 2040 Future Year traffic forecast includes Build and No-Build scenarios for a single widening alternative.

## 1.2 FORECAST HISTORY

Two traffic forecasts have been developed for the proposed project. The following is a brief summary of the previous forecasts:

- April 1994, Prepared by NCDOT – included 1993 and 2020 forecasts.
- July 2013, Prepared by Stantec – included 2013 No-Build and 2035 No-Build and Build forecasts for the NC 150 corridor from NC 16 to slightly east of the Williamson Road/Bluefield Road intersection.

The traffic forecast study area was modified in the fall of 2014 due to the addition of the I-5717 project to upgrade the I-77/NC 150 interchange.

## 1.3 PROJECT DESCRIPTION

NCDOT proposes to improve approximately 15 miles of NC 150 from NC 16 in Catawba County to just west of the NC 150/US 21 interchange in Mooresville, Iredell County. Improvements to the I-77 interchange are now identified in the STIP as Project No. I-5717; therefore, NCDOT will prepare a single environmental document for both R-2307 and I-5717. The purpose and need of these projects is to improve the capacity and reduce the congestion along NC 150 from NC 16 to just west of the NC 150/US 21 interchange. The project involves adding lanes, modifying the existing I-77 interchange, replacing several bridges, implementing superstreet designs, and other roadway design improvements. Detailed studies of these proposed improvements will be discussed in the EA that is under development.

## 1.4 AREA INFORMATION

Catawba County has an estimated population of 154,100 citizens based on 2010 census data and a 2013 population of 155,400 according to the North Carolina Office of State Budget and Management. The county covers approximately 405 square miles and consists of several cities and towns including; Brookford, Catawba, Claremont, Conover, Hickory, Long View, Maiden, and Newton. Newton is the county seat of Catawba County. Catawba County has a traditional manufacturing employment base, comprising of textile, furniture, and telecommunications. Significant effort has been put into developing new sectors within manufacturing such as biomedical, pharmaceutical, and technology.

There has also been a strong initiative to identify diverse non-manufacturing sectors such as retail and retirement development.

NC 150 serves as a local route for area residents as well as serving regional traffic as the only east-west facility connecting Mooresville with Catawba County. The section of the NC 150 widening project in Catawba County begins at the NC 16 Interchange and ends at the Catawba / Iredell County Line.

Iredell County has an estimated population of 161,200 citizens based on 2010 census data and a 2013 population of approximately 165,000 according to the North Carolina Office of State Budget and Management. The county covers approximately 575 square miles and consists of several cities and towns including; Harmony, Love Valley, Mooresville, Statesville, Troutman, and Union Grove. Statesville is the county seat of Iredell County. The section of the NC 150 widening project in Iredell County begins at the Catawba / Iredell County Line and ends just west of the NC 150/US 21 interchange.

The project location map for the R-2307 forecast is shown on Figure 1-1: Project Vicinity Map.

## 1.5 ROUTE INFORMATION

The following roadways are designated on the Greater Hickory MPO Thoroughfare Plan or Draft CRTPO Comprehensive Transportation Plan maps:

The **NC 150** corridor is designated as an east-west Boulevard which serves the inter-county travel demands between Cleveland, Lincoln, Catawba, Iredell and Rowan counties. The project study corridor between Catawba and Iredell Counties serves residential, recreational, and commercial communities throughout the Lake Norman area. The speed limit along NC 150 is 45 miles per hour.

**NC 16** and **NC 16 Business**, which are located on the western end of the project in Catawba County, are designated as a north-south Major Thoroughfares. The speed limit along NC 16 is 45 miles per hour.

**East Maiden Road (SR 1855)** is designated as a Minor Thoroughfare and connects NC 150 to locations further west, including Maiden and provides access to US 321. The speed limit along East Maiden Road is 45 miles per hour.

**Little Mountain Road (SR 1815)** is designated as a Minor Thoroughfare that intersects with NC 150 and continues northwest to intersect with Buffalo Shoals Road and ultimately terminating at the intersection of Balls Creek Road. The speed limit along Little Mountain Road is 35 miles per hour.

**Slanting Bridge Road (SR 1844)** is designated as a Minor Thoroughfare which intersects NC 150 and continues south to the Catawba County line. Slanting Bridge Road intersects with Sherrills Ford Road north of NC 150. The speed limit along Slanting Bridge Road is 35 miles per hour.

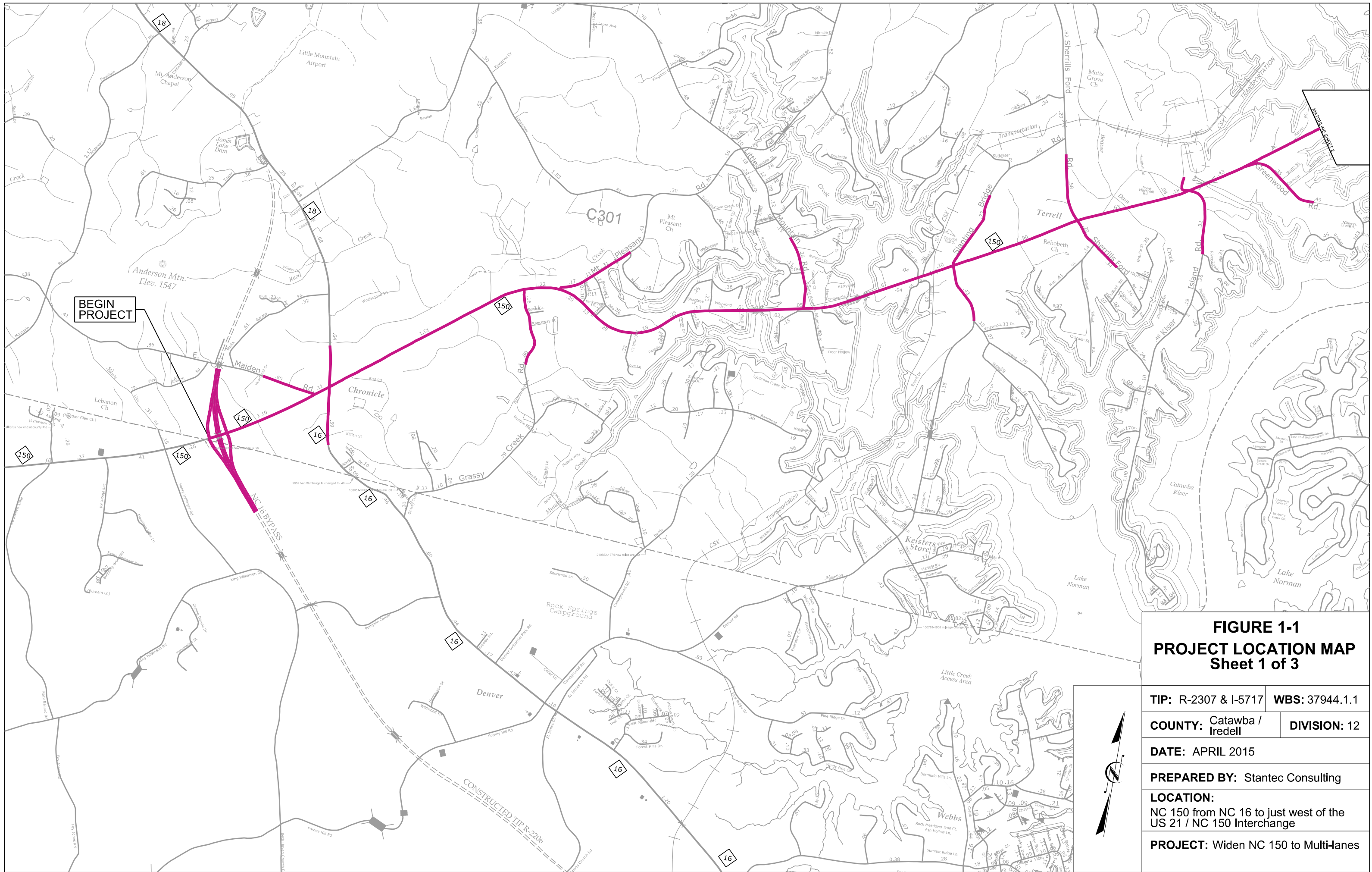
**Sherrills Ford Road (SR 1848)** is designated as a Minor Thoroughfare that intersects with NC 150 and continues northwest to intersect with NC 10. The speed limit along Sherrills Ford Road is 35 miles per hour.

**Perth Road (SR 1303)** is designated as a Boulevard that intersects with NC 150 and continues northeast past the Lake Norman Airport to intersect with North Main Street (NC 115 / US 21). Perth Road changes to Wagner Street at the intersection of Massey Street. The speed limit along Perth Road is 35 miles per hour.

**Morrison Plantation Parkway** is designated as a Boulevard and connects NC 150 and Brawley School Road. The speed limit along Morrison Plantation Parkway is 35 mph.

**Williamson Road (SR 1109)** and **Bluefield Road (SR 1467)** are designated as Boulevards with Williamson Road running from I-77 at Exit 31 to NC 150 and Bluefield Road continuing to the north to Cornelius Road.

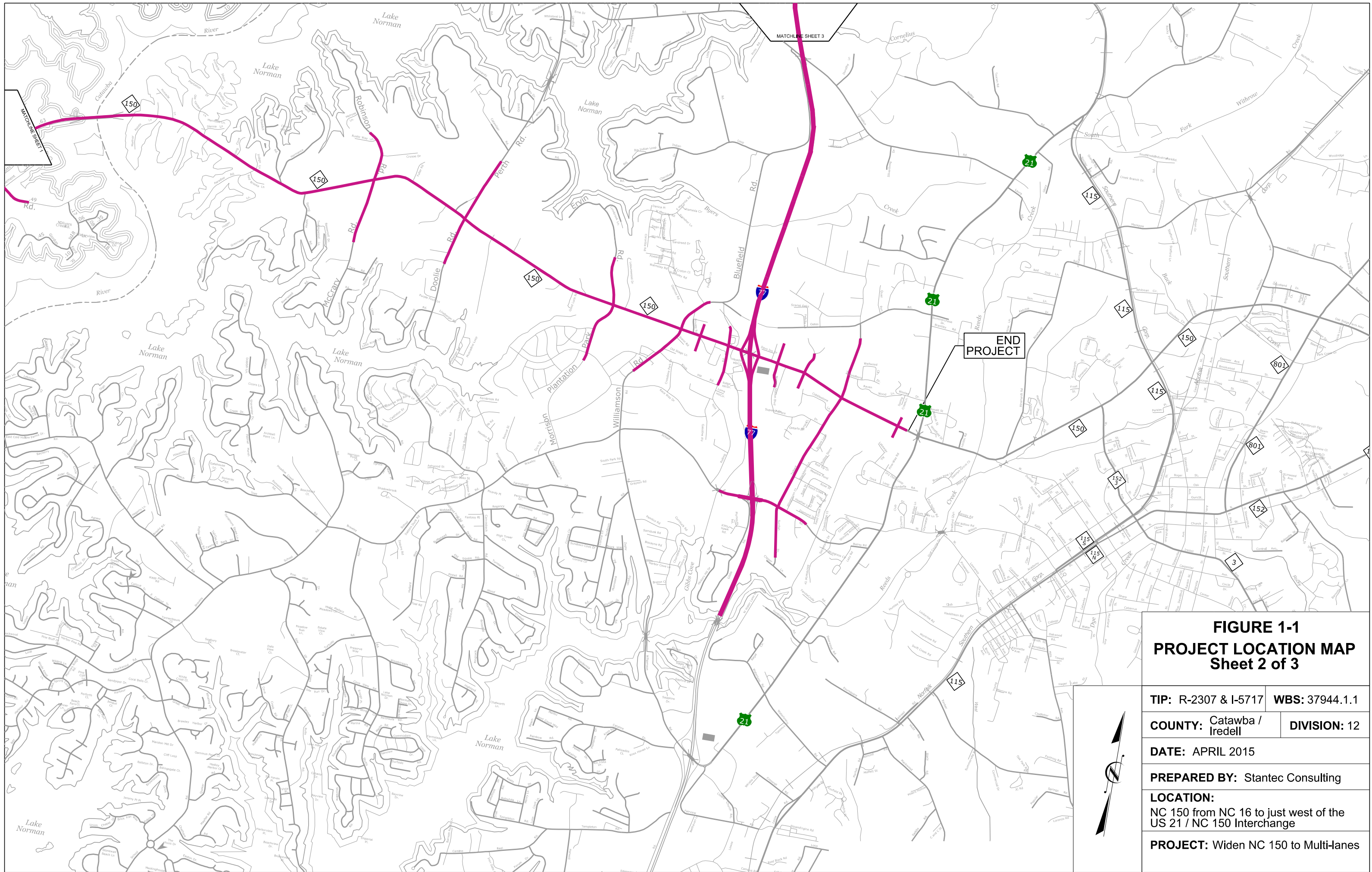




**FIGURE 1-1**  
**PROJECT LOCATION MAP**  
 Sheet 1 of 3

<b>TIP:</b> R-2307 & I-5717	<b>WBS:</b> 37944.1.1
<b>COUNTY:</b> Catawba / Iredell	<b>DIVISION:</b> 12
<b>DATE:</b> APRIL 2015	
<b>PREPARED BY:</b> Stantec Consulting	
<b>LOCATION:</b> NC 150 from NC 16 to just west of the US 21 / NC 150 Interchange	
<b>PROJECT:</b> Widen NC 150 to Multi-lanes	





**FIGURE 1-1**  
**PROJECT LOCATION MAP**  
 Sheet 2 of 3

**TIP:** R-2307 & I-5717    **WBS:** 37944.1.1

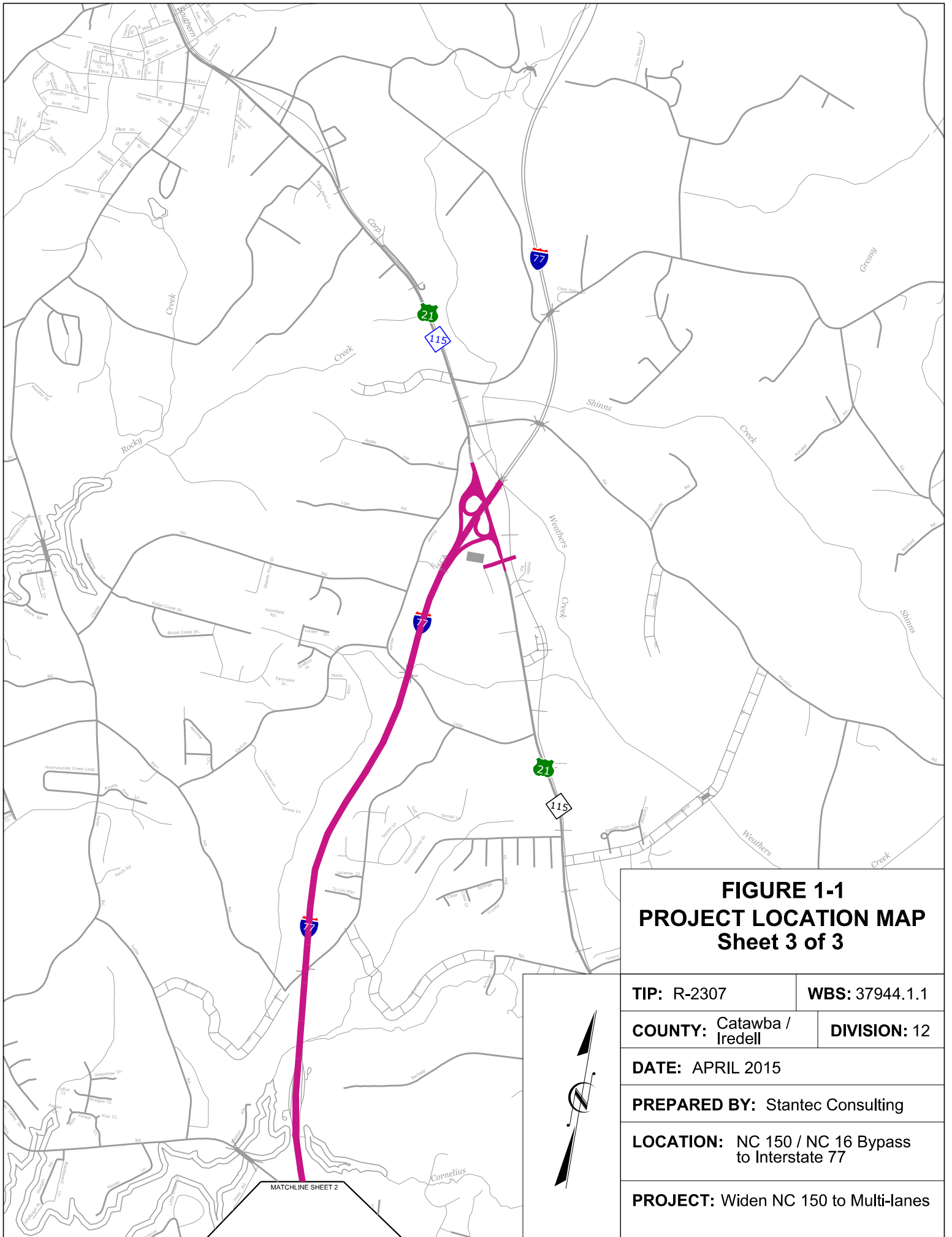
**COUNTY:** Catawba / Iredell    **DIVISION:** 12

**DATE:** APRIL 2015

**PREPARED BY:** Stantec Consulting

**LOCATION:**  
 NC 150 from NC 16 to just west of the  
 US 21 / NC 150 Interchange

**PROJECT:** Widen NC 150 to Multi-lanes



**FIGURE 1-1  
PROJECT LOCATION MAP  
Sheet 3 of 3**

<b>TIP:</b> R-2307	<b>WBS:</b> 37944.1.1
<b>COUNTY:</b> Catawba / Iredell	<b>DIVISION:</b> 12
<b>DATE:</b> APRIL 2015	
<b>PREPARED BY:</b> Stantec Consulting	
<b>LOCATION:</b> NC 150 / NC 16 Bypass to Interstate 77	
<b>PROJECT:</b> Widen NC 150 to Multi-lanes	

MATCHLINE SHEET 2



**Interstate 77** is located near the eastern end of the project in Iredell County and is designated as a Freeway. Interstate 77 connects to Interstate 40 to the north and Interstate 485 to the south. The speed limit along I-77 is 65 miles per hour.

**Talbert Road (SR 1116)** is located on the eastern end of the project in Iredell County and is designated as a Minor Thoroughfare. The speed limit along Talbert Road is 35 miles per hour

**Brawley School Road (SR 1100)** is designated as a Boulevard, is located approximately 1 mile south of NC 150 and runs from the tip of a peninsula on Lake Norman east to US 21 and includes an interchange on I-77 that opened in 2013. The speed limit along Brawley School Road is 45 miles per hour.

**US 21/NC 115** are overlapping routes that cross I-77 one interchange north of NC 150 at Exit 42. US 21 and NC 115 are both designated as Boulevards. NC 115 runs from North Charlotte through Mecklenburg, Iredell and Wilkes counties with its northern terminus at its intersection with NC 18 and NC 268 in North Wilkesboro. US 21 is a north-south highway that runs 394 miles from Hunting Island State Park, South Carolina to Wytheville, Virginia.

## 1.6 FUTURE AREA ROADWAY IMPROVEMENTS – FISCAL CONSTRAINT

The project is located within the boundaries of the Charlotte Regional Transportation Planning Organization (CRTPO) and the Greater Hickory Metropolitan Planning Organization; therefore the travel demand model and traffic forecasts are fiscally constrained to match the assumptions of the corresponding Metropolitan Transportation Plan (MTP) or Long Range Transportation Plan (LRTP).

The *Greater Hickory MPO 2040 Long Range Transportation Plan* includes a discussion of the proposed project, including the following:

NC 150 is a major east-west route between Shelby, Lincolnton, and Mooresville (I-77). A small portion of NC 150 goes through the southeast corner of Catawba County. NC 150 is recommended to be widened from 2-lanes to multi-lanes from NC 16 in Catawba County to I-77 (R-2307). Currently, it is unfunded in the STIP.

The following projects that directly affect the proposed project are assumed to be constructed prior to 2040:

- TIP Project R-3100A/B - NC 16 widening to a mixture of 4-lane divided or 5-lane boulevards from the Newton-Conover East Loop to SR 1895.

The CRTPO 2040 *Metropolitan Transportation Plan* includes portions of the proposed project in the fiscally constrained projects list including the NC 150 Widening from Wadell Road to Perth Road (Project ID 26), the NC 150 Widening from Perth Road to Ervin Road (Project ID 43), the NC 150 Widening from Ervin Road to I-77 (Project ID 44), the NC 150 Widening from I-77 to US 21 (Project ID 55) and the I-77/NC 150 interchange conversion (Project ID 47). Additionally, the following projects that directly affect the proposed project are included in the 2040 MTP and are assumed to be constructed prior to 2040:

- NC 150/Talbert Road Intersection Improvements (Project ID 305)
- I-77 Improvements West Catawba Avenue to NC 150 (Project ID 280) – Add 1 HOT Lane in each direction
- Midnight Lane/Oates Road (Project ID 50) – New 3-lane roadway including grade separation over I-77
- Williamson Road Widening (Project ID 51) – Widen from 3-lanes to 4-lanes with median, sidewalks and bike lanes
- I-77 Improvements – West Catawba Avenue to NC 150 (Project ID 72) – Widen from 4 lanes to 6 lanes

## 2. SOURCES OF INFORMATION AND DATA

The following sections describe the various information and data sources used in the development of the traffic forecast.

### 2.1 RELATED FORECASTS

Past traffic forecasts in the vicinity of the proposed project were utilized as a tool when preparing the traffic forecasts. Two past traffic forecasts and one past traffic estimate that were less than ten years old and included some study area roadways were used in the process. They are:

- R-2206, NC 16 Widening from NC 16 Business to NC 16 Newton Bypass, December 2008
- R-3833B, Brawley School Road Widening and new Interchange on I-77 with Gibbs Road Realignment, January 2006
- I-3311C, I-5405, & I-4750AA, I-77 HOT Lanes from I-277 to NC 150, June 2013

All of these forecasts included roadway facilities that play a major role in the development of the R-2307/I-5717 forecast. They were a valuable asset in determining design data and providing reasonableness checks for the traffic volumes developed in the traffic forecast for the proposed project.

### 2.2 HISTORIC AADT

Existing traffic count data for study area roadways from 1993 to 2013 was provided by the NCDOT Traffic Survey Group (TSG). Data sources included:

- NCDOT TSG Average Annual Daily Traffic (AADT) history from 1993 to 2013

The locations of the historic traffic data counts are shown in Figure 2-1 . The complete 20-year AADT history for each location is found in Appendix A.

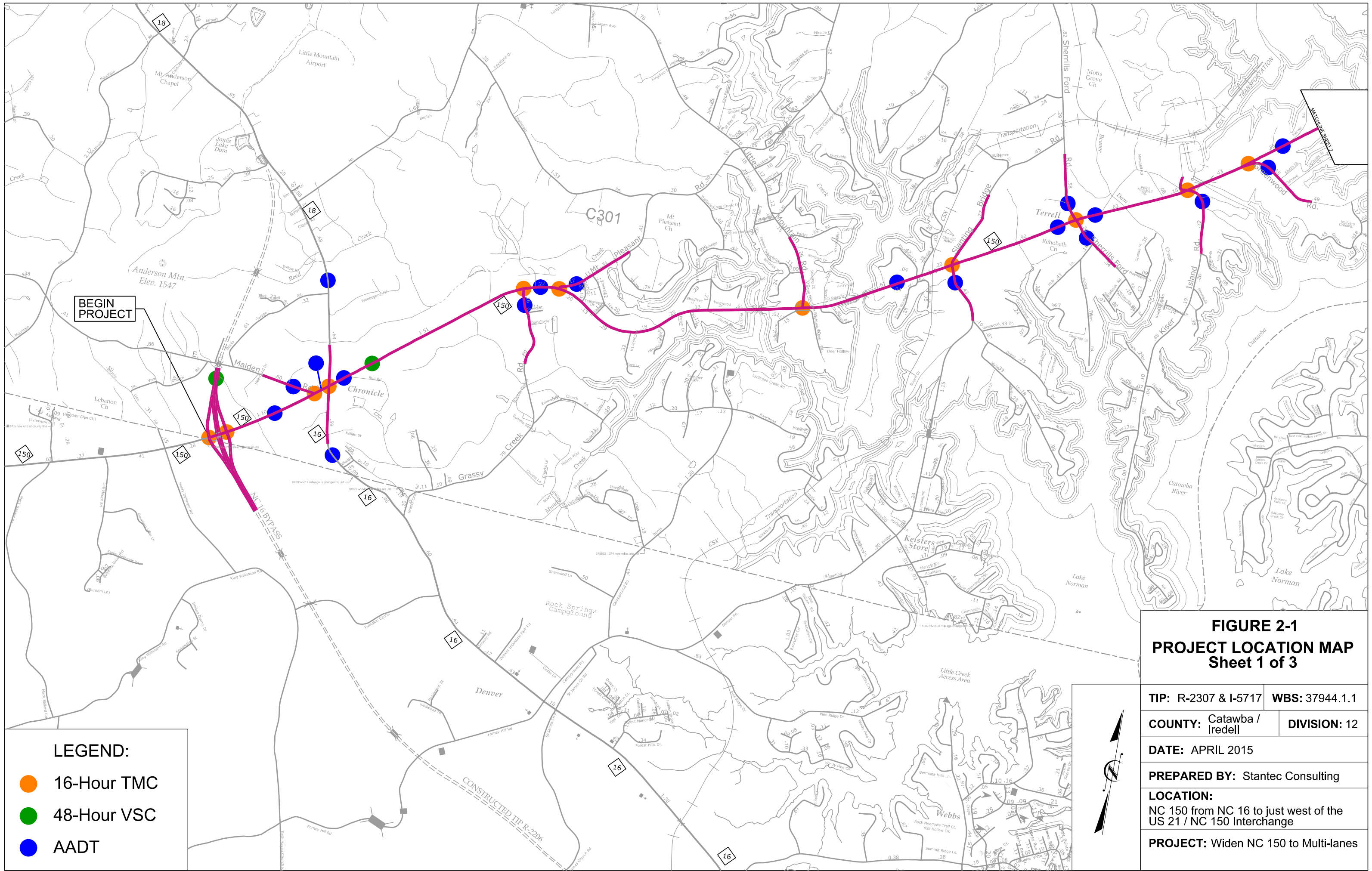
### 2.3 FIELD DATA COLLECTION

During the scoping process, existing project specific counts and those included in the NCDOT TSG count database were reviewed. A majority of the counts utilized for the previous forecast were only for the AM and PM peak periods and were determined to not be adequate for the development of this forecast. Two 13-hour turning movement counts (from August 2013 and October 2013) and nine 48-hour Automated Traffic Recorder (ATR) counts (from May 2014) were identified and determined to be adequate for purposes of developing the traffic forecast.

New project specific counts were taken in two separate requests. The first set was requested in December 2014 through the NCDOT TSG on-call contract and included nine 16-hour turning movement counts and five 48-hour classification counts. Once it was determined that the peak period counts collected for the previous forecast were not adequate a second set of counts was collected in March 2015 by Quality Counts, as a subconsultant to Stantec. The second set of counts included sixteen 16-hour turning movement counts and two 48-hour classification counts.

The traffic count locations fall under two separate TSG ATR classifications, as follows:

- ATR Group 1 (The most dominant group in the State. Mostly rural in nature and is predominantly used for count locations on nonurban primary routes and all rural and most urban secondary roads.). This ATR Group was used for all non-Interstate roadways



BEGIN PROJECT

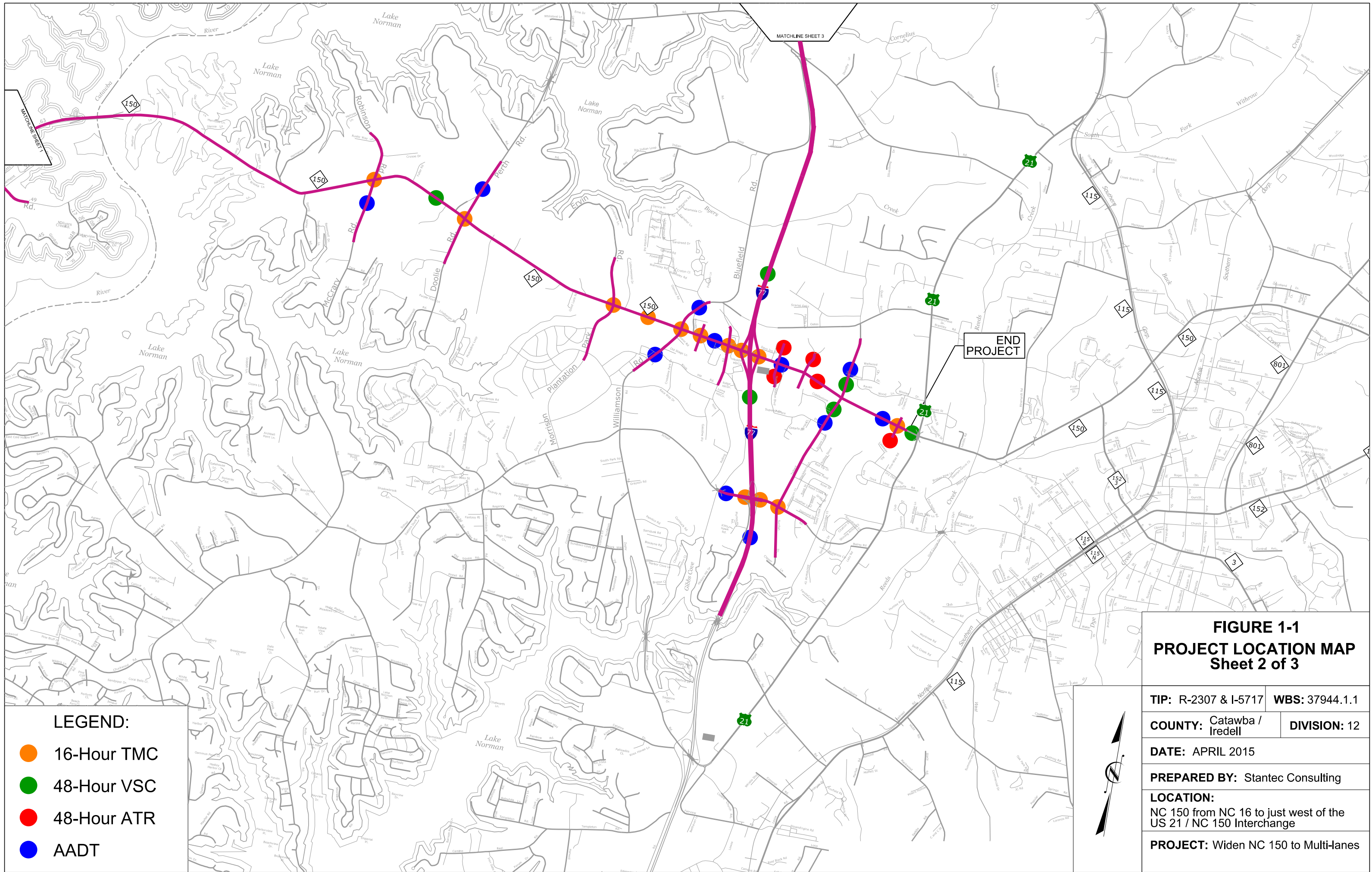
**LEGEND:**

- 16-Hour TMC
- 48-Hour VSC
- AADT

**FIGURE 2-1**  
**PROJECT LOCATION MAP**  
 Sheet 1 of 3

<b>TIP:</b> R-2307 & I-5717	<b>WBS:</b> 37944.1.1
<b>COUNTY:</b> Catawba / Iredell	<b>DIVISION:</b> 12
<b>DATE:</b> APRIL 2015	
<b>PREPARED BY:</b> Stantec Consulting	
<b>LOCATION:</b> NC 150 from NC 16 to just west of the US 21 / NC 150 Interchange	
<b>PROJECT:</b> Widen NC 150 to Multi-lanes	





**LEGEND:**

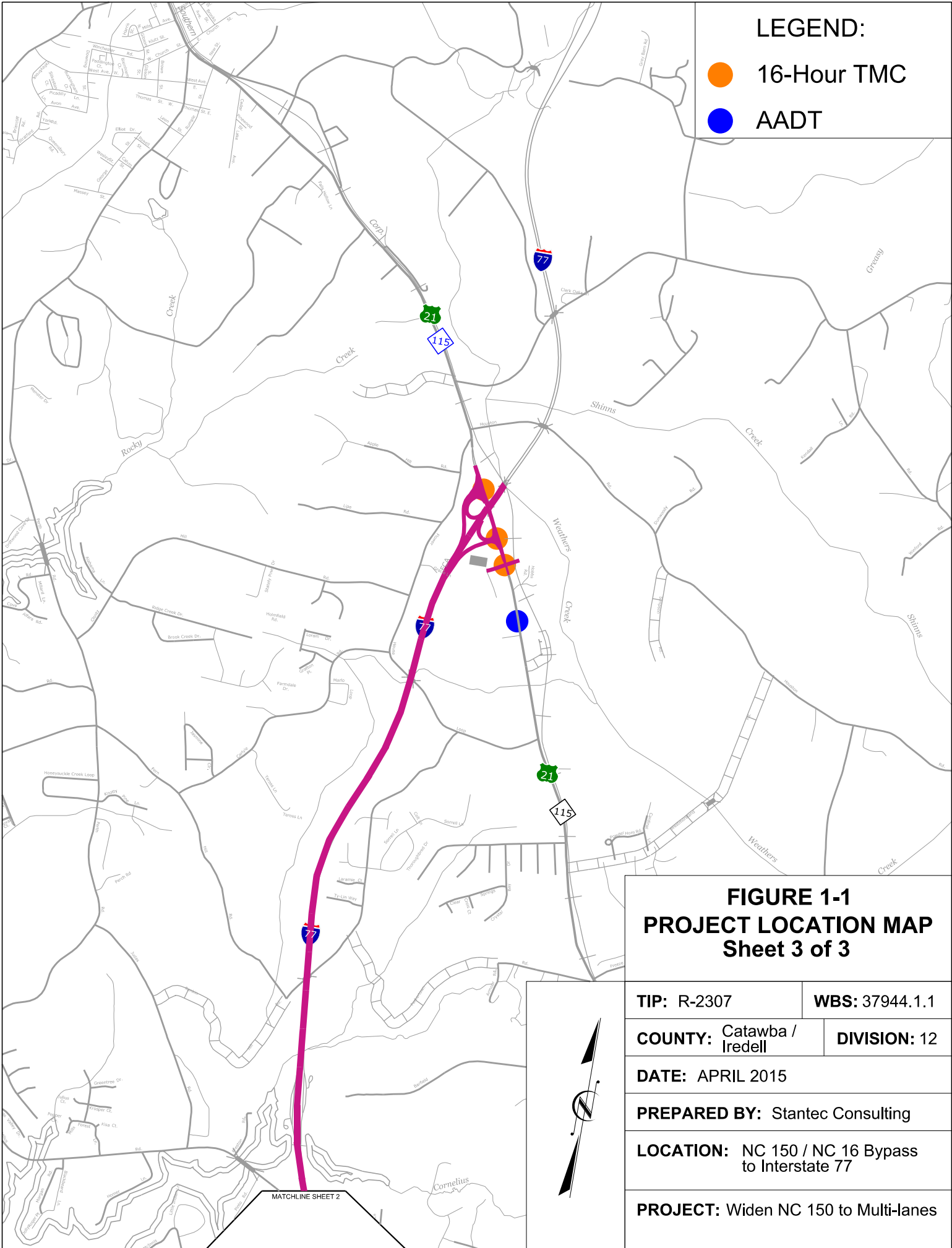
- 16-Hour TMC
- 48-Hour VSC
- 48-Hour ATR
- AADT

**FIGURE 1-1  
PROJECT LOCATION MAP  
Sheet 2 of 3**

<b>TIP:</b> R-2307 & I-5717	<b>WBS:</b> 37944.1.1
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- ATR Group 11 (Applies to urban interstate and some rural locations strongly influenced by nearby large urban areas.). This ATR Group was utilized for all counts taken along the Interstate roadways.

For the counts collected in 2013 and 2014, the results were adjusted to 2015 based on factors for each roadway. Traffic counts taken in 2013 for the AM and PM peak periods were compared to the 2015 counts and it was determined that a growth rate of 1.25 percent per year would be applied to the counts taken in August 2013, October 2013 and May 2014. Counts taken in December 2014 were not factored as any growth from then until March 2015 would likely be negligible. The traffic count locations are listed in Table 2-1 and are displayed in Figure 2-1.

The classification counts were converted to 24-Hour volumes by dividing the 48-Hour counts by two and then applying the correct seasonal adjustment factors. The turning movement counts (TMCs) were converted to 24-Hour volumes by determining the percent of trips that occurred during those 13 or 16-Hour periods from the nearest available 48-Hour counts. For example, if a 48-Hour count (or for simplicity 24-Hour count) resulted in 20,000 vehicles counted, with 18,000 occurring between 6AM and 10PM, 90% of the daily count occurs during the 16-Hour period. The 13 or 16-Hour count would then be divided by 0.9 (90 percent) to get the extrapolated 24 Hour volume. For each of the 13 and 16-Hour TMCs the most applicable adjacent classification count was used in determining the AADT.

**Table 2-1: Collected Traffic Count Locations**

Location	Count Type	Date(s)	County	ATR Group	Seasonal Adjustment Factor
NC 150 at NC 16 SB Ramp Terminal	16-hour TMC	3/19/2015	Catawba	1	0.99
NC 150 at NC 16 NB Ramp Terminal	16-hour TMC	3/19/2015	Catawba	1	0.99
NC 150 at E. Maiden Road	16-hour TMC	3/17/15	Catawba	1	1.05
NC 150 at NC 16 Business	16-hour TMC	3/17/15	Catawba	1	1.05
NC 150 at Grassy Creek Road	16-hour TMC	3/17/15	Catawba	1	1.05
NC 150 at Mt. Pleasant Road	16-hour TMC	3/17/15	Catawba	1	1.05
NC 150 at Little Mountain Road	16-hour TMC	3/17/15	Catawba	1	1.05
NC 150 at Slanting Bridge Road	16-hour TMC	3/17/15	Catawba	1	1.05
NC 150 at Sherrills Ford Road	16-hour TMC	3/17/15	Catawba	1	1.05
NC 150 at Kiser Island Road/Marshall Steam Station	16-hour TMC	3/17/15	Catawba	1	1.05
NC 150 at Greenwood Road	16-hour TMC	3/17/15	Catawba	1	1.05
NC 150 at McCrary Road/Robinson Road	16-hour TMC	3/17/15	Iredell	1	1.05
NC 150 at Doolie Rd/Perth Rd	16-hour TMC	12/11/14&3/16/15	Iredell	1	0.98/1.04
NC 150 at Morrison Plantation Parkway/Ervin Road	16-hour TMC	3/17/15	Iredell	1	1.05
NC 150 at Mooresville Crossing/Target Entrance	16-hour TMC	3/17/15	Iredell	1	1.05
NC 150 at Williamson Rd/Bluefield Rd	13-hour TMC	10/15/13	Iredell	1	0.99
NC 150 at Lowes/Food Lion Access	16-hour TMC	3/17/15	Iredell	1	1.05
NC 150 at Rolling Hills Road/Regency Center Drive	16-hour TMC	3/17/15	Iredell	1	1.05
NC 150 at I-77 NB Ramp Terminal	16-hour TMC	12/15/14&12/16/14	Iredell	1	0.93/0.96
NC 150 at I-77 SB Ramp Terminal	16-hour TMC	12/17/14&12/18/14	Iredell	1	1.00/0.98
NC 150 at Macleod Drive	13-hour TMC	8/1/13	Iredell	1	0.93
SR 1100 at I-77 SB Ramp Terminal	16-hour TMC	12/9/14&3/16/15	Iredell	1	0.96/1.04
SR 1100 at I-77 NB Ramp Terminal	16-hour TMC	12/9/14&3/16/15	Iredell	1	0.96/1.04
SR 1100 at Talbert Road	16-hour TMC	12/10/14&3/16/15	Iredell	1	0.96/1.04
US 21 at I-77 SB Ramp Terminal	16-hour TMC	12/11/14&3/16/15	Iredell	1	0.98/1.04
US 21 at I-77 NB Ramp Terminal	16-hour TMC	12/10/14&3/16/15	Iredell	1	1.00/1.04
US 21 at Lexus Dr./Garden Center Ave	16-hour TMC	12/10/14&3/16/15	Iredell	1	1.00/1.04
NC 16 north of NC 150	48-hour VSC	3/17/15-3/18/15	Catawba	1	1.05/1.05

Location	Count Type	Date(s)	County	ATR Group	Seasonal Adjustment Factor
NC 150 east of NC 16 Business	48-hour VSC	3/17/15-3/18/15	Catawba	1	1.05/1.05
NC 150 between Fuller Rd & Perth Rd	48-hour VSC	12/8/14-12/9/15	Iredell	1	0.93/0.96
I-77 SB between Exits 35 and 36	48-hour VSC	12/8/14-12/9/14	Iredell	11	1.06/1.01
I-77 NB between Exits 35 and 36	48-hour VSC	12/8/14-12/9/14	Iredell	11	1.06/1.01
I-77 SB between Exits 36 and 42	48-hour VSC	12/8/14-12/9/14	Iredell	11	1.06/1.01
I-77 NB between Exits 36 and 42	48-hour VSC	12/8/14-12/9/14	Iredell	11	1.06/1.01
NC 150 east of I-77	48-hour VSC	5/20/14-5/21/14	Iredell	1	0.97/0.95
Norman Station Blvd south of NC 150	48-hour ATR	5/20/14-5/21/14	Iredell	1	0.97/0.95
Norman Station Blvd north of NC 150	48-hour ATR	5/20/14-5/21/14	Iredell	1	0.97/0.95
Corporate Center Drive north of NC 150	48-hour ATR	5/20/14-5/21/14	Iredell	1	0.97/0.95
NC 150 east of Corporate Center Drive	48-hour ATR	5/20/14-5/21/14	Iredell	1	0.97/0.95
Talbert Road south of NC 150	48-hour VSC	5/20/14-5/21/14	Iredell	1	0.97/0.95
Talbert Road north of NC 150	48-hour VSC	5/20/14-5/21/14	Iredell	1	0.97/0.95
Macleod Drive south of NC 150	48-hour ATR	5/20/14-5/21/14	Iredell	1	0.97/0.95
NC 150 east of Macleod Drive	48-hour VSC	5/20/14-5/21/14	Iredell	1	0.97/0.95

Note: TMC = turning movement count; VSC = volumes, speed, classification count; ATR = automated traffic recorder (volume only)

## 2.4 FIELD INVESTIGATION

An orientation field trip was taken as part of the traffic forecast initiation process. The field trip was taken on December 16, 2014 during the PM Peak period and December 18, 2014 during the AM peak period and mid-day timeframe. The following observations were noted:

- No ongoing or recently completed large scale development was observed along the corridor; however, there were numerous for sale and for lease signs along the corridor at undeveloped or underdeveloped parcels. There was a very large concentration of available land for development between Morrison Plantation Parkway and the Iredell County Line where NC 150 is currently a two-lane roadway.
- The corridor was very congested in and around the I-77 interchange with large commercial developments lining the corridor. Individual cycle failures were prevalent as it took several cycles to go through some signalized intersections during peak periods.
- The western portion of the corridor has very high peak period volumes with queueing being common at several intersections during peak periods. Traffic flow along the two-lane sections was predominantly eastbound during the AM peak and westbound during the PM peak.
- Construction was observed on the NC 150 bridges over Lake Norman. The bridge maintenance caused reduced speeds within the work zone, but no lane closures were observed.
- The study area has a large recreational usage due to proximity to Lake Norman. The field visit occurred during the off season for these uses; however, the traffic patterns and peak flow patterns indicated that there was a substantial year round population and that the recreational uses may be ancillary along the corridor, especially during peak periods.

## 2.5 INFORMATION FROM LOCAL PLANNERS

Questionnaires were completed by or discussed with the following individuals to assist in understanding the project and traffic forecast study area:

- John Marshall, MTCC Chair, Greater Hickory Metropolitan Planning Organization
- Matthew Todd, Planning Division Manager, Iredell County
- Neil Burke, Senior Principal Planner, Charlotte Regional Transportation Planning Organization
- Kelsie Anderson, Transportation Engineer, Town of Mooresville
- Daniel Sellers, Greater Hickory MPO Coordinator, NCDOT TPB
- David Keilson, Division Planning Engineer, NCDOT Division 12
- John Cook, District 2 Supervisor, NCDOT Division 12
- Jacky Eubanks, Catawba County
- Anil Panicker, CRTPO Coordinator, NCDOT TPB

Detailed information from the questionnaires is included in Appendix B.

## 2.6 OTHER SOURCES

Data sources used that are not listed in Sections 2.1 through 2.5 include:

Charlotte Regional Transportation Planning Organization. *2040 Metropolitan Transportation Plan*. Adopted April 16, 2014. Available: <http://www.crtpo.org/PDFs/MTP/2040/Report/ExecSummary.pdf>

Greater Hickory Metropolitan Planning Organization. *2040 Long Range Transportation Plan*. Available: [http://www.wpcog.org/index.asp?Type=B\\_BASIC&SEC={EB5C7A77-57A7-46EA-8563-D93F957F0E4F}](http://www.wpcog.org/index.asp?Type=B_BASIC&SEC={EB5C7A77-57A7-46EA-8563-D93F957F0E4F})

Kimley-Horn and Associates, Inc.; Updated by Charlotte Department of Transportation. *Metrolina Regional Model 14v1 Metrolina Model User's Guide*



## **3. BASE YEAR 2015 NO-BUILD TRAFFIC FORECAST**

### **3.1 METHODOLOGY**

A review of previous traffic forecasts, field-collected traffic counts, area AADT history, and engineering judgment serve as the basis for the 2015 Base Year No-Build traffic forecast. After careful review for reasonableness checks, the 48-Hour classification counts and 13/16-Hour TMCs were first converted to AADT volumes by using the appropriate NCDOT TSG seasonal adjustment factors based on the month and day of the week the counts were collected.

A variation of the NCDOT Traffic Forecast Utility (TFU) spreadsheet was also a major tool used in the determination of the traffic forecast volumes. The NCDOT TFU spreadsheet includes the calculation of a validation score that considers the approach volumes and design factors for each intersection. The score is utilized as a tool in selecting the appropriate volumes and factors with a score that is less than 1.0 being considered to be valid. However, if a score is greater than 1.0, it will receive additional evaluation to determine if the selected volumes and factors are acceptable, especially for those that are based on count data and well established travel patterns or trends. Ultimately, the approach volumes and factors will be selected based on engineering judgment such that the AADTs and turning movements can be converted to peak hour volumes.

The forecast includes four existing interchanges; however, one of these interchanges (US 21/NC 115 at I-77), includes non-freeway surface streets opposite the ramps at the ramp terminal (Julian Drive). To accurately forecast these locations, the interchange was forecast as a single intersection and the surface street was offset from the interchange as a three-leg intersection. This methodology allows for the accurate prediction of interchange traffic and allows the engineers completing the traffic capacity analysis to replicate the existing conditions utilizing standard methodologies for this type of interchange configuration.

The data from the field-collected traffic counts were incorporated into the spreadsheet in order to replicate volumes as closely as possible for each intersection in the traffic forecast. The traffic forecast volumes in the 2015 Base-Year traffic forecast mimic the observed patterns as closely as possible. Once the traffic forecast volumes were determined, they were compared to historic AADT trends and interpolated model volumes for reasonableness. Table C1 found in Appendix C provides a comparison of historic AADT trends, field collected data, interpolated model volumes, and the selected traffic forecast volumes for all locations within the study area. Some locations did not have the necessary NCDOT AADT data to calculate the historic trends. In most cases, the chosen traffic forecast value is in line with the historic AADT trends extrapolated to 2015.

### **3.2 DESIGN FACTORS**

Design factors are a very important aspect of traffic forecasting. The truck percentages, peak hour factor (or K-Factor), and directional distribution are all used along with forecasted traffic volumes when designing a roadway. The methodology and chosen values for each of the aforementioned factors are described below.

#### **3.2.1 TRUCK PERCENTAGES**

Truck Percentages were determined using the 48-Hour mainline classification count data, the 16-Hour TMC data, and previous traffic forecast listed in Section 2.1. Overall truck percentages were then separated into the two NCDOT standard classifications: Duals (single-unit trucks with at least one dual-tire axle) and TTSTs (multi-unit trucks with single or twin trailers). Attempts were made to maintain consistent truck percentages along a roadway facility unless circumstances warranted a change. Data used to determine the truck percentages and the chosen values are found in Table C2 in Appendix C. A discussion of the truck percentages for the project is also included as follows:

- Previous forecast heavy vehicle percentages were highly variable between forecasts for different projects and tended to be slightly higher than those collected for this forecast. Many of the TMC counts collected for this forecast utilized video and it is likely that the percentages taken from visual observation are more accurate than those collected with tubes. Tube counts become less accurate where there are high levels of congestion and variations in speed, which are both prevalent along the corridor roadways.
- NC 150 corridor – the total truck percentages collected from turning movement counts showed from five to eight percent total trucks for the Catawba County portion of the corridor, while the one tube count showed thirteen percent trucks. Therefore, west of NC 16 three percent duals and two percent TTSTs were selected. The remaining portion of the NC 150 corridor in Catawba County had slightly higher truck percentages with five percent duals and three percent TTSTs being selected. The NC 150 corridor in Iredell County had truck percentages that varied from three to five percent for TMCs and four to eleven percent for tube counts. Therefore, the NC 150 corridor from west of Doolie Road/Perth Road to west of the NC 150/US 21 interchange was determined to have four percent duals and two percent TTSTs.
- NC 16 and NC 16 Business – the total truck percentage collected for these roadways ranged from seven to eleven percent with NC 16 carrying a larger percentage of TTSTs and the business route having a higher percentage of duals. The truck percentage for NC 16 was selected to be three percent duals and nine percent TTSTs, while NC 16 Business was selected to have five percent duals and three percent TTSTs.
- Y-lines along NC 150 – the truck traffic for Y-lines along the NC 150 corridor generally ranged from two to eight percent and the selected percentages were largely in line with the turning movement count percentages. Several locations included higher truck percentages due to land uses that are highly conducive to increased truck traffic, such as the power plant on Marshall Steam Station.
- I-77 – the truck percentages for I-77 were collected using Wavetronix radar data collection with what appeared to be reasonable length bins for each vehicle class. However, the results of the counts showed heavy vehicles making up nearly fifty percent of all vehicles on the Interstate. In discussions with the NCDOT TPB it was determined that other recent counts in the area had similar results. The selection of truck percentages for I-77 therefore needed to rely more heavily on other data sources. One source of data was the traffic estimate for I-4750AA which had truck percentages ranging from nineteen to twenty-three percent. A second data source utilized was the traffic forecast for R-3833B which had truck percentages of eighteen percent duals and six percent TTSTs. A third source of data was a manual classification count taken from a video shot from I-77 overpasses in Huntersville to the south of the study area for the project. The classification from the video included 2,500 vehicles during the peak periods and resulted in three percent duals and six percent TTSTs while the associated traffic forecast for this location (I-5714/I-5715) included a truck percentage of three percent duals and seven percent TTSTs. Therefore, the truck percentages for I-77 were selected to be four percent duals and eight percent TTSTs.
- Brawley School Road Corridor – the truck percentages taken from turning movement counts for Brawley School Road ranged from two to three percent, while previous forecasts showed six to nine percent trucks. Therefore, it was determined that the selected truck percentages would be three percent duals and one percent TTSTs.
- US 21/NC 115 Corridor – the truck percentages along US 21/NC 155 ranged from five to sixteen percent with a large spike in percentage on the south side of the interchange between I-77 and Lexus Drive where a WilcoHess Travel Plaza is located. Therefore, truck percentages were selected as four percent duals and two percent TTSTs north of the interchange. From I-77 to Lexus Drive/Garden Center Avenue the selected truck

percentage was four percent duals and eight percent TTSTs before dropping to three percent duals and five percent TTSTs south of the Lexus Drive intersection.

### **3.2.2 DIRECTIONAL DISTRIBUTION**

The directional distribution (D) provides information on the direction of traffic flow in the peak period and is a percentage (rounded to the nearest 5 percent) based on the percent of traffic traveling in each direction along the roadway. In addition to the directional distribution percentage the direction of the peak travel during the PM peak period is selected and included on the forecast figures. For the forecast study area, generally D was in the 51% to 65% range. D values typically fell within the range of 55% to 65% with the exception of some minor side streets in the traffic forecast. Table C3 in Appendix C provides the D value information used for this traffic forecast. A discussion of the D values for the project is also included as follows:

- NC 150 Corridor – the directional distribution along NC 150 ranged from 50 to 62 percent and had relatively consistent PM peak period directions. The directional distribution for the far western portion of the corridor was determined to be 55 percent with a PM peak in the westbound direction due to the volumes being more balanced due to the influence of the NC 16 corridor on the far western edge of the study area. The NC 150 corridor from Slanting Bridge Road to Doolie Road/Perth Road had greater directionality with a selected distribution of 60 percent with the PM peak remaining in the westbound direction. The NC 150 corridor from Doolie Road/Perth Road to west of the NC 150/US 21 interchange was determined to have a directional distribution of 55 percent with the PM peak in the westbound direction west of I-77 and the eastbound direction east of I-77. The traffic in close proximity to the I-77 interchange was very balanced with several of the counts ranging from 50-52 percent in the dominant direction; however, a minimum value of 55 percent was used.
- NC 16 and NC 16 Business – the directional distribution along both of the NC 16 routes ranged from 52 to 58 percent; therefore, a directional distribution of 55 percent was selected with the PM peak in the northbound direction.
- Y-lines along NC 150 – the directional distributions for Y-lines along NC 150 generally ranged from 52 to 64 percent and the selected directional distributions were largely in line with the turning movement count percentages. Two locations had directional distributions that are not typical for rural corridors such as NC 150. The Marshall Steam Station directional distribution was nearly 80 percent in the turning movement count and a directional distribution of 75 percent was selected to reflect the highly directional traffic pattern exhibited at this location. The second location was along Doolie Road, which provides access to Lake Norman High School and a small residential development. Doolie Road had a directional distribution of 77 percent from the turning movement count and a selected directional distribution on 75 percent to correspond to the highly directional pattern exhibited by the school.
- I-77 – the directional distribution along I-77 ranged from 55 to 58 percent based on the classification counts. It was determined that a directional distribution of 55 percent would be the most appropriate distribution with the PM peak direction in the northbound direction.
- Brawley School Road – the directional distribution along Brawley School Road was 58 percent west of the I-77 interchange and ranged from 52 to 54 percent east of the interchange. The selected directional distributions were 60 percent to the west of I-77 and 55 percent to the east of I-77 with the PM peak direction being away from I-77 in both directions.

- US 21/NC 115 Corridor – the directional distributions along the US 21/NC 115 corridor ranged from 51 to 56 percent. A directional distribution of 55 percent was selected with the PM peak direction in the northbound direction.

### 3.2.3 PEAK HOUR FACTOR

The peak hour factor (K) is the percentage of AADT that occurs during the peak time period of the day. The K-factor is meant to approximate what percentage of daily traffic would be present during the 30th highest peak hour of a given year, which is commonly referred to as K30. To determine the K-value for the classification counts the highest hourly volume was divided by the daily average of the 48-Hour counts. For turning movement counts the K-factor was developed by dividing the peak hour of the count by the daily volume. The K-factors in this traffic forecast range from 8% to 12%. Typically, the roadways with higher functional classifications have lower K-factors. The K-factor information used for this forecast is found in Table C4 in Appendix C. A discussion of the K values for the project is also included as follows:

- NC 150 Corridor – the peak hour factor along NC 150 ranged from seven to eleven percent and had relatively consistent percentages along the corridor with the percentage increasing the further you traveled from the I-77 corridor. The peak hour factor for the far western portion of the corridor was determined to be ten percent, which is consistently maintained through the Doolie Road/Perth Road intersection. The NC 150 corridor from Doolie Road/Perth Road to east of Morrison Plantation Parkway/Ervin Road had a lower peak hour distribution with a selected value of nine percent. The NC 150 corridor from Morrison Plantation Parkway/Ervin Road to west of the NC 150/US 21 interchange was determined to have a peak hour factor of eight percent and is reflective of the congested corridor and the spreading of trips beyond the peak one hour period.
- NC 16 and NC 16 Business – the peak hour factor along both of the NC 16 routes ranged from nine to eleven percent; therefore, a peak hour factor of ten percent was selected for both roadways.
- Y-lines along NC 150 – the peak hour factors for Y-lines along NC 150 generally ranged from nine to twelve percent and the selected peak hour factors were largely in line with the turning movement count percentages. One location had a peak hour factor that is not typical for rural corridors such as NC 150. The Marshall Steam Station peak hour factor was nearly 16 percent in the turning movement count and a peak hour factor of 15 percent was selected to reflect the higher peak traffic pattern exhibited at this location due to a large concentration of vehicles leaving the location in a short period during the peak period.
- I-77 – the peak hour factors along I-77 ranged from seven to eight percent based on the classification counts. It was determined that a peak hour factor of eight percent would be the most appropriate factor as the count that included the lower percentage had a higher directional distribution; therefore using the slightly higher rate of eight percent with slightly lower rate selected for the directional distribution would produce peak hour volume that are very consistent with the peak hour count data.
- Brawley School Road – the peak hour factors along Brawley School Road ranged from nine to ten percent and the selected peak hour factor was nine percent to the west of Talbert Road and 10 percent to the east of Talbert Road, which was largely consistent with the turning movement counts.
- US 21/NC 115 Corridor – the peak hour factor along the US 21/NC 115 corridor ranged from nine to ten percent. A peak hour factor of ten percent was selected north of I-77 while a factor of nine percent was selected south of I-77.



### **3.3 TRAFFIC FORECAST VOLUMES**

Based on the methodology described in Section 3.1, traffic forecasts for the 2015 Base Year No-Build Scenario were calculated. Adjusted counts were compared to trend line analyses and the extrapolation of data to 2015 during the process. Utilizing the variation of the NCDOT Traffic Forecast Utility spreadsheet, bidirectional turning movements were also forecasted at intersections to replicate observed daily turning movement volumes as closely as possible. Comparisons of trend line analyses, volume extrapolation, observed counts, and selected forecast volumes are shown in Table C1 in Appendix C.

## 4. MODEL DATA

The study area for the forecast is included in both the Metrolina Regional Model and the Hickory/Unifour Travel Demand Model. The study area is on the outer edges of both models and has limited connectivity, relying heavily on through trips generated by external stations. During the scoping process, it was determined that the solely the Metrolina Regional Model would be utilized for this forecast. The Metrolina Regional Travel Demand Model (MRM 14v1.0) was utilized as a tool in the development of the forecast to determine the Base year build and Future year scenario traffic volumes.

The MRM was developed in TransCAD and was calibrated based on a base year of 2010, and has models for an intermediate year of 2015 and a future year of 2040. Two major projects within the limits of the study area were constructed between 2010 and 2015; the NC 16 Bypass at the western edge of the study area and the widening of Brawley School Road including the construction of a new interchange at I-77. Therefore, during scoping it was decided that the both the 2010 and 2015 model would be run with the 2010 calibrated model being compared to the traffic counts in the area and the 2015 data being compared to recent counts and historic counts extrapolated to 2015. Both the 2010 and 2015 models were reviewed for the project corridor and surrounding areas. Generally, the model accurately portrayed the transportation network as it existed in 2010 and 2015, respectively.

Table C5 can be found in Appendix C and displays model performance for the 2010 model against 2009-2011 NCDOT AADTs, the 2015 and 2040 model volumes and an extrapolated volume for 2015 based on the 2010 and 2040 model output. A discussion of the model performance for the project study area corridors is included as follows:

- NC 150 Corridor – the 2010 model volumes for the Catawba County portion of the study area were generally higher than the corresponding AADT counts by 3,000 to 6,000 vehicles per day, while the 2015 model volumes were much closer with volume discrepancies of 1,000 to 4,000 vehicles per day higher for the model volumes. The two-lane portion of NC 150 between the Catawba/Iredell County Line and Morrison Plantation Parkway has a wide range of values with the western edge having the model being substantially higher (10,000 vpd in 2010 and 8,000 vpd in 2015) than the AADT and project specific counts and the eastern edge having the model being substantially lower than (approximately 5,000 vpd in 2015) than the project specific traffic counts. From Morrison Plantation Parkway to I-77 the model and count data is pretty well aligned with minimal differences in volume for both 2010 and 2015. East of I-77 the model generally is lower than the AADT and project specific counts by 7,000 to 10,000 vpd.
- NC 16 and NC 16 Business – the 2015 model volumes for NC 16 are generally too low (by about 7,000 vpd) south of NC 150 and too high (by about 3,000 vpd) north of NC 150 when compared to the project specific count data. The model also appears to overassign volumes to NC 16 and underassign volumes to NC 16 Business.
- Y-lines along NC 150 – many of the minor roadways that intersect NC 150 were not included in the model; however, the few roadways that were included were generally consistent with the count data at the corresponding location.
- I-77 – the 2010 and 2015 model results appear to have volumes that are slightly higher than the corresponding traffic count data with the largest discrepancy occurring between Exit 36 and Exit 42. The growth from 2010 to 2015 appears to be consistent with growth trend from the count data along the I-77 corridor
- Brawley School Road – the 2010 and 2015 model results reproduce volumes that are very consistent with the count data; especially for the portion of Brawley School Road that was recently widened.
- US 21/NC 115 Corridor – the 2010 and 2015 model results reproduce volumes and growth rates that are very consistent with the count data along the corridor.

## **5. BASE YEAR 2015 BUILD TRAFFIC FORECAST**

### **5.1 ASSUMPTIONS**

Due to the potential need for intermediate year traffic volumes it was determined that a Base Year Build scenario would also be needed for the traffic forecast. The 2015 MRM was utilized in the development of the forecast with all 2010-2015 projects verified and the proposed project (R-2307/I-5717) added to the network. The following changes were made to the 2015 model network:

- NC 150 was modified to be a four-lane divided facility from NC 16 to Waddell Road with the same attributes as the remaining proposed projects along the NC 150 Corridor.
- CRTPO MTIP Project ID 26 – NC 150 Widening; Waddell Road to Perth Road – Widen to 4-lanes
- CRTPO MTIP Project ID 43 – NC 150 Widening; Perth Road to Ervin Road – Widen to 6-lanes
- CRTPO MTIP Project ID 44 – NC 150 Widening; Ervin Road to I-77 – Widen to 6-lanes
- CRTPO MTIP Project ID 45 – NC 150 Widening; I-77 to US 21 – Widen to 6-lanes
- CRTPO MTIP Project ID 47 – I-77/NC 150 Interchange – Modify existing diamond interchange to Diverging Diamond Interchange

### **5.2 METHODOLOGY**

The MRM was heavily relied on in the calculation of the 2015 Base Year Build traffic volumes. Once the MRM was run to include R-2307 and I-5717, model volumes were extracted for each location included in the evaluation. Model volumes from the 2015 No-Build and Build model runs were compared in order to calculate a diversion percentage between the two scenarios. These diversion percentages were then applied to the 2015 No-Build traffic volumes in order to develop 2015 Build Traffic volumes.

### **5.3 DESIGN FACTORS**

The 2015 No-Build and Build model networks were reviewed to see if any of the corridors experienced changes in the percent of traffic occurring in the peak period of the model, direction of peak travel, or directional split. Minor changes in the percentage of volume that occurred during the peak hour did occur on some roadways that experienced higher volume to capacity ratios, such as NC 150 west of Morrison Plantation Parkway; however the change was not substantial enough to justify a change in the D or K values. Based on knowledge of the forecast study area and travel patterns in the area, it was determined that the 2015 Base Year truck percentages were adequate for use in the 2015 Build scenario.

### **5.4 TRAFFIC FORECAST VOLUMES**

Based on the methodology described in Section 5.2, traffic volumes for the 2015 Base Year Build Scenario were calculated. Adjusted volumes developed through the methodology in Section 5.2 were compared to trend line analyses derived from normal growth based on historic data and model output. Base Year model assignment accuracy was taken into account when analyzing the 2015 build model output. Bidirectional turning movements were also developed at intersections to mimic observed daily turning movement volumes as closely as possible where applicable. Table C6 in Appendix C shows the comparisons of model output, diversion percentages, and selected volumes. A brief summary of the key observations and findings from a comparison between the 2015 No-Build and the 2015 Build scenarios are as follows:

- The volumes along NC 150 in Catawba County are anticipated to be 11.5 to 34.5 percent higher in 2015 with the proposed project being constructed as compared to the No-Build scenario, largely due to the existing capacity deficiencies of the two-lane roadway. The portion of the corridor from NC 16 to Slanting Bridge Road has the highest anticipated increase due to a portion of the NC 150 traffic that is destined for locations to the south diverting to Slanting Bridge Road to access NC 16 further south in Denver, NC. There are also some trips that are currently avoiding the NC 150 corridor due to the capacity constraints that are now utilizing NC 16. Although the increase in volumes in this area is higher than may be expected it is reasonable based on the existing roadway being over capacity and the diversion of trips away from the congested facilities in the area. From Slanting Bridge Road to Morrison Plantation Parkway the increase becomes less pronounced with the diversion rate falling from nearly 18 percent to slightly more than three percent the further you travel east along the NC 150 corridor. The existing four-lane typical section east of Morrison Plantation Parkway has minimal changes in volume between the 2015 No-Build and Build scenarios as the existing volumes are just below the capacity of the facility.
- The volumes along NC 150 from the Catawba/Iredell County Line to I-77 would be relatively unchanged with an anticipated increase of 0.8 to 4.9 percent in 2015 with the proposed project being constructed as compared to the No-Build scenario.
- The volumes along NC 150 from I-77 to US 21 would be increased minimally with an anticipated increase of 2.5 to 4.1 percent in 2015 with the proposed project being constructed as compared to the No-Build scenario.
- Most of the Y-line roadways along the corridor would have either no change or a minimal change in volume between the no-build and build scenarios. Some minor Y-lines did see decreases, such as Slanting Bridge Road and Sherrills Ford Road which are alternate routes to locations north and south of the study area; whereas NC 16 saw an increase in volume likely due to trips being able to travel more efficiently along NC 150, allowing it to be a shorter path for north-south trips.
- The volume along I-77, Brawley School Road and US 21/NC 115 would remain unchanged from the volumes shown in the 2015 No-Build forecast

## 6. FUTURE YEAR 2040 NO-BUILD TRAFFIC FORECAST

### 6.1 ASSUMPTIONS

A Future Year of 2040 was chosen for the R-2307/I-5717 traffic volume examination as it is the latest year available in the MRM and to provide a design life of approximately twenty years beyond the scheduled construction date of 2019 (R-2307) and 2021 (I-5717). All 2040 fiscally- constrained projects, with the exception of R-2307 and I-5717, listed in the CRTPO 2040 MTP and Greater Hickory MPO 2040 LRTP were included in the 2040 No-Build alternative model run.

The modeling aspects for the 2040 No-Build scenario include utilizing the MRM fiscally constrained model, removing the proposed project and making the following changes to the network:

- Added MTP Project ID 50 – Midnight Lane/Oates Road – Construct new 3-lane roadway, including grade separation over I-77. This project was inadvertently not included in the 2040 model provided, but is included in the Horizon Tear 2025 Fiscally Constrained Roadway Projects list in the MTP.

### 6.2 METHODOLOGY

The MRM was utilized as a tool in the development of the 2040 Future Year No-Build traffic volumes.

2015 Base Year and a 2040 Future Year No-Build model runs were completed without the proposed project in place. The Compound Annual Growth Rate (CAGR) for each traffic volume location was calculated using the following equation:

$$((2040 \text{ Model Value}/2015 \text{ Model Value}) ^{1/25}) -1$$

The CAGR rates were reviewed and adjusted during this phase using engineering judgment where needed. The selected CAGR rates were then applied to the 2015 No-Build traffic volumes and extrapolated to determine the 2040 traffic volumes.

The 2040 No-Build traffic forecast includes managed lanes on I-77. The forecast volumes for the managed lanes were developed by determining the total demand along I-77 in 2040 and then applying the proportion of volume in the managed lanes from the model to the total model volume along the segment of I-77. Because the managed lanes has only one ingress/egress point and the general purpose lanes include several segments due to interchange locations the average of all of the I-77 segments was used in developing the proportion for applying the model data to the forecast.

### 6.3 DESIGN FACTORS

The 2040 model network was reviewed to see if any of the corridors experienced changes in the percent of traffic occurring in the peak hour, direction of peak travel, or directional split. The modeled volumes showed some slight changes in the percentage of traffic that occurred during the peak hour on several of roadways that experienced higher volume to capacity ratios. Based on a review of the model data it was determined that all of the 2015 Base Year factors were still adequate with the following exception:

- The Directional Distribution for Doolie Road, south of NC 150 was reduced from 75 to 70 percent to reflect that the future growth is largely residential and would provide a more balanced traffic volume in the opposite direction of the peak travel that would lower the directional split that is heavily influenced by traffic accessing Lake Norman High School.



Based on a review of the model data and knowledge of the forecast study area and anticipated growth in the area, it was determined that none of the other design factors would change from those included in the 2015 Base Year forecast.

The design factors for the I-77 managed lanes require special factors as they have different operational characteristics than general purpose lanes. The I-77 managed lanes do not allow heavy vehicles; therefore, the truck factors are zero percent for both duals and TTSTs. The assumption was made that most drivers will only utilize the managed lanes when the general purpose lanes are over capacity; therefore, the vast majority of the volume will occur during the peak period which will increase the peak hour factor. Based on this assumption it was decided that a peak hour factor of sixteen percent would be appropriate as it would show a large concentration during the peak hour and allow for slightly lower volumes in the shoulder periods around the peak and minimal traffic during off peak periods. Similarly, the directional distribution would also increase as the likelihood that traffic will be congested in both directions for substantial portions of the peak period are lower. It was decided that a directional distribution of 70 percent would be appropriate for the 2040 No-Build scenario. Due to the higher volumes in the managed lanes it is likely that the peak hour factor for the general purpose lanes would be slightly lower; therefore, a seven percent factor was selected for the forecast. Due to the truck restriction on the managed lanes it is also likely that the overall percentage of trucks in the general purpose lanes would increase; therefore, the truck percentage was revised from the twelve percent (4 percent duals, eight percent TTST) in the 2015 Base Year Forecast to fourteen percent (five percent duals and nine percent TTST) for the 2040 No-Build forecast.

## **6.4 TRAFFIC FORECAST VOLUMES**

Based on the methodology described in Section 6.2, traffic volumes for the 2040 Future Year No-Build Scenario were calculated.

The model volumes in 2040 along NC 150 included very low growth rates that ranged from -0.1% to 1.1 percent with a majority of the facility having a growth rate between 0.5 and 0.8 percent. This appears to occur largely due to the capacity constraint in the model and the limited capacity of the two-lane section of NC 150 west of Morrison Plantation Parkway. Based on the growth of the traffic analysis zones (TAZs) in the area and the limited alternative routes available due to the geographic constraints of being surrounded by Lake Norman, it was determined that a minimum growth rate of 1.25% would be utilized from NC 16 to Perth Road/Doolie Road and a minimum growth rate of 1.00% would be utilized from Perth Road/Doolie Road to US 21. The historic 20-year growth rate along NC 150 ranged from 1.7 to 5.5 percent, which supports the use of a growth rate higher than the predicted model growth rate. Overall traffic assignment patterns remained similar to those found in the 2015 No-Build Scenario; however it appeared that some local trips were reduced and the fact that the study area is at the edge of the MRM model, many of the through trips are not changed as they are largely external station trips. Table C7 in Appendix C shows the comparisons of model output, CAGRs, and selected volumes. Some of the volumes were modified slightly to allow for the development of a balanced network.

A brief summary of the key observations and findings from a comparison between the 2015 No-Build traffic volumes and the 2040 No-Build scenario are as follows:

- The volumes along NC 150 increases at a 1.25 percent CAGR (west of Doolie Road/Perth Road) and 1.0 percent CAGR (east of Doolie Road/Perth Road) largely due to the capacity constraint of the existing two-lane cross section west of Morrison Plantation Road.
- The Y-line traffic in Catawba County shows growth rates higher than the growth rate along the NC 150 corridor with growth rates ranging from 1.1 to 2.2 percent CAGR with an average growth rate of 1.6 percent CAGR.

The Y-line traffic for all roadways that access NC 150 in Catawba County increase from 69,900 vpd in 2015 to 101,400 vpd in 2040, or an increase of 31,500 vpd.

- The Y-line traffic in Iredell County shows growth rates that range from 0.2 to 2.1 percent CAGR with an average of 0.9 percent CAGR. The Y-line traffic for all roadways (excluding I-77) that access NC 150 in Iredell County increase from 146,300 vpd in 2015 to 183,900 vpd in 2040, or an increase of 37,600. The largest increase is along Williamson Road which increases at a rate of 2.1 percent CAGR resulting in an increase from 18,200 vpd in 2015 to 30,500 vpd in 2040, largely due to the planned widening of Williamson Road.
- The volume of traffic along I-77 shows growth rates that range from 0.5 to 1.1 percent CAGR with some additional capacity being provided by the managed lanes, resulting in 10,400 vpd utilizing the lanes in 2040.
- The Brawley School Road corridor shows minimal growth west of I-77, but has moderate growth ranging from 1.4 to 2.1 percent CAGR east of I-77. The US 21/NC 115 corridor has a consistent 1.4 to 1.5 percent CAGR throughout the entire length within the study area.

## 7. FUTURE YEAR 2040 BUILD TRAFFIC FORECAST

### 7.1 ASSUMPTIONS

The 2040 Build traffic forecast contains all of the assumptions found in the 2040 No-Build traffic volume network discussed in Section 6.1. The R-2307/I-5715 projects were coded into the model based on the attributes included in the MRM project list.

### 7.2 METHODOLOGY

The Methodology for the 2040 Build traffic forecast is slightly different than is typically used in developing a future year build forecast. Typically, the build volumes are developed by applying a diversion rate that is determined by comparing the 2040 No-Build and Build model volumes and then applying the diversion to the 2040 No-Build forecast volumes. The 2040 No-Build forecast largely used minimum growth rates of 1.0 and 1.25 percent CAGR along the NC 150 corridor, which were substantially higher than those from the model. Therefore, use of a diversion rate derived from the unadjusted model volumes would not reflect the increased growth included in the 2040 No-Build forecast and would provide additional growth beyond what would be considered reasonable. This occurrence was discussed with Brian Wert (NCDOT State Traffic Forecast Engineer) on April 17, 2015 and it was determined that the best approach would be to use the same approach as was utilized for the development of the 2040 No-Build scenario, as follows:

2015 Base Year and a 2040 Future Year Build model runs were completed. The CAGR for each traffic volume location was calculated using the following equation:

$$((2040 \text{ Model Value} / 2015 \text{ Model Value}) ^{1/25}) - 1$$

The CAGR rates were reviewed and adjusted during this phase using engineering judgment where needed. The selected CAGR rates were then applied to the 2015 No-Build traffic volumes and extrapolated to determine the 2040 traffic volumes.

### 7.3 DESIGN FACTORS

The 2040 model network was reviewed to see if any of the corridors experienced changes in the percent of traffic occurring in the peak hour, direction of peak travel, or directional split. The selection of design factors for the 2040 Build scenario was similar to the evaluations discussed in the previous scenarios, with the selected values being the same as those selected for the 2040 No-Build scenario discussed in Section 6.3.

### 7.4 TRAFFIC FORECAST VOLUMES

Based on the methodology described in Section 7.2, traffic volumes for the 2040 Future Year Build Forecast Scenario were calculated. Table C8 in Appendix C shows the comparisons of model output, growth rate percentages, and selected volumes.

The model volumes for 2040 are very reasonable for a majority of the corridor; however, the portion of NC 150 between Doolie Road/Perth Road and Williamson Road/Bluefield Road showed growth rates that were substantially greater than would be anticipated at 3.6 percent CAGR. The resultant growth would push this section of NC 150 to over 75,000 AADT, if the model growth rate was applied directly to the base year AADT. This level of growth would result in substantial changes in trip patterns (through changes in turn volume percentages) to enact such a large increase in volume along NC 150 for such a short segment. Based on engineering judgment, the limited number of Y-line roadways in the model and knowledge of the study area it was decided that a lower growth rate that ranged from

1.6 to 2.3 percent CAGR was more appropriate and would allow volumes along the corridor to maintain a reasonable volume and distribution of trips along the corridor.

A brief summary of the key observations and findings from a comparison between the 2040 No-Build and the 2040 Build scenario are as follows:

- The volumes along NC 150 increases at a 1.0 to 2.9 percent CAGR, which is substantially higher than the 1.0 to 1.25 percent CAGR for the No-Build scenario. The average growth rate along NC 150 is approximately 1.9 percent CAGR which reflects the anticipated strong growth in both development along the corridor and the increase in through trips along the corridor, which is one of only a few routes that crosses Lake Norman and the Catawba River.
- The Y-line traffic in Catawba County is very similar to the 2040 No-Build scenario with a slight decrease from 101,400 vpd for the 2040 No-Build Scenario to 98,100 vpd for the Build scenario.
- The Y-line traffic in Iredell County is very similar to the 2040 No-Build scenario as well with a slight increase from 183,000 vpd for the No-Build Scenario to 187,700 vpd for the 2040 Build scenario. Overall, the total volume for Y-line traffic between the 2040 No-Build and Build scenarios is negligible, which is reflective of the limited options for east-west travel in central Iredell County due to the geographic limitations of Lake Norman.
- The volume difference for traffic along I-77, the Brawley School Road corridor and the US 21/NC 115 corridor are negligible between the 2040 No-Build and Build scenarios.

**APPENDIX A:**  
**HISTORIC AADT COUNT DATA**





**Table A1: NCDOT Historic AADT**

Location	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993
NC 150 - South (West) of E. Maiden Road (SR 1855)	11,000		9,600		9,800																
NC 150 - West of NC 16 Business	12,000		12,000		12,000		12,000		12,000		12,000	12,000	10,000	11,000	11,000	11,000	8,700	7,500	7,400	8,600	7,700
NC 150 - East of NC 16 Business	11,000		9,800		10,000		11,000		10,000		9,700	10,000	9,400	9,600	9,700	9,500	7,800	12,000	12,000	8,900	8,200
NC 150 - East of Grassy Creek Road (SR 1853)	12,000		11,000		12,000		12,000		12,000		11,000	12,000	11,000		12,000		8,000				6,900
NC 150 - West of Todd Street (SR 2640)	9,400		8,700		9,100		10,000	10,000	10,000	10,000	8,200	9,300	8,400	8,300	8,500	8,400	7,100	6,400			
NC 150 - West of Sherrills Ford Road (SR 1848)	12,000		11,000		12,000		13,000	14,000	13,000	13,000	10,000	12,000	10,000	10,000	10,000	9,000	7,800	8,300	7,800	7,400	7,400
NC 150 - East of Sherrills Ford Road (SR 1848)	16,000		15,000		16,000		17,000	19,000	18,000	18,000	14,000	16,000	13,000	13,000	13,000	12,000	11,000	10,000	9,600	9,000	8,500
NC 150 - East of Greenwood Road (SR 1840)	12,000		15,000		15,000		17,000	19,000	18,000	18,000	14,000	15,000	13,000	13,000	13,000	12,000	10,000	9,700	8,900	8,300	7,900
NC 150 - West of Robinson Road (SR 1396)	19,000				17,000																
NC 150 - West of Williamson Road (SR 1109)	30,000				26,000																
NC 150 - West of I-77		40,000	39,000	35,000	38,000	38,000	38,000	40,000	37,000	32,000	34,000	30,000	27,000	23,000	21,000	22,000	21,000	19,000	17,000	16,000	16,000
NC 150 - East of I-77	34,000	38,000	38,000	35,000	36,000	38,000	38,000		37,000		35,000	31,000	30,000		28,000	24,000	23,000	19,000	17,000	14,000	15,000
NC 150 - West of US 21		36,000	35,000	32,000	33,000	34,000	35,000	36,000	34,000	31,000		31,000	28,000	26,000	25,000	24,000	22,000	19,000	18,000	14,000	16,000
NC 16 Bypass - North of NC 150	7,400																				
NC 16 Bypass - South of St. James Church Road (SR 1386)	16,000	14,000																			
E. Maiden Road (SR 1855) - North of NC 150	2,300		2,600		2,700		2,700		2,900		3,100	3,200	2,800		3,000		2,500		1,900		1,900
NC 16 Business - South of NC 150	7,900		13,000		13,000		14,000		13,000		12,000	13,000	12,000	12,000	13,000	13,000	13,000	11,000	11,000	10,000	10,000
NC 16 - North of Buck's Garage Road (SR 1888)	4,300		8,400		8,000		8,200		7,800		7,600	7,500	7,700	12,000	7,800	9,300	8,100	7,900	8,100	8,000	6,800
Grassy Creek Road (SR 1853) - South of NC 150	1,500		1,900		1,900		2,100		1,900		1,900		1,700		1,700		1,500		1,200		1,200
Mt. Pleasant Road (SR 1849) - North of NC 150	2,800		2,500		2,600		2,800		2,700		2,500		2,600		3,000		2,900		2,000		2,000
Little Mountain Road (SR 1815) - North of NC 150	1,600		1,800		1,700		1,900	1,800		1,900		1,500	1,500		1,500		2,300		900		1,100
Slanting Bridge Road - South of NC 150	6,600		6,600		6,500		7,600		7,300		5,400		5,600		5,200		4,400		3,500		3,100
Sherrills Ford Road (SR 1848) - South of NC 150	1,000		1,300		1,100		1,100	970		1,200		840									
Sherrills Ford Road - North of NC 150	5,300		5,200		5,400		5,800		6,400		4,600		4,500		3,300		3,000		1,900		2,000
Kiser island Road (SR 1841 - South of NC 150)			1,200		1,200		1,200		1,400		1,100										
Greenwood Road - South of NC 150	680		730		750		620	760		1,100		530									
McCrary Road (SR 1168) - South of NC 150		800		780		770		730		480		510	480		520		640		380		500
Perth Road (SR 1303) - North of NC 150			9,700		9,000				6,900		6,800		5,200		4,600		3,300		2,400		2,400
Williamson Road (SR 1109) - South of NC 150		23,000		21,000		22,000		19,000		13,000		15,000	14,000		12,000		9,500		5,500		
Bluefield Road (SR 1474) - North of NC 150	11,000		7,400		11,000		11,000		9,200		8,300		4,500		4,600		2,800		1,800		1,400
I-77 from Exit 33 to Exit 35 (2013)/Exit 36 (2002-2012)	69,000	59,000	61,000	58,000	61,000	56,000	62,000	60,000	61,000	57,000	57,000	53,000	54,000	53,000	52,000	49,000		49,000		37,000	34,000
I-77 from Exit 35 to Exit 36	64,000											9,800									
I-77 fro Exit 36 to Exit 42	58,000	53,000	54,000	51,000	53,000	49,000	55,000	53,000	51,000	46,000	50,000	48,000	46,000	48,000	48,000	44,000		45,000		35,000	33,000
I-77 from Exit 42 to Exit 45	59,000	53,000	56,000	52,000	53,000	50,000	56,000	53,000	53,000	47,000	51,000	49,000	48,000	49,000	50,000	46,000		46,000		38,000	33,000
Talbert Road (SR 1116) - South of NC 150			6,500		7,100		7,200		6,700		6,000	340									
Talbert Road (SR 1116) - North of NC 150		8,600		7,500		11,000		10,000		7,800		5,100	3,800		1,600		1,100		710		790
Brawley School Road (SR 1100) - West of SR 1196	23,000				15,000		16,000		11,000		12,000		8,700				4,100		3,800		2,800
US 21/NC 115 - East of I-77		12,000	12,000	12,000	10,000	12,000	11,000	12,000	11,000	11,000	11,000	10,000	9,700	9,500	9,600	9,800	8,700	8,300	8,300	7,000	7,300

**APPENDIX B:**

**LOCAL REPRESENTATIVE QUESTIONNAIRES**





Stantec Consulting Services Inc.  
801 Jones Franklin Road Suite 300, Raleigh NC 27606-3394

Completed by: Daniel Sellers, PE, Unifour and Hickory Coordinator, TPB, NCDOT

(919) 707-0978 | [dc sellers1@ncdot.gov](mailto:dc sellers1@ncdot.gov) | 4/21/2015

April 16, 2015

Dear Local Agency Representative,

**Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey**

Stantec is currently in the process of updating the traffic forecast for NCDOT project R-2307 / I-5717, which includes widening and improvements to NC 150 through parts of Iredell and Catawba Counties. The project limits begin at NC 16 in Catawba County and extend eastward through the I-77 interchange to just west of US 21 in Iredell County. The forecast includes base year (2015) and design year (2040) forecasts.

We are seeking input from local officials who are familiar with the area and have identified you as a local representative. I have listed a few questions below that will help us in the development in the traffic forecast. We would greatly appreciate your time in answering these questions. You may answer the questions in text format below and return them to me at [Samuel.Williams@stantec.com](mailto:Samuel.Williams@stantec.com). If you would rather discuss the questions over the phone, I will be following up with a phone call early next week. Thank you in advance for your time and please let me know if you have any questions.

As my area of expertise is the Catawba County side of NC 150, I have limited my responses to that area as much as possible.

- 1) Current and historical traffic trends indicate that growth in the area was flat or negative from 2007 through 2011, but has recently increased. Do you agree with this statement? What growth patterns have you noticed?

Yes. The Catawba County Side of 150 has been flat for the last 5 years or so. While those locations that had a drop in traffic have recovered. NC 16 that crosses the western end of the project serves as the main route into Greater Hickory from NC 150. It, more than NC 150 has seen the greatest pop in traffic of 2,000-3,000 VPD from 2011 to 2013. Several stations in SE Catawba County have had a similar 10% increase those last two years.

- 2) Aside from school being in session, are there any noticeable seasonal differences in traffic?

The only nearby seasonal data I know of would be from traffic station A1701. It is in Newton and probably too far away to give relevant data. I would recommend contacting the MPO and County Planners for more options.

- 3) Do you know of any transportation projects in the area that would impact our study?

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April 15, 2015

Page 2 of 3

Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey

The NC 16 widening may make this area more attractive to Greater Hickory commuters. The Travel Demand Model (Hickory 2011 v1.0) does not include an interactive land use model, and thus cannot break out any impacts. There are no other projects in the Hickory LRTP that I think would impact development patterns in SE Catawba County.

- 4) We have been made aware of the following developments in our study area. Are you aware of any other planned or approved development in the area that would affect our study?
- a. The Village at Sherrills Ford (near Slanting Bridge Road, west of Terrell)
  - b. Marshall Road Commercial Development (just west of Marshall Steam Station)
  - c. NC 150/Doolie Apartments (located in SW quadrant of NC 150 and Doolie Road)
  - d. Anticipated commercial development in NW quadrant of NC 150 and Perth Road (land use unknown at this time)
  - e. Old Iron Mixed Use Development (located on north side of NC 150 between Perth Road and Ervin Road)
  - f. Cambridge Apartments (on Ervin Road across from Sam's Club) – currently under construction
  - g. Outback Steakhouse (near Target entrance)
  - h. Sam's Car Wash (located in SE quadrant of NC 150 / I-77 interchange)

I am not kept informed of specific developments. I would recommend contacting the county and MPO planners.

- 5) Do you have any additional comments that would be helpful in our development of the traffic forecast?

I think the biggest traffic forecast challenges to the NC 150 project are within Iredell County not Catawba County. While the SE area of Catawba is growing, there is a split between what portions of that development are satellites of Hickory vs. what portion are Charlotte communities. Because of its location at the border of the Hickory TDM and the Metrolina Regional Model, it is not well modeled by either.

Thank you again for your time and consideration!

Regards,

**STANTEC CONSULTING SERVICES INC.**

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April 15, 2015  
Page 3 of 3

**Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey**

Samuel Williams, EI  
Transportation Engineer in Training  
Phone: (919) 865-7385  
Fax: (919) 851-7024  
Samuel.williams@stantec.com

Attachment: Attachment

c. Cc List

kr document2



Stantec Consulting Services Inc.  
801 Jones Franklin Road Suite 300, Raleigh NC 27606-3394

April 24, 2015

Dear Local Agency Representative,

**Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey**

Stantec is currently in the process of updating the traffic forecast for NCDOT project R-2307 / I-5717, which includes widening and improvements to NC 150 through parts of Iredell and Catawba Counties. The project limits begin at NC 16 in Catawba County and extend eastward through the I-77 interchange to just west of US 21 in Iredell County. The forecast includes base year (2015) and design year (2040) forecasts.

We are seeking input from local officials who are familiar with the area and have identified you as a local representative. I have listed a few questions below that will help us in the development in the traffic forecast. We would greatly appreciate your time in answering these questions. You may answer the questions in text format below and return them to me at [Samuel.Williams@stantec.com](mailto:Samuel.Williams@stantec.com). If you would rather discuss the questions over the phone, I will be following up with a phone call early next week. Thank you in advance for your time and please let me know if you have any questions.

Responses entered based on comments from phone conversation between David Keilson and Sam Williams on April 21, 2015.

- 1) Current and historical traffic trends indicate that growth in the area was flat or negative from 2007 through 2011, but has recently increased. Do you agree with this statement? What growth patterns have you noticed?
  
- 2) Aside from school being in session, are there any noticeable seasonal differences in traffic?
  
- 3) Do you know of any transportation projects in the area that would impact our study?

Just south of Exit 33 on I-77, Fairview Road will bridge I-77 and connect to Alcove Road.

Brawley School Road will be widened from Talbert Road to US 21.



April 15, 2015

Page 2 of 3

Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey

NC 16 will be widened to four lanes from the junction of NC 16 and NC 16 Business north to Newton, NC.

- 4) We have been made aware of the following developments in our study area. Are you aware of any other planned or approved development in the area that would affect our study?
- a. The Village at Sherrills Ford (near Slanting Bridge Road, west of Terrell)
  - b. Marshall Road Commercial Development (just west of Marshall Steam Station)
  - c. NC 150/Doolie Apartments (located in SW quadrant of NC 150 and Doolie Road)
  - d. Anticipated commercial development in NW quadrant of NC 150 and Perth Road (land use unknown at this time)
  - e. Old Iron Mixed Use Development (located on north side of NC 150 between Perth Road and Ervin Road)
  - f. Cambridge Apartments (on Ervin Road across from Sam's Club) – currently under construction
  - g. Outback Steakhouse (near Target entrance)
  - h. Sam's Car Wash (located in SE quadrant of NC 150 / I-77 interchange)
- 5) Do you have any additional comments that would be helpful in our development of the traffic forecast?

At the intersection of NC 150 and Perth Road / Doolie Road:

Due to the congestion there in the morning, people making a westbound left take "creative approaches" to get to the school, such as 1) turning right and making a u-turn on Perth Road, then continuing south through the intersection, or 2) continuing west through the intersection, making a u-turn and then turning right. Therefore, while the counts collected may show the distribution of volumes, they may not accurately reflect the demand at the intersection.

Thank you again for your time and consideration!

Regards,

**STANTEC CONSULTING SERVICES INC.**

Samuel Williams, EI

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April 15, 2015

Page 3 of 3

**Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey**

Transportation Engineer in Training

Phone: (919) 865-7385

Fax: (919) 851-7024

Samuel.williams@stantec.com

Attachment: 27T

c. 27T

kr document2



Stantec Consulting Services Inc.  
801 Jones Franklin Road Suite 300, Raleigh NC 27606-3394

Completed by: John Marshall, GHMPS

(828) 485-4232 | [john.marshall@wpcog.org](mailto:john.marshall@wpcog.org) | 4/17/2015

April 16, 2015

Dear Local Agency Representative,

**Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey**

Stantec is currently in the process of updating the traffic forecast for NCDOT project R-2307 / I-5717, which includes widening and improvements to NC 150 through parts of Iredell and Catawba Counties. The project limits begin at NC 16 in Catawba County and extend eastward through the I-77 interchange to just west of US 21 in Iredell County. The forecast includes base year (2015) and design year (2040) forecasts.

We are seeking input from local officials who are familiar with the area and have identified you as a local representative. I have listed a few questions below that will help us in the development in the traffic forecast. We would greatly appreciate your time in answering these questions. You may answer the questions in text format below and return them to me at [Samuel.Williams@stantec.com](mailto:Samuel.Williams@stantec.com). If you would rather discuss the questions over the phone, I will be following up with a phone call early next week. Thank you in advance for your time and please let me know if you have any questions.

- 1) Current and historical traffic trends indicate that growth in the area was flat or negative from 2007 through 2011, but has recently increased. Do you agree with this statement? What growth patterns have you noticed?

Yes we agree with traffic trends for the Catawba County section. On the Catawba County side it has had more to do with development interest than actual development. There have been sewer lines installed that have increased interest along with the future improvements to NC 150.

- 2) Aside from school being in session, are there any noticeable seasonal differences in traffic?

Lake traffic increases during summer months.

- 3) Do you know of any transportation projects in the area that would impact our study?

At this time there are no major transportation projects in Catawba County that would impact NC 150.





April 15, 2015

Page 2 of 3

Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey

- 4) We have been made aware of the following developments in our study area. Are you aware of any other planned or approved development in the area that would affect our study?
- a. The Village at Sherrills Ford (near Slanting Bridge Road, west of Terrell)
  - b. Marshall Road Commercial Development (just west of Marshall Steam Station)
  - c. NC 150/Doolie Apartments (located in SW quadrant of NC 150 and Doolie Road)
  - d. Anticipated commercial development in NW quadrant of NC 150 and Perth Road (land use unknown at this time)
  - e. Old Iron Mixed Use Development (located on north side of NC 150 between Perth Road and Ervin Road)
  - f. Cambridge Apartments (on Ervin Road across from Sam's Club) – currently under construction
  - g. Outback Steakhouse (near Target entrance)
  - h. Sam's Car Wash (located in SE quadrant of NC 150 / I-77 interchange)

The Key Harbor Development (1200-1500 homes) on Island Point Road (SR 1838) could affect traffic on NC 150. Currently that development is on hold.

- 5) Do you have any additional comments that would be helpful in our development of the traffic forecast?

The Mountain Creek Park on Little Mountain Road (SR 1815) in future years (currently not funded) could affect traffic on NC 150. The proposed park is 600 acres and is located 2 mile north of NC 150 on Little Mountain Road.

Thank you again for your time and consideration!

Regards,

**STANTEC CONSULTING SERVICES INC.**

Samuel Williams, EI  
Transportation Engineer in Training  
Phone: (919) 865-7385  
Fax: (919) 851-7024

Design with community in mind



April 15, 2015  
Page 3 of 3

**Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey**

Samuel.williams@stantec.com

Attachment: Attachment

c. Cc List

kr document2



**Town of Mooresville**  
**Development Services Department**  
Post Office Box 878  
Mooresville, North Carolina 28115  
704-662-7040

April 20, 2015

Samuel Williams, EI  
Stantec Consulting Services Inc.  
801 Jones Franklin Road Suite 300  
Raleigh NC 27606-3394

**RE: Town of Mooresville Response to R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey**

Dear Mr. Williams,

Thank you for your request for local input for the subject project. Below are responses to the questions received via email on April 15, 2015.

- Q1: Current and historical traffic trends indicate that growth in the area was flat or negative from 2007 through 2011, but has recently increased. Do you agree with this statement? What growth patterns have you noticed?
- A1: Development interest in NC 150 corridor is consistently strong and has picked up since the release of NCDOT's Draft STIP confirming the widening project for NC 150.
- Q2: Aside from school being in session, are there any noticeable seasonal differences in traffic?
- A2: The Town accounts for additional traffic during Race Week in mid-May and Lake-related weekend traffic throughout the spring and summer.
- Q3: Do you know of any transportation projects in the area that would impact our study?
- A3: The Town is pursuing a project to spot widen Williamson Road to provide two through lanes in each direction (concept plan attached) and developer-installed mitigation measures are anticipated for items 4c (in progress) and 4g (attached).
- Q4: We have been made aware of the following developments in our study area. Are you aware of any other planned or approved development in the area that would affect our study?
- a. The Village at Sherrills Ford (near Slanting Bridge Road, west of Terrell)
  - b. Marshall Road Commercial Development (just west of Marshall Steam Station)
  - c. NC 150/Doolie Apartments (located in SW quadrant of NC 150 and Doolie Road)
  - d. Anticipated commercial development in NW quadrant of NC 150 and Perth Road (land use unknown at this time)
  - e. Old Iron Mixed Use Development (located on north side of NC 150 between Perth Road and Ervin Road)
  - f. Cambridge Apartments (on Ervin Road across from Sam's Club) – currently under construction
  - g. Outback Steakhouse (near Target entrance)
  - h. Sam's Car Wash (located in SE quadrant of NC 150 / I-77 interchange)
- A4: The "study area" was not defined in your original request. Please submit an exhibit for complete identification of developments that may impact your traffic forecast.

Without the information above, these are additional developments which may generate trips on NC 150. Please note, all but one of these developments have been discussed with Town staff by developers but have not yet been through the approval process.

- a. Shopping Center on Brawley/Talbert (site plan attached) - The Town anticipates this retail center may attract regional trips. A TIA is in progress for this site and includes trip distribution to/from NC150 at Talbert Road.

- b. Potential single family site (approx. 100 lots) in the northwest quadrant of NC 150/Perth with direct access to Perth Road.
- c. Townhomes and mixed use development on NC 150 in front of Water Oak (concept plan attached)
- d. Phase 2 of the residences at Morrison Plantation (site plan attached) – This project has been approved for construction

Additionally, there are several large, undeveloped tracts along US 21 which, when developed, are anticipated to generate trips that would impact operations on NC 150. It may be prudent to make some development assumptions, based on the Town's land use plan, at this eastern limit of the R-2307 project.

- Q5: Do you have any additional comments that would be helpful in our development of the traffic forecast?
- A5: This traffic forecast should account for latent trip demand on NC 150 due to current perceived congestion. I expect we will see trip increases on NC 150 beyond the growth and development projections. Build as much capacity as you can for all modes.

Sincerely,



Kelsie Anderson, PE, STP  
Transportation Engineer  
[kanderson@ci.mooresville.nc.us](mailto:kanderson@ci.mooresville.nc.us)  
704-663-2891

Enclosures: Williamson Road Widening Concept Plan  
Atwell Development Mitigation Measures  
NEC Brawley Site Plan  
Mixed Use at Water Oak Concept Plan  
Residences at Morrison Plantation Phase 2 Site Plan

cc: Allison Kraft, Senior Engineer  
Craig Culberson, Senior Planner  
Matthew Todd, Iredell County Planning Division Manager  
David Keilson, NCDOT Division 12 Planning Engineer  
John Cook, NCDOT Division 12-District 2 Supervisor



Stantec Consulting Services Inc.  
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Completed by: Matthew Todd, Planning Division Manager, Iredell County Development Services  
(704) 928-2048 | [mtodd@co.iredell.nc.us](mailto:mtodd@co.iredell.nc.us) | 4/17/2015

April 16, 2015

Dear Local Agency Representative,

**Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey**

Stantec is currently in the process of updating the traffic forecast for NCDOT project R-2307 / I-5717, which includes widening and improvements to NC 150 through parts of Iredell and Catawba Counties. The project limits begin at NC 16 in Catawba County and extend eastward through the I-77 interchange to just west of US 21 in Iredell County. The forecast includes base year (2015) and design year (2040) forecasts.

We are seeking input from local officials who are familiar with the area and have identified you as a local representative. I have listed a few questions below that will help us in the development in the traffic forecast. We would greatly appreciate your time in answering these questions. You may answer the questions in text format below and return them to me at [Samuel.Williams@stantec.com](mailto:Samuel.Williams@stantec.com). If you would rather discuss the questions over the phone, I will be following up with a phone call early next week. Thank you in advance for your time and please let me know if you have any questions.

- 1) Current and historical traffic trends indicate that growth in the area was flat or negative from 2007 through 2011, but has recently increased. Do you agree with this statement? What growth patterns have you noticed?

Generally speaking new development throughout Iredell County was relatively flat during the above mentioned time period. Over the past couple year's development has increased largely in the south end of the County including the 150 Corridor. We fully expect this trend to continue with additional commercial and residential growth to continue along this corridor and along Perth Road that feeds into NC 150.

- 2) Aside from school being in session, are there any noticeable seasonal differences in traffic?

I am not aware of any other seasonal differences in traffic on the 150 corridor.

- 3) Do you know of any transportation projects in the area that would impact our study?

There are no other transportation projects in the area that would impact the study.



April 15, 2015

Page 2 of 3

Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey

- 4) We have been made aware of the following developments in our study area. Are you aware of any other planned or approved development in the area that would affect our study?
- a. The Village at Sherrills Ford (near Slanting Bridge Road, west of Terrell)
  - b. Marshall Road Commercial Development (just west of Marshall Steam Station)
  - c. NC 150/Doolie Apartments (located in SW quadrant of NC 150 and Doolie Road)
  - d. Anticipated commercial development in NW quadrant of NC 150 and Perth Road (land use unknown at this time)
  - e. Old Iron Mixed Use Development (located on north side of NC 150 between Perth Road and Ervin Road)
  - f. Cambridge Apartments (on Ervin Road across from Sam's Club) – currently under construction
  - g. Outback Steakhouse (near Target entrance)
  - h. Sam's Car Wash (located in SE quadrant of NC 150 / I-77 interchange)
  - i. Trillium Subdivision – 64 lots off Ervin Road
  - j. Potential unnamed residential development – approx. 100 lots Normandy Road off Perth
- 5) Do you have any additional comments that would be helpful in our development of the traffic forecast?

This area is going to continue to have increased residential and commercial development. The Iredell County 2030 Horizon Plan has areas along this corridor identified as a mix of low density residential, high density residential/mixed use, and corridor commercial. Lake Norman High School off Doolie Road during the school year produces high traffic volumes and greatly impacts the road functionality of 150 along with the intersection at Doolie/Perth. Adequate turn lanes are needed to serve this use. Also, Perth Road that extends north to Troutman and US 21 is an area that is going to see continued residential growth. Perth is the main road connecting these residents to Mooresville and the 150 corridor.

Thank you again for your time and consideration!

Regards,

**STANTEC CONSULTING SERVICES INC.**

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April 15, 2015  
Page 3 of 3

**Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey**

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Attachment: Attachment

c. Cc List

kr document2



Stantec Consulting Services Inc.  
801 Jones Franklin Road Suite 300, Raleigh NC 27606-3394

Completed by: Neil Burke, CRTPO on 4/16/2015

704-353-0198 | [nburke@charlottenc.gov](mailto:nburke@charlottenc.gov)

April 16, 2015

Dear Local Agency Representative,

**Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey**

Stantec is currently in the process of updating the traffic forecast for NCDOT project R-2307 / I-5717, which includes widening and improvements to NC 150 through parts of Iredell and Catawba Counties. The project limits begin at NC 16 in Catawba County and extend eastward through the I-77 interchange to just west of US 21 in Iredell County. The forecast includes base year (2015) and design year (2040) forecasts.

We are seeking input from local officials who are familiar with the area and have identified you as a local representative. I have listed a few questions below that will help us in the development in the traffic forecast. We would greatly appreciate your time in answering these questions. You may answer the questions in text format below and return them to me at [Samuel.Williams@stantec.com](mailto:Samuel.Williams@stantec.com). If you would rather discuss the questions over the phone, I will be following up with a phone call early next week. Thank you in advance for your time and please let me know if you have any questions.

- 1) Current and historical traffic trends indicate that growth in the area was flat or negative from 2007 through 2011, but has recently increased. Do you agree with this statement? What growth patterns have you noticed?

*Since 2011, the economy in the Charlotte area has rebounded and the NC 150 corridor has experienced additional commercial development along the corridor. In addition, several residential subdivisions are under construction or have recently been completed within the area of influence. To a lesser extent, the continued interest in redevelopment and cultural activities in Downtown Mooresville may be attributable to the increase in traffic volumes along NC 150.*

- 2) Aside from school being in session, are there any noticeable seasonal differences in traffic?



April 15, 2015

Page 2 of 3

Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey

*There may be seasonal traffic increases associated with recreational activities for Lake Norman in the summer and holiday shopping associated with the retail establishments along the NC 150 corridor between Thanksgiving and Christmas.*

Do you know of any transportation projects in the area that would impact our study?

*Consideration should be given to the following adjacent projects:*

- *I-4750AA - I-77 HOT lane project from Catawba Avenue (Exit 28) to NC 150 (Exit 36). Construction may begin late this year pending financial close between I-77 Mobility Partners and NCDOT.*
- *I-4750AB – I-77 Construct one new General Purpose lane in each direction from Catawba Avenue (Exit 28) to NC 150 (Exit 36). Currently Unfunded in the 2016-25 DRAFT STIP.*
- *I-4750B – I-77 Widening from NC 150 (Exit 36) to US 21/NC 115 (Exit 42). Currently Unfunded in the 2016-25 DRAFT STIP.*
- *R-5100 - Williamson Road widening (I-77 to NC 150) which is programmed for ROW in 2020 and construction in 2022 in the 2016-25 DRAFT STIP*
- *U-5816 – Midnight Lane – Oates Road & I-77 Overpass: Programmed for ROW in 2020 and Construction in 2022 in the 2016-25 DRAFT STIP.*
- *R-3833C – Brawley School Road Widening (Talbert Road to US 21): Programmed for ROW in 2020 and Construction in 2022 in the 2016-25 DRAFT STIP.*
- *U-5817 – Extend Fairview Road over I-77 to connect with Alcove Road. Programmed for ROW in 2019 and Construction in 2021 in the 2016-25 DRAFT STIP. This is part of a larger Fairview Flyover Feasibility Study that NCDOT has completed. The project is probably outside of the area of influence, however; once constructed the connection of Fairview Road to Williamson Road may redirect some “cross-town” trips that may normally have used portions of the NC 150 corridor.*
- *FS-1512B I-77 and Cornelius Road Interchange Feasibility Study*

3) We have been made aware of the following developments in our study area. Are you aware of any other planned or approved development in the area that would affect our study?

a. The Village at Sherrills Ford (near Slanting Bridge Road, west of Terrell)

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April 15, 2015

Page 3 of 3

**Reference: R-2307 / I-5717 NC 150 Corridor Study Traffic Forecast Survey**

- b. Marshall Road Commercial Development (just west of Marshall Steam Station)
- c. NC 150/Doolie Apartments (located in SW quadrant of NC 150 and Doolie Road)
- d. Anticipated commercial development in NW quadrant of NC 150 and Perth Road (land use unknown at this time)
- e. Old Iron Mixed Use Development (located on north side of NC 150 between Perth Road and Ervin Road)
- f. Cambridge Apartments (on Ervin Road across from Sam's Club) – currently under construction
- g. Outback Steakhouse (near Target entrance)
- h. Sam's Car Wash (located in SE quadrant of NC 150 / I-77 interchange)

***No additional comments.***

- 4) Do you have any additional comments that would be helpful in our development of the traffic forecast?

***Saturday mornings and early afternoons generally have the highest peak period traffic volumes along the NC 150 corridor, surpassing weekday peak hour volumes.***

Thank you again for your time and consideration!

Regards,

**STANTEC CONSULTING SERVICES INC.**

Samuel Williams, EI  
Transportation Engineer in Training  
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Fax: (919) 851-7024  
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Attachment: Attachment

c. Cc List

kr document2

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**APPENDIX C:**  
**TRAFFIC FORECAST TABLES**





**Table C1: 2015 Base Year No-Build Traffic Volumes**

Forecast Location	NCDOT Historic Count Data							AADT Extrapolated to 2015 <sup>(1)</sup>	Project Specific Count Data <sup>(3)</sup>		2015 No-Build Traffic Forecast
	2007	2008	2009	2010	2011	2012	2013		TMC	Mainline	
NC 150 - West of NC 16 Bypass									13,100 <sup>(6)</sup>		<b>13,200</b>
NC 150 - NC 16 Bypass to E. Maiden Road (SR 1855)			9,800		9,600		11,000	11,300	11,300 <sup>(6)</sup> 12,200 <sup>(6)</sup>		<b>11,300</b>
NC 150 - E. Maiden Road (SR 1855) to NC 16 Business	12,000		12,000		12,000		12,000	12,000	14,100 <sup>(6)</sup> 13,600 <sup>(6)</sup>		<b>13,300</b>
NC 150 - NC 16 Business to Grassy Creek Road (SR 1853)	11,000		10,000		9,800		11,000	10,700	12,600 <sup>(6)</sup> 11,900 <sup>(6)</sup>	12,200 <sup>(8)</sup>	<b>12,600</b>
NC 150 - Grassy Creek Road (SR 1853) to Mt. Pleasant Road (SR 1849)	12,000		12,000		11,000		12,000	11,900	12,800 <sup>(6)</sup> 12,800 <sup>(6)</sup>		<b>13,100</b>
NC 150 - Mt. Pleasant Road (SR 1849) to Little Mountain Road (SR 1815)									10,200 <sup>(6)</sup> 9,600 <sup>(6)</sup>		<b>10,500</b>
NC 150 - Little Mountain Road (SR 1815) to Slanting Bridge Road (SR 1844)	10,000		9,100		8,700		9,400	9,200	10,400 <sup>(6)</sup> 10,800 <sup>(6)</sup>		<b>11,000</b>
NC 150 - Slanting Bridge Road (SR 1844) to Sherrills Ford Road (SR 1848)	13,000		12,000		11,000		12,000	11,900	13,900 <sup>(6)</sup> 14,100 <sup>(6)</sup>		<b>14,000</b>
NC 150 - Sherrills Ford Road (SR 1848) to Kiser Island Road (SR 1841)/Marshall Steam Station	17,000		16,000		15,000		16,000	15,700	17,900 <sup>(6)</sup> 17,300 <sup>(6)</sup>		<b>17,800</b>
NC 150 - Kiser Island Road (SR 1841)/Marshall Steam Station to Greenwood Road (SR 1840)									17,200 <sup>(6)</sup> 17,000 <sup>(6)</sup>		<b>17,400</b>
NC 150 - East of Greenwood Road (SR 1840)	17,000		15,000		15,000		12,000	12,800	17,000 <sup>(6)</sup>		<b>17,100</b>
NC 150 - West of McCrary Road/Robinson Road			17,000				19,000	20,000	20,300 <sup>(6)</sup>		<b>20,900</b>
NC 150 - McCrary Road/Robinson Road to Doolie Road (SR 1168)/Perth Road (SR 1303)									21,300 <sup>(6)</sup> 22,000 <sup>(5)</sup>	20,500 <sup>(8)</sup>	<b>21,800</b>
NC 150 - East of Doolie Road (SR 1180)/Perth Road (SR 1303)									26,000 <sup>(5)</sup>		<b>26,100</b>
NC 150 - West of Morrison Plantation Park/Ervin Road (SR 1304)									30,500 <sup>(6)</sup>		<b>30,500</b>
NC 150 - East of Morrison Plantation Park/Ervin Road (SR 1304)									27,800 <sup>(6)</sup>		<b>27,800</b>
NC 150 - West of Mooresville Crossing Entrance/Target Entrance									28,800 <sup>(6)</sup>		<b>28,800</b>

**Table C1: 2015 Base Year No-Build Traffic Volumes**

Forecast Location	NCDOT Historic Count Data							AADT Extrapolated to 2015 <sup>(1)</sup>	Project Specific Count Data <sup>(3)</sup>		2015 No-Build Traffic Forecast
	2007	2008	2009	2010	2011	2012	2013		TMC	Mainline	
NC 150 - Mooresville Crossing Entrance/Target Entrance to Williamson Road (SR 1109)/Bluefield Road (SR 1467)			26,000				30,000	32,000	31,000 <sup>(6)</sup> 28,500 <sup>(4)</sup>		<b>31,200</b>
NC 150 - Williamson Road (SR 1109)/Bluefield Road (SR 1467) to Lowes Access/Food Lion Access									35,200 <sup>(4)</sup> 39,800 <sup>(6)</sup>		<b>39,000</b>
NC 150 - East of Lowes Access/Food Lion Access	38,000	38,000	38,000	35,000	39,000	40,000		41,000	37,700 <sup>(6)</sup>		<b>37,200</b>
NC 150 - West of Rolling Hills Road/Regency Center Drive									40,300 <sup>(6)</sup>		<b>40,400</b>
NC 150 - Rolling Hills Road/Regency Center Drive to I-77									46,700 <sup>(6)</sup> 44,500 <sup>(5)</sup>		<b>45,700</b>
NC 150 - I-77 to Norman Station Boulevard									41,400 <sup>(5)</sup>	39,500 <sup>(7)</sup>	<b>41,400</b>
NC 150 - East of Norman Station Boulevard	38,000	38,000	36,000	35,000	38,000	38,000	34,000	36,500			<b>35,500</b>
NC 150 - West of Corporate Center Drive/Kia Driveway											<b>34,800</b>
NC 150 - Corporate Center Drive/Kia Driveway to Talbert Drive (SR 1116)										33,400 <sup>(7)</sup>	<b>34,000</b>
NC 150 - East of Talbert Drive (SR 1116)											<b>36,300</b>
NC 150 - West of Macleod Drive	35,000	34,000	33,000	32,000	35,000	36,000		35,500	30,500 <sup>(4)</sup>		<b>35,800</b>
NC 150 - East of Macleod Drive									31,900 <sup>(4)</sup>	35,700 <sup>(7)</sup>	<b>36,900</b>
NC 16 Bypass - South of NC 150						14,000	16,000	20,000			<b>16,000</b>
NC 16 Bypass - North of NC 150							7,400	N/A (2)		9,300 <sup>(8)</sup>	<b>9,300</b>
E. Maiden Road (SR 1855) - North of NC 150	2,700		2,700		2,600		2,300	2,200	2,600 <sup>(6)</sup>		<b>2,600</b>
NC 16 Business - South of NC 150	14,000		13,000		13,000		7,900	10,000	10,600 <sup>(6)</sup>		<b>9,900</b>
NC 16 Business - North of NC 150	8,200		8,000		8,400		4,300	5,900	6,200 <sup>(6)</sup>		<b>6,000</b>
Grassy Creek Road (SR 1853) - South of NC 150	2,100		1,900		1,900		1,500	1,600	1,500 <sup>(6)</sup>		<b>1,500</b>
Mt. Pleasant Road (SR 1849) - North of NC 150	2,800		2,600		2,500		2,800	2,700	2,900 <sup>(6)</sup>		<b>3,000</b>
Little Mountain Road (SR 1815) - North of NC 150	1,900		1,700		1,800		1,600	1,600	1,700 <sup>(6)</sup>		<b>1,700</b>
Slanting Bridge Road (SR 1844) - South of NC 150	7,600		6,500		6,600		6,600	6,900	7,600 <sup>(6)</sup>		<b>7,500</b>
Slanting Bridge Road (SR 1844) - North of NC 150									2,500 <sup>(6)</sup>		<b>2,500</b>
Sherrills Ford Road (SR 1848) - South of NC 150	1,100		1,100		1,300		1,000	1,100	1,200 <sup>(6)</sup>		<b>1,200</b>
Sherrills Ford Road (SR 1848) - North of NC 150	5,800		5,400		5,200		5,300	5,400	5,200 <sup>(6)</sup>		<b>5,200</b>
Kiser Island Road (SR 1841) - South of NC 150	1,200		1,200		1,200			1,200	1,600 <sup>(6)</sup>		<b>1,700</b>
Marshall Steam Station - North of NC 150									1,100 <sup>(6)</sup>		<b>1,100</b>

**Table C1: 2015 Base Year No-Build Traffic Volumes**

Forecast Location	NCDOT Historic Count Data							AADT Extrapolated to 2015 <sup>(1)</sup>	Project Specific Count Data <sup>(3)</sup>		2015 No-Build Traffic Forecast
	2007	2008	2009	2010	2011	2012	2013		TMC	Mainline	
Greenwood Road (SR 1840) - South of NC 150	620		750		730		680	600	100 (6)		700
McCrary Road - South of NC 150		770		780		800		1,000	1,000 (6)		1,100
Robinson Road - North of NC 150									800 (6)		800
Doolie Road (SR 1180) - South of NC 150									4,300 (5)		4,800
Perth Road (SR 1303) - North of SR 150			9,000		9,700			11,300	10,500 (5)		10,500
Morrison Plantation Park (SR 1304) - South of NC 150									14,800 (6)		14,800
Ervin Road (SR 1304) - North of NC 150									4,900 (6)		4,900
Mooreville Crossing Entrance - South of NC 150									5,200 (6)		5,400
Target Entrance - North of NC 150									8,200 (6)		8,200
Williamson Road (SR 1109) - South of NC 150		22,000		21,000		23,000		27,300	18,300 (4)		18,200
Bluefield Road (SR 1467) - North of NC 150	11,000		11,000		7,400		11,000	10,500	14,000 (4)		14,000
Lowes Access - South of NC 150									8,200 (6)		8,300
Food Lion Access - North of NC 150									3,100 (6)		3,100
Rolling Hills Road - South of NC 150									8,800 (6)		8,900
Regency Center Drive - North of NC 150									6,600 (6)		6,600
I-77 - South of Exit 35 (Brawley School Road)	62,000	56,000	61,000	58,000	61,000	59,000	69,000	64,900			69,600
I-77 - Exit 35 (Brawley School Road) to Exit 36 (NC 150)							64,000	N/A (2)		62,900 (8)	62,300
I-77 - Exit 36 (NC 150) to Exit 42 (US 21/NC 115)	55,000	49,000	53,000	51,000	54,000	53,000	58,000	56,700		55,500 (8)	58,000
I-77 - North of Exit 42 (US 21/NC 115)	56,000	50,000	53,000	52,000	56,000	53,000	59,000	57,400			58,500
Norman Station Boulevard - South of NC 150										10,800 (7)	11,400
Norman Station Boulevard - North of NC 150										3,300 (7)	3,300
Kia Driveway - South of NC 150											600
Corporate Center Drive - North of NC 150										900 (7)	1,000
Talbert Road (SR 1116) - South of NC 150	7,200		7,100		6,500			7,300		8,400 (7)	8,600
Talbert Road (SR 1116) - North of NC 150		11,000		7,500		8,600		8,700		7,500 (7)	7,500
Macleod Drive - South of NC 150									3,900 (4)	1,700 (7)	3,900
Macleod Drive - North of NC 150									400 (4)		400
Brawley School Road (SR 1100) - West of I-77	16,000		15,000				23,000	24,000	27,100 (5)		27,000
Brawley School Road (SR 1100) - I-77 to Talbert Road (SR 1116)/Sunfish Drive									21,300 (5)		22,300
									23,100 (5)		

**Table C1: 2015 Base Year No-Build Traffic Volumes**

Forecast Location	NCDOT Historic Count Data							AADT Extrapolated to 2015 <sup>(1)</sup>	Project Specific Count Data <sup>(3)</sup>		2015 No-Build Traffic Forecast
	2007	2008	2009	2010	2011	2012	2013		TMC	Mainline	
Brawley School Road (SR 1100) - East of Talbert Road (SR 1116)/Sunfish Drive									18,700 (5)		<b>18,500</b>
Sunfish Drive - South of Brawley School Road (SR 1100)									500 (5)		<b>500</b>
Talbert Drive (SR 1116) - North of Brawley School Road (SR 1100)									11,900 (5)		<b>11,900</b>
US 21/NC 115 - West of Julian Drive									15,900 (5)		<b>16,000</b>
US 21/NC 115 - Julian Drive to I-77									16,500 (5) 17,000 (5)		<b>16,800</b>
US 21/NC 115 - I-77 to Lexus Drive/Garden Center Avenue									18,000 (5) 16,600 (5)		<b>17,500</b>
US 21/NC 115 - East of Lexus Drive/Garden Center Avenue	11,000	12,000	10,000	12,000	12,000	12,000		12,100	12,500 (5)		<b>12,800</b>
Julian Drive - North of US 21/NC 115									2,000 (5)		<b>2,000</b>
Lexus Drive - South of US 21/NC 115									2,000 (5)		<b>2,000</b>
Garden Center Avenue - North of US 21/NC 115									4,700 (5)		<b>4,700</b>

**Notes:**

- (1) Data extrapolated to 2015 based on linear regression of 2002-2013 data
- (2) Data extrapolation to 2015 not possible due to roadway recently being opened and only one data point available
- (3) All Project Specific Counts were converted to AADT based on the NCDOT Traffic Survey Unit ATR Seasonal Factors as described in Section 2.3
- (4) 2013 NCDOT 13-hour Turning Movement Count - factored to 24-hour volumes, adjusted to AADT and factored to 2015.
- (5) 2014 Project Specific 16-hour Turning Movement Count - factored to 24-hour volumes, adjusted to AADT and factored to 2015.
- (6) 2015 Project Specific 16-hour Turning Movement Count - factored to 24-hour volume and adjusted to AADT.
- (7) 2014 Project Specific Mainline Count - Adjusted to AADT and factored to 2015.
- (8) 2015 Project Specific Mainline Count - Adjusted to AADT.

**Table C2: 2015 Base Year No-Build Design Data – Truck Percentages**

Forecast Location	Previous Forecast		Project Specific Count Data <sup>(3)</sup>		Selected 2015 BY NB Value
	Truck Percentage	TIP Project	TMC	Mainline	
NC 150 - West of NC 16 Bypass	4,6	R-2307	3,2 (3)		4,2
NC 150 - NC 16 Bypass to E. Maiden Road (SR 1855)	6,2	R-2307	4,3 (3) 4,3 (3)		5,3
NC 150 - E. Maiden Road (SR 1855) to NC 16 Business	6,2	R-2307	4,3 (3) 5,4 (3)		5,3
NC 150 - NC 16 Business to Grassy Creek Road (SR 1853)	6,2	R-2307	4,4 (3) 5,3 (3)		5,3
NC 150 - Grassy Creek Road (SR 1853) to Mt. Pleasant Road (SR 1849)	6,2	R-2307	5,3 (3) 4,3 (3)	9,4 (5)	5,3
NC 150 - Mt. Pleasant Road (SR 1849) to Little Mountain Road (SR 1815)	6,2	R-2307	4,4 (3) 3,4 (3)		5,3
NC 150 - Little Mountain Road (SR 1815) to Slanting Bridge Road (SR 1844)	6,2	R-2307	3,4 (3) 3,4 (3)		5,3
NC 150 - Slanting Bridge Road (SR 1844) to Sherrills Ford Road (SR 1848)	6,2	R-2307	3,3 (3) 4,3 (3)		5,3
NC 150 - Sherrills Ford Road (SR 1848) to Kiser Island Road (SR 1841)/Marshall Steam Station	6,2	R-2307	4,2 (3) 3,2 (3)		5,3
NC 150 - Kiser Island Road (SR 1841)/Marshall Steam Station to Greenwood Road (SR 1840)	6,2	R-2307	3,2 (3) 5,1 (3)		5,3
NC 150 - East of Greenwood Road (SR 1840)	6,2	R-2307	5,1 (3)		5,3
NC 150 - West of McCrary Road/Robinson Road	6,2	R-2307	4,2 (3)		5,3
NC 150 - McCrary Road/Robinson Road to Doolie Road (SR 1168)/Perth Road (SR 1303)	6,2	R-2307	3,2 (3) 3,1 (2)	2,2 (4)	4,2
NC 150 - East of Doolie Road (SR 1180)/Perth Road (SR 1303)	5,3	R-2307	3,1 (2)		4,2
NC 150 - West of Morrison Plantation Park/Ervin Road (SR 1304)	5,3	R-2307	3,1 (3)		4,2
NC 150 - East of Morrison Plantation Park/Ervin Road (SR 1304)	5,3	R-2307	3,1 (3)		4,2
NC 150 - West of Mooresville Crossing Entrance/Target Entrance	5,3	R-2307	3,1 (3)		4,2
NC 150 - Mooresville Crossing Entrance/Target Entrance to Williamson Road (SR 1109)/Bluefield Road (SR 1467)	5,3	R-2307	2,1 (3)		4,2

**Table C2: 2015 Base Year No-Build Design Data – Truck Percentages**

Forecast Location	Previous Forecast		Project Specific Count Data <sup>(3)</sup>		Selected 2015 BY NB Value
	Truck Percentage	TIP Project	TMC	Mainline	
NC 150 - Williamson Road (SR 1109)/Bluefield Road (SR 1467) to Lowes Access/Food Lion Access	5,3	R-2307	2,1 (3)		4,2
NC 150 - East of Lowes Access/Food Lion Access			2,1 (3)		4,2
NC 150 - West of Rolling Hills Road/Regency Center Drive			3,1 (3)		4,2
NC 150 - Rolling Hills Road/Regency Center Drive to I-77			3,1 (3) 1,1 (2)		4,2
NC 150 - I-77 to Norman Station Boulevard			1,1 (2)	8,1 (4)	4,2
NC 150 - East of Norman Station Boulevard					4,2
NC 150 - West of Corporate Center Drive/Kia Driveway					4,2
NC 150 - Corporate Center Drive/Kia Driveway to Talbert Drive (SR 1116)					4,2
NC 150 - East of Talbert Drive (SR 1116)					4,2
NC 150 - West of Macleod Drive			2,1 (1)		4,2
NC 150 - East of Macleod Drive			2,1 (1)	9,2 (4)	4,2
NC 16 Bypass - South of NC 150	6,7	R-2307			3,9
NC 16 Bypass - North of NC 150	7,7 {5,4}	R-2307 {R-2206}		3,9 (5)	3,9
E. Maiden Road (SR 1855) - North of NC 150	4,6	R-2307	4,1 (3)		4,1
NC 16 Business - South of NC 150	4,5	R-2307	6,3 (3)		5,3
NC 16 Business - North of NC 150	8,2 {5,4}	R-2307 {R-2206}	5,2 (3)		5,3
Grassy Creek Road (SR 1853) - South of NC 150	3,1	R-2307	4,1 (3)		4,1
Mt. Pleasant Road (SR 1849) - North of NC 150	4,2	R-2307	4,1 (3)		4,1
Little Mountain Road (SR 1815) - North of NC 150	4,2	R-2307	3,1 (3)		3,1
Slanting Bridge Road (SR 1844) - South of NC 150	3,1	R-2307	3,1 (3)		3,1
Slanting Bridge Road (SR 1844) - North of NC 150	3,1	R-2307	3,1 (3)		3,1
Sherrills Ford Road (SR 1848) - South of NC 150	3,1	R-2307	2,1 (3)		2,1
Sherrills Ford Road (SR 1848) - North of NC 150	3,1	R-2307	3,1 (3)		3,1
Kiser Island Road (SR 1841) - South of NC 150	4,1	R-2307	3,1 (3)		3,1
Marshall Steam Station - North of NC 150	19,10	R-2307	5,12 (3)		6,12
Greenwood Road (SR 1840) - South of NC 150	4,1	R-2307	1,1 (3)		2,1
McCrary Road - South of NC 150	6,1	R-2307	7,1 (3)		7,1
Robinson Road - North of NC 150	6,1	R-2307	5,1 (3)		5,1
Doolie Road (SR 1180) - South of NC 150	2,1	R-2307	4,1 (2)		4,1



**Table C2: 2015 Base Year No-Build Design Data – Truck Percentages**

Forecast Location	Previous Forecast		Project Specific Count Data <sup>(3)</sup>		Selected 2015 BY NB Value
	Truck Percentage	TIP Project	TMC	Mainline	
Perth Road (SR 1303) - North of SR 150	3,2	R-2307	3,1 (2)		3,1
Morrison Plantation Park (SR 1304) - South of NC 150	3,1	R-2307	2,1 (3)		2,1
Ervin Road (SR 1304) - North of NC 150	4,2	R-2307	3,1 (3)		3,1
Mooreville Crossing Entrance - South of NC 150			1,6 (3)		1,5
Target Entrance - North of NC 150			1,4 (3)		1,4
Williamson Road (SR 1109) - South of NC 150	2,1	R-2307	1,1 (1)		2,1
Bluefield Road (SR 1467) - North of NC 150	5,1	R-2307	2,1 (1)		2,1
Lowes Access - South of NC 150	2,1	R-2307	1,1 (3)		2,1
Food Lion Access - North of NC 150	2,1	R-2307	1,1 (3)		2,1
Rolling Hills Road - South of NC 150			2,1 (3)		2,1
Regency Center Drive - North of NC 150			2,1 (3)		2,1
I-77 - South of Exit 35 (Brawley School Road)	18,6; {19} <sup>6</sup>	R-3833B; {I-4750AA}			4,8
I-77 - Exit 35 (Brawley School Road) to Exit 36 (NC 150)	18,6; {22} <sup>6</sup>	R-3833B; {I-4750AA}		30,19 (4)	4,8
I-77 - Exit 36 (NC 150) to Exit 42 (US 21/NC 115)	{23} <sup>6</sup>	I-4750AA		26,21 (4)	4,8
I-77 - North of Exit 42 (US 21/NC 115)					4,8
Norman Station Boulevard - South of NC 150					3,1
Norman Station Boulevard - North of NC 150					3,1
Kia Driveway - South of NC 150					3,1
Corporate Center Drive - North of NC 150					3,1
Talbert Road (SR 1116) - South of NC 150				7,1 (4)	3,1
Talbert Road (SR 1116) - North of NC 150				7,1 (4)	4,2
Macleod Drive - South of NC 150			3,1 (1)		8,2
Macleod Drive - North of NC 150			1,1 (1)		3,1
Brawley School Road (SR 1100) - West of I-77	6,3	R-3833B	2,1 (2)		3,1
Brawley School Road (SR 1100) - I-77 to Talbert Road (SR 1116)/Sunfish Drive	4,2	R-3833B	1,1 (2) 1,1 (2)		3,1
Brawley School Road (SR 1100) - East of Talbert Road (SR 1116)/Sunfish Drive	4,2	R-3833B	1,1 (2)		3,1
Sunfish Drive - South of Brawley School Road (SR 1100)	1,1	R-3833B	5,1 (2)		5,1
Talbert Drive (SR 1116) - North of Brawley School Road (SR 1100)	2,1	R-3833B	1,1 (2)		3,1
US 21/NC 115 - West of Julian Drive			3,2 (2)		4,2

**Table C2: 2015 Base Year No-Build Design Data – Truck Percentages**

Forecast Location	Previous Forecast		Project Specific Count Data <sup>(3)</sup>		Selected 2015 BY NB Value
	Truck Percentage	TIP Project	TMC	Mainline	
US 21/NC 115 - Julian Drive to I-77			3,2 (2)		<b>4,2</b>
US 21/NC 115 - I-77 to Lexus Drive/Garden Center Avenue			4,12 (2) 3,7 (2)		<b>4,8</b>
US 21/NC 115 - East of Lexus Drive/Garden Center Avenue			3,5 (2)		<b>3,5</b>
Julian Drive - North of US 21/NC 115			3,3 (2)		<b>3,3</b>
Lexus Drive - South of US 21/NC 115			1,37 (2)		<b>1,37</b>
Garden Center Avenue - North of US 21/NC 115			3,2 (2)		<b>3,2</b>

**Notes:**

- (1) 2013 Project Specific 16-hour Turning Movement Count
- (2) 2014 Project Specific 16-hour Turning Movement Count
- (3) 2015 Project Specific 16-hour Turning Movement Count
- (4) 2014 Project Specific Mainline Count
- (5) 2015 Project Specific Mainline Count
- (6) Traffic Estimate only include total truck percentage and did not distinguish between Duals and TTSTs

**Table C3: 2015 Base Year No-Build Design Data – Directional Distribution**

Forecast Location	Previous Forecast		Project Specific Count Data <sup>(3)</sup>		Selected 2015 BY NB Value
	Directional Distribution	TIP Project	TMC	Mainline	
NC 150 - West of NC 16 Bypass	60	R-2307	60 (3)		60
NC 150 - NC 16 Bypass to E. Maiden Road (SR 1855)	55	R-2307	55 (3) 55 (3)		55
NC 150 - E. Maiden Road (SR 1855) to NC 16 Business	55	R-2307	55 (3) 55 (3)		55
NC 150 - NC 16 Business to Grassy Creek Road (SR 1853)	55	R-2307	55 (3) 55 (3)	55 (5)	55
NC 150 - Grassy Creek Road (SR 1853) to Mt. Pleasant Road (SR 1849)	55	R-2307	55 (3) 55 (3)		55
NC 150 - Mt. Pleasant Road (SR 1849) to Little Mountain Road (SR 1815)	55	R-2307	55 (3) 55 (3)		55
NC 150 - Little Mountain Road (SR 1815) to Slanting Bridge Road (SR 1844)	55	R-2307	55 (3) 55 (3)		55
NC 150 - Slanting Bridge Road (SR 1844) to Sherrills Ford Road (SR 1848)	60	R-2307	60 (3) 60 (3)		60
NC 150 - Sherrills Ford Road (SR 1848) to Kiser Island Road (SR 1841)/Marshall Steam Station	60	R-2307	60 (3) 60 (3)		60
NC 150 - Kiser Island Road (SR 1841)/Marshall Steam Station to Greenwood Road (SR 1840)	60	R-2307	60 (3) 60 (3)		60
NC 150 - East of Greenwood Road (SR 1840)	60	R-2307	60 (3)		60
NC 150 - West of McCrary Road/Robinson Road	60	R-2307	60 (3)		60
NC 150 - McCrary Road/Robinson Road to Doolie Road (SR 1168)/Perth Road (SR 1303)	60	R-2307	60 (3) 55 (2)	55 (4)	60
NC 150 - East of Doolie Road (SR 1180)/Perth Road (SR 1303)	55	R-2307	55 (2)		55
NC 150 - West of Morrison Plantation Park/Ervin Road (SR 1304)	55	R-2307	60 (3)		55
NC 150 - East of Morrison Plantation Park/Ervin Road (SR 1304)	55	R-2307	60 (3)		55
NC 150 - West of Mooresville Crossing Entrance/Target Entrance	55	R-2307	55 (3)		55
NC 150 - Mooresville Crossing Entrance/Target Entrance to Williamson Road (SR 1109)/Bluefield Road (SR 1467)	55	R-2307	55 (3) 55 (1)		55

**Table C3: 2015 Base Year No-Build Design Data – Directional Distribution**

Forecast Location	Previous Forecast		Project Specific Count Data <sup>(3)</sup>		Selected 2015 BY NB Value
	Directional Distribution	TIP Project	TMC	Mainline	
NC 150 - Williamson Road (SR 1109)/Bluefield Road (SR 1467) to Lowes Access/Food Lion Access	55	R-2307	55 (1) 55 (3)		55
NC 150 - East of Lowes Access/Food Lion Access	55	R-2307	55 (3)		55
NC 150 - West of Rolling Hills Road/Regency Center Drive			55 (3)		55
NC 150 - Rolling Hills Road/Regency Center Drive to I-77			55 (3) 55 (2)		55
NC 150 - I-77 to Norman Station Boulevard			55 (2)	55 (4)	55
NC 150 - East of Norman Station Boulevard					55
NC 150 - West of Corporate Center Drive/Kia Driveway					55
NC 150 - Corporate Center Drive/Kia Driveway to Talbert Drive (SR 1116)				55 (4)	55
NC 150 - East of Talbert Drive (SR 1116)					55
NC 150 - West of Macleod Drive			55 (1)		55
NC 150 - East of Macleod Drive			55 (1)	55 (4)	55
NC 16 Bypass - South of NC 150	60	R-2307			55
NC 16 Bypass - North of NC 150	55 {60}	R-2307 {R-3100}		55 (5)	55
E. Maiden Road (SR 1855) - North of NC 150	60	R-2307	70 (3)		65
NC 16 Business - South of NC 150	55	R-2307	60 (3)		55
NC 16 Business - North of NC 150	60 {55}	R-2307 {R-3100}	55 (3)		55
Grassy Creek Road (SR 1853) - South of NC 150	55	R-2307	55 (3)		55
Mt. Pleasant Road (SR 1849) - North of NC 150	60	R-2307	65 (3)		65
Little Mountain Road (SR 1815) - North of NC 150	65	R-2307	60 (3)		60
Slanting Bridge Road (SR 1844) - South of NC 150	55	R-2307	55 (3)		55
Slanting Bridge Road (SR 1844) - North of NC 150	55	R-2307	60 (3)		60
Sherrills Ford Road (SR 1848) - South of NC 150	60	R-2307	55 (3)		55
Sherrills Ford Road (SR 1848) - North of NC 150	65	R-2307	65 (3)		65
Kiser Island Road (SR 1841) - South of NC 150	60	R-2307	60 (3)		60
Marshall Steam Station - North of NC 150	85	R-2307	80 (3)		75
Greenwood Road (SR 1840) - South of NC 150	65	R-2307			60
McCrary Road - South of NC 150	55	R-2307	55 (3)		55
Robinson Road - North of NC 150	55	R-2307	55 (3)		55
Doolie Road (SR 1180) - South of NC 150	55	R-2307	75 (2)		75

**Table C3: 2015 Base Year No-Build Design Data – Directional Distribution**

Forecast Location	Previous Forecast		Project Specific Count Data <sup>(3)</sup>		Selected 2015 BY NB Value
	Directional Distribution	TIP Project	TMC	Mainline	
Perth Road (SR 1303) - North of SR 150	55	R-2307	60 (2)		60
Morrison Plantation Park (SR 1304) - South of NC 150	55	R-2307	55 (3)		55
Ervin Road (SR 1304) - North of NC 150	65	R-2307	55 (3)		55
Mooreville Crossing Entrance - South of NC 150	55	R-2307	55 (3)		55
Target Entrance - North of NC 150	55	R-2307	55 (3)		55
Williamson Road (SR 1109) - South of NC 150	55	R-2307	60 (1)		55
Bluefield Road (SR 1467) - North of NC 150	55	R-2307	55 (1)		55
Lowes Access - South of NC 150			55 (3)		55
Food Lion Access - North of NC 150			55 (3)		55
Rolling Hills Road - South of NC 150			55 (3)		55
Regency Center Drive - North of NC 150			60 (3)		60
I-77 - South of Exit 35 (Brawley School Road)	60	R-3833B			55
I-77 - Exit 35 (Brawley School Road) to Exit 36 (NC 150)	60	R-3833B		60 (4)	55
I-77 - Exit 36 (NC 150) to Exit 42 (US 21/NC 115)				55 (4)	55
I-77 - North of Exit 42 (US 21/NC 115)					55
Norman Station Boulevard - South of NC 150				60 (4)	60
Norman Station Boulevard - North of NC 150				55 (4)	55
Kia Driveway - South of NC 150					55
Corporate Center Drive - North of NC 150				60 (4)	60
Talbert Road (SR 1116) - South of NC 150				55 (4)	55
Talbert Road (SR 1116) - North of NC 150				55 (4)	55
Macleod Drive - South of NC 150			55 (1)	55 (4)	55
Macleod Drive - North of NC 150			55 (1)		55
Brawley School Road (SR 1100) - West of I-77	60	R-3833B	60 (2)		60
Brawley School Road (SR 1100) - I-77 to Talbert Road (SR 1116)/Sunfish Drive	60	R-3833B	55 (2) 55 (2)		55
Brawley School Road (SR 1100) - East of Talbert Road (SR 1116)/Sunfish Drive	60	R-3833B	55 (2)		55
Sunfish Drive - South of Brawley School Road (SR 1100)	80	R-3833B	55 (2)		55
Talbert Drive (SR 1116) - North of Brawley School Road (SR 1100)	60	R-3833B	55 (2)		55
US 21/NC 115 - West of Julian Drive			55 (2)		55

**Table C3: 2015 Base Year No-Build Design Data – Directional Distribution**

Forecast Location	Previous Forecast		Project Specific Count Data <sup>(3)</sup>		Selected 2015 BY NB Value
	Directional Distribution	TIP Project	TMC	Mainline	
US 21/NC 115 - Julian Drive to I-77			55 (2) 60 (2)		55
US 21/NC 115 - I-77 to Lexus Drive/Garden Center Avenue			55 (2) 55 (2)		55
US 21/NC 115 - East of Lexus Drive/Garden Center Avenue			55 (2)		55
Julian Drive - North of US 21/NC 115			55 (2)		55
Lexus Drive - South of US 21/NC 115			75 (2)		75
Garden Center Avenue - North of US 21/NC 115			55 (2)		55

**Notes:**

- (1) 2013 Project Specific 16-hour Turning Movement Count
- (2) 2014 Project Specific 16-hour Turning Movement Count
- (3) 2015 Project Specific 16-hour Turning Movement Count
- (4) 2014 Project Specific Mainline Count
- (5) 2015 Project Specific Mainline Count

**Table C4: 2015 Base Year No-Build Design Data – Peak Hour Factor**

Forecast Location	Previous Forecast		Project Specific Count Data <sup>(3)</sup>		Selected 2015 BY NB Value
	Peak Hour Factor	TIP Project	TMC	Mainline	
NC 150 - West of NC 16 Bypass	10	R-2307	11 (3)		10
NC 150 - NC 16 Bypass to E. Maiden Road (SR 1855)	10	R-2307	11 (3) 11 (3)		10
NC 150 - E. Maiden Road (SR 1855) to NC 16 Business	10	R-2307	10 (3) 10 (3)		10
NC 150 - NC 16 Business to Grassy Creek Road (SR 1853)	10	R-2307	10 (3) 10 (3)	9 (5)	10
NC 150 - Grassy Creek Road (SR 1853) to Mt. Pleasant Road (SR 1849)	10	R-2307	10 (3) 10 (3)		10
NC 150 - Mt. Pleasant Road (SR 1849) to Little Mountain Road (SR 1815)	10	R-2307	10 (3) 10 (3)		10
NC 150 - Little Mountain Road (SR 1815) to Slanting Bridge Road (SR 1844)	10	R-2307	10 (3) 10 (3)		10
NC 150 - Slanting Bridge Road (SR 1844) to Sherrills Ford Road (SR 1848)	10	R-2307	10 (3) 10 (3)		10
NC 150 - Sherrills Ford Road (SR 1848) to Kiser Island Road (SR 1841)/Marshall Steam Station	10	R-2307	10 (3) 10 (3)		10
NC 150 - Kiser Island Road (SR 1841)/Marshall Steam Station to Greenwood Road (SR 1840)	10	R-2307	10 (3) 10 (3)		10
NC 150 - East of Greenwood Road (SR 1840)	10	R-2307	10 (3)		10
NC 150 - West of McCrary Road/Robinson Road	10	R-2307	10 (3)		10
NC 150 - McCrary Road/Robinson Road to Doolie Road (SR 1168)/Perth Road (SR 1303)	9	R-2307	10 (3) 8 (2)	9 (4)	10
NC 150 - East of Doolie Road (SR 1180)/Perth Road (SR 1303)	9	R-2307	8 (2)		9
NC 150 - West of Morrison Plantation Park/Ervin Road (SR 1304)	8	R-2307	9 (3)		9
NC 150 - East of Morrison Plantation Park/Ervin Road (SR 1304)	8	R-2307	8 (3)		9
NC 150 - West of Mooresville Crossing Entrance/Target Entrance	8	R-2307	7 (3)		8
NC 150 - Mooresville Crossing Entrance/Target Entrance to Williamson Road (SR 1109)/Bluefield Road (SR 1467)	8	R-2307	8 (3) 9 (1)		8



**Table C4: 2015 Base Year No-Build Design Data – Peak Hour Factor**

Forecast Location	Previous Forecast		Project Specific Count Data <sup>(3)</sup>		Selected 2015 BY NB Value
	Peak Hour Factor	TIP Project	TMC	Mainline	
NC 150 - Williamson Road (SR 1109)/Bluefield Road (SR 1467) to Lowes Access/Food Lion Access	7	R-2307	9 (1) 8 (3)		8
NC 150 - East of Lowes Access/Food Lion Access	7	R-2307	8 (3)		8
NC 150 - West of Rolling Hills Road/Regency Center Drive			7 (3)		8
NC 150 - Rolling Hills Road/Regency Center Drive to I-77			8 (3) 8 (2)		8
NC 150 - I-77 to Norman Station Boulevard			8 (2)	8 (4)	8
NC 150 - East of Norman Station Boulevard					8
NC 150 - West of Corporate Center Drive/Kia Driveway					8
NC 150 - Corporate Center Drive/Kia Driveway to Talbert Drive (SR 1116)				8 (4)	8
NC 150 - East of Talbert Drive (SR 1116)					8
NC 150 - West of Macleod Drive			9 (1)		8
NC 150 - East of Macleod Drive			9 (1)	8 (4)	8
NC 16 Bypass - South of NC 150	11	R-2307			10
NC 16 Bypass - North of NC 150	11 {12}	R-2307 {R-3100}		9 (5)	10
E. Maiden Road (SR 1855) - North of NC 150	10	R-2307	9 (3)		9
NC 16 Business - South of NC 150	10	R-2307	9 (3)		10
NC 16 Business - North of NC 150	10 {11}	R-2307 {R-3100}	10 (3)		10
Grassy Creek Road (SR 1853) - South of NC 150	12	R-2307	12 (3)		12
Mt. Pleasant Road (SR 1849) - North of NC 150	11	R-2307	11 (3)		11
Little Mountain Road (SR 1815) - North of NC 150	11	R-2307	8 (3)		9
Slanting Bridge Road (SR 1844) - South of NC 150	11	R-2307	9 (3)		9
Slanting Bridge Road (SR 1844) - North of NC 150	11	R-2307	9 (3)		9
Sherrills Ford Road (SR 1848) - South of NC 150	12	R-2307	12 (3)		12
Sherrills Ford Road (SR 1848) - North of NC 150	11	R-2307	10 (3)		10
Kiser Island Road (SR 1841) - South of NC 150	12	R-2307	9 (3)		9
Marshall Steam Station - North of NC 150	12	R-2307	16 (3)		15
Greenwood Road (SR 1840) - South of NC 150	12	R-2307			10
McCrary Road - South of NC 150	8	R-2307	8 (3)		8
Robinson Road - North of NC 150	8	R-2307	9 (3)		9
Doolie Road (SR 1180) - South of NC 150	12	R-2307	12 (2)		12

**Table C4: 2015 Base Year No-Build Design Data – Peak Hour Factor**

Forecast Location	Previous Forecast		Project Specific Count Data <sup>(3)</sup>		Selected 2015 BY NB Value
	Peak Hour Factor	TIP Project	TMC	Mainline	
Perth Road (SR 1303) - North of SR 150	11	R-2307	9 (2)		9
Morrison Plantation Park (SR 1304) - South of NC 150	9	R-2307	9 (3)		9
Ervin Road (SR 1304) - North of NC 150	12	R-2307	11 (3)		11
Mooreville Crossing Entrance - South of NC 150			11 (3)		11
Target Entrance - North of NC 150			11 (3)		11
Williamson Road (SR 1109) - South of NC 150	9	R-2307	10 (1)		10
Bluefield Road (SR 1467) - North of NC 150	9	R-2307	10 (1)		10
Lowes Access - South of NC 150	8	R-2307	10 (3)		10
Food Lion Access - North of NC 150	8	R-2307	11 (3)		11
Rolling Hills Road - South of NC 150			9 (3)		9
Regency Center Drive - North of NC 150			9 (3)		9
I-77 - South of Exit 35 (Brawley School Road)	11 {7.2NB/7.6SB} <sup>6</sup>	R-3833B {I-4750AA}			8
I-77 - Exit 35 (Brawley School Road) to Exit 36 (NC 150)	11 {8.9NB/8.5SB} <sup>6</sup>	R-3833B {I-4750AA}		7 (4)	8
I-77 - Exit 36 (NC 150) to Exit 42 (US 21/NC 115)	8.5NB/10.3SB <sup>6</sup>	I-4750AA		8 (4)	8
I-77 - North of Exit 42 (US 21/NC 115)					8
Norman Station Boulevard - South of NC 150				9 (4)	9
Norman Station Boulevard - North of NC 150				12 (4)	12
Kia Driveway - South of NC 150					10
Corporate Center Drive - North of NC 150				12 (4)	12
Talbert Road (SR 1116) - South of NC 150				9 (4)	9
Talbert Road (SR 1116) - North of NC 150				9 (4)	9
Macleod Drive - South of NC 150			10 (1)	12 (4)	12
Macleod Drive - North of NC 150			8 (1)		12
Brawley School Road (SR 1100) - West of I-77	9	R-3833B	9 (2)		9
Brawley School Road (SR 1100) - I-77 to Talbert Road (SR 1116)/Sunfish Drive	9	R-3833B	9 (2) 10 (2)		9
Brawley School Road (SR 1100) - East of Talbert Road (SR 1116)/Sunfish Drive	9	R-3833B	10 (2)		10
Sunfish Drive - South of Brawley School Road (SR 1100)	9	R-3833B	8 (2)		8
Talbert Drive (SR 1116) - North of Brawley School Road (SR 1100)	11	R-3833B	10 (2)		10
US 21/NC 115 - West of Julian Drive			10 (2)		10

**Table C4: 2015 Base Year No-Build Design Data – Peak Hour Factor**

Forecast Location	Previous Forecast		Project Specific Count Data <sup>(3)</sup>		Selected 2015 BY NB Value
	Peak Hour Factor	TIP Project	TMC	Mainline	
US 21/NC 115 - Julian Drive to I-77			10 (2) 10 (2)		<b>10</b>
US 21/NC 115 - I-77 to Lexus Drive/Garden Center Avenue			9 (2) 8 (2)		<b>9</b>
US 21/NC 115 - East of Lexus Drive/Garden Center Avenue			9 (2)		<b>9</b>
Julian Drive - North of US 21/NC 115			12 (2)		<b>12</b>
Lexus Drive - South of US 21/NC 115			8 (2)		<b>8</b>
Garden Center Avenue - North of US 21/NC 115			8 (2)		<b>8</b>

**Notes:**

- (1) 2013 Project Specific 16-hour Turning Movement Count
- (2) 2014 Project Specific 16-hour Turning Movement Count
- (3) 2015 Project Specific 16-hour Turning Movement Count
- (4) 2014 Project Specific Mainline Count
- (5) 2015 Project Specific Mainline Count
- (6) Traffic Estimate included one-way AADT with separate K-values for the NB and SB directions

**Table C5: Model Validation**

Forecast Location	Model Calibration 2010 <sup>(1)</sup>		Interpolated Model <sup>(2)</sup>	Model	Forecast Volume	FY NB Volumes	
	Model	AADT	2015	2015	2015 NB	2040 Model	2040 Forecast
NC 150 - West of NC 16 Bypass	14,600		15,200	14,600	13,200	15,500	18,000
NC 150 - NC 16 Bypass to E. Maiden Road (SR 1855)	14,600	9,600	15,600	10,500	11,300	12,700	15,500
NC 150 - E. Maiden Road (SR 1855) to NC 16 Business	14,600	12,000	15,600	10,500	13,300	12,700	18,200
NC 150 - NC 16 Business to Grassy Creek Road (SR 1853)	15,800	9,800	18,300	16,200	12,600	20,900	17,200
NC 150 - Grassy Creek Road (SR 1853) to Mt. Pleasant Road (SR 1849)	14,500	11,000	17,000	14,800	13,100	18,200	18,000
NC 150 - Mt. Pleasant Road (SR 1849) to Little Mountain Road (SR 1815)	14,000		16,900	13,800	10,500	15,600	14,300
NC 150 - Little Mountain Road (SR 1815) to Slanting Bridge Road (SR 1844)	14,000	8,700	16,900	13,800	11,000	15,600	15,000
NC 150 - Slanting Bridge Road (SR 1844) to Sherrills Ford Road (SR 1848)	18,800	11,000	21,700	19,800	14,000	22,300	19,100
NC 150 - Sherrills Ford Road (SR 1848) to Kiser Island Road (SR 1841)/Marshall Steam Station	18,200	15,000	21,800	18,500	17,800	20,900	24,200
NC 150 - Kiser Island Road (SR 1841)/Marshall Steam Station to Greenwood Road (SR 1840)	20,600		24,800	21,400	17,400	25,600	23,700
NC 150 - East of Greenwood Road (SR 1840)	20,600	15,000	24,800	21,400	17,100	25,600	23,200
NC 150 - West of McCrary Road/Robinson Road	26,900	17,000	31,700	28,200	20,900	33,200	28,400
NC 150 - McCrary Road/Robinson Road to Doolie Road (SR 1168)/Perth Road (SR 1303)	26,900		31,700	28,200	21,800	33,200	29,700
NC 150 - East of Doolie Road (SR 1180)/Perth Road (SR 1303)	20,100		25,900	21,000	26,100	23,500	33,600
NC 150 - West of Morrison Plantation Park/Ervin Road (SR 1304)	20,100		25,900	21,000	30,500	23,500	38,900
NC 150 - East of Morrison Plantation Park/Ervin Road (SR 1304)	20,100		23,900	15,900	27,800	18,200	35,700
NC 150 - West of Mooresville Crossing Entrance/Target Entrance	20,100		23,900	15,900	28,800	18,200	36,900
NC 150 - Mooresville Crossing Entrance/Target Entrance to Williamson Road (SR 1109)/Bluefield Road (SR 1467)	20,100	26,000	23,900	15,900	31,200	18,200	39,900
NC 150 - Williamson Road (SR 1109)/Bluefield Road (SR 1467) to Lowes Access/Food Lion Access	38,300		40,200	35,100	39,000	34,400	50,000
NC 150 - East of Lowes Access/Food Lion Access	38,300	39,000	40,200	35,100	37,200	34,400	47,700
NC 150 - West of Rolling Hills Road/Regency Center Drive	46,300		48,500	44,200	40,400	45,600	51,800
NC 150 - Rolling Hills Road/Regency Center Drive to I-77	46,300		48,500	44,200	45,700	45,600	58,700
NC 150 - I-77 to Norman Station Boulevard	36,500		38,600	34,400	41,400	42,500	53,100
NC 150 - East of Norman Station Boulevard	36,500	38,000	38,600	34,400	35,500	42,500	45,500
NC 150 - West of Corporate Center Drive/Kia Driveway	27,800		30,000	26,600	34,800	34,900	45,100
NC 150 - Corporate Center Drive/Kia Driveway to Talbert Drive (SR 1116)	27,800		30,000	26,600	34,000	34,900	44,400
NC 150 - East of Talbert Drive (SR 1116)	24,300		26,700	25,100	36,300	30,500	45,200
NC 150 - West of Macleod Drive	24,300	35,000	26,700	25,100	35,800	30,500	44,000

**Table C5: Model Validation**

Forecast Location	Model Calibration 2010 <sup>(1)</sup>		Interpolated Model <sup>(2)</sup>	Model	Forecast Volume	FY NB Volumes	
	Model	AADT	2015	2015	2015 NB	2040 Model	2040 Forecast
NC 150 - East of Macleod Drive	24,300		26,700	25,100	36,900	30,500	45,300
NC 16 Bypass - South of NC 150	N/A	N/A	3,900	14,400	16,000	20,700	23,000
NC 16 Bypass - North of NC 150	N/A	N/A	3,100	12,800	9,300	16,900	12,300
NC 16 Business - South of NC 150	11,200	13,000	10,100	3,900	9,900	6,900	16,100
NC 16 Business - North of NC 150	19,300	8,400	17,200	5,500	6,000	7,400	8,100
Slanting Bridge Road (SR 1844) - South of NC 150	6,200	6,600	6,500	7,500	7,500	9,800	9,800
Sherrills Ford Road (SR 1848) - North of NC 150	6,600	5,200	7,300	7,300	5,200	10,400	7,400
Perth Road (SR 1303) - North of SR 150	10,100	9,700	10,800	10,400	10,500	13,200	13,300
Morrison Plantation Park (SR 1304) - South of NC 150	15,000		14,800	10,000	14,800	12,200	18,100
Williamson Road (SR 1109) - South of NC 150	17,300		19,700	15,800	18,200	26,500	30,500
Bluefield Road (SR 1467) - North of NC 150	17,800	7,400	18,600	19,200	14,000	22,200	16,200
I-77 - South of Exit 35 (Brawley School Road)	63,600	61,000	70,100	78,000	69,600	97,500	87,100
I-77 - Exit 35 (Brawley School Road) to Exit 36 (NC 150)	N/A	N/A	17,200	72,600	62,300	86,600	74,100
I-77 - Exit 36 (NC 150) to Exit 42 (US 21/NC 115)	60,800	54,000	66,500	68,400	58,000	90,000	76,300
I-77 - North of Exit 42 (US 21/NC 115)	60,000	56,000	65,000	66,400	58,500	85,500	75,300
Talbert Road (SR 1116) - South of NC 150	11,200	6,500	11,500	11,000	8,600	11,700	9,100
Talbert Road (SR 1116) - North of NC 150	9,000		9,700	10,300	7,500	13,000	9,500
Brawley School Road (SR 1100) - West of I-77	14,100	15,000	17,000	28,000	27,000	27,900	28,000
Brawley School Road (SR 1100) - I-77 to Talbert Road (SR 1116)/Sunfish Drive	15,900		20,300	26,100	22,300	37,100	31,600
Brawley School Road (SR 1100) - East of Talbert Road (SR 1116)/Sunfish Drive	11,700		15,000	13,100	18,500	28,400	31,000
Talbert Drive (SR 1116) - North of Brawley School Road (SR 1100)	8,100		8,900	11,800	11,900	11,500	11,900
US 21/NC 115 - West of Julian Drive/I-77	14,400		15,800	15,900	16,000	22,300	22,400
US 21/NC 115 - I-77 to Lexus Drive/Garden Center Avenue	11,000		12,000	11,400	16,800	16,000	24,600
US 21/NC 115 - East of Lexus Drive/Garden Center Avenue	10,500	12,000	11,300	10,900	12,800	14,400	18,600

**Notes:**

- (1) MRM 14v1.0 has a calibration year of 2010; however due to changes in the study area network, the 2015 MRM network was utilized for the forecast
- (2) Interpolated volume between 2010 and 2040 model data

**Table C6: 2015 Build Traffic Volumes**

Forecast Location	2015 Model Volumes		Model Diversion Percentage	Chosen Diversion Percentage	2015 Forecast Volumes	
	No-Build	Build			No-Build	Build
NC 150 - West of NC 16 Bypass	14,600	15,000	2.74%	3.03%	13,200	13,600
NC 150 - NC 16 Bypass to E. Maiden Road (SR 1855)	10,500	14,200	35.24%	34.51%	11,300	15,200
NC 150 - E. Maiden Road (SR 1855) to NC 16 Business	10,500	14,200	35.24%	33.83%	13,300	17,800
NC 150 - NC 16 Business to Grassy Creek Road (SR 1853)	16,200	20,200	24.69%	24.60%	12,600	15,700
NC 150 - Grassy Creek Road (SR 1853) to Mt. Pleasant Road (SR 1849)	14,800	19,000	28.38%	26.72%	13,100	16,600
NC 150 - Mt. Pleasant Road (SR 1849) to Little Mountain Road (SR 1815)	13,800	18,200	31.88%	31.43%	10,500	13,800
NC 150 - Little Mountain Road (SR 1815) to Slanting Bridge Road (SR 1844)	13,800	18,200	31.88%	31.82%	11,000	14,500
NC 150 - Slanting Bridge Road (SR 1844) to Sherrills Ford Road (SR 1848)	19,800	23,300	17.68%	17.86%	14,000	16,500
NC 150 - Sherrills Ford Road (SR 1848) to Kiser Island Road (SR 1841)/Marshall Steam Station	18,500	21,500	16.22%	14.61%	17,800	20,400
NC 150 - Kiser Island Road (SR 1841)/Marshall Steam Station to Greenwood Road (SR 1840)	21,400	23,200	8.41%	11.49%	17,400	19,400
NC 150 - East of Greenwood Road (SR 1840)	21,400	23,200	8.41%	11.70%	17,100	19,100
NC 150 - West of McCrary Road/Robinson Road	28,200	29,100	3.19%	3.35%	20,900	21,600
NC 150 - McCrary Road/Robinson Road to Doolie Road (SR 1168)/Perth Road (SR 1303)	28,200	29,100	3.19%	3.21%	21,800	22,500
NC 150 - East of Doolie Road (SR 1180)/Perth Road (SR 1303)	21,000	21,200	0.95%	0.77%	26,100	26,300
NC 150 - West of Morrison Plantation Park/Ervin Road (SR 1304)	21,000	21,200	0.95%	0.98%	30,500	30,800
NC 150 - East of Morrison Plantation Park/Ervin Road (SR 1304)	15,900	16,600	4.40%	4.32%	27,800	29,000
NC 150 - West of Mooresville Crossing Entrance/Target Entrance	15,900	16,600	4.40%	4.86%	28,800	30,200
NC 150 - Mooresville Crossing Entrance/Target Entrance to Williamson Road (SR 1109)/Bluefield Road (SR 1467)	15,900	16,600	4.40%	4.49%	31,200	32,600
NC 150 - Williamson Road (SR 1109)/Bluefield Road (SR 1467) to Lowes Access/Food Lion Access	35,100	35,500	1.14%	1.03%	39,000	39,400
NC 150 - East of Lowes Access/Food Lion Access	35,100	35,500	1.14%	1.08%	37,200	37,600
NC 150 - West of Rolling Hills Road/Regency Center Drive	44,200	44,700	1.13%	1.24%	40,400	40,900
NC 150 - Rolling Hills Road/Regency Center Drive to I-77	44,200	44,700	1.13%	1.09%	45,700	46,200
NC 150 - I-77 to Norman Station Boulevard	34,400	35,300	2.62%	2.66%	41,400	42,500
NC 150 - East of Norman Station Boulevard	34,400	35,300	2.62%	2.54%	35,500	36,400
NC 150 - West of Corporate Center Drive/Kia Driveway	26,600	28,100	5.64%	3.45%	34,800	36,000
NC 150 - Corporate Center Drive/Kia Driveway to Talbert Drive (SR 1116)	26,600	28,100	5.64%	4.12%	34,000	35,400
NC 150 - East of Talbert Drive (SR 1116)	25,100	26,000	3.59%	3.58%	36,300	37,600
NC 150 - West of Macleod Drive	25,100	26,000	3.59%	3.63%	35,800	37,100

**Table C6: 2015 Build Traffic Volumes**

Forecast Location	2015 Model Volumes		Model Diversion Percentage	Chosen Diversion Percentage	2015 Forecast Volumes	
	No-Build	Build			No-Build	Build
NC 150 - East of Macleod Drive	25,100	26,000	3.59%	3.52%	36,900	38,200
NC 16 Bypass - South of NC 150	14,400	16,000	11.11%	11.25%	16,000	17,800
NC 16 Bypass - North of NC 150	12,800	12,400	-3.13%	-3.23%	9,300	9,000
E. Maiden Road (SR 1855) - North of NC 150	4,400	5,000	13.64%	15.38% (1)	2,600	3,000
NC 16 Business - South of NC 150	3,900	3,700	-5.13%	-5.05%	9,900	9,400
NC 16 Business - North of NC 150	5,500	5,800	5.45%	5.00%	6,000	6,300
Grassy Creek Road (SR 1853) - South of NC 150	10,200	10,300	0.98%	0.00% (1)	1,500	1,500
Mt. Pleasant Road (SR 1849) - North of NC 150	4,800	4,800	0.00%	0.00% (1)	3,000	3,000
Little Mountain Road (SR 1815) - North of NC 150	5,500	5,500	0.00%	0.00% (1)	1,700	1,700
Slanting Bridge Road (SR 1844) - South of NC 150	7,500	6,700	-10.67%	-10.67%	7,500	6,700
Slanting Bridge Road (SR 1844) - North of NC 150	5,500	5,500	0.00%	0.00% (1)	2,500	2,500
Sherrills Ford Road (SR 1848) - South of NC 150	4,500	4,500	0.00%	0.00% (1)	1,200	1,200
Sherrills Ford Road (SR 1848) - North of NC 150	7,300	6,800	-6.85%	-5.77%	5,200	4,900
Kiser Island Road (SR 1841) - South of NC 150	4,500	4,500	0.00%	0.00% (1)	1,700	1,700
Marshall Steam Station - North of NC 150	4,400	5,000	13.64%	0.00% (1)	1,100	1,100
Greenwood Road (SR 1840) - South of NC 150	4,500	4,500	0.00%	0.00% (1)	700	700
McCrary Road - South of NC 150	11,700	11,700	0.00%	0.00% (1)	1,100	1,100
Robinson Road - North of NC 150	5,700	5,700	0.00%	0.00% (1)	800	800
Doolie Road (SR 1180) - South of NC 150	11,700	11,700	0.00%	0.00% (1)	4,800	4,800
Perth Road (SR 1303) - North of SR 150	10,400	10,500	0.96%	0.95%	10,500	10,600
Morrison Plantation Park (SR 1304) - South of NC 150	10,000	10,100	1.00%	0.68%	14,800	14,900
Ervin Road (SR 1304) - North of NC 150				0.00%	4,900	4,900
Mooreville Crossing Entrance - South of NC 150				0.00%	5,400	5,400
Target Entrance - North of NC 150				0.00%	8,200	8,200
Williamson Road (SR 1109) - South of NC 150	15,800	15,800	0.00%	0.00%	18,200	18,200
Bluefield Road (SR 1467) - North of NC 150	19,200	19,500	1.56%	1.43%	14,000	14,200
Lowes Access - South of NC 150				0.00%	8,300	8,300
Food Lion Access - North of NC 150				0.00%	3,100	3,100
Rolling Hills Road - South of NC 150	11,700	11,600	-0.85%	0.00% (1)	8,900	8,900
Regency Center Drive - North of NC 150	17,200	17,300	0.58%	0.00% (1)	6,600	6,600
I-77 - South of Exit 35 (Brawley School Road)	78,000	78,000	0.00%	0.00%	69,600	69,600



**Table C6: 2015 Build Traffic Volumes**

Forecast Location	2015 Model Volumes		Model Diversion Percentage	Chosen Diversion Percentage	2015 Forecast Volumes	
	No-Build	Build			No-Build	Build
I-77 - Exit 35 (Brawley School Road) to Exit 36 (NC 150)	72,600	72,600	0.00%	0.00%	62,300	62,300
I-77 - Exit 36 (NC 150) to Exit 42 (US 21/NC 115)	68,400	68,600	0.29%	0.00%	58,000	58,000
I-77 - North of Exit 42 (US 21/NC 115)	66,400	66,600	0.30%	0.00%	58,500	58,500
Norman Station Boulevard - South of NC 150	5,900	6,400	8.47%	8.77% (1)	11,400	12,400
Norman Station Boulevard - North of NC 150	7,900	7,900	0.00%	0.00% (1)	3,300	3,300
Kia Driveway - South of NC 150				0.00%	600	600
Corporate Center Drive - North of NC 150	7,900	7,900	0.00%	0.00% (1)	1,000	1,000
Talbert Road (SR 1116) - South of NC 150	11,000	10,800	-1.82%	-2.33%	8,600	8,400
Talbert Road (SR 1116) - North of NC 150	10,300	10,500	1.94%	1.33%	7,500	7,600
Macleod Drive - South of NC 150				0.00%	3,900	3,900
Macleod Drive - North of NC 150				0.00%	400	400
Brawley School Road (SR 1100) - West of I-77	28,000	27,900	-0.36%	-0.37%	27,000	26,900
Brawley School Road (SR 1100) - I-77 to Talbert Road (SR 1116)/Sunfish Drive	26,100	25,900	-0.77%	-1.35%	22,300	22,000
Brawley School Road (SR 1100) - East of Talbert Road (SR 1116)/Sunfish Drive	13,100	12,800	-2.29%	-2.16%	18,500	18,100
Sunfish Drive - South of Brawley School Road (SR 1100)	4,400	4,600	4.55%	0.00% (1)	500	500
Talbert Drive (SR 1116) - North of Brawley School Road (SR 1100)	11,800	12,000	1.69%	0.84%	11,900	12,000
US 21/NC 115 - West of Julian Drive	15,900	15,900	0.00%	0.00%	16,000	16,000
US 21/NC 115 - Julian Drive to I-77	15,900	15,900	0.00%	0.00%	16,800	16,800
US 21/NC 115 - I-77 to Lexus Drive/Garden Center Avenue	11,400	11,400	0.00%	0.00%	17,500	17,500
US 21/NC 115 - East of Lexus Drive/Garden Center Avenue	10,900	10,900	0.00%	0.00%	12,800	12,800
Julian Drive - North of US 21/NC 115				0.00%	2,000	2,000
Lexus Drive - South of US 21/NC 115				0.00%	2,000	2,000
Garden Center Avenue - North of US 21/NC 115				0.00%	4,700	4,700

Notes:

(1) - Model volumes shown is for a centroid connector that was determined to be representative of the traffic flow for the subject roadway

**Table C7: 2040 No-Build Traffic Volumes**

Forecast Location	Forecast 2015 BY NB	Historic Growth Rate		Model Growth Rate <sup>(1)</sup>	Chosen Growth Rate <sup>(1)</sup>	FY NB Volumes	
	AADT	2003-2013	1993-2013	2015-2040	2015-2040	2040 Model	2040 Forecast
NC 150 - West of NC 16 Bypass	13,200	0.00%	2.50%	0.24%	1.25%	15,500	18,000
NC 150 - NC 16 Bypass to E. Maiden Road (SR 1855)	11,300	0.00%	2.50%	0.76%	1.27%	12,700	15,500
NC 150 - E. Maiden Road (SR 1855) to NC 16 Business	13,300	0.00%	2.50%	0.76%	1.26%	12,700	18,200
NC 150 - NC 16 Business to Grassy Creek Road (SR 1853)	12,600	0.70%	0.60%	1.02%	1.25%	20,900	17,200
NC 150 - Grassy Creek Road (SR 1853) to Mt. Pleasant Road (SR 1849)	13,100	0.20%	2.20%	0.83%	1.28%	18,200	18,000
NC 150 - Mt. Pleasant Road (SR 1849) to Little Mountain Road (SR 1815)	10,500	0.20%	2.20%	0.49%	1.24%	15,600	14,300
NC 150 - Little Mountain Road (SR 1815) to Slanting Bridge Road (SR 1844)	11,000	-0.20%	1.70%	0.49%	1.25%	15,600	15,000
NC 150 - Slanting Bridge Road (SR 1844) to Sherrills Ford Road (SR 1848)	14,000	-0.20%	3.10%	0.48%	1.25%	22,300	19,100
NC 150 - Sherrills Ford Road (SR 1848) to Kiser Island Road (SR 1841)/Marshall Steam Station	17,800	-0.60%	3.70%	0.49%	1.24%	20,900	24,200
NC 150 - Kiser Island Road (SR 1841)/Marshall Steam Station to Greenwood Road (SR 1840)	17,400	-0.60%	3.70%	0.72%	1.24%	25,600	23,700
NC 150 - East of Greenwood Road (SR 1840)	17,100	-2.70%	3.50%	0.72%	1.23%	25,600	23,200
NC 150 - West of McCrary Road/Robinson Road	20,900	2.80%	2.80%	0.66%	1.23%	33,200	28,400
NC 150 - McCrary Road/Robinson Road to Doolie Road (SR 1168)/Perth Road (SR 1303)	21,800	3.60%	3.60%	0.66%	1.24%	33,200	29,700
NC 150 - East of Doolie Road (SR 1180)/Perth Road (SR 1303)	26,100	3.60%	3.60%	0.45%	1.02%	23,500	33,600
NC 150 - West of Morrison Plantation Park/Ervin Road (SR 1304)	30,500	3.60%	3.60%	0.45%	0.98%	23,500	38,900
NC 150 - East of Morrison Plantation Park/Ervin Road (SR 1304)	27,800	3.60%	3.60%	0.54%	1.01%	18,200	35,700
NC 150 - West of Mooresville Crossing Entrance/Target Entrance	28,800	3.60%	3.60%	0.54%	1.00%	18,200	36,900
NC 150 - Mooresville Crossing Entrance/Target Entrance to Williamson Road (SR 1109)/Bluefield Road (SR 1467)	31,200	3.60%	3.60%	0.54%	0.99%	18,200	39,900
NC 150 - Williamson Road (SR 1109)/Bluefield Road (SR 1467) to Lowes Access/Food Lion Access	39,000	1.50%	5.50%	-0.08%	1.00%	34,400	50,000
NC 150 - East of Lowes Access/Food Lion Access	37,200	1.50%	5.50%	-0.08%	1.00%	34,400	47,700
NC 150 - West of Rolling Hills Road/Regency Center Drive	40,400	1.50%	5.50%	0.12%	1.00%	45,600	51,800
NC 150 - Rolling Hills Road/Regency Center Drive to I-77	45,700	1.50%	5.50%	0.12%	1.01%	45,600	58,700
NC 150 - I-77 to Norman Station Boulevard	41,400	-0.10%	4.70%	0.85%	1.00%	42,500	53,100
NC 150 - East of Norman Station Boulevard	35,500	-0.10%	4.70%	0.85%	1.00%	42,500	45,500
NC 150 - West of Corporate Center Drive/Kia Driveway	34,800	-0.10%	4.70%	1.09%	1.04%	34,900	45,100
NC 150 - Corporate Center Drive/Kia Driveway to Talbert Drive (SR 1116)	34,000	-0.10%	4.70%	1.09%	1.07%	34,900	44,400
NC 150 - East of Talbert Drive (SR 1116)	36,300	0.70%	4.50%	0.78%	0.88%	30,500	45,200
NC 150 - West of Macleod Drive	35,800	0.70%	4.50%	0.78%	0.83%	30,500	44,000

**Table C7: 2040 No-Build Traffic Volumes**

Forecast Location	Forecast 2015 BY NB	Historic Growth Rate		Model Growth Rate <sup>(1)</sup>	Chosen Growth Rate <sup>(1)</sup>	FY NB Volumes	
	AADT	2003-2013	1993-2013	2015-2040	2015-2040	2040 Model	2040 Forecast
NC 150 - East of Macleod Drive	36,900	0.70%	4.50%	0.78%	0.82%	30,500	45,300
NC 16 Bypass - South of NC 150	16,000	N/A	N/A	1.46%	1.46%	20,700	23,000
NC 16 Bypass - North of NC 150	9,300	N/A	N/A	1.12%	1.12%	16,900	12,300
E. Maiden Road (SR 1855) - North of NC 150	2,600	-2.60%	1.00%	1.33%	1.20% <sup>(2)</sup>	13,900	3,500
NC 16 Business - South of NC 150	9,900	-3.00%	0.10%	2.31%	1.96%	6,900	16,100
NC 16 Business - North of NC 150	6,000	-3.70%	-1.10%	1.19%	1.21%	7,400	8,100
Grassy Creek Road (SR 1853) - South of NC 150	1,500	-1.80%	1.90%	1.61%	1.54% <sup>(2)</sup>	15,200	2,200
Mt. Pleasant Road (SR 1849) - North of NC 150	3,000	0.40%	1.00%	1.96%	1.98% <sup>(2)</sup>	7,800	4,900
Little Mountain Road (SR 1815) - North of NC 150	1,700	-1.60%	2.10%	1.84%	1.87% <sup>(2)</sup>	8,200	2,700
Slanting Bridge Road (SR 1844) - South of NC 150	7,500	0.80%	3.90%	1.08%	1.08%	9,800	9,800
Slanting Bridge Road (SR 1844) - North of NC 150	2,500			1.61%	1.58% <sup>(2)</sup>	8,200	3,700
Sherrills Ford Road (SR 1848) - South of NC 150	1,200	-1.00%	1.60%	1.90%	1.86% <sup>(2)</sup>	7,200	1,900
Sherrills Ford Road (SR 1848) - North of NC 150	5,200	0.00%	5.70%	1.43%	1.42%	10,400	7,400
Kiser Island Road (SR 1841) - South of NC 150	1,700	0.10%	0.10%	1.90%	2.02% <sup>(2)</sup>	7,200	2,800
Marshall Steam Station - North of NC 150	1,100			2.21%	2.21% <sup>(2)</sup>	7,600	1,900
Greenwood Road (SR 1840) - South of NC 150	700	-3.50%	0.00%	1.90%	1.82% <sup>(2)</sup>	7,200	1,100
McCrary Road - South of NC 150	1,100	5.60%	3.20%	1.38%	1.51% <sup>(2)</sup>	16,500	1,600
Robinson Road - North of NC 150	800			1.37%	1.28% <sup>(2)</sup>	8,000	1,100
Doolie Road (SR 1180) - South of NC 150	4,800			1.38%	1.40% <sup>(2)</sup>	16,500	6,800
Perth Road (SR 1303) - North of SR 150	10,500	5.00%	8.80%	0.96%	0.95%	13,200	13,300
Morrison Plantation Park (SR 1304) - South of NC 150	14,800			0.80%	0.81%	12,200	18,100
Ervin Road (SR 1304) - North of NC 150	4,900			N/A	0.46% <sup>(3)</sup>		5,500
Mooresville Crossing Entrance - South of NC 150	5,400			N/A	0.42% <sup>(3)</sup>		6,000
Target Entrance - North of NC 150	8,200			N/A	0.37% <sup>(3)</sup>		9,000
Williamson Road (SR 1109) - South of NC 150	18,200	6.40%	7.50%	2.09%	2.09%	26,500	30,500
Bluefield Road (SR 1467) - North of NC 150	14,000	1.10%	10.80%	0.58%	0.59%	22,200	16,200
Lowes Access - South of NC 150	8,300			N/A	0.32% <sup>(3)</sup>		9,000
Food Lion Access - North of NC 150	3,100			N/A	0.49% <sup>(3)</sup>		3,500
Rolling Hills Road - South of NC 150	8,900			0.63%	0.66% <sup>(2)</sup>	13,700	10,500
Regency Center Drive - North of NC 150	6,600			1.24%	1.25% <sup>(2)</sup>	23,400	9,000

**Table C7: 2040 No-Build Traffic Volumes**

Forecast Location	Forecast 2015 BY NB	Historic Growth Rate		Model Growth Rate <sup>(1)</sup>	Chosen Growth Rate <sup>(1)</sup>	FY NB Volumes	
	AADT	2003-2013	1993-2013	2015-2040	2015-2040	2040 Model	2040 Forecast
I-77 Managed Lanes - South of Exit 35 to North of Exit 36	N/A			N/A	N/A <sup>(4)</sup>	11,900	10,400
I-77 General Purpose - South of Exit 35 (Brawley School Road)	69,600	1.20%	2.50%	0.90%	0.90%	97,500	87,100
I-77 Total - South of Exit 35 (Brawley School Road)							97,500
I-77 Managed Lanes - South of Exit 35 to North of Exit 36	N/A			N/A	N/A <sup>(4)</sup>	11,900	10,400
I-77 General Purpose - Exit 35 (Brawley School Road) to Exit 36 (NC 150)	62,300	N/A	N/A	0.71%	0.70%	86,600	74,100
I-77 Total - Exit 35 (Brawley School Road) to Exit 36 (NC 150)							84,500
I-77 Managed Lanes - South of Exit 35 to North of Exit 36	N/A			N/A	N/A <sup>(4)</sup>	11,900	10,400
I-77 General Purpose - Exit 36 (NC 150) to Managed Lanes Northern Terminus	58,000	1.30%	2.00%	0.53%	0.51%	78,100	65,900
I-77 Total - Exit 36 (NC 150) to Managed Lanes Northern Terminus							76,300
I-77 - Managed Lanes Northern Terminus to Exit 42 (US 21/NC 115)	58,000	1.30%	2.00%	1.10%	1.10%	90,000	76,300
I-77 - North of Exit 42 (US 21/NC 115)	58,500	1.20%	1.90%	1.02%	1.01%	85,500	75,300
Norman Station Boulevard - South of NC 150	11,400			0.63%	0.59% <sup>(2)</sup>	6,900	13,200
Norman Station Boulevard - North of NC 150	3,300			0.99%	0.97% <sup>(2)</sup>	10,100	4,200
Kia Driveway - South of NC 150	600			0.63%	1.16% <sup>(2)</sup>	6,900	800
Corporate Center Drive - North of NC 150	1,000			0.99%	1.05% <sup>(2)</sup>	10,100	1,300
Talbert Road (SR 1116) - South of NC 150	8,600	1.10%	2.60%	0.25%	0.23%	11,700	9,100
Talbert Road (SR 1116) - North of NC 150	7,500	-0.50%	17.10%	0.94%	0.95%	13,000	9,500
Macleod Drive - South of NC 150	3,900			N/A	0.75% <sup>(3)</sup>		4,700
Macleod Drive - North of NC 150	400			N/A	3.73% <sup>(3)</sup>		1,000
Brawley School Road (SR 1100) - West of I-77	27,000	7.20%	11.30%	-0.01%	0.15%	27,900	28,000
Brawley School Road (SR 1100) - I-77 to Talbert Road (SR 1116)/Sunfish Drive	22,300			1.42%	1.40%	37,100	31,600
Brawley School Road (SR 1100) - East of Talbert Road (SR 1116)/Sunfish Drive	18,500			3.14%	2.09%	28,400	31,000
Sunfish Drive - South of Brawley School Road (SR 1100)	500			3.21%	3.20% <sup>(2)</sup>	9,700	1,100
Talbert Drive (SR 1116) - North of Brawley School Road (SR 1100)	11,900			-0.10%	0.00%	11,500	11,900
US 21/NC 115 - West of Julian Drive	16,000			1.36%	1.35%	22,300	22,400
US 21/NC 115 - Julian Drive to I-77	16,800			1.36%	1.37%	22,300	23,600

**Table C7: 2040 No-Build Traffic Volumes**

Forecast Location	Forecast 2015 BY NB	Historic Growth Rate		Model Growth Rate <sup>(1)</sup>	Chosen Growth Rate <sup>(1)</sup>	FY NB Volumes	
	AADT	2003-2013	1993-2013	2015-2040	2015-2040	2040 Model	2040 Forecast
US 21/NC 115 - I-77 to Lexus Drive/Garden Center Avenue	17,500	0.80%	2.60%	1.37%	1.37%	16,000	24,600
US 21/NC 115 - East of Lexus Drive/Garden Center Avenue	12,800	0.80%	2.60%	1.12%	1.51%	14,400	18,600
Julian Drive - North of US 21/NC 115	2,000			N/A	0.73% <sup>(3)</sup>		2,400
Lexus Drive - South of US 21/NC 115	2,000			N/A	0.73% <sup>(3)</sup>		2,400
Garden Center Avenue - North of US 21/NC 115	4,700			N/A	0.70% <sup>(3)</sup>		5,600

**Notes:**

(1) Growth rate shown is the Compound Annual Growth Rate (CAGR).

(2) Growth rate shown is for a centroid connector that was determined to be representative of the change in volume for the subject roadway

(3) Model growth rate cannot be calculated as the roadway is not included in the model and the area centroid connectors are not representative of the likely change in volume for the subject roadway

(4) Volume for I-77 managed lanes was developed based on a proportion of the managed lane volume to the total volume of the general purpose and managed lanes from the model applied to the total forecast volume on I-77

**Table C8: 2040 Build Traffic Volumes**

Forecast Location	Forecast 2015 BY NB	Historic Growth Rate		Model Growth Rate (1)	Chosen Growth Rate (1)	2040 Model Volumes	2040 Forecast Volumes	
	AADT	2003-2013	1993-2013	2015-2040	2015-2040	2040 Build	No-Build	Build
NC 150 - West of NC 16 Bypass	13,200	0.00%	2.50%	0.70%	1.02%	17,400	18,000	17,000
NC 150 - NC 16 Bypass to E. Maiden Road (SR 1855)	11,300	0.00%	2.50%	2.49%	2.49%	19,400	15,500	20,900
NC 150 - E. Maiden Road (SR 1855) to NC 16 Business	13,300	0.00%	2.50%	2.49%	2.47%	19,400	18,200	24,500
NC 150 - NC 16 Business to Grassy Creek Road (SR 1853)	12,600	0.70%	0.60%	2.29%	2.40%	28,500	17,200	22,800
NC 150 - Grassy Creek Road (SR 1853) to Mt. Pleasant Road (SR 1849)	13,100	0.20%	2.20%	2.45%	2.42%	27,100	18,000	23,800
NC 150 - Mt. Pleasant Road (SR 1849) to Little Mountain Road (SR 1815)	10,500	0.20%	2.20%	2.91%	2.87%	28,300	14,300	21,300
NC 150 - Little Mountain Road (SR 1815) to Slanting Bridge Road (SR 1844)	11,000	-0.20%	1.70%	2.91%	2.89%	28,300	15,000	22,400
NC 150 - Slanting Bridge Road (SR 1844) to Sherrills Ford Road (SR 1848)	14,000	-0.20%	3.10%	2.09%	2.48%	33,200	19,100	25,800
NC 150 - Sherrills Ford Road (SR 1848) to Kiser Island Road (SR 1841)/Marshall Steam Station	17,800	-0.60%	3.70%	2.74%	2.37%	36,400	24,200	32,000
NC 150 - Kiser Island Road (SR 1841)/Marshall Steam Station to Greenwood Road (SR 1840)	17,400	-0.60%	3.70%	2.71%	2.59%	41,800	23,700	33,000
NC 150 - East of Greenwood Road (SR 1840)	17,100	-2.70%	3.50%	2.71%	2.68%	41,800	23,200	33,100
NC 150 - West of McCrary Road/Robinson Road	20,900	2.80%	2.80%	2.39%	2.33%	50,900	28,400	37,200
NC 150 - McCrary Road/Robinson Road to Doolie Road (SR 1168)/Perth Road (SR 1303)	21,800	3.60%	3.60%	2.39%	2.34%	50,900	29,700	38,900
NC 150 - East of Doolie Road (SR 1180)/Perth Road (SR 1303)	26,100	3.60%	3.60%	3.47%	2.02%	49,300	33,600	43,000
NC 150 - West of Morrison Plantation Park/Ervin Road (SR 1304)	30,500	3.60%	3.60%	3.47%	1.83%	49,300	38,900	48,000
NC 150 - East of Morrison Plantation Park/Ervin Road (SR 1304)	27,800	3.60%	3.60%	3.64%	1.95%	38,900	35,700	45,000
NC 150 - West of Mooresville Crossing Entrance/Target Entrance	28,800	3.60%	3.60%	3.64%	1.87%	38,900	36,900	45,800
NC 150 - Mooresville Crossing Entrance/Target Entrance to Williamson Road (SR 1109)/Bluefield Road (SR 1467)	31,200	3.60%	3.60%	3.64%	1.64%	38,900	39,900	46,800
NC 150 - Williamson Road (SR 1109)/Bluefield Road (SR 1467) to Lowes Access/Food Lion Access	39,000	1.50%	5.50%	1.23%	1.23%	47,600	50,000	52,900
NC 150 - East of Lowes Access/Food Lion Access	37,200	1.50%	5.50%	1.23%	1.25%	47,600	47,700	50,800
NC 150 - West of Rolling Hills Road/Regency Center Drive	40,400	1.50%	5.50%	1.05%	1.15%	57,400	51,800	53,800
NC 150 - Rolling Hills Road/Regency Center Drive to I-77	45,700	1.50%	5.50%	1.05%	1.05%	57,400	58,700	59,400
NC 150 - I-77 to Norman Station Boulevard	41,400	-0.10%	4.70%	1.26%	1.27%	47,100	53,100	56,700
NC 150 - East of Norman Station Boulevard	35,500	-0.10%	4.70%	1.26%	1.27%	47,100	45,500	48,700
NC 150 - West of Corporate Center Drive/Kia Driveway	34,800	-0.10%	4.70%	1.53%	1.46%	38,900	45,100	50,000
NC 150 - Corporate Center Drive/Kia Driveway to Talbert Drive (SR 1116)	34,000	-0.10%	4.70%	1.53%	1.51%	38,900	44,400	49,500
NC 150 - East of Talbert Drive (SR 1116)	36,300	0.70%	4.50%	1.50%	1.49%	36,400	45,200	52,600

**Table C8: 2040 Build Traffic Volumes**

Forecast Location	Forecast 2015 BY NB	Historic Growth Rate		Model Growth Rate (1)	Chosen Growth Rate (1)	2040 Model Volumes	2040 Forecast Volumes	
	AADT	2003-2013	1993-2013	2015-2040	2015-2040	2040 Build	No-Build	Build
NC 150 - West of Macleod Drive	35,800	0.70%	4.50%	1.50%	1.50%	36,400	44,000	51,900
NC 150 - East of Macleod Drive	36,900	0.70%	4.50%	1.50%	1.49%	36,400	45,300	53,400
NC 16 Bypass - South of NC 150	16,000	N/A	N/A	1.26%	1.26%	19,700	23,000	21,900
NC 16 Bypass - North of NC 150	9,300	N/A	N/A	0.72%	0.67%	15,300	12,300	11,000
E. Maiden Road (SR 1855) - North of NC 150	2,600	-2.60%	1.00%	1.30%	1.94% (2)	13,800	3,500	4,200
NC 16 Business - South of NC 150	9,900	-3.00%	0.10%	1.60%	1.59%	5,800	16,100	14,700
NC 16 Business - North of NC 150	6,000	-3.70%	-1.10%	1.99%	1.98%	9,000	8,100	9,800
Grassy Creek Road (SR 1853) - South of NC 150	1,500	-1.80%	1.90%	1.66%	1.54% (2)	15,400	2,200	2,200
Mt. Pleasant Road (SR 1849) - North of NC 150	3,000	0.40%	1.00%	1.96%	1.98% (2)	7,800	4,900	4,900
Little Mountain Road (SR 1815) - North of NC 150	1,700	-1.60%	2.10%	1.89%	1.87% (2)	8,300	2,700	2,700
Slanting Bridge Road (SR 1844) - South of NC 150	7,500	0.80%	3.90%	0.00%	0.26%	7,500	9,800	8,000
Slanting Bridge Road (SR 1844) - North of NC 150	2,500			1.66%	1.69% (2)	8,300	3,700	3,800
Sherrills Ford Road (SR 1848) - South of NC 150	1,200	-1.00%	1.60%	1.90%	1.86% (2)	7,200	1,900	1,900
Sherrills Ford Road (SR 1848) - North of NC 150	5,200	0.00%	5.70%	1.27%	1.25%	10,000	7,400	7,100
Kiser Island Road (SR 1841) - South of NC 150	1,700	0.10%	0.10%	1.90%	2.16% (2)	7,200	2,800	2,900
Marshall Steam Station - North of NC 150	1,100			2.42%	2.21% (2)	8,000	1,900	1,900
Greenwood Road (SR 1840) - South of NC 150	700	-3.50%	0.00%	1.90%	1.82% (2)	7,200	1,100	1,100
McCrary Road - South of NC 150	1,100	5.60%	3.20%	1.43%	1.51% (2)	16,700	1,600	1,600
Robinson Road - North of NC 150	800			1.47%	1.28% (2)	8,200	1,100	1,100
Doolie Road (SR 1180) - South of NC 150	4,800			1.43%	1.40% (2)	16,700	6,800	6,800
Perth Road (SR 1303) - North of SR 150	10,500	5.00%	8.80%	1.11%	0.95%	13,700	13,300	13,300
Morrison Plantation Park (SR 1304) - South of NC 150	14,800			1.33%	0.81%	13,900	18,100	18,100
Ervin Road (SR 1304) - North of NC 150	4,900			N/A	0.46% (3)		5,500	5,500
Mooreville Crossing Entrance - South of NC 150	5,400			N/A	0.42% (3)		6,000	6,000
Target Entrance - North of NC 150	8,200			N/A	0.37% (3)		9,000	9,000
Williamson Road (SR 1109) - South of NC 150	18,200	6.40%	7.50%	2.47%	2.47%	29,100	30,500	33,500
Bluefield Road (SR 1467) - North of NC 150	14,000	1.10%	10.80%	0.47%	0.54%	21,600	16,200	16,000
Lowe's Access - South of NC 150	8,300			N/A	0.32% (3)		9,000	9,000
Food Lion Access - North of NC 150	3,100			N/A	0.49% (3)		3,500	3,500
Rolling Hills Road - South of NC 150	8,900			0.60%	0.62% (2)	13,600	10,500	10,400



**Table C8: 2040 Build Traffic Volumes**

Forecast Location	Forecast 2015 BY NB	Historic Growth Rate		Model Growth Rate (1)	Chosen Growth Rate (1)	2040 Model Volumes	2040 Forecast Volumes	
	AADT	2003-2013	1993-2013	2015-2040	2015-2040	2040 Build	No-Build	Build
Regency Center Drive - North of NC 150	6,600			1.32%	1.34% (2)	23,900	9,000	9,200
I-77 Managed Lanes - South of Exit 35 to North of Exit 36	N/A			N/A	N/A (4)		10,400	10,400
I-77 General Purpose - South of Exit 35 (Brawley School Road)	69,600	1.20%	2.50%	0.90%	0.88%	96,300	87,100	86,700
I-77 Total - South of Exit 35 (Brawley School Road)								97,100
I-77 Managed Lanes - South of Exit 35 to North of Exit 36	N/A			N/A	N/A (4)		10,400	10,400
I-77 General Purpose - Exit 35 (Brawley School Road) to Exit 36 (NC 150)	62,300	N/A	N/A	0.67%	0.63%	85,800	74,100	72,900
I-77 Total - Exit 35 (Brawley School Road) to Exit 36 (NC 150)								83,300
I-77 Managed Lanes - South of Exit 35 to North of Exit 36	N/A			N/A	N/A (4)		10,400	10,400
I-77 General Purpose - Exit 36 (NC 150) to Managed Lanes Northern Terminus	58,000	1.30%	2.00%	0.54%	0.49%	89,100	65,900	65,600
I-77 Total - Exit 36 (NC 150) to Managed Lanes Northern Terminus								76,000
I-77 - Managed Lanes Northern Terminus to Exit 42 (US 21/NC 115)	58,000	1.30%	2.00%	1.06%	1.09%	89,101	76,300	76,000
I-77 - North of Exit 42 (US 21/NC 115)	58,500	1.20%	1.90%	1.00%	1.00%	85,100	75,300	75,000
Norman Station Boulevard - South of NC 150	11,400			0.80%	0.77% (2)	7,200	13,200	13,800
Norman Station Boulevard - North of NC 150	3,300			0.99%	0.97% (2)	10,100	4,200	4,200
Kia Driveway - South of NC 150	600			0.80%	1.16%	7,200	800	800
Corporate Center Drive - North of NC 150	1,000			0.99%	1.05% (2)	10,100	1,300	1,300
Talbert Road (SR 1116) - South of NC 150	8,600	1.10%	2.60%	0.51%	0.56%	12,500	9,100	9,900
Talbert Road (SR 1116) - North of NC 150	7,500	-0.50%	17.10%	0.71%	0.73%	12,300	9,500	9,000
Macleod Drive - South of NC 150	3,900			N/A	0.75% (3)		4,700	4,700
Macleod Drive - North of NC 150	400			N/A	3.73% (3)		1,000	1,000
Brawley School Road (SR 1100) - West of I-77	27,000	7.20%	11.30%	0.06%	0.06%	28,400	28,000	27,400
Brawley School Road (SR 1100) - I-77 to Talbert Road (SR 1116)/Sunfish Drive	22,300			1.52%	1.33%	38,100	31,600	31,000
Brawley School Road (SR 1100) - East of Talbert Road (SR 1116)/Sunfish Drive	18,500			3.08%	2.09%	28,000	31,000	31,000
Sunfish Drive - South of Brawley School Road (SR 1100)	500			3.38%	3.20% (2)	10,100	1,100	1,100
Talbert Drive (SR 1116) - North of Brawley School Road (SR 1100)	11,900			0.13%	0.13%	12,200	11,900	12,300
US 21/NC 115 - West of Julian Drive	16,000			1.21%	1.35%	21,500	22,400	22,400
US 21/NC 115 - Julian Drive to I-77	16,800			1.21%	1.37%	21,500	23,600	23,600

**Table C8: 2040 Build Traffic Volumes**

Forecast Location	Forecast 2015 BY NB	Historic Growth Rate		Model Growth Rate <sup>(1)</sup>	Chosen Growth Rate <sup>(1)</sup>	2040 Model Volumes	2040 Forecast Volumes	
	AADT	2003-2013	1993-2013	2015-2040	2015-2040	2040 Build	No-Build	Build
US 21/NC 115 - I-77 to Lexus Drive/Garden Center Avenue	17,500	0.80%	2.60%	1.31%	1.37%	15,800	24,600	24,600
US 21/NC 115 - East of Lexus Drive/Garden Center Avenue	12,800	0.80%	2.60%	1.12%	1.51%	14,400	18,600	18,600
Julian Drive - North of US 21/NC 115	2,000			N/A	0.73% <sup>(3)</sup>		2,400	2,400
Lexus Drive - South of US 21/NC 115	2,000			N/A	0.73% <sup>(3)</sup>		2,400	2,400
Garden Center Avenue - North of US 21/NC 115	4,700			N/A	0.70% <sup>(3)</sup>		5,600	5,600

**Notes:**

(1) Growth rate shown is the Compound Annual Growth Rate (CAGR).

(2) Growth rate shown is for a centroid connector that was determined to be representative of the change in volume for the subject roadway

(3) Model growth rate cannot be calculated as the roadway is not included in the model and the area centroid connectors are not representative of the likely change in volume for the subject roadway

(4) Volume for I-77 managed lanes was developed based on a proportion of the managed lane volume to the total volume of the general purpose and managed lanes from the model applied to the total forecast volume on I-77



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