



July 18th, 2022

Memorandum To: Michael Haley
Central Corridor Development Engineer
Corridor Development Unit - NCDOT

From: Tim Padgett, PE
Kimley-Horn and Associates, Inc.

Subject: Traffic Forecast for H090738 A and B (NC 33 Widening from NC 306 to SR 1565 (Beaufort Road/Grimesland Bridge Road)) in Beaufort and Pitt Counties, NC

This forecast was reviewed and approved by the NCDOT Transportation Planning Division on July 14, 2022.

Please find attached the 2022 and 2050 traffic estimates for H090738 A and B in Beaufort and Pitt Counties. This project studies the widening of NC 33 from NC 306 to US 17 (Section A) and from US 17 to SR 1565 (Beaufort Road/Grimesland Bridge Road) (section B) to a three-lane roadway. The following scenarios are provided:

- Base Year 2022 No-Build/Build
- Future Year 2050 No-Build/Build

Certain assumptions were made in the development of the forecast:

Fiscal Constraint. In areas outside an MPO, the future year forecasts assume construction of projects listed within the State Transportation Improvement Plan (STIP) which include construction money. According to the 2020-2029 STIP, project H090738 A and B is not included in the current STIP list.

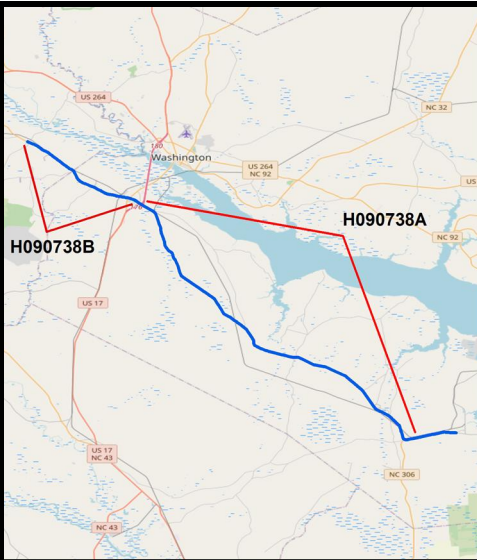
Future Conditions and Development Activity. The forecast was developed using output from the North Carolina Statewide Travel Demand Model (NCSTMv4.5). Assumptions about future development activity and changes in the distribution of population and employment in the forecast study area are implicit in the model.

Forecast Methodology. Base year 2022 estimates and Horizon Year 2050 estimates provided in the attached estimates were developed using a method under which observed traffic data as well as 2017 and 2045 model output were considered, along with historic and projected growth.

To determine any intermediate years, straight-line interpolation may be used. AADT volumes may be extrapolated for up to two years immediately following 2050. 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.

If we can be of any further assistance please do not hesitate to contact me at 919-653-2991, or tim.padgett@kimley-horn.com

Cc: TrafficForecast@ncdot.gov



H090738 A and B Traffic Estimate

2022
No Build/Build

NC 33 Widening

Vehicles Per Day in 100s

— New Roadway

EXTENTS

NC 306 to Beaufort St

Beaufort and Pitt
Counties

Division 2

PROJECT

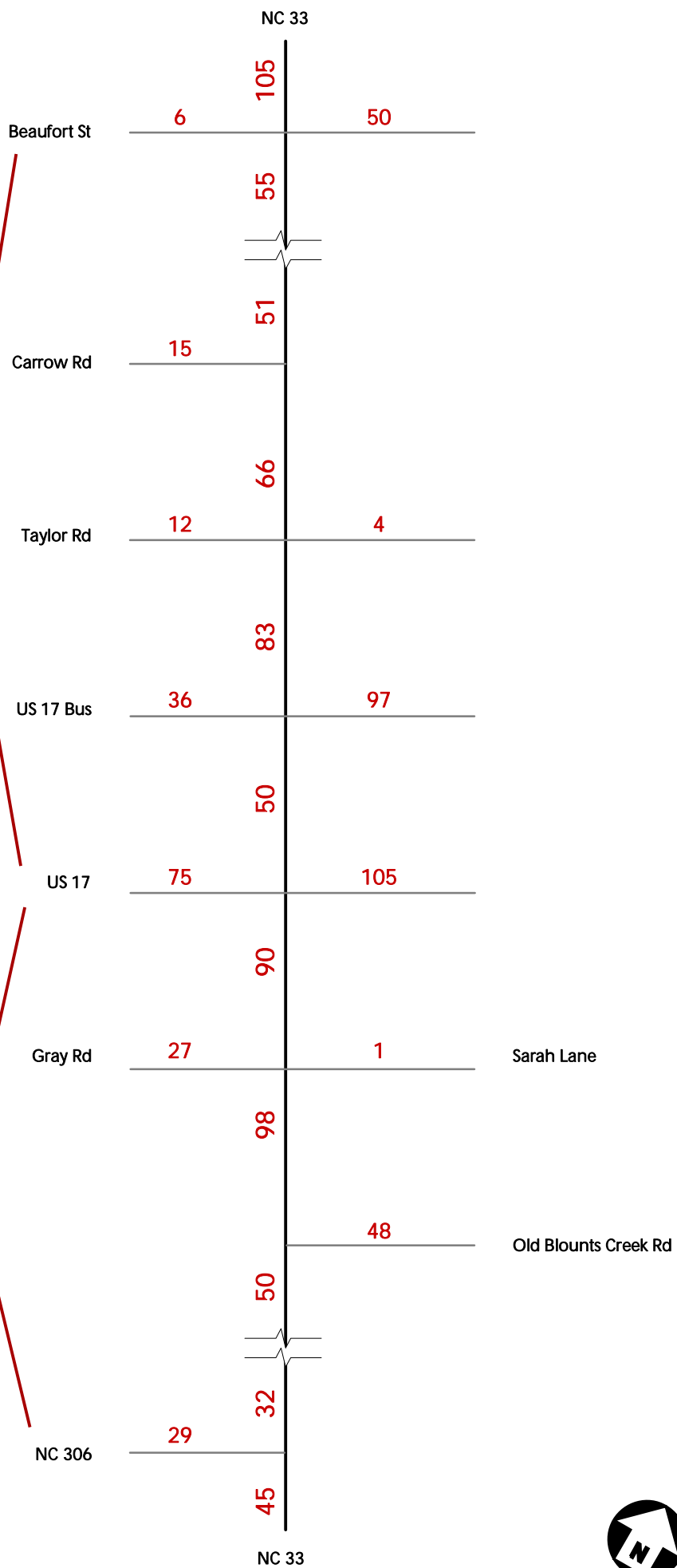
Widen NC 33 to 3 lanes from NC 306 to
Beaufort St

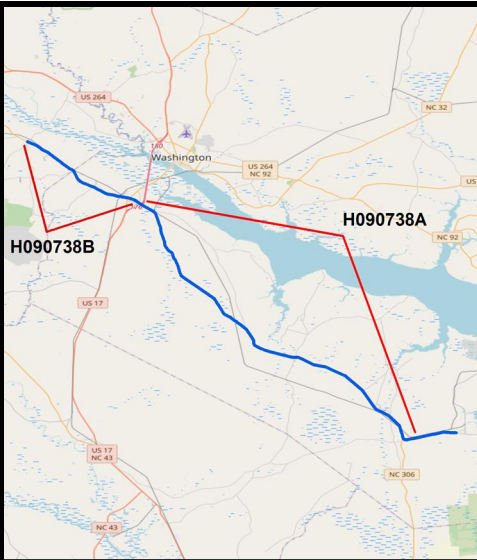
WBS# 34263.1.1

July 14, 2022

B

A





H090738 A and B Traffic Estimate

2050
No Build/Build

NC 33 Widening

Vehicles Per Day in 100s

— New Roadway

EXTENTS

NC 306 to Beaufort St

Beaufort and Pitt
Counties

Division 2

PROJECT

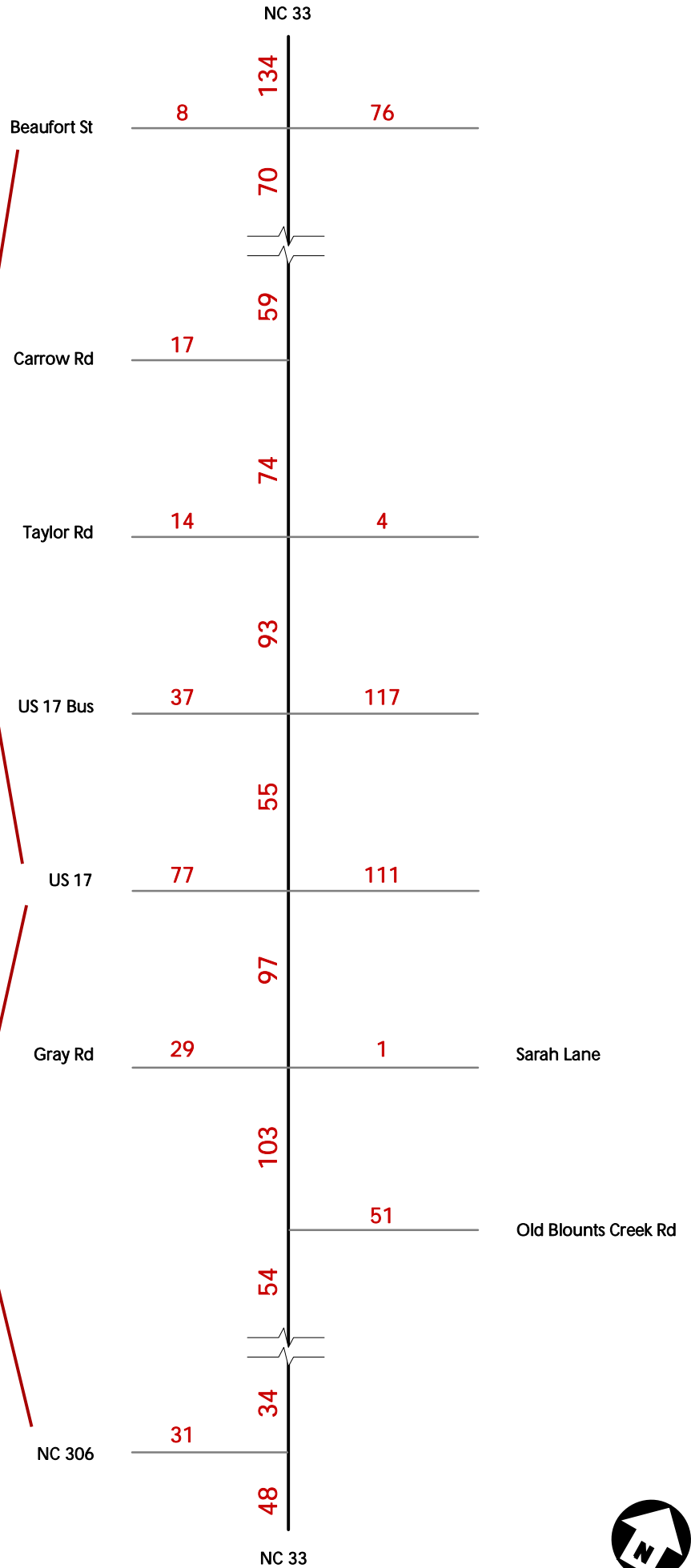
Widen NC 33 to 3 lanes from NC 306 to
Beaufort St

WBS# 34263.1.1

July 14, 2022

B

A



Traffic Forecast Report

**H090738 A and B
(TIP PROJECT)**

**NC 33 Widening from NC 306 to SR 1565 (Beaufort
Road/Grimesland Bridge Road), Beaufort and Pitt
Counties**

**WBS # 34263.1.1
July 2022**

Prepared By: Kimley-Horn and Associates, Inc.

Kimley»»Horn

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Traffic Forecast Report

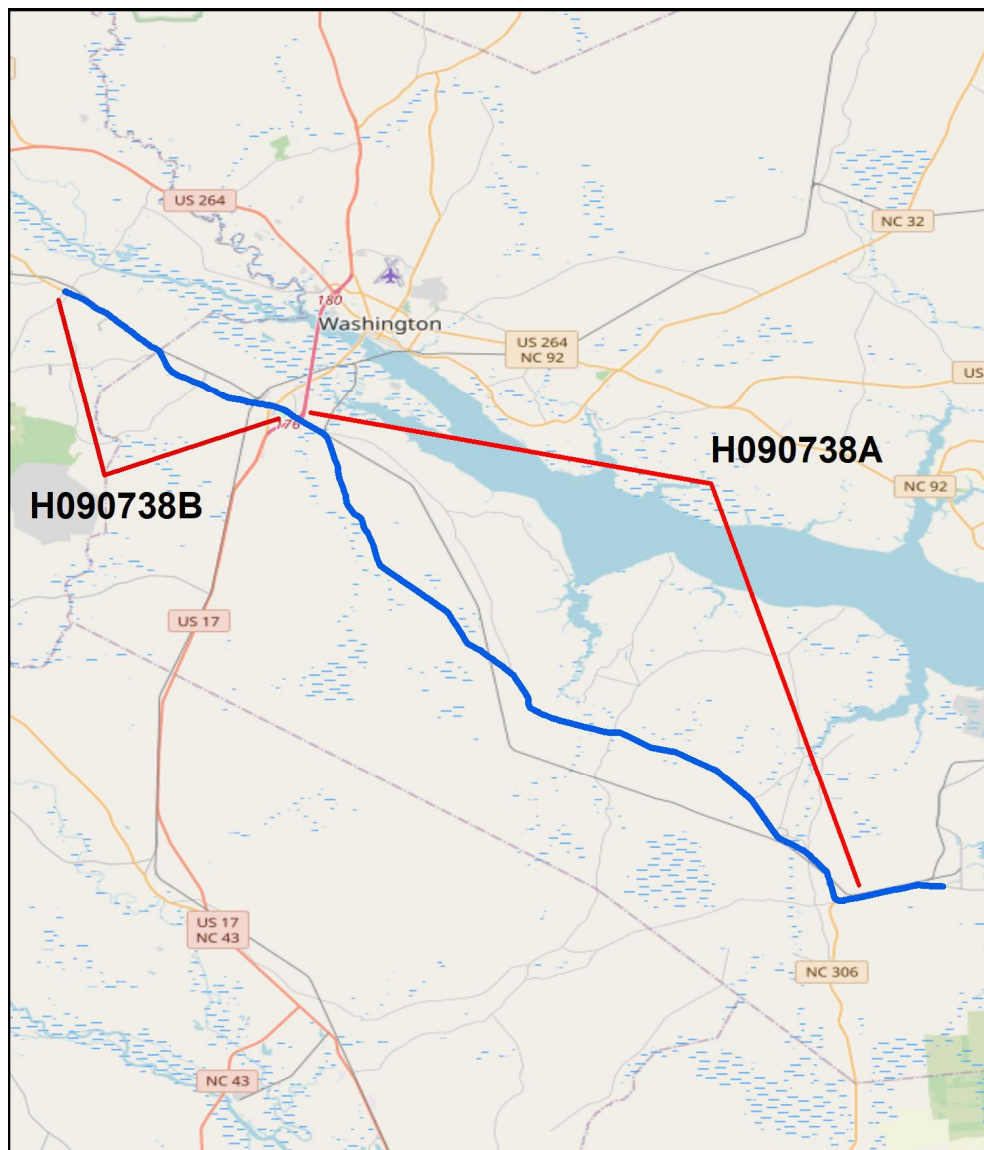
1. Project Background

Project Request Information

This traffic estimate was requested by Michael Haley with the Corridor Development Unit of NCDOT. The proposed project is in Beaufort and Pitt Counties. The project studies the widening of NC 33 from NC 306 to US 17 (Section A) and from US 17 to SR 1565 (Beaufort Road/Grimesland Bridge Road) (section B) to a three-lane roadway

The traffic estimate was performed for each of the following scenarios:

- Base Year 2022 No-Build/Build
- Future Year 2050 No-Build/Build



Route Information

NC 33 is classified as a Major Collector within the project. NC 33 serves as an east/west connection from north of Rocky Mount, through downtown Greenville, to locations near the eastern coast of North Carolina.

Beaufort Street is also a Major Collector and carries traffic north to and from US 264.

US 17 Business is classified as a Minor Arterial route and runs parallel to US 17, connecting the city of Washington across the Pamlico River to other areas in eastern North Carolina.

US 17 is classified as a Freeway facility within the project area. This is a north-south connector route that runs from Punta Gorda, FL to Winchester, VA, primarily along the Atlantic coast. This route runs parallel to I-95 for much of its extent.

Old Blounts Creek Road is classified as a Minor Collector and serves as a loop road northeast of NC 33, providing access to communities along the interior coastline.

NC 306 is classified as a Major Collector and runs north-south, connecting Minnesott Beach to NC 33.

All other routes are classified as local routes within the project study area.

Land Use Information

Land use in the area primarily consists of rural agricultural areas with spots of residential and commercial areas along NC 33, particularly near US 17 and the western terminus of the project. There is space for future development. The Pitt County Land Use Plan classifies the areas around NC 33 to be rural and agricultural land.

Information about planned and future growth activity can be found in Section 5. Future Year 2050 No-Build/Build Forecast.

2. Sources of Information and Data

Historic AADT

Historic Average Annual Daily Traffic (AADT) volumes from 2002 through 2020 were used as part of the forecast process. Note that although 2020 AADTs were evaluated, the impacts of COVID-19 were assumed to have a large impact on travel patterns, therefore data from 2018 or 2019 was given preference and any data from 2020 was carefully compared to historic trends.

A historic AADT table is provided in **Appendix A**.

3. Base Year 2022 No-Build/Build Estimate

Methodology

Historic AADT information and engineering judgement was used to determine the 2022 AADTs on all facilities and at their intersections.

All AADT information can be found in the tables in **Appendix A**.

4. General Model Data

Model Information

The North Carolina Statewide Travel Demand Model (NCSTMv4.5) was used in the development of this forecast. The model base year is 2017.

Model runs were completed for both the Base Year and Future Year Build scenarios. Diversion due to the addition of a third, center two-way left-turn lane was found to not have a significant impact on traffic volumes at the daily level. The model showed no diversion with the widening of NC 33 which is typical for roadways where congestion is minimal and/or the facilities are not used to bypass congestion on parallel facilities. Neither the existing BY volumes nor projected FY volumes appear to be capacity constrained; therefore, additional traffic is not expected to divert to the corridor with the proposed widening to a three-lane facility. Therefore the NB and BLD conditions are assumed to be the same for this project.

Model Scenarios

The NCSTM analysis was performed for 2017 and 2045 for each of the scenarios listed in Table 1 below.

TABLE 1 – NCSTM MODEL SCENARIOS

Alternative	Build Condition
2022 NB/BLD	Widen NC 33 to 3 lanes
2050 NB/BLD	Widen NC 33 to 3 lanes

Note:

- “No Build” is defined as without the subject project, but with all other applicable projects. (In the base year this is current conditions, in the future year it is the STIP).
- All future year (2050) Scenarios are to be fiscally constrained per the 2020-2029 State Transportation Improvement Plan (STIP)

The NCSTM provides volumes as an average weekday in spring/fall when school is in session. Therefore, these volumes were converted to AADT using appropriate seasonal factors from the Transportation Planning Division Traffic Surveys Group. An average weekday factor for the month of October (0.94 non interstate) was used for this conversion.

The model was found to be loading reasonably well, except for US 17 Business north of NC 33 where the model volumes were lower than historic AADT information. Many of the side streets were not included in the model and were unable to provide a direct comparison along NC 33. A Model Validation table can be found in **Appendix A**.

5. Future Year 2050 No-Build/Build Estimate

Assumptions

In areas outside an MPO, the future year forecasts assume construction of projects listed within the State Transportation Improvement Plan (STIP) which include construction money. According to the 2020-2029 STIP, project H090738 A and B is not included in the current STIP list. Nearby STIP projects include U-6215 (NC 33 widening from Blackjack-Simpson Road to Mobleys Bridge Road –

post year construction), north of the project study area, and several bridge replacement projects near, but not on, the NC 33 corridor.

This information is included in the official version of the North Carolina Statewide Travel Demand Model (NCSTMv4.5). All development projected in the model is included as input to this forecast.

Methodology

For the Future Year (2050) No-Build/Build Forecast, the following were considered when developing volumes:

- Historic growth along the corridor calculated from AADT data (5-year, 10-year, and long-term per year growth rates)
- Model growth for the corridor calculated from 2017 and 2045 No-Build model run results (NCSTMv4.5)

For this forecast, the following individuals were contacted to get information on new and upcoming developments and projects.

- Leonard (Len) E. White, Jr.– Division 2 Planning Engineer
- Kevin Richards – NCDOT RPO Contact (RPO Planner)
- Liamcy Hogan-Rivera – NCDOT RPO Contact (Transportation Engineer)
- Carlton Gideon – Mid-East Commission Planner (Beaufort County Planning)
- James Rhodes, AICP – Pitt County Planning Director

Comments from this group included nearby development pressure north of the project area. Specific development activity noted included:

- Planning staff is not aware of any proposed developments east of Grimesland to the County line. However, there is a proposed development (~300 units) on S. Grimesland Bridge Rd just beyond the town limits and another proposed subdivision (55 lots) on N. Grimesland Bridge Rd/Poker House Rd just beyond the town limits. In addition, there are approximately 500 residential lots in various stages of construction along NC 33 between Simpson and Grimesland. (north of the project area)

Growth rates were calculated based on all available data and applied to the 2022 No-Build/Build Forecast using engineering judgement.

Growth Information

Growth rates calculated from the North Carolina Statewide Travel Demand Model (NCSTMv4.5) from 2017-2045 was relatively minor, with model growth along NC 33 being under 1.0% within the project area and side street approaches with growth below 1.0% or even relatively stagnant on US 17 and US 17 Business south of NC 33. The model TAZs are very large in this area and centroid loadings do not accurately reflect development locations very well.

Historic AADTs varied with per year growth rates ranging from -5.8% to 1.7%. Along with the per-year growth, 5-year and 10-year historic growth was considered, but also provided varying growth trends.

Future Year growth rates were chosen to be similar to model growth in most areas with model data, and side street growth was chosen based on historic trends, with values ranging from 0.0% to 1.5%.

Appendix A
Data Tables

Table A.1 Historic AADT Table

Location	NCDOT Historic Traffic Count Data					2022 Extrapolated AADT	2022 Estimate
	2016	2018	2019	2020	2020		
SR 1565 (Beaufort Street) South of NC 33 (Pitt Street)	520	0	0	0	0	500	600
SR 1565 (Beaufort Street) North of NC 33 (Pitt Street)	0	4600	0	4900	0	5000	5000
NC 33 (Pitt Street) West of SR 1565 (Beaufort Street)	9500	9900	10000	0	0	10700	10500
NC 33 (Pitt Street) East of SR 1565 (Beaufort Street)	5300	5500	5200	0	4500	4500	5500
Carrow Road South of NC 33 (Pitt Street)	0	0	0	0	1200	1200	1500
NC 33 (Pitt Street) West of Carrow Road	0	0	0	0	0	-	5100
NC 33 (Pitt Street) East of Carrow Road	5900	6000	6200	6600	6200	6200	6600
Taylor Road South of NC 33 (Pitt Street)	0	0	0	0	0	900	1200
Mill Road North of NC 33 (Pitt Street)	0	0	0	0	0	-	400
NC 33 (Pitt Street) West of Taylor Road/Mill Road	5900	6000	6200	6600	6200	6200	6600
NC 33 (Pitt Street) East of Taylor Road/Mill Road	7300	7400	7900	8700	0	9000	8300
US 17 Business South of NC 33 (Pitt Street)	3500	3100	3300	3600	3000	2700	3600
US 17 Business North of NC 33 (Pitt Street)	0	9300	9400	9700	0	8800	9700
NC 33 (Pitt Street) West of US 17 Business	7300	7400	7800	8000	0	8200	8300
NC 33 (Pitt Street) East of US 17 Business	5200	4600	4800	5000	4600	4500	5000
US 17 South of NC 33 (Pitt Street)	0	0	0	0	0	-	7500
US 17 North of NC 33 (Pitt Street)	10000	9100	10500	10500	9700	9900	10500
NC 33 (Pitt Street) West of US 17	5200	4600	4800	5000	4600	4500	5000
NC 33 (Pitt Street) East of US 17	0	0	0	0	0	-	9000
Gray Road South of NC 33 (Pitt Street)	2600	0	0	0	2100	2100	2700
Poore Farm Road North of NC 33 (Pitt Street)	0	0	0	0	0	-	100
NC 33 (Pitt Street) West of Gray Road/Poore Farm Road	0	0	0	0	0	-	9000
NC 33 (Pitt Street) East of Gray Road/Poore Farm Road	9300	9100	8900	9800	0	10200	9600
Old Blounts Creek Road North of NC 33 (Pitt Street)	0	4400	0	4800	0	4900	4800
NC 33 (Pitt Street) West of Old Blounts Creek Road	9300	9100	8900	9800	0	10200	9600
NC 33 (Pitt Street) East of Old Blounts Creek Road	4000	4200	3900	4500	0	4700	5000
NC 306 South of NC 33	0	0	0	0	0	-	2900
NC 33 West of NC 306	3000	3200	3100	3200	2700	2600	3200
NC 306 East of NC 33/NC 306	4900	4600	4400	4500	0	4400	4500

Table A.2 Growth Rate Table

Location	2022 AADT Estimate	Historic Growth Rates		Model Growth Rates	Applied Growth Rates	2050 No-Build Volumes	
		5-Year Growth	10-Year Growth	Per Year Growth (2017 - 2045)		Model Estimate	FYNB Forecast
SR 1565 (Beaufort Street) South of NC 33 (Pitt Street)	600	3.1%	-1.1%	-1.1%	1.0%	-	800
SR 1565 (Beaufort Street) North of NC 33 (Pitt Street)	5000	3.3%	1.8%	1.0%	1.5%	-	7600
NC 33 (Pitt Street) West of SR 1565 (Beaufort Street)	10500	4.6%	1.3%	1.7%	0.9%	8208	13400
NC 33 (Pitt Street) East of SR 1565 (Beaufort Street)	5500	-1.7%	-2.0%	-0.1%	0.9%	8208	7000
Carrow Road South of NC 33 (Pitt Street)	1500	-	-2.2%	-0.4%	0.4%	-	1700
NC 33 (Pitt Street) West of Carrow Road	5100	-	-	-	0.5%	7102	5900
NC 33 (Pitt Street) East of Carrow Road	6600	1.3%	-1.6%	0.3%	0.4%	7102	7400
Taylor Road South of NC 33 (Pitt Street)	1200	0.3%	-0.9%	-0.8%	0.6%	-	1400
Mill Road North of NC 33 (Pitt Street)	400	-	-	-	0.0%	-	400
NC 33 (Pitt Street) West of Taylor Road/Mill Road	6600	1.3%	-1.6%	0.3%	0.4%	7102	7400
NC 33 (Pitt Street) East of Taylor Road/Mill Road	8300	4.5%	-0.1%	1.0%	0.4%	7102	9300
US 17 Business South of NC 33 (Pitt Street)	3600	-5.1%	1.8%	-5.8%	0.1%	3835	3700
US 17 Business North of NC 33 (Pitt Street)	9700	1.9%	-4.3%	-3.2%	0.7%	5418	11700
NC 33 (Pitt Street) West of US 17 Business	8300	2.7%	-0.5%	0.6%	0.4%	7778	9300
NC 33 (Pitt Street) East of US 17 Business	5000	-2.0%	-4.6%	-1.1%	0.3%	2681	5500
US 17 South of NC 33 (Pitt Street)	7500	-	-	-	0.1%	7841	7700
US 17 North of NC 33 (Pitt Street)	10500	-0.6%	1.1%	1.1%	0.2%	13026	11100
NC 33 (Pitt Street) West of US 17	5000	-2.0%	-4.6%	-1.1%	0.3%	2681	5500
NC 33 (Pitt Street) East of US 17	9000	-	-	-	0.3%	9440	9700
Gray Road South of NC 33 (Pitt Street)	2700	-5.2%	-5.0%	-0.3%	0.3%	-	2900
Poore Farm Road North of NC 33 (Pitt Street)	100	-	-	-	0.0%	-	100
NC 33 (Pitt Street) West of Gray Road/Poore Farm Road	9000	-	-	-	0.3%	9440	9700
NC 33 (Pitt Street) East of Gray Road/Poore Farm Road	9600	0.8%	0.0%	1.4%	0.3%	9440	10300
Old Blounts Creek Road North of NC 33 (Pitt Street)	4800	-0.5%	0.9%	0.4%	0.2%	-	5100
NC 33 (Pitt Street) West of Old Blounts Creek Road	9600	0.8%	0.0%	1.4%	0.3%	9440	10300
NC 33 (Pitt Street) East of Old Blounts Creek Road	5000	-0.5%	-0.6%	1.2%	0.3%	9440	5400
NC 306 South of NC 33	2900	-	-	-	0.2%	3672	3100
NC 33 West of NC 306	3200	-3.9%	-4.1%	-1.4%	0.2%	3269	3400
NC 306 East of NC 33/NC 306	4500	-7.7%	-3.6%	-0.5%	0.2%	4483	4800

Table A.3 Model Validation Table

Location	Base Year (2022)				Historic Yearly Growth Rate (2002 - 2022)	Model Yearly Growth Rate (2017 - 2045)	Applied Growth Rate	2050 No-Build Volumes		
	Historic Estimate (2017)	Model AADT (2017)	Extrapolated Model AADT (2022)	2022 Forecast Estimate				Historic Extrapolation	Model Estimate (Extrapolated)	2050 Forecast Volumes
SR 1565 (Beaufort Street) South of NC 33 (Pitt Street)	-	-	-	600	-1.1%	-	1.0%	-	-	800
SR 1565 (Beaufort Street) North of NC 33 (Pitt Street)	4600	-	-	5000	1.0%	-	1.5%	6000	-	7600
NC 33 (Pitt Street) West of SR 1565 (Beaufort Street)	9900	6421	6700	10500	1.7%	0.9%	0.9%	16000	8600	13400
NC 33 (Pitt Street) East of SR 1565 (Beaufort Street)	5500	6421	6700	5500	-0.1%	0.9%	0.9%	5300	8600	7000
Carrow Road South of NC 33 (Pitt Street)	-	-	-	1500	-0.4%	-	0.4%	-	-	1700
NC 33 (Pitt Street) West of Carrow Road	-	6323	6500	5100	-	0.4%	0.5%	-	7300	5900
NC 33 (Pitt Street) East of Carrow Road	6000	6323	6500	6600	0.3%	0.4%	0.4%	6500	7300	7400
Taylor Road South of NC 33 (Pitt Street)	-	-	-	1200	-0.8%	-	0.6%	-	-	1400
Mill Road North of NC 33 (Pitt Street)	-	-	-	400	-	-	0.0%	-	-	400
NC 33 (Pitt Street) West of Taylor Road/Mill Road	6000	6323	6500	6600	0.3%	0.4%	0.4%	6500	7300	7400
NC 33 (Pitt Street) East of Taylor Road/Mill Road	7400	6323	6500	8300	1.0%	0.4%	0.4%	9700	7300	9300
US 17 Business South of NC 33 (Pitt Street)	3100	3790	3800	3600	-5.8%	0.0%	0.1%	600	3800	3700
US 17 Business North of NC 33 (Pitt Street)	9300	4149	4400	9700	-3.2%	1.0%	0.7%	3700	5700	11700
NC 33 (Pitt Street) West of US 17 Business	7400	7037	7200	8300	0.6%	0.4%	0.4%	8800	7900	9300
NC 33 (Pitt Street) East of US 17 Business	4600	2656	2700	5000	-1.1%	0.0%	0.3%	3400	2700	5500
US 17 South of NC 33 (Pitt Street)	-	7774	7800	7500	-	0.0%	0.1%	-	7900	7700
US 17 North of NC 33 (Pitt Street)	9100	12289	12400	10500	1.1%	0.2%	0.2%	12300	13200	11100
NC 33 (Pitt Street) West of US 17	4600	2657	2700	5000	-1.1%	0.0%	0.3%	3400	2700	5500
NC 33 (Pitt Street) East of US 17	-	8730	8900	9000	-	0.3%	0.3%	-	9600	9700
Gray Road South of NC 33 (Pitt Street)	-	-	-	2700	-0.3%	-	0.3%	-	-	2900
Poore Farm Road North of NC 33 (Pitt Street)	-	-	-	100	-	-	0.0%	-	-	100
NC 33 (Pitt Street) West of Gray Road/Poore Farm Road	-	8730	8900	9000	-	0.3%	0.3%	-	9600	9700
NC 33 (Pitt Street) East of Gray Road/Poore Farm Road	9100	8730	8900	9600	1.4%	0.3%	0.3%	13300	9600	10300
Old Blounts Creek Road North of NC 33 (Pitt Street)	4400	-	-	4800	0.4%	-	0.2%	4900	-	5100
NC 33 (Pitt Street) West of Old Blounts Creek Road	9100	8730	8900	9600	1.4%	0.3%	0.3%	13300	9600	10300
NC 33 (Pitt Street) East of Old Blounts Creek Road	4200	8730	8900	5000	1.2%	0.3%	0.3%	5800	9600	5400
NC 306 South of NC 33	-	3444	3500	2900	-	0.2%	0.2%	-	3700	3100
NC 33 West of NC 306	3200	3068	3100	3200	-1.4%	0.2%	0.2%	2100	3300	3400
NC 306 East of NC 33/NC 306	4600	4218	4300	4500	-0.5%	0.2%	0.2%	4000	4500	4800