

Traffic Estimate Report

I-6011A

US 74 at Creek Road – Grade Separation

Robeson County, NC

WBS No: 48690.1.2

January 2022

PREPARED FOR:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

PREPARED BY:

**STV ENGINEERS, INC. (F-0991)
900 WEST TRADE STREET, SUITE 715
CHARLOTTE, NC 28202**





Traffic Estimate Cover Letter

January 2022

TO: Alex Henderson
Engineering Specialist, Division Design & Construct (DDC)

FROM: Trent Moody, PE
STV Engineers, Inc.

SUBJECT: I-6011A: US 74 at Creek Road Grade Separation, Robeson County

The NCDOT Transportation Planning Division has reviewed and approved this Traffic Estimate for I-6011A as of January 3, 2022.

Please find attached the 2021/2045 Traffic Estimate for I-6011A: Convert the at-grade intersection of US 74 at SR 2225 (Creek Road) to an overpass, removing access to US 74 (future I-74), in Robeson County.

Included are the following four scenarios:

- 2021 Base Year No-Build (BY-NB)
- 2021 Base Year Build (BY-B)
- 2045 Future Year No-Build (FY-NB)
- 2045 Future Year Build (FY-B)

The following individuals were consulted during the development of this traffic estimate:

- Keith Dixon – Transportation Planning Division
- Darius D. Sturdivant – Division Planning engineer, Division 6

Certain assumptions were made in the development of the traffic estimate:

Fiscal Constraint: This project is located within the boundaries of the Lumber River Rural Planning Organization (LRRPO). The 2020-2029 State Transportation Improvement Plan (STIP) was utilized in determining projects in the vicinity that may have impacts to traffic. Projects that are anticipated to directly affect the proposed project, and are assumed to be complete and open to traffic by 2045, are listed below:

- R-5751: Convert the at-grade intersections of US 74 at NC 72 and US 74 at NC 130 to a singular interchange
- R-5752: Convert the at-grade intersection of US 74 at SR 2220 (Broadridge Road) to an interchange
- I-6011: Upgrade US 74 from NC 41 near Lumberton to US 76 near Chadbourn to interstate standards

Development Activity: There are no current approved developments within the study area that are expected to have an impact on traffic volumes.



Travel Demand Model: The North Carolina Statewide Travel Model v4.5 (NCSTMv4.5) was used as a tool to determine the growth rate for the roadway segments analyzed. The model base and horizon years are 2017 and 2045, respectively.

Traffic Estimate Methodology: The 2021 BY-NB traffic estimates were developed based on the selected growth rates applied to 2019 historic AADTs over 2 years (or 4 years for two historic AADTs from the year 2017). Growth rates were developed using linear regression projection of 10-year and 20-year historic AADT data, NCSTM model data, the R-5751 traffic forecast, population data, and information from local planners. With the introduction of the project in the BY-B scenario, traffic estimates were then diverted to NC 130, NC 72, and Broadridge Road.

The 2045 FY-NB traffic estimates were developed based on the selected growth rates applied to 2021 BY-NB estimates over 24 years. With the introduction of the project in the FY-B scenario, traffic estimates were then diverted to NC 130, NC 72, and Broadridge Road. Engineering judgment adjustments were applied as needed in finalizing the estimates for balancing purposes.

Interpolation/Extrapolation: To estimate AADT estimates between 2021 and 2045, straight line interpolation may be used. AADT estimates may be extrapolated for up to two years immediately following 2045. If it is determined that any of these assumptions have become inconsistent with the project and surrounding area activity, please request updated projections at this location.

cc (with Attachments):
TrafficForecast@ncdot.gov
Keith Dixon, Transportation Planning Division
File Copy: I-6011A Robeson County



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1.0 Project Background

STV Engineers, Inc. (STV) has been contracted by the North Carolina Department of Transportation (NCDOT) to develop base year and future year traffic estimates for NCDOT State Transportation Improvement Program (STIP) project number I-6011A in NCDOT Division 6. The project proposes to convert the at-grade intersection of US 74 at SR 2225 (Creek Road) to an overpass, removing access to US 74 (future I-74), in Robeson County. The project study area is illustrated in Figure 1 in the Appendix.

1.1 Project Request Information

The traffic estimate for this project was requested by NCDOT in support of the project design and development. The scope of work for the traffic estimate was finalized in consultation with NCDOT Transportation Planning Division (TPD) in November 2021. Through project scoping with NCDOT TPD, it has been agreed that two base year estimates would be developed for the year 2021 and two future year estimates would be developed for the year 2045. The evaluated scenarios are:

- 2021 Base Year No-Build (BY-NB)
- 2021 Base Year Build (BY-B)
- 2045 Future Year No-Build (FY-NB)
- 2045 Future Year Build (FY-B)

The conversion of the US 74 at Creek Road intersection will cause traffic to be diverted to SR 2220 (Broadridge Road) to the north and NC 72/NC 130 to the south, which will be reflected in BY-B and FY-B estimates.

1.2 Area Information

US 74 is currently a four-lane divided highway with a mixture of at-grade intersections as well as grade separated interchanges. US 74 at Broadridge Road is a grade separated interchange, while US 74 at Creek Road, NC 72, and NC 130 are at-grade intersections. Future plans call for grade separated interchanges and upgrades conforming to interstate standards. US 74 runs north-south in the study area. Creek Road, Broadridge Road, NC 72, and NC 130 are two-lane undivided roadways that runs east-west in the study area. Land uses in the study area are primarily residential and agricultural.

1.3 Fiscal Constraint

This project is located within the boundaries of the Lumber River Rural Planning Organization (LRRPO). The 2020-2029 State Transportation Improvement Plan (STIP) was utilized in determining projects in the vicinity that may have impacts to traffic. Projects that are anticipated to directly affect the proposed project, and are assumed to be complete and open to traffic by 2045, are listed below:

- R-5751: Convert the at-grade intersections of US 74 at NC 72 and US 74 at NC 130 to a singular interchange
- R-5752: Convert the at-grade intersection of US 74 at SR 2220 (Broadridge Road) to an interchange
- I-6011: Upgrade US 74 from NC 41 near Lumberton to US 76 near Chadbourn to interstate standards



1.4 Route Information

Route types and classifications of roadways within the study area are summarized below in Table 1.

Table 1: Route Information

Route Number	Local Route Name	Speed Limit	Classification
US 74	-	60 MPH	Other Freeway
SR 2225	Creek Road	55 MPH west of US 74 Statutory Speed Limit East of US 74	Local
NC 130	-	55 MPH	Major Collector
NC 72	-	Statutory Speed Limit	Major Collector
SR 2220	Broadridge Road	Statutory Speed Limit	Minor Collector

2.0 Sources of Information and Data

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

2.1 Historic AADT

Historic AADT estimates from 1991 to 2019 were obtained from the NCDOT Traffic Survey Group (TSG) and used as part of the estimate process. Within the limits of the study areas, nine NCDOT historic AADT locations are present. General AADT trends for select roadways are summarized below:

- Along US 74, linear regression projection of growth rates from historical AADT data depicts between a 0.77% - 4.90% increasing trendline using 10-years of historical data (2009-2019) and between a -1.86% - 3.74% trendline using 20-years of historical data (1999-2019)
- Along SR 2225 (Creek Road), linear regression projection of growth rates from historical AADT data depicts a 1.98% increasing trendline west of US 74 using 20-years of historical data (1999-2019). There is a negative trendline east of US 74 using 10-years and 20-years of historical data.
- Along SR 2220 (Broadridge Road), linear regression projection of growth rates from historical AADT data depicts a -2.11% trendline using 10-years of historical data (2009-2019) and between a -3.75% - 2.27% trendline using 20-years of historical data (1999-2019)
- Along NC 72, linear regression projection of growth rates from historical AADT data depicts a -2.11% trendline using 10-years of historical data (2009-2019) and a -0.27% trendline using 20-years of historical data (1999-2019)
- Along NC 130, linear regression projection of growth rates from historical AADT data depicts a 1.10% trendline using 10-years of historical data (2009-2019) and a -0.49% trendline using 20-years of historical data (1999-2019)

The historic AADT data and trends are presented in Appendix A.



2.2 NCSTM Model Data

The North Carolina Statewide Travel Model v4.5 (NCSTMv4.5) was used as a tool to determine the growth rate for the roadway segments analyzed. The base year of the model is 2017 with a future year of 2045. The model included US 74, NC 72, and NC 130, but did not include Creek Road and Broadridge Road.

Compound Annual Growth Rates (CAGRs) were used in producing the change rate depicted by the model outputs at each location in the study area. The CAGRs were calculated at each location using the following equation:

$$((2045 \text{ Model Value}/2017 \text{ Model Value})^{1/28}) - 1$$

The model outputs in the study area, along with their corresponding CAGRs, are presented in Table 2.

Table 2: NCSTM Model Outputs and CAGRs

Roadway Segment	2017 Model Outputs	2045 Model Outputs	CAGR
US 74 south of NC 130	10,200	13,000	0.87%
US 74 between NC 130 and NC 72	9,200	11,600	0.83%
US 74 north of NC 72	6,300	8,600	1.12%
NC 130 west of US 74	1,100	2,900	3.52%
NC 72 east of US 74	6,500	6,600	0.05%

2.3 R-5751 Traffic Forecast

A traffic forecast was completed for STIP project number R-5751: Convert the at-grade intersections of US 74 at NC 72 and US 74 at NC 130 to a singular interchange. The AADT data within this forecast was used to develop CAGRs as detailed in Table 3. The forecast can be found in Appendix B.

Table 3: R-5751 Traffic Forecast AADT Data

Roadway Segment	2018 BYNB Forecast AADT	2040 FYB Forecast AADT	CAGR
US 74 south of NC 130	18,400	29,000	2.09%
US 74 north of NC 72	14,900	24,700	2.32%
NC 130 west of US 74	1,300	2,000	1.98%
NC 72 east of US 74	2,400	3,300	1.46%



2.4 Population Data

Please see Table 4 outlining the 2021 population data and 2045 population estimate for Robeson County per the NC Demographer's Office, and the calculated CAGR.

Table 4: Population Data for Robeson County

2021 Population	2045 Population Estimate	CAGR
130,713	128,232	-0.08%

2.5 Information from Local Planners

Local planners and engineers were contacted to discuss existing and future plans within the study area. Below are some important notes from the stakeholders:

- Location is rural: Primarily farmland/agricultural and low density residential
- Future year traffic volumes (2035) on Creek road and along roads in the vicinity of the project are expected to remain low and no future year capacity deficiencies are anticipated as documented in the 2011 Robeson County CTP Report
- Study area is located in close proximity to the Lumber River State Park
- This area is considered natural and scenic and is expected to remain mostly unchanged

2.6 Other Sources

Data sources used that are not listed in Sections 2.1 through 2.4 include:

- The 2020-2029 State Transportation Improvement Plan (STIP)
- NCDOT Functional Classification of Roadways Maps

3.0 Growth Rates

To develop base year and future year estimates, growth rates are needed to apply to 2019 Historic AADTs in the study area. Selected Growth Rates for each roadway segment are outlined in Table 5, which summarizes collected data in Section 2.0 and makes selections based on available data.



Table 5: Selected Growth Rates

Roadway Segment	Historic AADT CAGR		NCSTM Model CAGR	R-5751 Traffic Forecast CAGR	Population Data CAGR	Growth Rate Selection
	10-year Data	20-year Data				
US 74 south of NC 130	2.73%	1.99%	0.87%	2.09%	-0.08%	1.75%
US 74 between NC 130 and NC 72	0.77%	-1.86%	0.83%	-		1.75%
US 74 between NC 72 and Creek Road	-	-	1.12%	2.32%		1.75%
US 74 between Creek Road and Broadridge Road	4.90%	-	1.12%	-		1.75%
US 74 north of Broadridge Road	-	-	1.12%	-		1.75%
NC 130 west of US 74	1.10%	-0.49%	3.52%	1.98%		1.00%
NC 72 east of US 74	-2.11%	-0.27%	0.05%	1.46%		0.25%
Creek Road west of US 74	-	1.98%	-	-		1.00%
Creek Road east of US 74	-	-	-	-		1.00%
Broadridge Road west of US 74	-2.11%	2.27%	-	-		1.00%
Broadridge Road east of US 74	-2.11%	-3.75%	-	-		0.00%

4.0 Base Year Estimates

4.1 Base Year No-Build Estimates

Selected growth rates were applied to 2019 Historic AADTs on each roadway segment over two years to estimate 2021 AADTs, as shown in Table 6. As there is no historic AADT data along US 74 between NC 72 and Creek Road, and along US 74 north of Broadridge Road, the data in these roadway segments is assumed to be the same as US 74 between Creek Road and Broadridge Road.

**Table 6: 2021 Base Year No-Build AADT Estimates**

Roadway Segment	2019 Historic AADT	Selected Growth Rates	2021 BYNB AADT Estimate
US 74 south of NC 130	18,000	1.75%	18,600
US 74 between NC 130 and NC 72	16,500	1.75%	17,100
US 74 between NC 72 and Creek Road	15,500	1.75%	16,000
US 74 between Creek Road and Broadridge Road	15,500	1.75%	16,000
US 74 north of Broadridge Road	15,500	1.75%	16,000
NC 130 west of US 74	1,000	1.00%	1,000
NC 72 east of US 74	2,100	0.25%	2,100
Creek Road west of US 74	1,100 (2017 AADT)	1.00%	1,100
Creek Road east of US 74	770 (2017 AADT)	1.00%	900*
Broadridge Road west of US 74	950	1.00%	1,000
Broadridge Road east of US 74	900	0.00%	900

*Estimate adjusted for balancing purposes

4.2 Volume Diversion

With the project proposal to convert the at-grade intersection of US 74 at Creek Road to an overpass, traffic accessing Creek Road from US 74, and vice versa, will be diverted to NC 130, NC 72, and Broadridge Road. The NCDOT TFU tool was used to assist in determining the amount of traffic between US 74 and Creek Road to be diverted, and which locations to divert the traffic to. The TFU for BY-NB is included in Appendix C. The AADT volume diversions were based off of the assumed TFU turning volumes at US 74 and Creek Road. The proposed diversions are as follows:

- US 74 at Creek Road northwest quadrant: Divert 300 AADT to/from the west of US 74 at Broadridge Road
- US 74 at Creek Road southwest quadrant: Divert 300 AADT to/from the west of US 74 at NC 130
- US 74 at Creek Road northeast quadrant: Divert 200 AADT to/from the east of US 74 at Broadridge Road
- US 74 at Creek Road southeast quadrant: Divert 200 AADT to/from the east of US 74 at NC 72



4.3 Base Year Build Estimates

Below in Table 7 the Base Year Build AADT Estimates for the study area are summarized. These AADT estimates are adjusted from the BYNB estimates with the diversions outlined in Section 4.2 due to the proposed project grade separation of US 74 at Creek Road.

Table 7: 2021 Base Year Build AADT Estimates

Roadway Segment	2021 BYNB AADT Estimate	AADT Diversion	2021 BYB AADT Estimate
US 74 south of NC 130	18,600	+0	18,600
US 74 between NC 130 and NC 72	17,100	-300	16,800
US 74 between NC 72 and Creek Road	16,000	-500	15,500
US 74 between Creek Road and Broadridge Road	16,000	-500	15,500
US 74 north of Broadridge Road	16,000	+0	16,000
NC 130 west of US 74	1,000	+300	1,300
NC 72 east of US 74	2,100	+200	2,300
Creek Road west of US 74	1,100	-600	500
Creek Road east of US 74	900	-400	500
Broadridge Road west of US 74	1,000	+300	1,300
Broadridge Road east of US 74	900	+200	1,100

The 2021 BYNB AADT Estimates and 2021 BYB AADT Estimates are illustrated in Figure 2 in the Appendix.

5.0 Future Year Estimates

5.1 Future Year No-Build Estimates

Selected growth rates were applied to 2021 AADT Estimates (from Section 4.1) on each roadway segment over 24 years to estimate 2045 AADTs, as shown in Table 8. With the inclusion of R-5751 in the future to form US 74 at NC 72/NC 130 as one interchange, the roadway segment of US 74 between NC 130 and NC 72 no longer exists.

**Table 8: 2045 Future Year No-Build AADT Estimates**

Roadway Segment	2021 BYNB AADT Estimate	Selected Growth Rates	2045 FYNB AADT Estimate
US 74 south of NC 130	18,600	1.75%	28,200
US 74 between NC 72 and Creek Road	16,000	1.75%	24,300
US 74 between Creek Road and Broadridge Road	16,000	1.75%	24,300
US 74 north of Broadridge Road	16,000	1.75%	24,300
NC 130 west of US 74	1,000	1.00%	1,300
NC 72 east of US 74	2,100	0.25%	2,200
Creek Road west of US 74	1,100	1.00%	1,400
Creek Road east of US 74	900	1.00%	1,200*
Broadridge Road west of US 74	1,000	1.00%	1,300
Broadridge Road east of US 74	900	0.00%	900

*Estimate adjusted for balancing purposes

5.2 Volume Diversion

With the project proposal to convert the at-grade intersection of US 74 at Creek Road to an overpass, traffic accessing Creek Road from US 74, and vice versa, will be diverted to NC 130, NC 72, and Broadridge Road. The NCDOT TFU tool was used to assist in determining the amount of traffic between US 74 and Creek Road to be diverted, and which locations to divert the traffic to. The TFU for FY-NB is included in Appendix C. The AADT volume diversions were based off of the assumed TFU turning volumes at US 74 and Creek Road. The proposed diversions are as follows:

- US 74 at Creek Road northwest quadrant: Divert 400 AADT to/from the west of US 74 at Broadridge Road
- US 74 at Creek Road southwest quadrant: Divert 300 AADT to/from the west of US 74 at NC 130
- US 74 at Creek Road northeast quadrant: Divert 200 AADT to/from the east of US 74 at Broadridge Road
- US 74 at Creek Road southeast quadrant: Divert 300 AADT to/from the east of US 74 at NC 72

5.3 Future Year Build Estimates

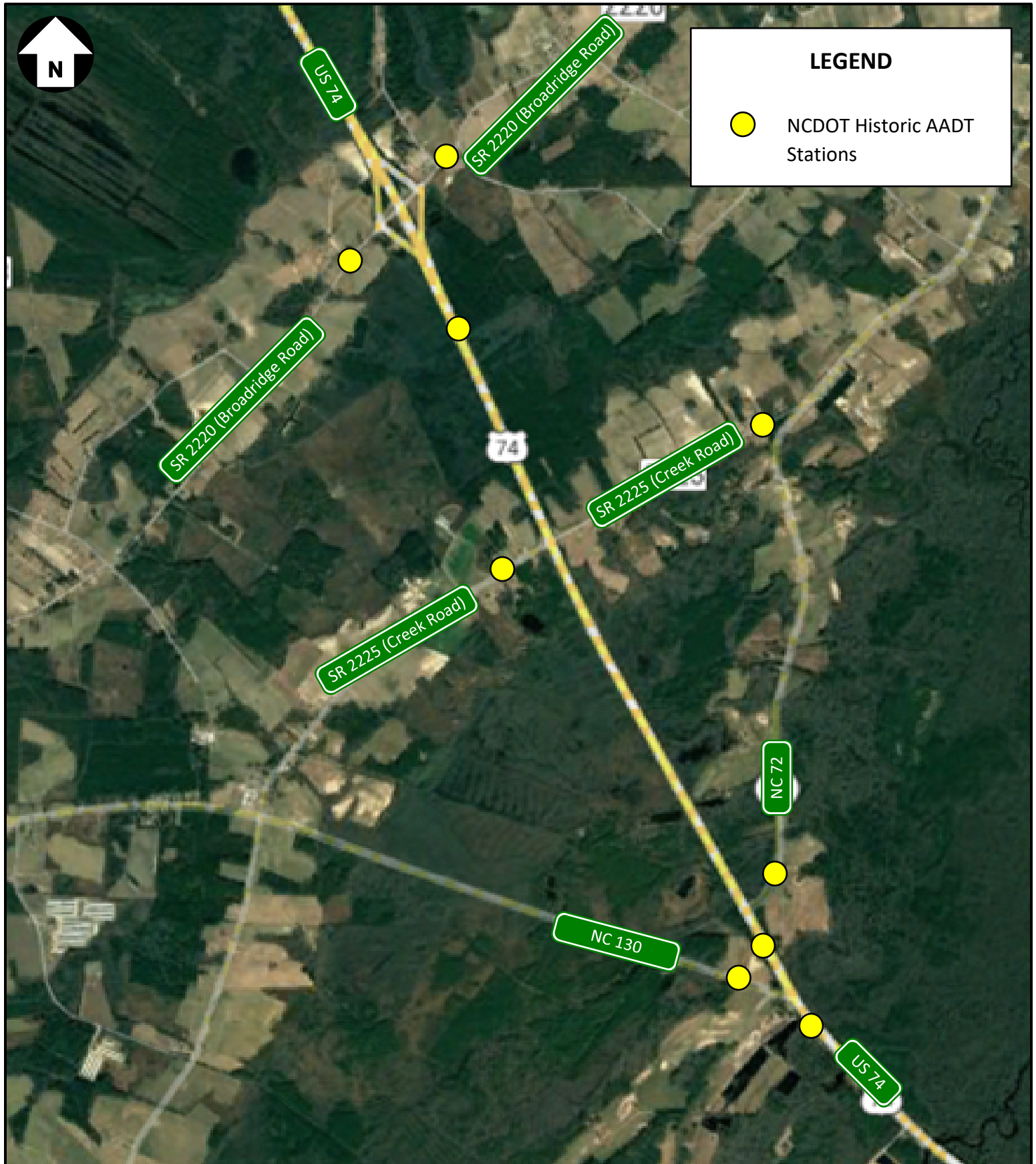
Below in Table 9 the Future Year Build AADT Estimates for the study area are summarized. These AADT estimates are adjusted from the FYNB estimates with the diversions outlined in Section 5.2 due to the proposed project grade separation of US 74 at Creek Road.

**Table 9: 2045 Future Year Build AADT Estimates**

Roadway Segment	2045 FYNB AADT Estimate	AADT Diversion	2045 FYB AADT Estimate
US 74 south of NC 130	28,200	+0	28,200
US 74 between NC 72 and Creek Road	24,300	-600	23,700
US 74 between Creek Road and Broadridge Road	24,300	-600	23,700
US 74 north of Broadridge Road	24,300	+0	24,300
NC 130 west of US 74	1,300	+300	1,600
NC 72 east of US 74	2,200	+300	2,500
Creek Road west of US 74	1,400	-700	700
Creek Road east of US 74	1,200	-500	700
Broadridge Road west of US 74	1,300	+400	1,700
Broadridge Road east of US 74	900	+200	1,100

The 2045 FYNB AADT Estimates and 2045 FYB AADT Estimates are illustrated in Figure 3 in the Appendix.

FIGURES



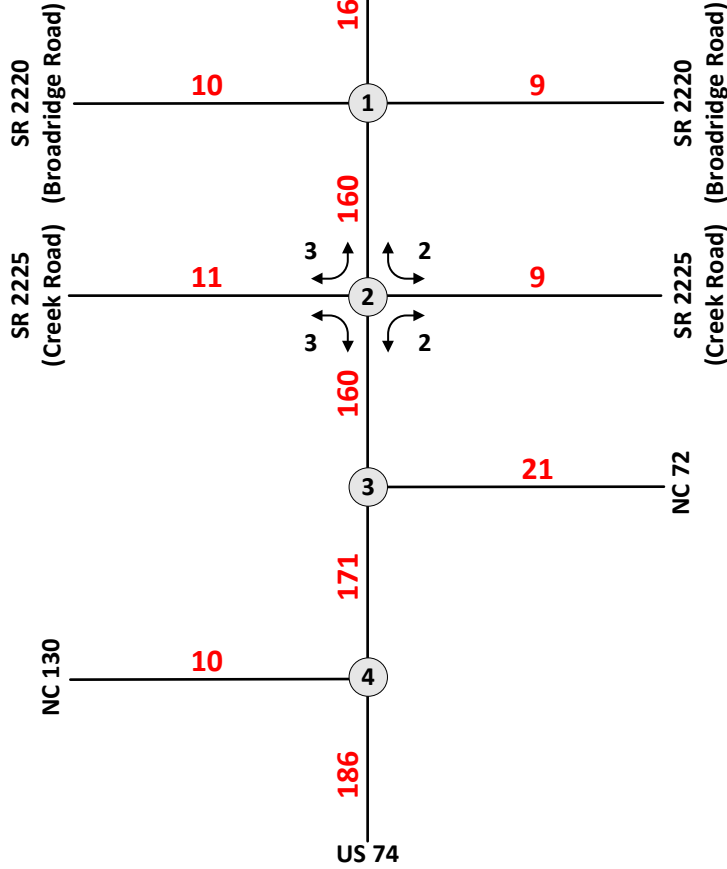
I-6011A

Convert US 74 at Creek Road from an at-grade intersection to an overpass

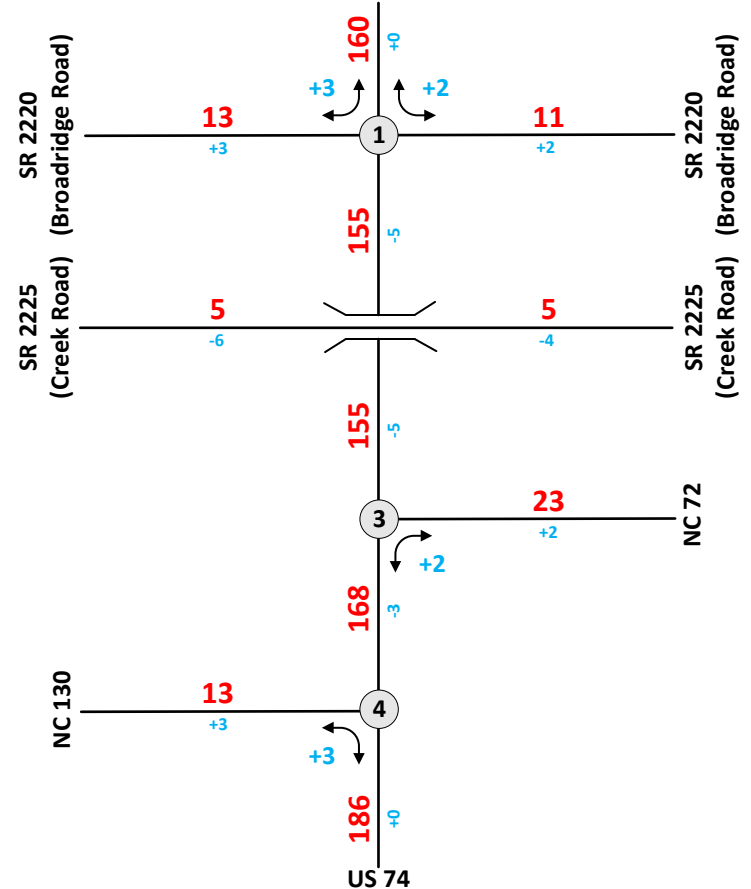
Figure 1

STUDY AREA

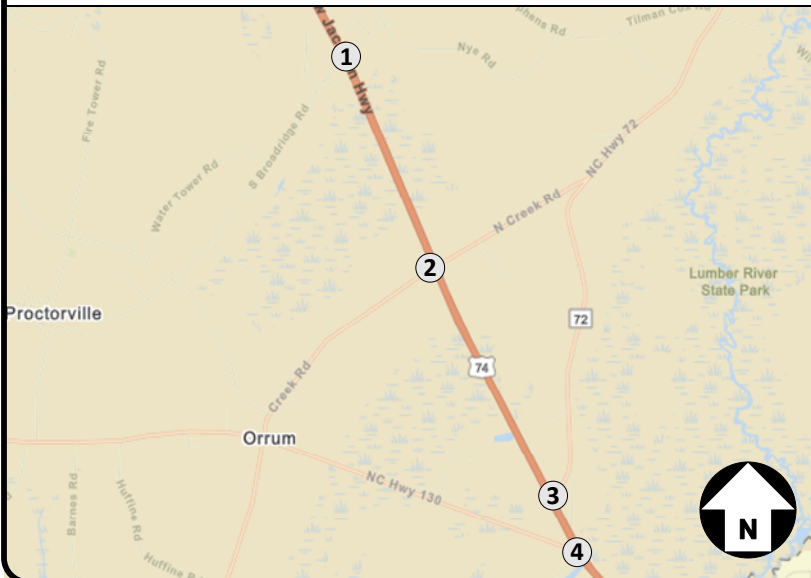




2021 Base Year No Build



2021 Base Year Build



2021

AVERAGE ANNUAL DAILY TRAFFIC

SHEET 1 OF 1

FIGURE 2

I-6011A

WBS: 48690.1.2

COUNTY: Robeson

DIVISION: 6

DATE: January 2022

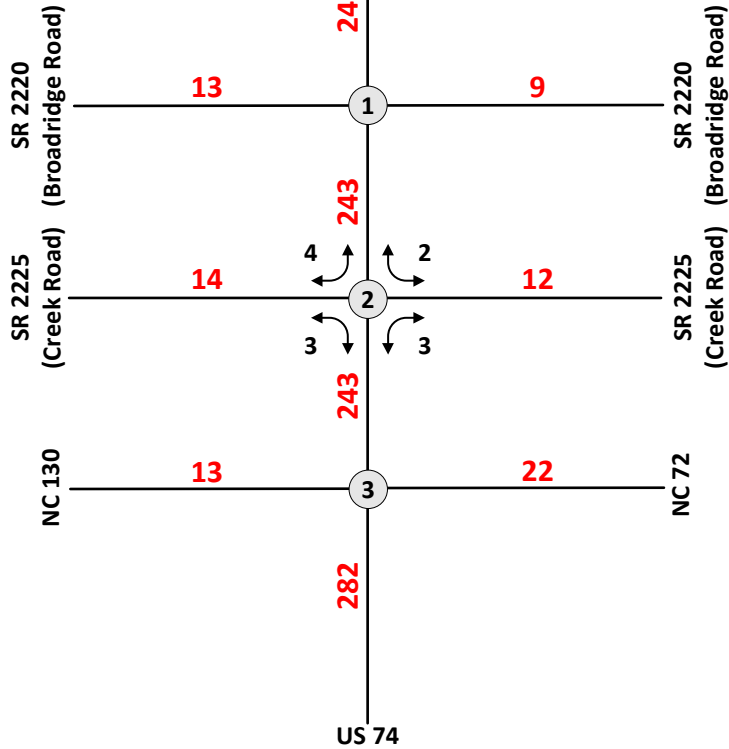
PREPARED BY: STV Engineers, Inc.

LOCATION: US 74 at Creek Road

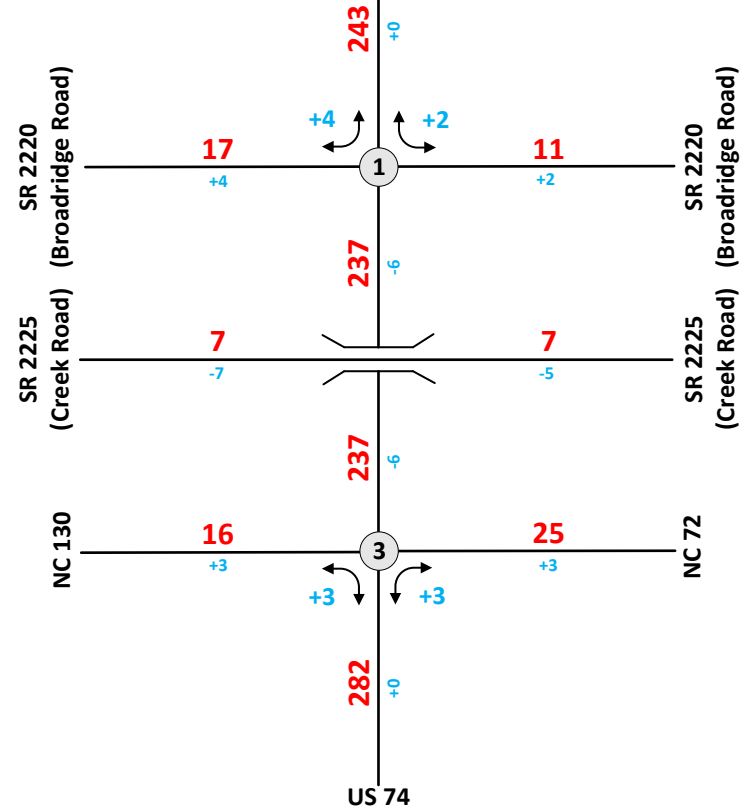
PROJECT: Convert to grade separated

LEGEND

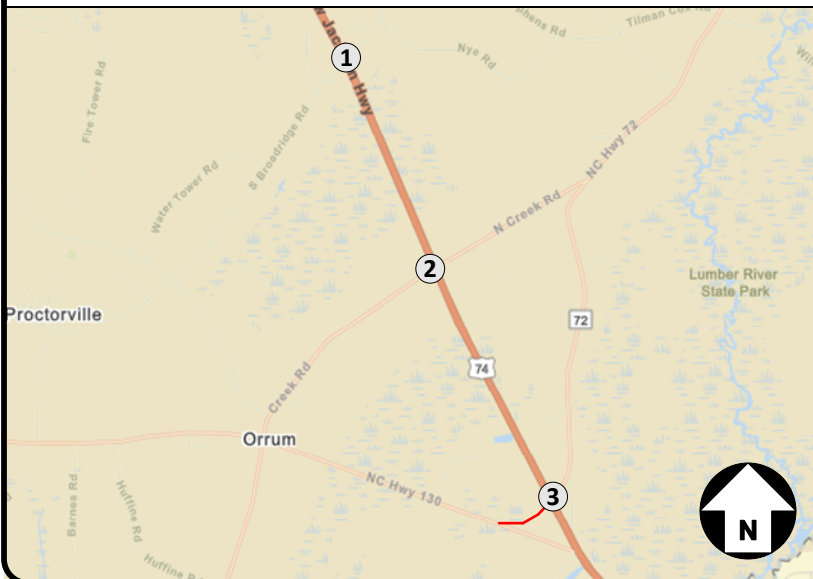
- ### No. of Vehicles Per Day (VPD) in 100s
- +/- ### No. of Vehicles Per Day (VPD) in 100s diverted
- 1- Less than 50 VPD
- X Movement Prohibited
- Roadway
- (X) Intersections



2045 Future Year No Build



2045 Future Year Build



2045

AVERAGE ANNUAL DAILY TRAFFIC

SHEET 1 OF 1

FIGURE 3

I-6011A

WBS: 48690.1.2

COUNTY: Robeson

DIVISION: 6

DATE: January 2022

PREPARED BY: STV Engineers, Inc.

LOCATION: US 74 at Creek Road

PROJECT: Convert to grade separated

LEGEND

- ### No. of Vehicles Per Day (VPD) in 100s
- +/- ### No. of Vehicles Per Day (VPD) in 100s diverted
- 1- Less than 50 VPD
- X Movement Prohibited
- Roadway
- (X) Intersections

APPENDIX A
NCDOT HISTORIC AADT DATA

Location	2019	2018	2017	2016	2015	2014	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	2021 Lin Reg 1999-2019	2045 Lin Reg 1999-2019	2021 Lin Reg 2009-2019	2045 Lin Reg 2009-2019	CAGR 2021-2045 20-Year	CAGR 2021-2045 10-Year
NC 72 E OF US 74	2300	2200	0	2500	2200	0	2200	0	1900	2100	2800	1900	2000	2200	2100	1800	0	2100	1800	1800	1700	1600	1500	1500	900	-0.27%	-2.11%
US 74 S OF NC 72	16500	0	13000	12000	12000	0	0	10000	0	11000	17000	11000	11000	12000	12000	10000	11000	11000	9300	9200	9000	8000	5100	8900	10700	-1.86%	0.77%
NC 130 W OF US 74	1000	1100	1000	1100	980	0	940	1000	930	1000	910	1000	0	1100	1200	1000	980	1000	1000	970	950	900	800	1000	1300	-0.49%	1.10%
US 74 N OF SR 2245	18000	19000	16000	12000	15000	13000	0	11000	12000	13000	14000	10000	12000	13000	13000	0	0	12000	10000	10000	10000	15900	25500	17600	33600	1.99%	2.73%
SR 2220 E OF US 74	900	0	1100	0	1100	0	900	0	1200	0	1100	0	1200	0	1500	0	1200	0	1300	0	1200	500	200	500	300	-3.75%	-2.11%
SR 2225 W OF NC 72	0	0	770	0	940	0	700	0	940	0	610	0	920	0	1100	0	960	0	1000	0	910	200	-200	100	-600		
SR 2220 W OF US 74	950	0	1100	0	1000	0	940	0	1200	0	1100	0	1300	0	1500	0	1200	0	0	0	0	700	1200	500	300	2.27%	-2.11%
SR 2225 W OF US 74	0	0	1100	0	1100	0	800	0	1100	0	1100	0	0	0	1300	0	1100	0	0	0	0	500	800	100	-1000	1.98%	
US 74 N OF SR 2225	15500	16500	14000	0	11000	0	0	0	0	0	8200	0	0	0	0	0	0	0	0	0	0	10600	25600	15800	49800		4.90%

- 1 - Linear Regression Projection of all available AADT estimates between 1999 and 2019 projected to 2021 and 2045.
- 2 - Linear Regression Projection of all available AADT estimates between 2009 and 2019 projected to 2021 and 2045.
- 3 - Compound Annual Growth Rate (CAGR) between the 2021 and 2045 20-Year projections.
- 4 - CAGR between the 2021 and 2045 10-year projections.

APPENDIX B

R-5751 TRAFFIC FORECAST REPORT

Memorandum



To: Scott Pridgen and Alex Henderson – NCDOT Division 6 Project Managers
From: RS&H Project Team
Subject: R-5751 Traffic Forecast Report
Date: May 4, 2018

Please find attached the traffic forecast for State Transportation Improvement Program (STIP) Project R-5751. This project falls within the Lumber River Council of Government (LRCOG) planning area. The North Carolina Department of Transportation (NCDOT) proposes the following improvements:

- » **STIP Project R-5751** proposes to make improvements to the intersections of US 74 at NC 130 and NC 72 by constructing a grade-separated interchange in Robeson County, NCDOT Division 6.

This forecast was requested by Scott Pridgen, NCDOT Division 6 Project Manager, and includes the following scenarios:

- » 2018 Base Year No Build (BYNB)
- » 2018 Base Year Build (BYB)
- » 2040 Future Year No Build (FYNB)
- » 2040 Future Year Build (FYB)

This forecast was approved by NCDOT Transportation Planning Division on May 3, 2018. This is the first traffic forecast for R-5751.

The following persons were consulted during the development of this forecast:

NCDOT Transportation Planning Division

Keith Dixon

NCDOT Division 6

Darius D. Sturdivant
Scott Pridgen

NCDOT District 1 – Robeson Co

Charles S. Miller, Jr. PE

NCDOT Lumber River Contact

Phil Geary

Robeson County

Ricky Harris

Lumber River Council of Governments

Janet Robertson

Certain Assumptions were made during the development of this forecast.

Fiscal Constraint:

The North Carolina Statewide Travel Demand Model (NCSTM), v2.3, was used to produce this forecast and included all fiscally constrained projects documented in the NCDOT Current STIP – April 2018 funded for construction. In addition, in coordination with NCDOT Division 6, the traffic forecast also includes the grade separation of US 74 at Creek Road (SR 2225) in the FYNB and FYB scenarios.

Methodology:

The traffic forecasts and traffic factor estimates for the 2018 BYNB Conditions were developed based on project specific traffic counts and historic Annual Average Daily Traffic (AADT) trends projected to 2018.

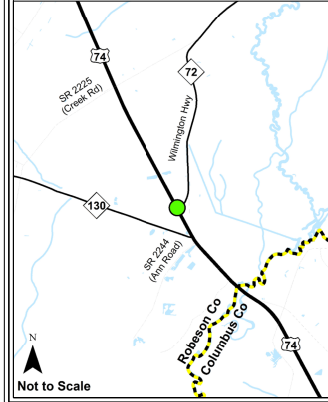
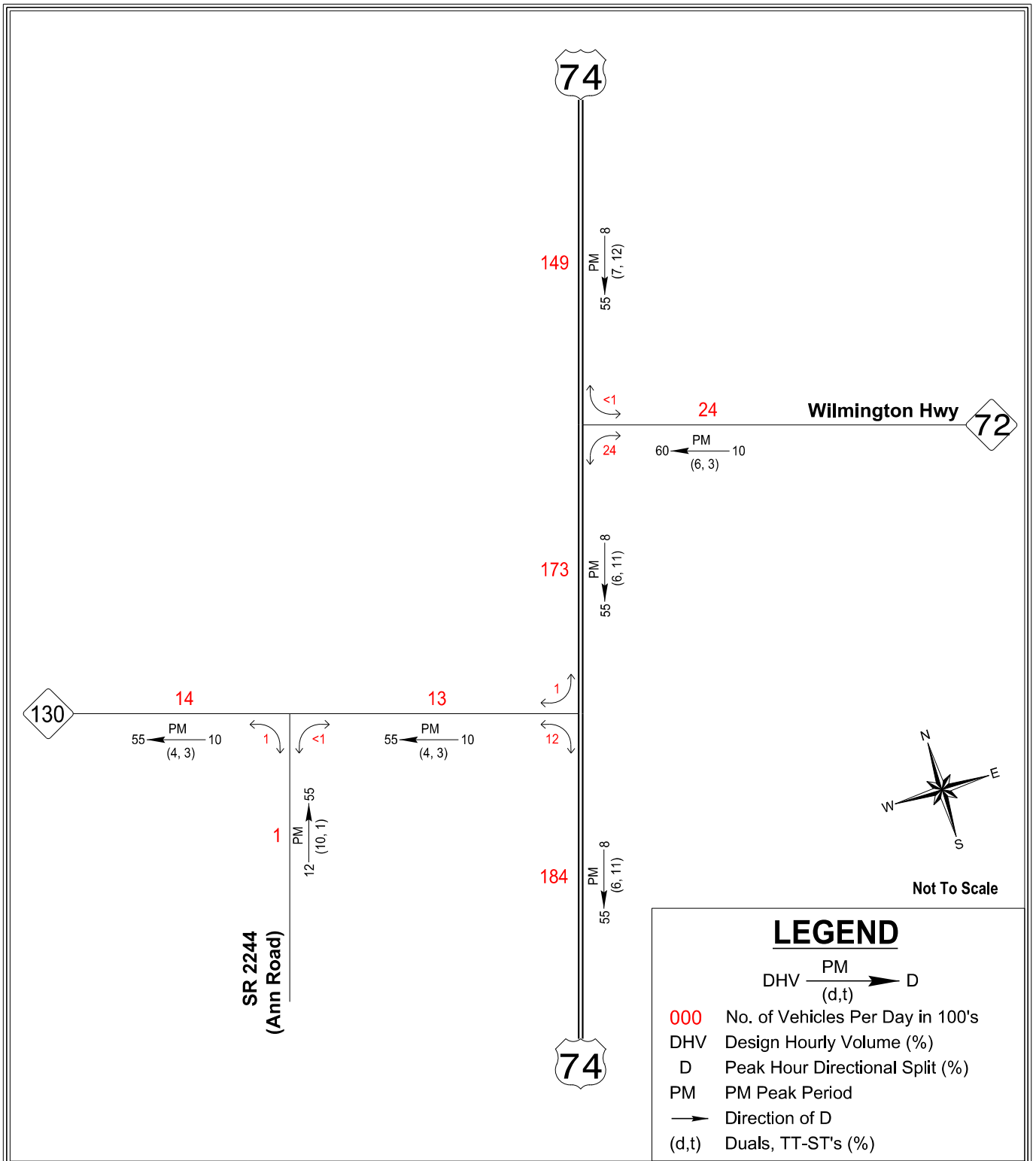
The 2040 FYNB Conditions traffic forecasts were estimated by linearly extrapolating the 2018 BYNB Conditions traffic forecasts using the growth rates calculated based on the NCSTM model output, historic traffic and population growth rates, population and employment forecasts, and stakeholder input regarding projected growth in the study area.

The 2018 BYB and 2040 FYB Conditions traffic forecasts were primarily developed by reviewing the changes in travel patterns obtained by comparing the NCSTM model output of the FYNB and FYB scenarios. It was concluded that no demand change exists between 2018 BYNB and 2018 BYB Conditions or between 2040 FYNB and 2040 FYB Conditions.

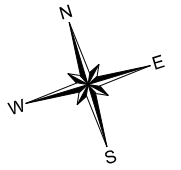
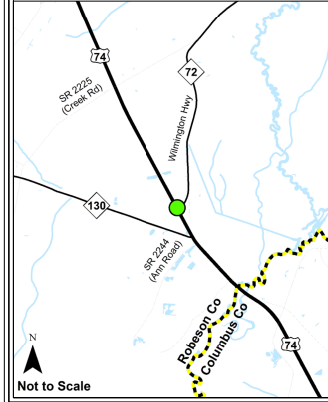
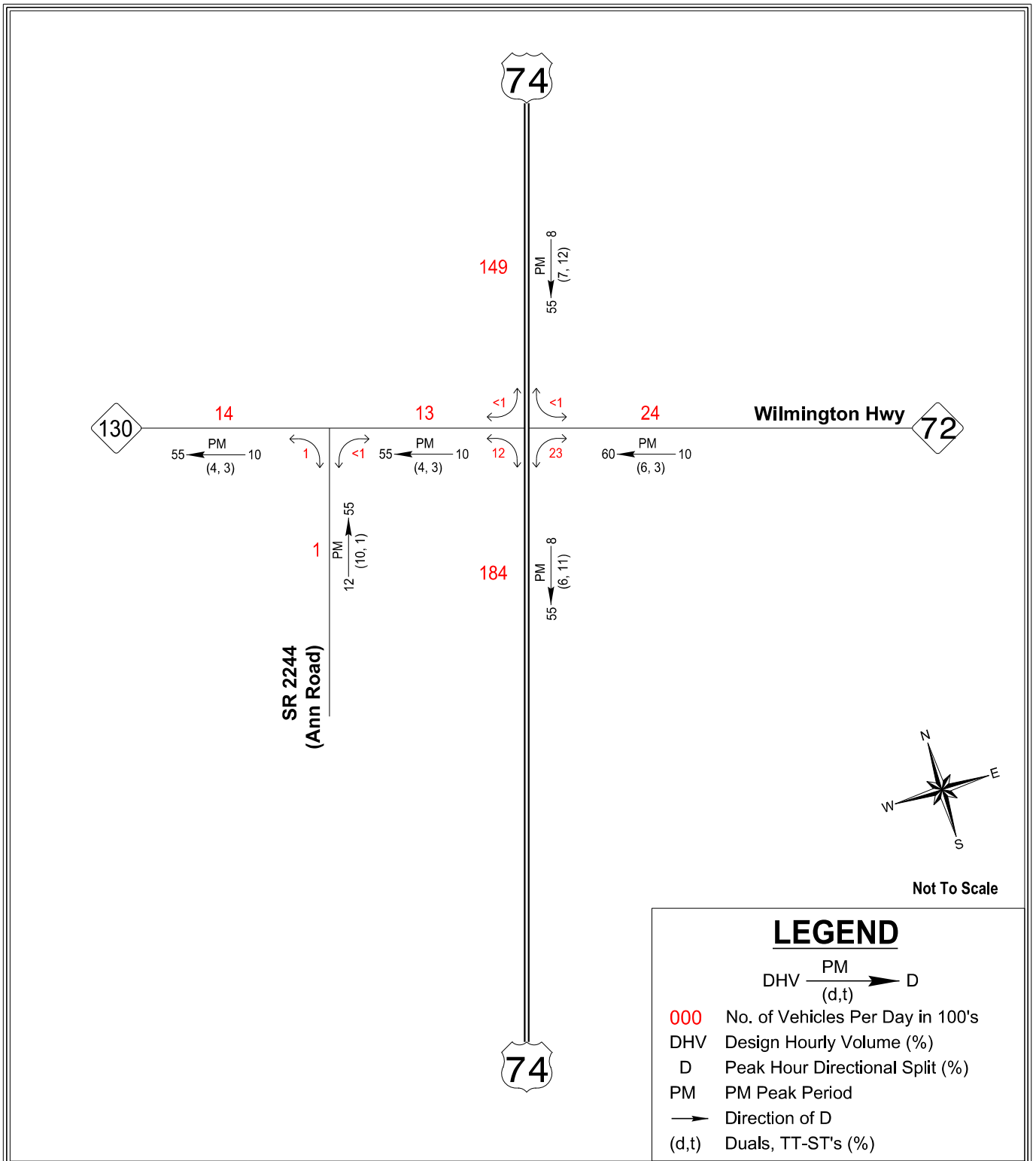
If we can be of any further assistance on this project, please do not hesitate to contact Tom Kelly Thomas.Kelly@rsandh.com 704.940.4710.

CC (with Attachments):

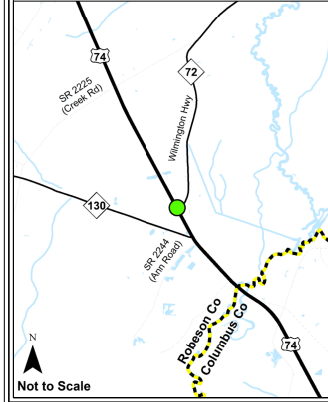
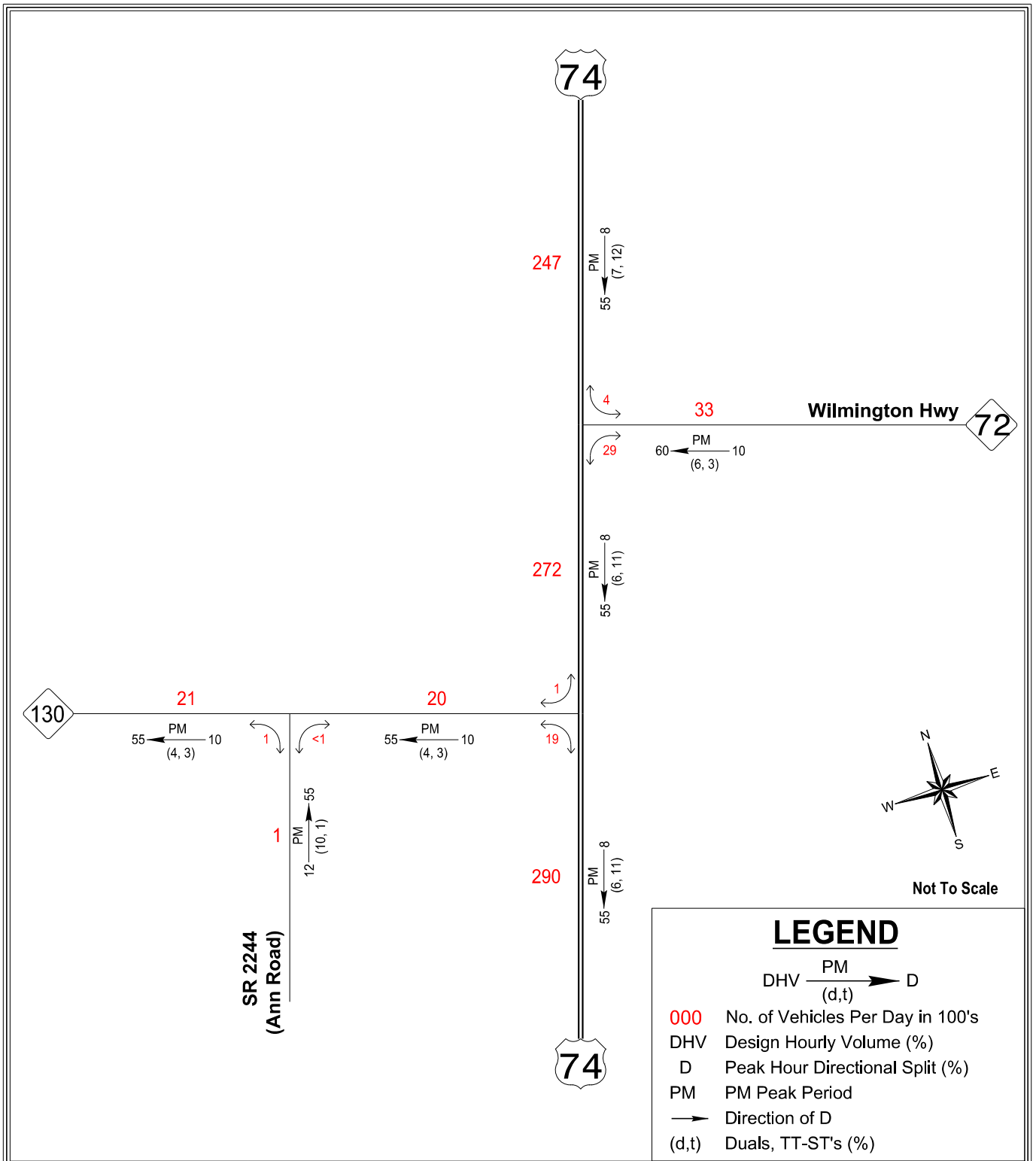
Jim Dunlop, PE, Congestion Management
Brenda Moore, PE, CPM, Roadway Design
Clark Morrison, Pavement Management
Darius D. Sturdivant, Division Planning Engineer
Steve Kendall, PE, Division Project Development Engineer
Behshad Norowzi, TPD Planning Supervisor
Keith Dixon, State Traffic Forecast Engineer
Traffic Forecasting GIS Support



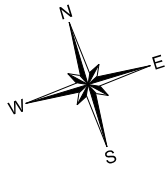
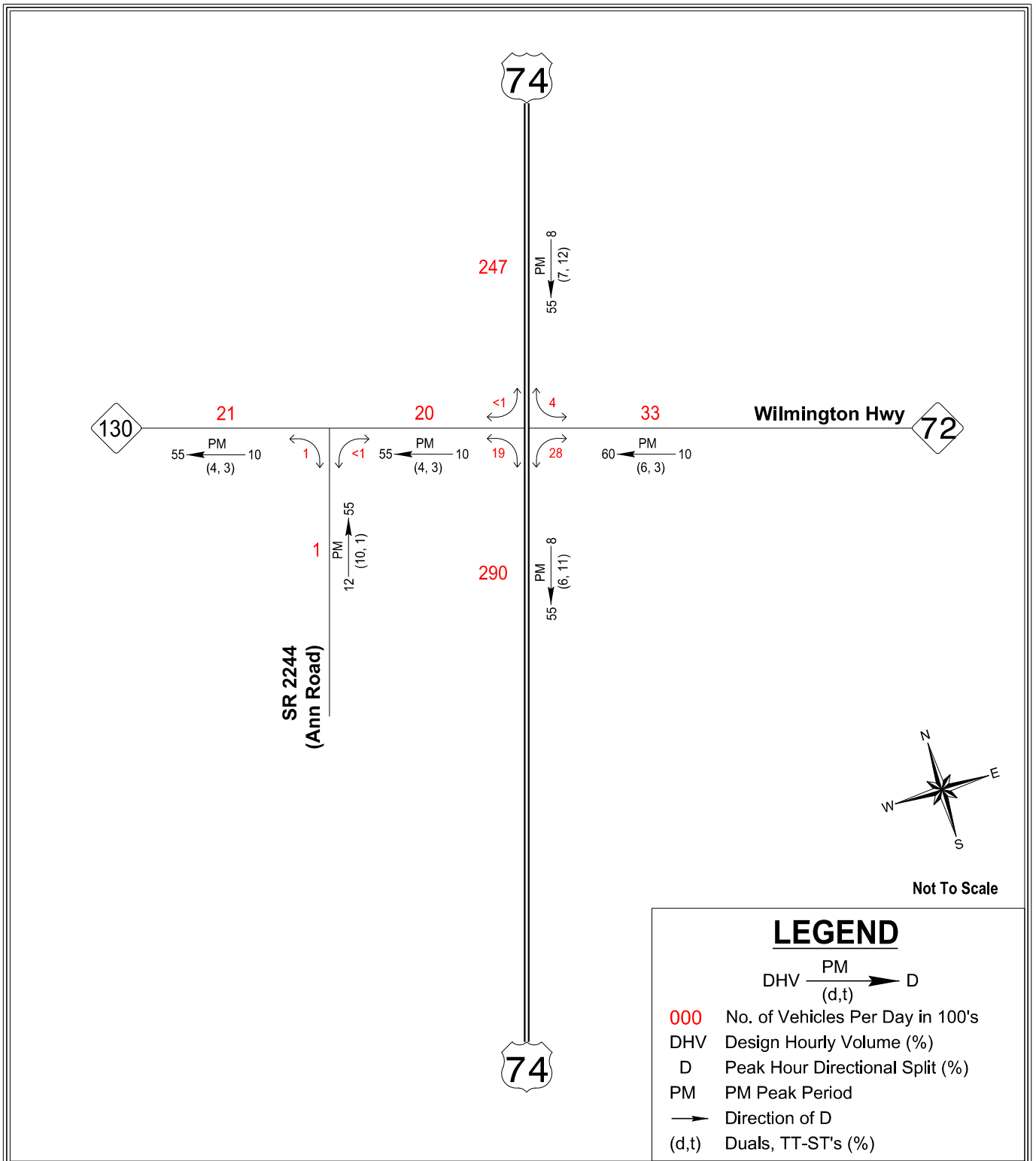
2018		Base Year No Build Conditions		FIGURE 1	
ANNUAL AVERAGE		ANNUAL AVERAGE		SHEET 1 OF 1	
DAILY TRAFFIC FORECASTS		DAILY TRAFFIC FORECASTS			
STIP: R-5751		WBS: 53087.1.1			
COUNTY: Robeson		DIVISION: 6			
DATE: April 2018		PREPARED BY: RS&H			
LOCATION: US 74 at NC 130 / NC 72 (Wilmington Highway) Intersection					
PROJECT: Upgrade US 74 at NC 130 / NC 72 (Wilmington Highway) from an Intersection to an Interchange					



Not To Scale



2040		Future Year No Build Conditions		FIGURE 3	
ANNUAL AVERAGE		ANNUAL AVERAGE		SHEET 1 OF 1	
DAILY TRAFFIC FORECASTS		DAILY TRAFFIC FORECASTS			
STIP: R-5751		WBS: 53087.1.1			
COUNTY: Robeson		DIVISION: 6			
DATE: April 2018		PREPARED BY: RS&H			
LOCATION: US 74 at NC 130 / NC 72 (Wilmington Highway) Intersection					
PROJECT: Upgrade US 74 at NC 130 / NC 72 (Wilmington Highway) from an Intersection to an Interchange					

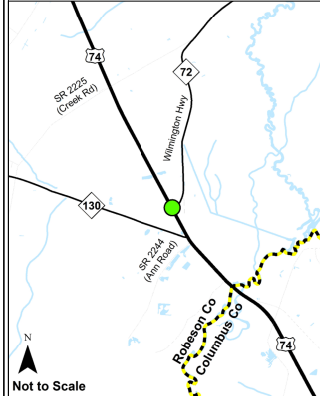


Not To Scale

LEGEND

DHV $\xrightarrow{\text{PM}}$ D
(d,t)

000 No. of Vehicles Per Day in 100's
 DHV Design Hourly Volume (%)
 D Peak Hour Directional Split (%)
 PM PM Peak Period
 \rightarrow Direction of D
 (d,t) Duals, TT-ST's (%)

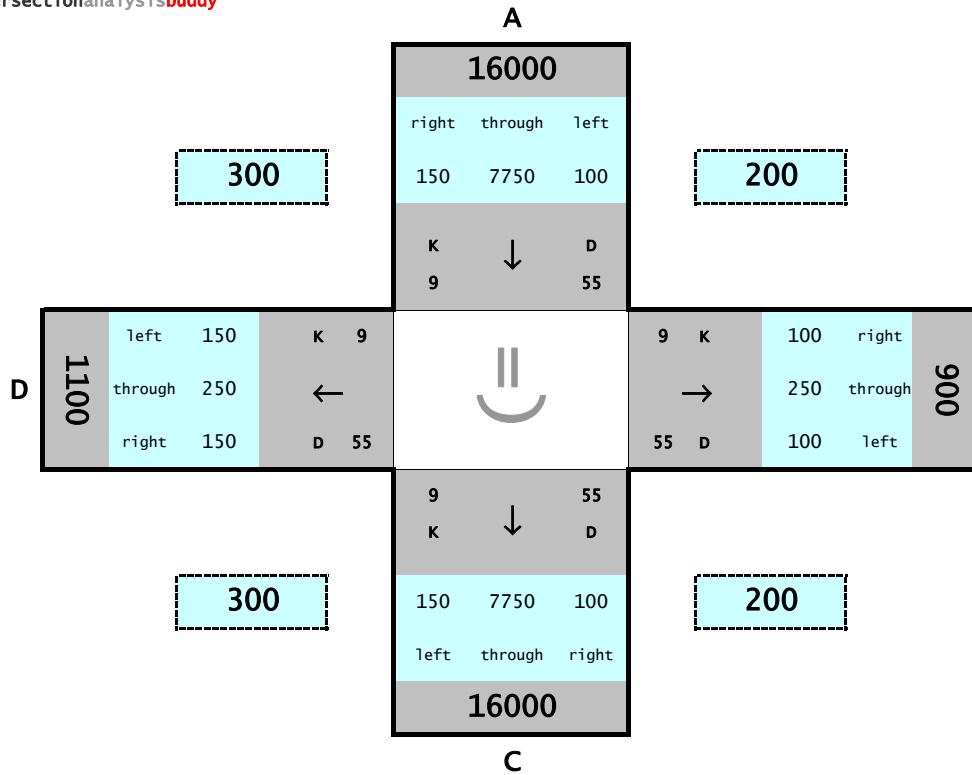


<h1>2040</h1>		Future Year Build Conditions		FIGURE 4	
ANNUAL AVERAGE		DAILY TRAFFIC FORECASTS		SHEET 1 OF 1	
STIP: R-5751		WBS: 53087.1.1			
COUNTY: Robeson		DIVISION: 6			
DATE: April 2018		PREPARED BY: RS&H			
LOCATION: US 74 at NC 130 / NC 72 (Wilmington Highway) Intersection					
PROJECT: Upgrade US 74 at NC 130 / NC 72 (Wilmington Highway) from an Intersection to an Interchange					

APPENDIX C

TFU PRINTS

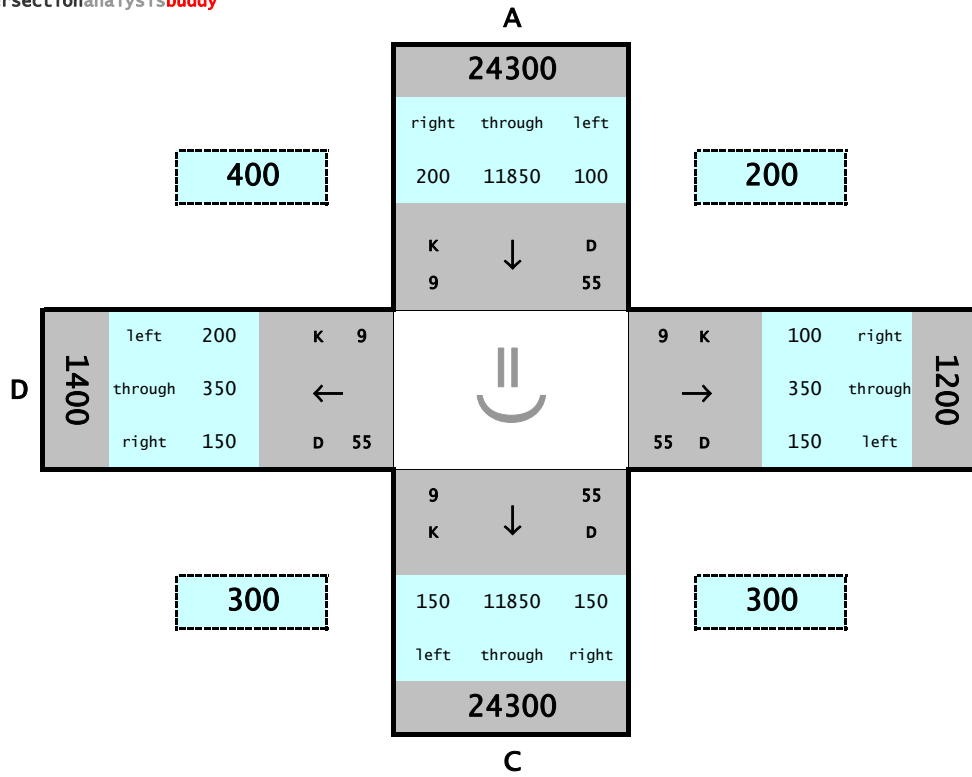
BYNB TFU



INPUT:				
		-3	Change NW & SE	
		-3	Change NE & SW	
A	16000	9	55	
B	900	9	55	
C	16000	9	55	
D	1100	9	55	
leg	current aadt	K	D	dir. parity
<i>(use AADT = 0 to disregard an intersection leg)</i>				
VALIDATION RESULTS:				
				score:
FACTORS ACCEPTABLE				0.25
TURNS ARE VALID				
CURRENT AADTS ARE VALID				
PROJ. AADTS ARE VALID				

	3500
	4900
	2800
	4600
leg	projected aadt

FYNB TFU



INPUT:				
		-3	Change NW & SE	
		-4	Change NE & SW	
A	24300	9	55	
B	1200	9	55	
C	24300	9	55	
D	1400	9	55	
leg	current aadt	K	D	dir. parity
<i>(use AADT = 0 to disregard an intersection leg)</i>				
VALIDATION RESULTS:				
				score:
FACTORS ACCEPTABLE				0.21
TURNS ARE VALID				
CURRENT AADTS ARE VALID				
PROJ. AADTS ARE VALID				

	3500
	4900
	2800
	4600
	projected aadt