Final Report

NCDOT State TIP Project No. U-5824

NC 66 Widening Forecast

Forsyth County
WBS: 44395.1.1

AUGUST

FEBRUARY 2017

PREPARED FOR

Nothing Compares

PREPARED BY

vhb

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February 9, 2017

MEMORANDUM TO: Brett Abernathy, PE, PLS
Divisions Project Development Team Lead
PDEA
NC Department of Transportation

FROM: Taruna Tayal
VHB Engineering NC, P.C.

SUBJECT: Traffic Forecast for U-5824 (NC 66 Widening), Forsyth County

Please find attached the 2016 / 2040 Traffic Forecast for the above mentioned project. TIP Project No. U-5824 is proposed widening of NC 66 (Old Hollow Road) from Harley Drive to Bellaire Circle Road in Forsyth County, North Carolina. Based on inputs from NCDOT Division staff, it was decided that the project will be formally extended eastward to US 158 (Reidsville Road). The project consists of widening the existing roadway to a multi-lane facility with a raised median. The project is located in northern Forsyth County in Walkertown, NC. It is an east west facility connecting US 158 and US 311 (New Walkertown Road). Subject project TIP U-5824 is included in the WSUAMPO 2040 MTP list. This project lies within the Winston Salem Urban Area MPO (WSUAMPO). According to the 2016-2025 NCDOT State Transportation Improvement Program (STIP), this project is programmed for construction in 2022. This forecast has been reviewed and approved by the Transportation Planning Branch on February 03, 2017.

Scott Snow (Walkertown Town Manager) and Gary Robertson, (Walkertown Town Planner) were contacted to verify the approved future developments within the study area during the development of this forecast.

The following scenarios are provided in this forecast:

1. 2016 Base Year No-Build
2. 2016 Base Year Build
3. 2040 Future Year No-Build
4. 2040 Future Year Build

Fiscal Constraint: Within an MPO, the future year forecasts assume construction of projects as listed within the MPO's Metropolitan Transportation Plan (MTP, previously called LRTP). This forecast is consistent with Winston Salem Urban Area MPO's current MTP, adopted (October 1, 2015). Projects in the MTP which may affect this facility include:

- U-2579 B - Winston-Salem Northern Beltway, Eastern Section (Future I-74). This project is a new multi-lane freeway between Business 40 and US 158.

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- U-2579 C - Winston-Salem Northern Beltway Eastern Section (Future I-74). This project is a new multi-lane freeway between US 158 and New Walkertown Road.
- U-2579 AA, AB - Winston-Salem Northern Beltway, Eastern Section (Future I-74). This project is a new multi-lane freeway between New Walkertown Road and Bus. 40/US 421,
- U-2579 D, E, F - Winston-Salem Northern Beltway, Eastern Section (Future I-74). This project is a new multi-lane freeway between US 311/New Walkertown Road to US 52,
- R-2247 - Winston-Salem, Northern Beltway (Western Loop). This project is a new multi-lane freeway between Interstate-40 to US 52.
- R-2247A Winston-Salem, Northern Beltway (Western Loop). This project is a new multi-lane freeway between US 158 (South Stratford Road) to I-40.
- R-2577 (US 158 widening). This project is a new multi-lane widening North of US 421/Business 40 in Winston-Salem to US 220.

Future Conditions and Development Activity: Town of Walkertown provided detailed information regarding specific planned and approved developments in the area. There is a residential development proposed in the study corridor between 2016 and 2040 for the WhiteHall Village development. Based on the household and employment data from the Piedmont Triad Regional Travel Demand Model v4.2 (PTRMv4.2), household growth will be between 80% - 400% between these years. The socio-economic data within the study are was modified for 2040 scenarios to reflect the approved development. The construction of U-2579 (Winston-Salem Northern Bypass) will have a significant impact on the traffic volume on subject project. This project results in the through traffic volumes on NC 66 (Old Hollow Road) in the future year being lower than the volumes in base year 2016. Without the Winston-Salem Northern Bypass NC 66 is the East West connector road between Kernersville and Bethania. The construction of Winston-Salem Northern Bypass provides a much faster access between these two areas hence reducing the traffic on NC 66.

Forecast Methodology: The Base Year No-Build traffic forecasts were developed primarily based upon traffic counts taken for this forecast, available historic traffic counts information was also reviewed. The Design Year 2040 traffic forecasts are developed based upon the modeling results, existing traffic data, as well as the expected traffic pattern change. The PTRM v4.2 (adopted in June 2016) was used as a tool in the development of the traffic forecasts.

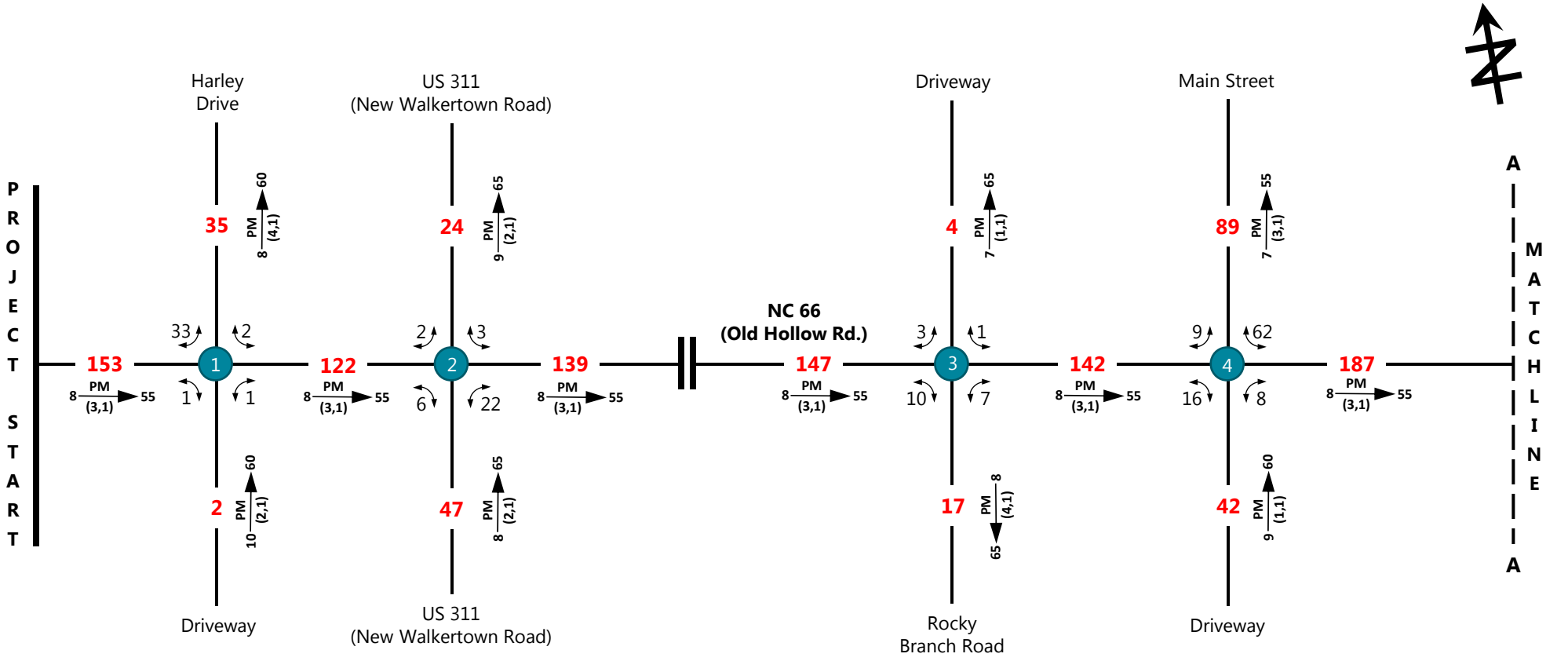
Interpolation: To determine any intermediate years straight-line interpolation may be used. AADT volumes may be extrapolated for up to two years immediately following 2040. If it is determined that any of these assumptions have become inconsistent with the project and surrounding area activity, please request updated projections at this location.

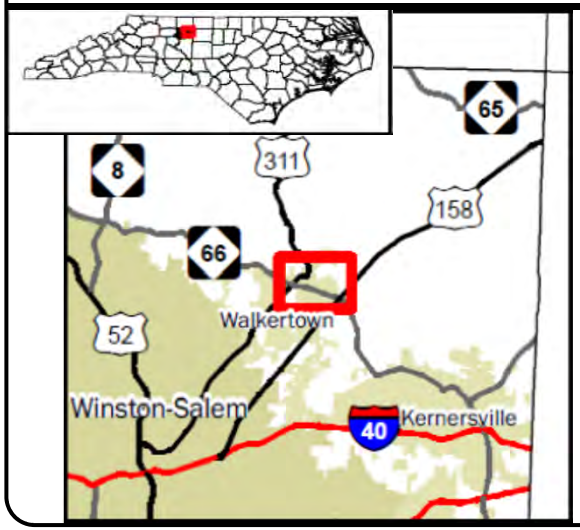
For future reference this forecast will be saved in Project Store in the LongRangePlanning\ Traffic Forecasts folder, under project U-5824.

If you have any questions or I can be of further assistance, please do not hesitate to call me at 919.741.5525, or e-mail me at ttayal@vhb.com.

cc: (via e-mail as PDF attachments):
Doumit Y. Ishak, Congestion Management
Glen Mumford, PE, Highway Design Branch
Clark Morrison, PhD, PE, Pavement Management
Diane K. Hampton, PE, Division 9 Planning Engineer
Michal L. Orr, Transportation Planning Branch
Keith G. Dixon, State Traffic Forecast Engineer, TPB

File Copy: U-5824, Forsyth





2016 Average Annual Daily Traffic

No-Build Alternative

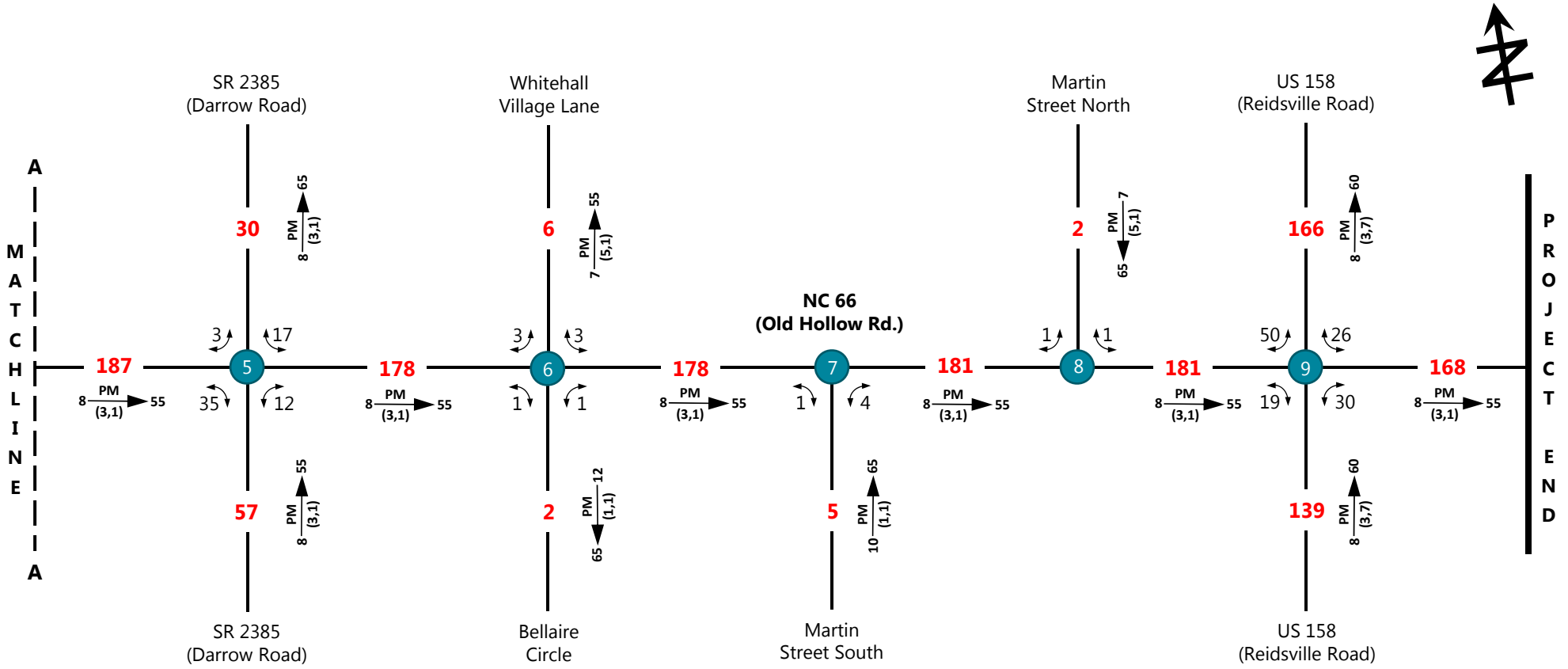
(Scenario 1) **SHEET 1 OF 2**

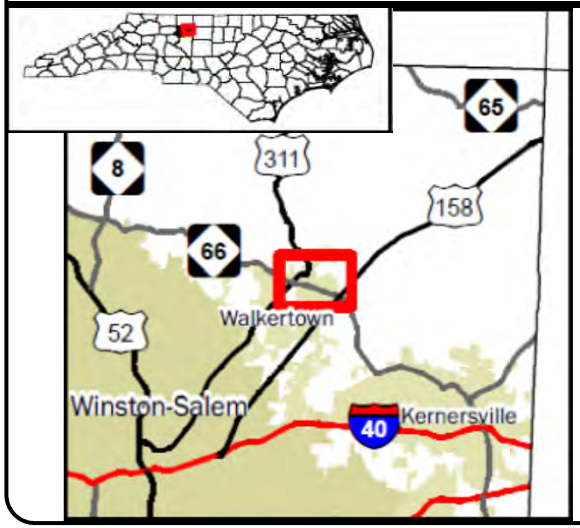
L E G E N D

K PM (d, t) D

###	No. of Vehicles per Day (VPD) in 100s
—	Existing Roadway
PM	PM Peak Hour
D	Peak Hour Directional Split (%)
→	Indicates Direction of D
(d,t)	Duals, TTSTs (%)
K	Design Hour Factor (%)
X	Movement Prohibited
1-	Less than 50 VPD

TIP: U-5824	**WBS:** 44395.1.1
COUNTY: Forsyth	**DIVISION:** 9
DATE: 02/09/2017	
PREPARED BY: VHB Engineering NC, P.C.	
LOCATION: NC 66 (Old Hollow Rd) from Harley Drive to US 158 (Reidsville Road)	
PROJECT: NC 66 (Old Hollow Road) Widening	





2016 Average Annual Daily Traffic

No-Build Alternative

(Scenario 1) **SHEET 2 OF 2**

L E G E N D

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###	No. of Vehicles per Day (VPD) in 100s
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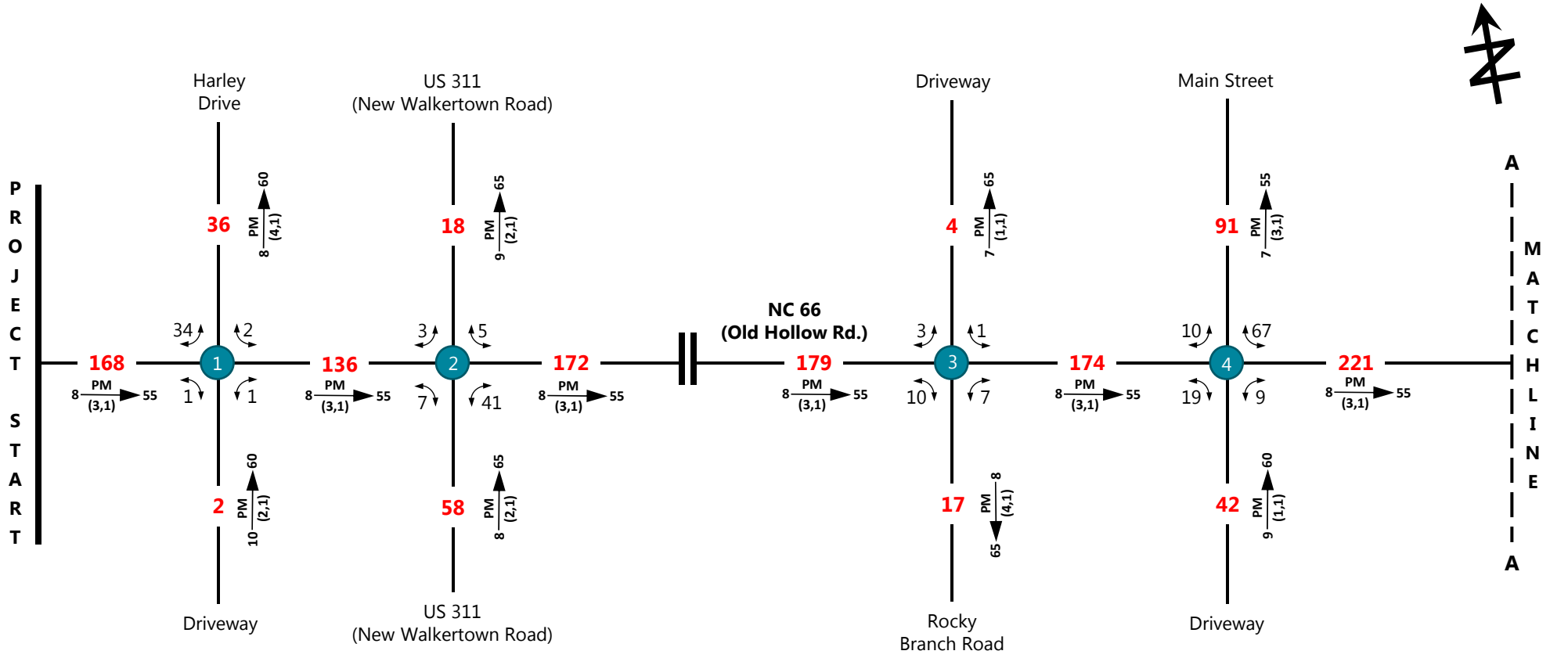

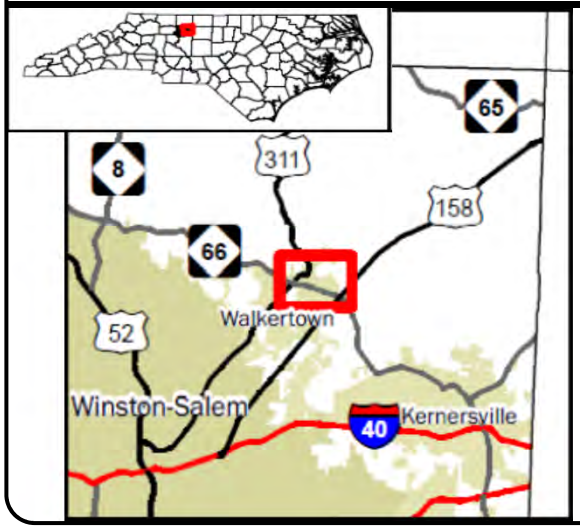

2016 Average Annual Daily Traffic

Build Alternative

(Scenario 2) SHEET 1 OF 2

L E G E N D

K PM (d, t) D

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—	Existing Roadway	D	Peak Hour Directional Split (%)
		→	Indicates Direction of D
		(d,t)	Duals, TTSTs (%)
		K	Design Hour Factor (%)
		X	Movement Prohibited
		1-	Less than 50 VPD

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COUNTY: Forsyth	**DIVISION:** 9
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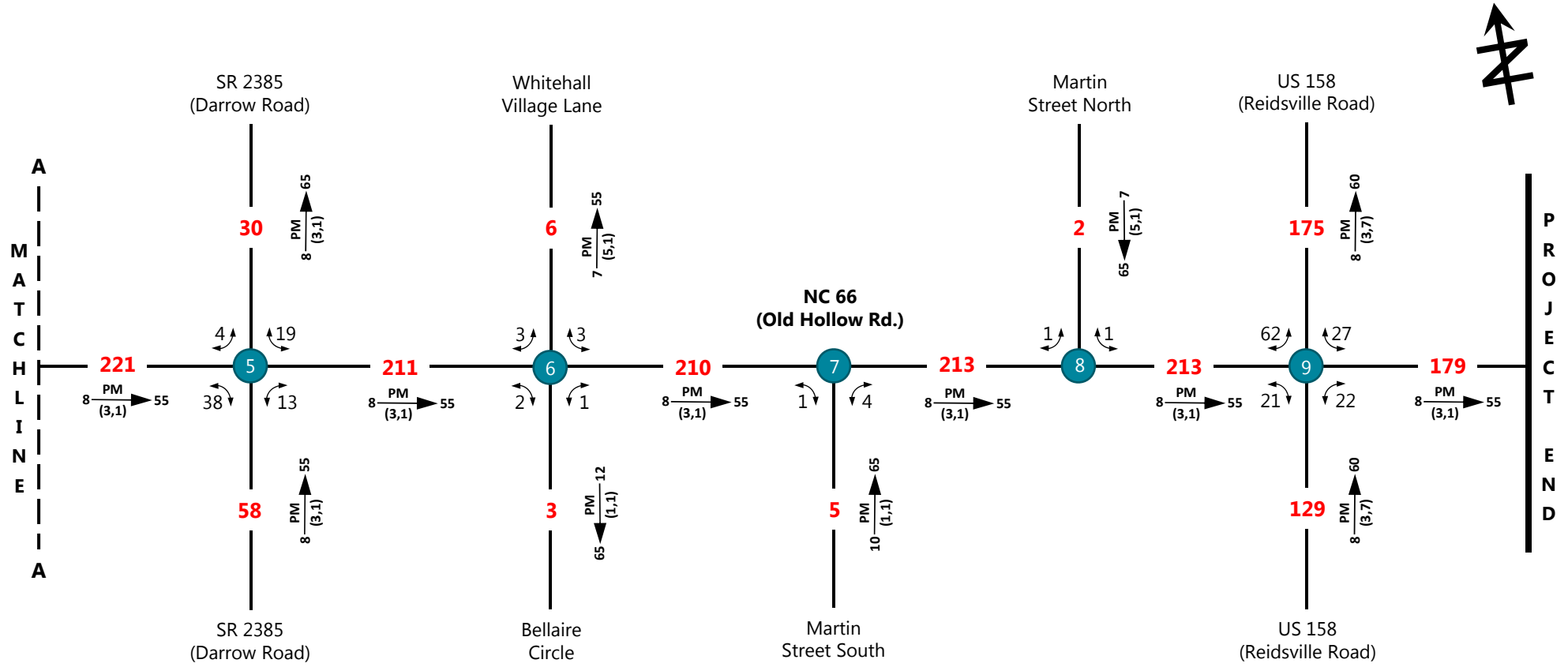

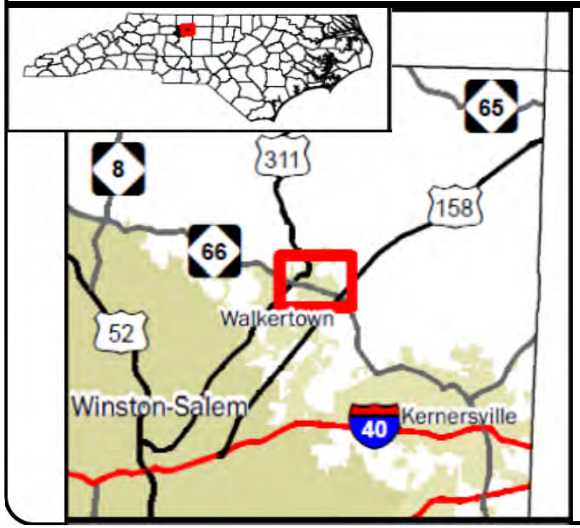

2016 Average Annual Daily Traffic

Build Alternative
(Scenario 2) SHEET 2 OF 2

L E G E N D

K PM (d, t) D

###	No. of Vehicles per Day (VPD) in 100s	PM	PM Peak Hour
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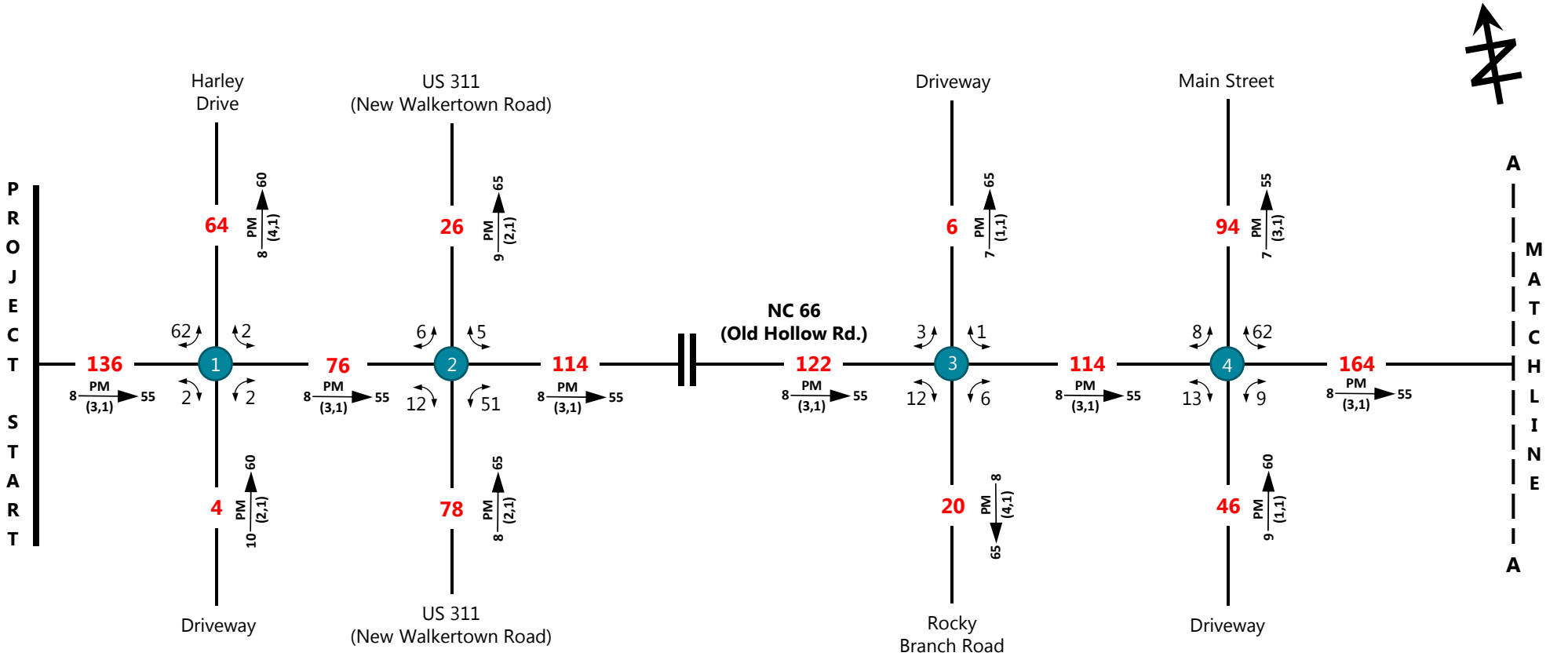
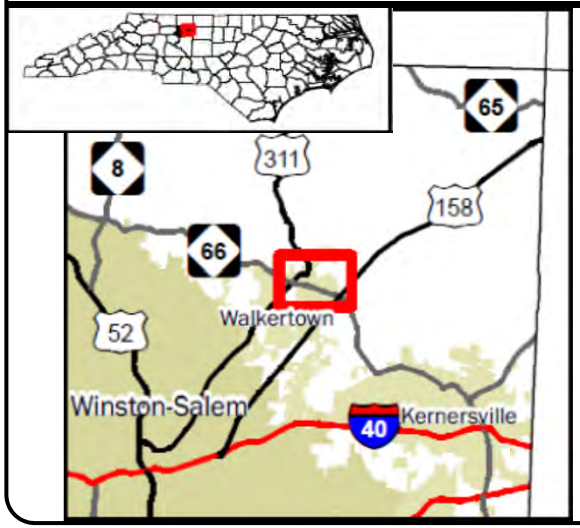
COUNTY: Forsyth	**DIVISION:** 9
DATE: 2/09/2017	
PREPARED BY: VHB Engineering NC, P.C.	
LOCATION: NC 66 (Old Hollow Rd) from Harley Drive to US 158 (Reidsville Road)	
PROJECT: NC 66 (Old Hollow Road) Widening	





2040 Average Annual Daily Traffic

No-Build Alternative

(Scenario 3) **SHEET 1 OF 2**

L E G E N D

K PM (d, t) D

###	No. of Vehicles per Day (VPD) in 100s
—	Existing Roadway
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→	Indicates Direction of D
(d,t)	Duals, TTSTs (%)
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TIP: U-5824	**WBS:** 44395.1.1
COUNTY: Forsyth	**DIVISION:** 9
DATE: 02/09/2017	
PREPARED BY: VHB Engineering NC, P.C.	
LOCATION: NC 66 (Old Hollow Rd) from Harley Drive to US 158 (Reidsville Road)	
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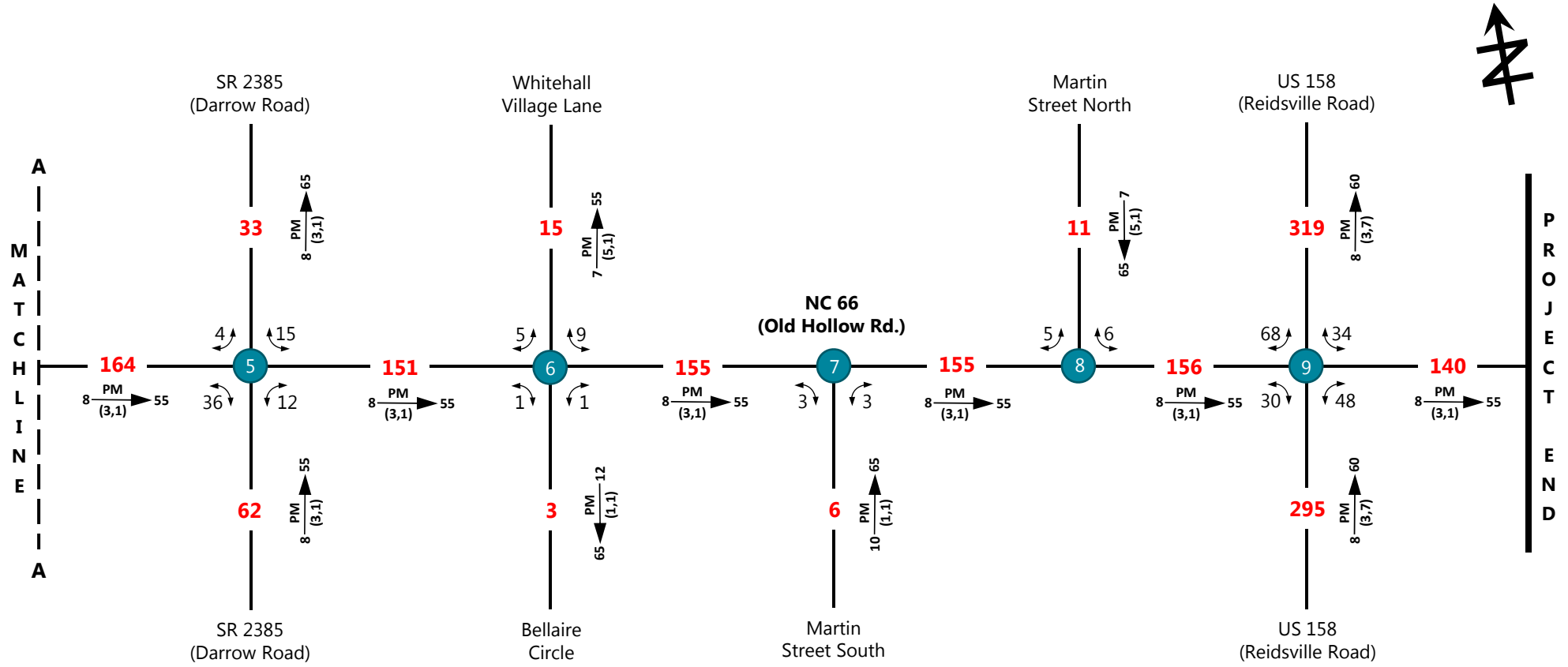

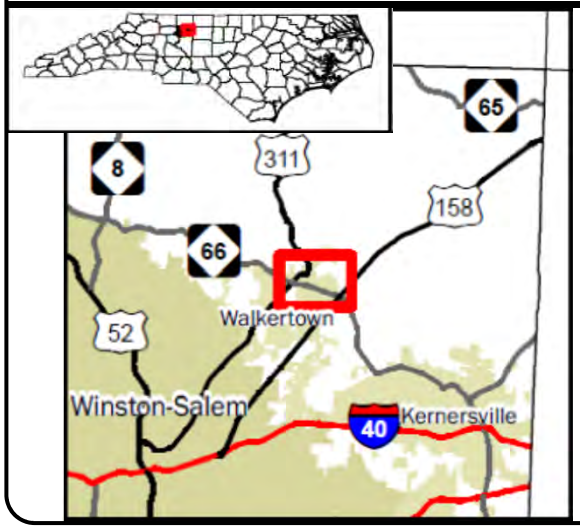

2040 Average Annual Daily Traffic

No-Build Alternative

(Scenario 3) **SHEET 2 OF 2**

L E G E N D

K PM (d, t) D

###	No. of Vehicles per Day (VPD) in 100s	PM	PM Peak Hour
—	Existing Roadway	D	Peak Hour Directional Split (%)
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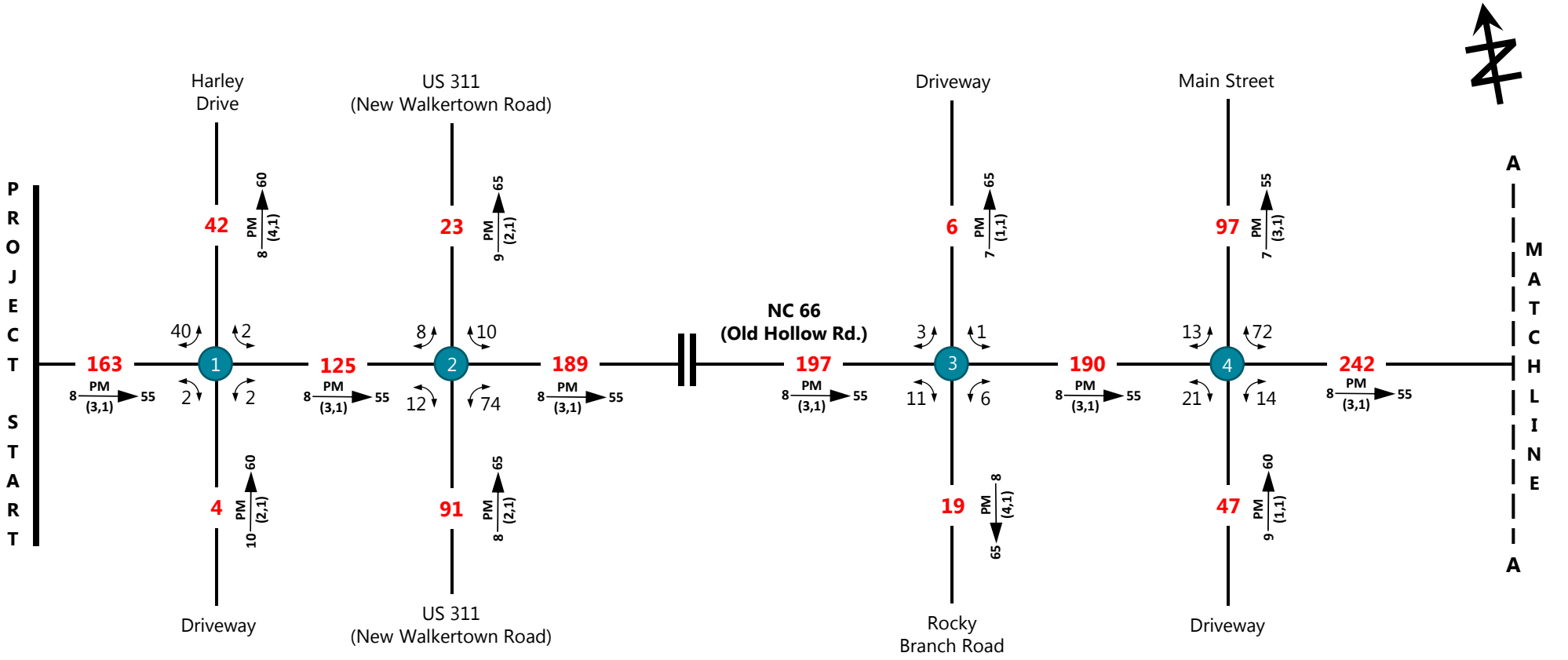

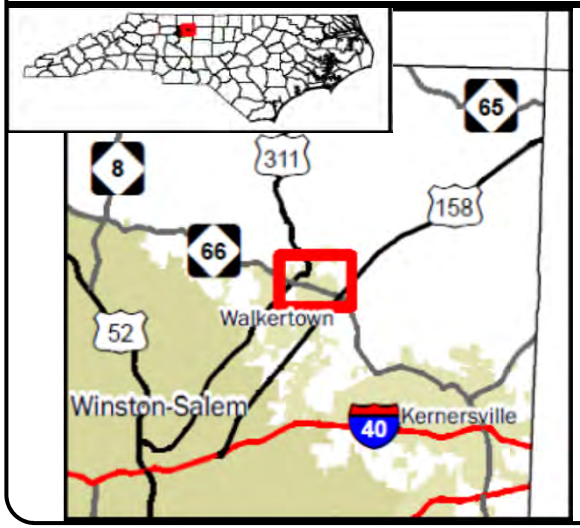

2040 Average Annual Daily Traffic

Build Alternative
(Scenario 4) SHEET 1 OF 2

L E G E N D

K PM (d, t) D

###	No. of Vehicles per Day (VPD) in 100s
—	Existing Roadway
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D	Peak Hour Directional Split (%)
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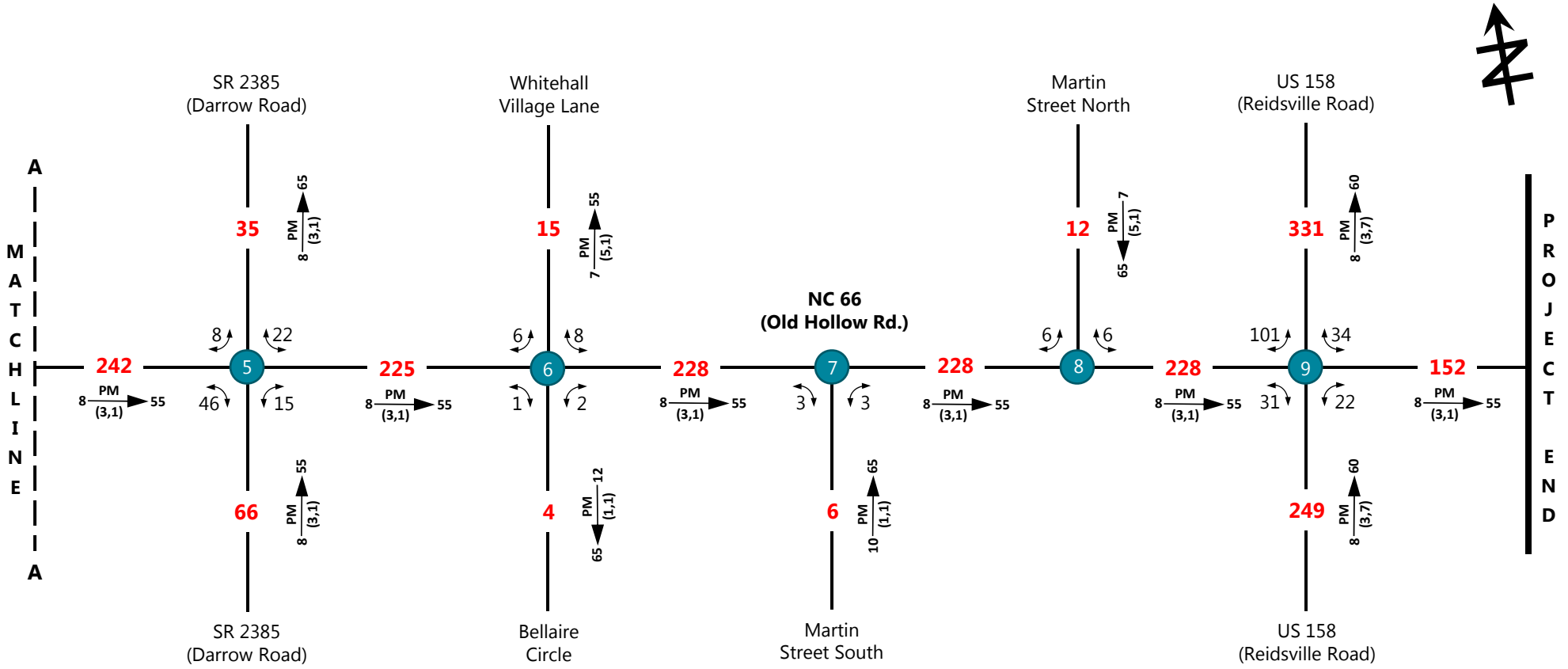
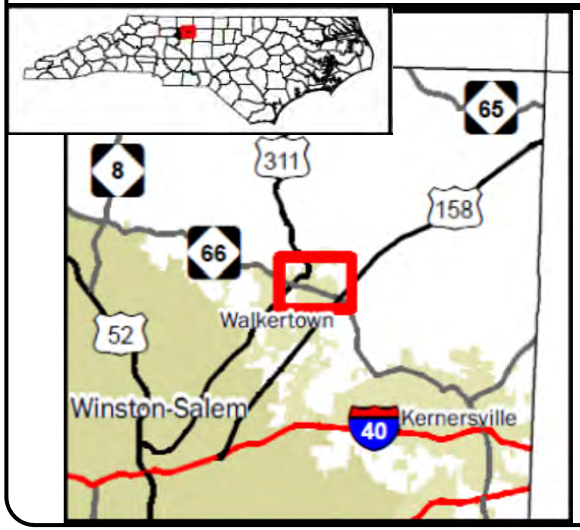
COUNTY: Forsyth	**DIVISION:** 9
DATE: 02/09/2017	
PREPARED BY: VHB Engineering NC, P.C.	
LOCATION: NC 66 (Old Hollow Rd) from Harley Drive to US 158 (Reidsville Road)	
PROJECT: NC 66 (Old Hollow Road) Widening	





2040 Average Annual Daily Traffic

Build Alternative
(Scenario 4) SHEET 2 OF 2

L E G E N D

K PM (d, t) D

###	No. of Vehicles per Day (VPD) in 100s
—	Existing Roadway
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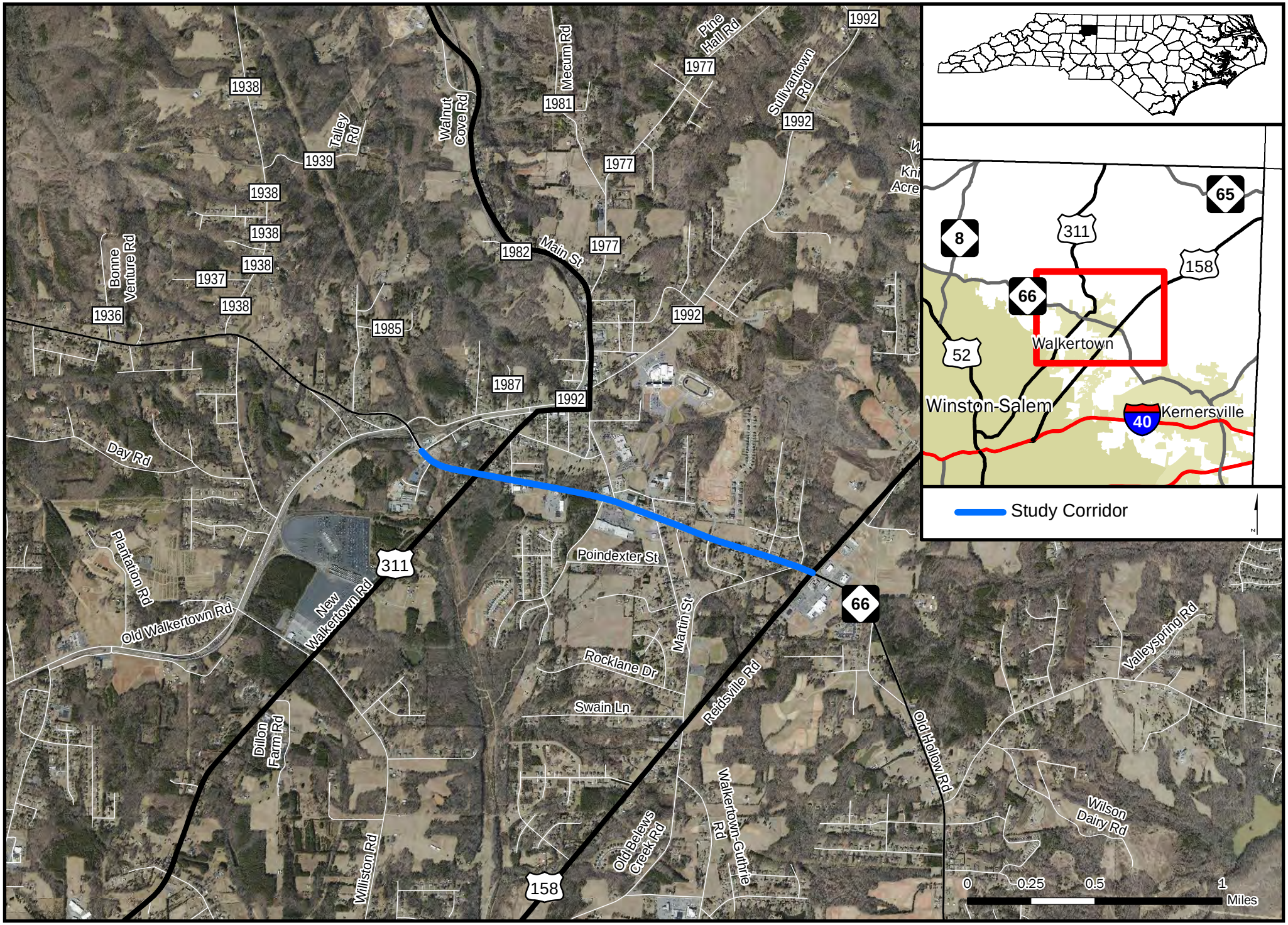


PROJECT VICINITY
TIP No. U-5824

1 PROJECT BACKGROUND

1.1 Project Request Information

TIP Project No. U-5824 is proposed widening of NC 66 (Old Hollow Road) from Harley Drive to Bellaire Circle Road in Forsyth County, North Carolina. Based on inputs from NCDOT Division staff, it was decided that the project will be formally extended eastward to US 158 (Reidsville Road). The project consists of widening the existing roadway to a multi-lane facility with a raised median. The project is located in northern Forsyth County in Walkertown, NC. It is an east west facility connecting US 158 and US 311 (New Walkertown Road). Figure 1 shows the study area limits and forecasted locations.

The project area is included in the Piedmont Triad Regional Model Version 4.2 (PTRM v4.2) which was used to develop traffic forecasts for this project. Version 4.2 of the PTRM was adopted by the Executive Committee in June 2016 to represent the adopted Metropolitan Transportation Plan (MTP) for the Winston-Salem Urban Area Metropolitan Planning Organization (WSUAMPO). The output from this model was analyzed to understand how future growth in the region impacts transportation facilities and service. These forecasts are derived from several techniques incorporated using historical traffic data, field data collected specifically for this project, and model output extracted from the PTRM v4.2. According to the 2016-2025 NCDOT State Transportation Improvement Program (STIP), this project is programmed for construction in 2022.

The traffic forecast years include a 2016 base year and a 2040 design year. For all the Build scenarios, traffic patterns were altered from the respective No-Build scenarios. This report documents the forecast development of four scenarios:

- Scenario 1- 2016 Base Year No-Build Scenario. The traffic forecast for this scenario was developed to establish existing conditions of the project. It assumes the existing roadway cross-section in the forecasted area.
- Scenario 2 - 2016 Base Year Build Scenario. The subject project i.e. the widening of NC 66 (Old Hollow Road) to 4-lane divided facility was forecasted in this scenario.
- Scenario 3 - 2040 Design Year No-Build Scenario. This scenario represents the future year traffic conditions without the subject project. All other fiscally constrained projects expected to be constructed by 2040 are included under this scenario. Travel patterns are altered as a result of nearby new projects (i.e., the Winston-Salem Northern/Eastern Urban Loop/ US 74 connector) that affect the operations on NC 66.
- Scenario 4 - 2040 Design Year Build Scenario. This scenario represents the future year traffic conditions with the subject project i.e. the widening of NC 66 (Old Hollow Road) to 4-lane divided facility. Travel patterns are altered as a result of this modification.

The data provided in the forecast includes all components necessary for capacity and level of service computations, geometric design, pavement design, air quality analysis, and noise analysis. Specifically, the data includes annual average daily traffic (AADT) for the facility and all intersecting roadways, vehicle classifications, peak-hour factors, directional split percentages, and turning movement estimates for all selected intersections within the study area.

To determine traffic volumes for any intermediate years, straight-line interpolation is generally used between years of similar scenarios. AADT volumes may be extrapolated for up to two years immediately

following 2040. Since the volumes on NC 66 decrease between 2016 and 2040 largely due to the opening of the sections of U-2579 between 2021 and 2030. Therefore, a straight line interpolation between 2016 and 2040 is not advisable. An interim year scenario or base-year scenarios with U-2579 may be needed.

1.2 Study Area Information and Field Investigation

NC 66 (Old Hollow Road) is an east–west North Carolina state highway that runs from Johnstown, Stokes County to Forsyth County, approximately 5 miles Northwest of Highpoint, NC. The land use in the study area is a mix of residential, commercial, office and a few industrial uses typically found in a rural setting. A field investigation was performed on September 7, 2016 for PM peak period.

The study area is located within the jurisdiction of the Winston- Salem Urban Area Metropolitan Planning Organization (WSUAMPO), which incorporates several communities in Forsyth County and parts of Davie, Davidson and Stokes Counties. Currently, NC 66 (Old Hollow Road) is a two-lane roadway with center turn lane classified as a minor arterial and serving as an east-west connector between the Town of Kernersville and Bethania. This facility is recognized as a minor arterial in the WSUAMPO MTP.

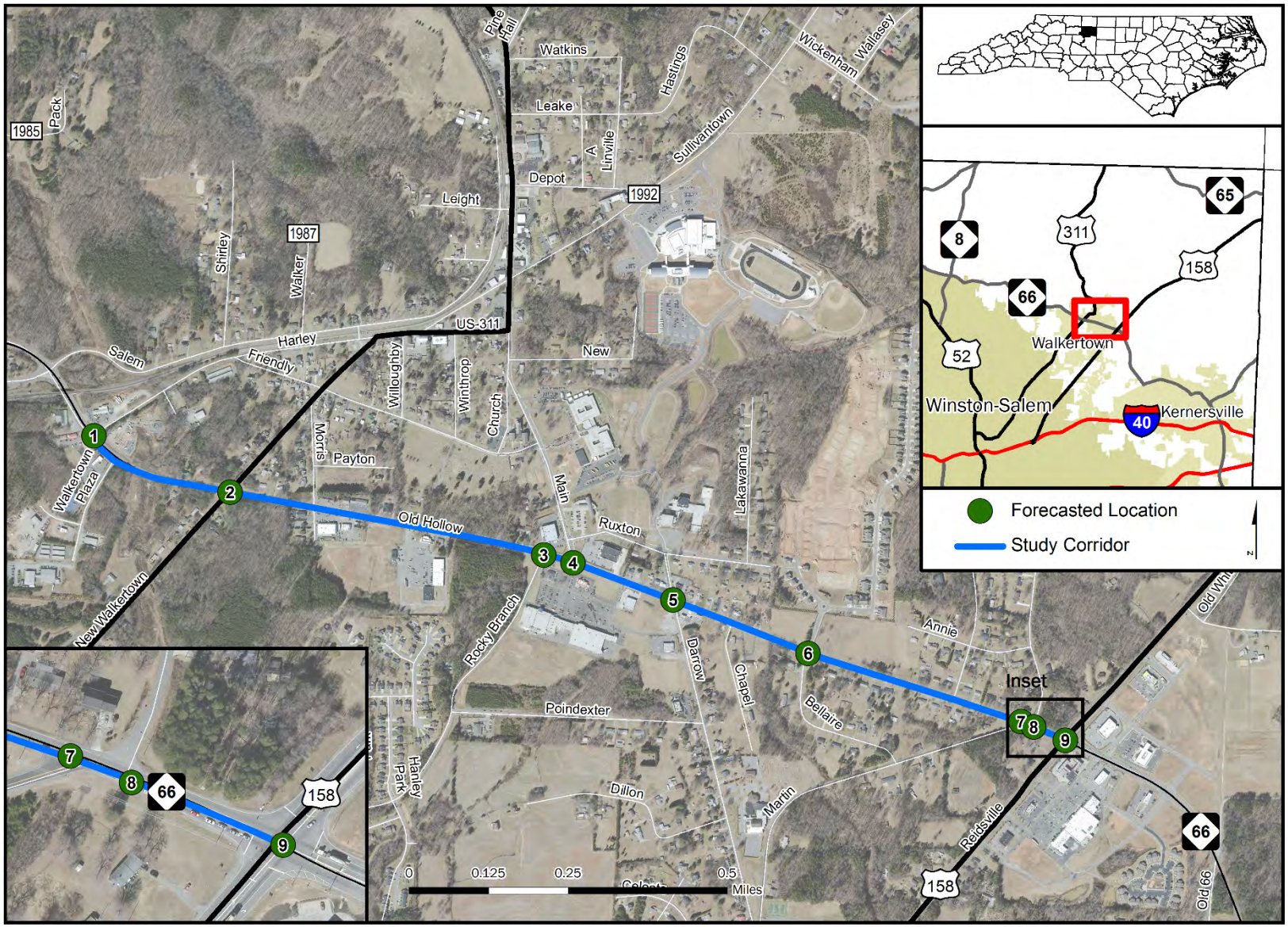
Nine (9) intersections were identified for analysis in the study area and listed below.

1. NC 66 (Old Hollow Road) at Harley Drive.
2. NC 66 (Old Hollow Road) at New Walkertown Road (US 311).
3. NC 66 (Old Hollow Road) at Rocky Branch Road (SR 2384).
4. NC 66 (Old Hollow Road) at Main Street (SR 2004).
5. NC 66 (Old Hollow Road) at Darrow Road (SR 2385).
6. NC 66 (Old Hollow Road) at Bellaire Circle.
7. NC 66 (Old Hollow Road) at Martin Street (South).
8. NC 66 (Old Hollow Road) at Martin Street (North).
9. NC 66 (Old Hollow Road) at US 158 (Reidsville Road).

The WSUAMPO MTP adopted on October 1, 2015 was reviewed in the development of this forecast. Scott Snow (Walkertown Town Manager), Gary Robertson, (Walkertown Town Planner) and Hemang M. Surti (Winston Salem MPO Coordinator at NCDOT) were contacted for additional information regarding future developments and networks in the project area.

Forecasts based on traffic data collected in 2016 are provided for all of the above intersections. Intersections for the 2016 Base Year and 2040 Design Year were forecasted in conjunction with the future WSUAMPO MTP projects.

Figure 1: NC 66 (Old Hollow Road) Study Area and Forecast Locations



1.3 Population and Employment Information

According to the U.S. Census Bureau estimates, Forsyth County's population was 369,019 in 2015. The population for the county increased at a rate of 1.32% per year between 1990 and 2015, but increased by 1.25% per year between 2000 and 2015 and only 1.03% between 2010 and 2015. Population in the Town of Walkertown is growing approximately at the same rate when compared to Forsyth County between 2010 and 2015 but growing at a much faster rate than Forsyth County between 1990 and 2015.

Annual historical employment data from 2000 to 2015 was obtained from the North Carolina Employment Security Commission (NCESC) and Bureau of Labor Statistics for Forsyth County. This data indicates that employment has grown at a rate of 0.50 % per year between 2000 and 2015 and 1.73 % per year between 2010 and 2015. There were 3.9% of Forsyth County workers unemployed in 2015.

Table 1 summarizes the historic population and employment estimates and growth rates for the county.

Table 1: Population and Employment Historical Growth Rates

Location	Category	Estimate				Growth Rate		
		1990	2000	2010	2015	1990-2015	2000-2015	2010-2015
Forsyth County	Population	265,878	306,067	350,670	369,019	1.32%	1.25%	1.03%
	Employment	139,864	157,131	155,423	169,352	0.77%	0.50%	1.73%
Town of Walkertown	Population	1,200	4,009	4,675	4,969	5.85%	1.44%	1.23%

Note: Population Source: The U.S. Census Bureau estimates

Employment Source: U.S. DoL BLS Data Finder

2 SOURCES OF INFORMATION AND DATA

2.1 Forecast History and Related Forecasts

There is no previous traffic forecast for U-5824 or for another project in the vicinity of this project.

2.2 Historic AADT

AADT volumes from 2003 to 2014 were gathered from the NCDOT Traffic Survey Group (TSG) for NC 66 (Old Hollow Road) and nearby major intersections. The historical AADT count data, locations and years from 2003-2014 are presented in Appendix A.

2.3 Field Data Collection

Turning movement counts for nine (9) intersections were collected for this forecast. The intersection turning movement counts were collected for six (6) intersections over a 13-hour period between the hours of 6 AM and 7 PM on April 6, 2016. The intersection turning movement counts were collected for three (3) intersections over a 48-hour period between the hours of 12 AM and 12 AM on April 6, 2016 and April 7, 2016. 48-hour Class counts were collected for one (1) location between intersection 4 and intersection 5 between the hours of 12 AM and 12 AM on April 6, 2016 and April 7, 2016. The location, type, and date for these data are listed in Appendix B and shown in Figure 2.

1. NC 66 (Old Hollow Road) at Harley Drive
2. NC 66 (Old Hollow Road) at New Walkertown Road (US 311)
3. NC 66 (Old Hollow Road) at Rocky Branch Road (SR 2384)
4. NC 66 (Old Hollow Road) at Main Street (SR 2004)
5. NC 66 (Old Hollow Road) at Darrow Road (SR 2385)
6. NC 66 (Old Hollow Road) at Bellaire Circle
7. NC 66 (Old Hollow Road) at Martin Street (South)
8. NC 66 (Old Hollow Road) at Martin Street (North)
9. NC 66 (Old Hollow Road) at US 158 (Reidsville Road)

E. NC 66 (Old Hollow Road) between Intersection 4 and Intersection 5 – 48-Hr Class Count

Refer to Appendix C for conversion factors from raw counts to daily counts and seasonal factors to generate AADTs.

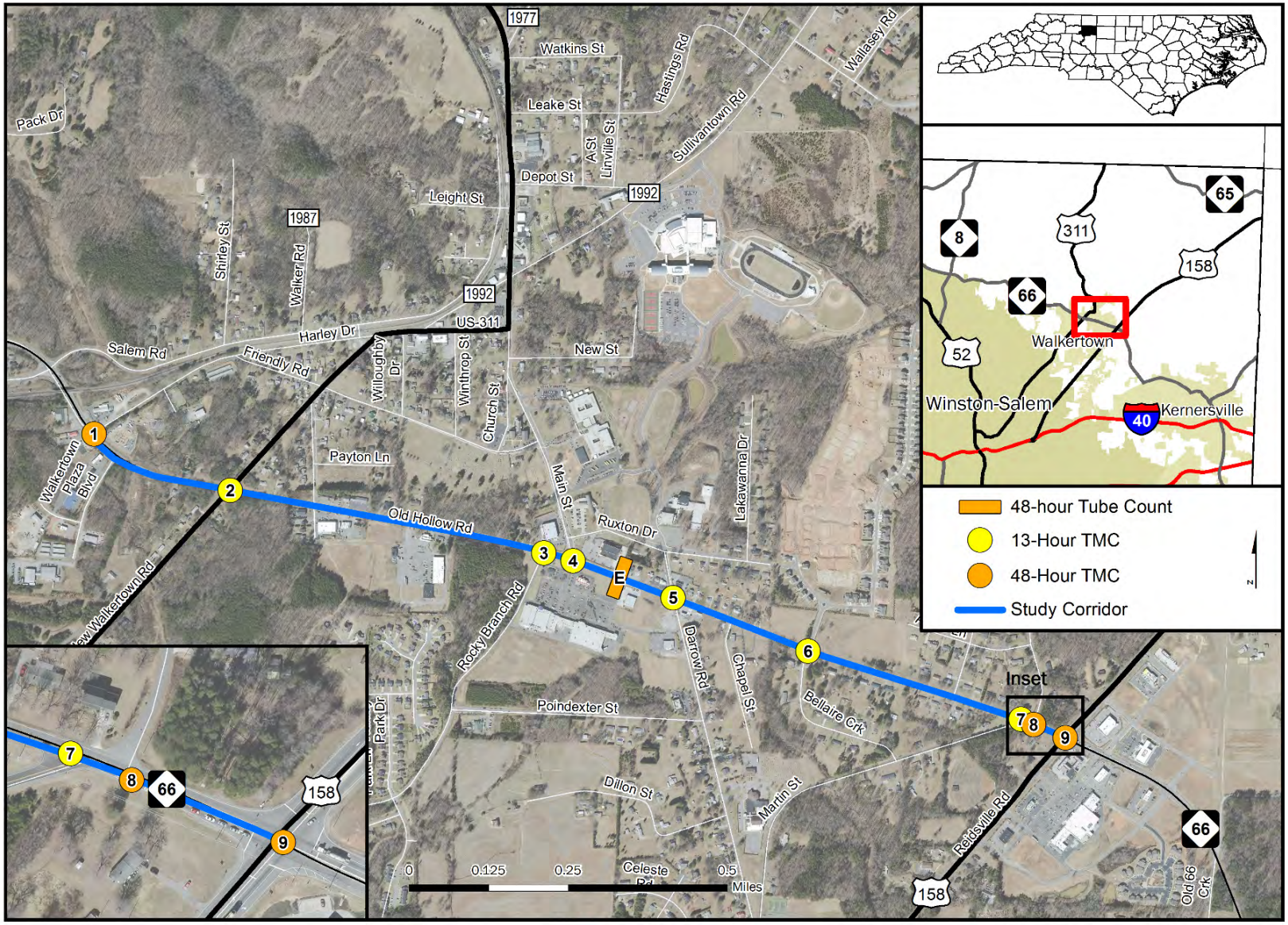
2.4 Field Investigation

A field investigation of the project area was performed on September 7, 2016. The land uses, development activity, activity centers, as well as truck traffic generators were observed for the entire study area.

It was confirmed that the land use for the project area is a mixture of commercial, residential, park, and rural uses. Most of the area is characterized by low density single-family housing, with some of the developments constructed within the past twenty years having a slightly higher density. Some commercial businesses directly abut NC 66.

The Whitehall Village residential development north of NC 66 at the intersection of Bellaire Circle is currently under construction. The development is bordered by NC 66 to the south, Avalee Street to the east and Lakawanna Drive to the west. At present, the development contains low to moderate density, single-family and townhouse residential development and it is being expanded to the north of the study project.

Figure 2: Turning Movement and Class Count Locations



3 2016 BASE YEAR NO-BUILD FORECAST

3.1 Assumptions & Methodology

The 2016 Base Year No-Build Scenario assumes that existing roadway conditions are present. Data was obtained and collected from various sources to develop forecast volumes for the base year as discussed in the sections below. The following steps were performed to achieve this:

- Evaluate historical and existing data
- Develop 2016 Base Year No-Build Mainline and Y-line AADT forecast volumes
- Develop Design Factors
- Balance 2016 Base Year No-Build Turning Movement forecast volumes

3.2 2016 Base Year No-Build Mainline and Y-line AADT Forecast Volumes

Independent techniques were employed to determine the 2016 Base Year No-Build Mainline and Y-line forecast volumes. These techniques are discussed in detail below:

- Estimating AADT Using Historical Data Extrapolation: This method of determining the 2016 Base Year No-Build Scenario Mainline and Y-line forecast volumes consisted of extrapolating historical trends using the historic AADT data shown in Appendix A. Independent linear trend analysis was performed on the data between 2005-2014.
- Estimating AADT Using 2016 Intersection Turning Movement Counts: Establishing the 2016 Base Year No-Build Scenario Mainline and Y-line forecast volumes using the 13-hour intersection turning movement counts consisted of applying a mathematical formula. The 13-hour intersection turning movement counts collected in 2016 were converted to raw segment daily traffic volumes, and projected to AADT volumes by multiplying the appropriate seasonal adjustment factors.

The estimated AADT volumes yielded from the techniques described above were compared with and verified through the NCDOT historic AADT data, especially the published AADT data for year 2014. All results were compared and a selection was made and carried forward giving preference to the field data collected in 2016. Historical Data and trend analysis using the above methods is shown in Appendix D along with the forecast values.

3.3 2016 Base Year No-Build Design Data

Design data, which includes Heavy Vehicle Percentages (Duals and TTSTs), Directional Distribution Factors (D), and Peak Hour Factors (K) were derived from design data developed from Intersection Turning Movement Counts collected in 2016. The selection of peak hour factor and directional distribution design data are shown in Appendix E. The selection of truck percentages is shown in Appendix F.

3.4 2016 Base Year No-Build Turning Movement Forecast Volumes

Upon establishing the 2016 Base Year No-Build Mainline and Y-line AADT forecast volumes, turning movements for each intersection were estimated. The turning movement percentages for each intersection were taken from intersection turning movement data collected in 2016. Scenario 1 shows the 2016 Base Year No-Build AADT forecast volume diagrams for all roadways and turning movement forecast volumes for these intersections.

4 GENERAL MODEL DATA

4.1 Background Model Information

The latest version of the adopted Piedmont Triad Regional Model, Version 4.2 (PTRM v4.2), a tool that was developed to understand how future growth in the region impacts transportation facilities and service, was used to develop the base year Build and future year traffic forecasts.

The model has a 2013 base year and 2040 future year. It is a time-of-day model, hence the assigned volumes for AM, PM, Mid-day and Night periods generated by the model were aggregated to generate a daily assigned volume representative of Average Weekday Daily Traffic (AWDT). The model highway network included existing roadways and all the proposed projects included in the 2040 WSUAMPO MTP and 2016-2025 NCDOT State Transportation Improvement Program (STIP).

The model was reviewed and necessary network modifications were performed. PTRM v4.2 Base Year (2013), Forecast Base Year (2016), and Design Year (2040) models were reviewed for completeness of MTP and STIP projects. Model runs were performed to check for any errors. The following modifications were made to the 2040 models upon approval by the NCDOT – Transportation Planning Branch (TPB) and WSUAMPO.

4.1.1 Projects removed from 2040 PTRMv4.2 network:

The Winston-Salem Southern Beltway - this project was removed from the future year (2040) model network as it is not included in the latest adopted 2040 WSUAMPO MTP and hence is not fiscally constrained project. Refer to Appendix L for the map showing location of this project.

4.1.2 Projects edited in 2040 PTRMv4.2 network:

No edits in the study area were made to the PTRMv4.2 network.

4.2 Base Year Model Validation

The socio-economic (SE) data between 2013 and 2020 were interpolated to develop 2016 SE Data. The 2013 model network was edited to include all projects completed between 2013 and 2016 to develop a 2016 base year No-Build Network. The daily assigned volume from the 2016 base year model was compared to 2016 base year counts to determine how the model replicates travel in the study area. The table in Appendix G lists the model validation results at key locations along the project corridor. The comparison indicates that the estimates from the base year model adopted in October 2015 differ from the 2016 traffic counts collected in the study area. The model volumes are within 15% -20% of the counts for most locations on NC 66 but are extremely high on US 311 and 40% to 60% lower compared to the counts on other side streets.

In this forecast, the model outputs are not directly used for the base year Build or design year traffic forecasts. Instead, the model volumes are used to determine the differences between base and the future years No-Build volumes. These volume differences are then applied to the 2016 Base Year No-Build forecast volumes to develop the 2040 Design Year No-Build traffic forecasts.

A comparison was made by deriving model growth rates for the mainline and y-line forecast segments using two distinct methods. The first method employed the traditional growth rate method using the proportional growth rate formula. The second, alternate method involved using the difference in model

volumes. The alternate methodology takes the difference in two model scenarios, for example, the 2016 Base Year No-Build and the 2040 Future Year No-Build. This result is added to the 2016 Base Year No-Build forecast volume as a prorated result. To remain consistent throughout the forecasts, absolute growth value was adopted.

4.3 Fiscal Constraints

The TIP U-5824 falls within the WSUAMPO MTP area, therefore forecasts are fiscally constrained to match the assumptions of the most recent MTP. Several planned projects impact NC 66 widening project.

- U-5824 - NC 66 (Old Hollow Road). This is the subject project.
- U-2579 B - Winston-Salem Northern Beltway, Eastern Section (Future I-74). This project is a new multi-lane freeway between Business 40 and US 158. This project is included in the 2016-2021 Street and Highway project list in the MTP.
- U-2579 C - Winston-Salem Northern Beltway Eastern Section (Future I-74). This project is a new multi-lane freeway between US 158 and New Walkertown Road. This project is included in the 2016-2021 Street and Highway project list in the MTP.
- U-2579 AA, AB - Winston-Salem Northern Beltway, Eastern Section (Future I-74). This project is a new multi-lane freeway between New Walkertown Road and Bus. 40/US 421, This project is included in the 2022-2030 Street and Highway project list in the MTP.
- U-2579 D, E, F - Winston-Salem Northern Beltway, Eastern Section (Future I-74). This project is a new multi-lane freeway between US 311/New Walkertown Road to US 52, This project is included in the 2022-2030 Street and Highway project list in the MTP.
- R-2247 - Winston-Salem, Northern Beltway (Western Loop). This project is a new multi-lane freeway between Interstate-40 to US 52. This project is included in the 2031-2040 Street and Highway project list in the MTP.
- R-2247A Winston-Salem, Northern Beltway (Western Loop). This project is a new multi-lane freeway between US 158 (South Stratford Road) to I-40. This project is included in the 2031-2040 Street and Highway project list in the MTP.
- R-2577 (US 158 widening). This project is a new multi-lane widening North of US 421/Business 40 in Winston-Salem to US 220.

Refer to Appendix M for the map showing location of projects that will affect the design year forecast.

5 2016 BASE YEAR BUILD FORECAST

5.1 Assumptions

The 2016 Base Year Build scenario assumes that the subject project, the improvement of NC 66 (Old Hollow Road), is constructed. It also assumes the existing roadway cross-section in the forecasted area for the remaining roadway sections. This scenario is needed to show differences in base year volumes between the No-Build and Build Scenario.

5.2 Model Development for Build Scenario

The 2016 Build forecast was based on the 2016 model run. The 2016 Base Year Build model network was created by modifying the 2016 No-Build network by editing the master network to include the widening of NC 66 (Old Hollow Road).

5.3 Methodology

5.3.1 2016 Base Year Build AADT Forecast Volumes from Model Output Difference

Model volumes were used to determine the difference between no-build and build volumes. Generally, the build forecast volumes were determined by applying the difference in no-build and build model volumes using the ratio difference rate and the absolute difference method.

For each forecasted roadway section, the absolute difference between 2016 Build and No-Build model volumes was calculated and applied to the 2016 Base Year No-Build AADT forecast volumes to produce build forecast volumes. The absolute difference method yielded more consistent results for balancing Build volumes than did the ratio difference method, which introduced unreasonably large changes on low volume roads. The forecasted AADT volumes were adjusted as necessary to ensure the balancing of intersection volumes and factors. The 2016 Base Year Build AADT Mainline and Y-Line forecast volumes are shown in the diagrams for Scenario 2.

The absolute difference developed from the model outputs show that traffic pattern changes between the Build and No-Build scenarios are not very significant along the study corridor. Values in a table in Appendix H show the selected 2016 Base Year Build Mainline and Y-line forecast volumes and difference calculations.

5.3.2 2016 Base Year Build Turning Movement Forecast Volumes

Upon establishing the 2016 Base Year Build Mainline and Y-line AADT forecast volumes, turning movements for each intersection were estimated. The turning movement percentages for each intersection were taken from field data collected in 2016. Scenario 2 shows the 2016 Base Year Build turning movement forecast volumes for the study area roadways and intersections.

5.3.3 Determination of Design Data

The design factors for 2016 Base Year build scenarios were developed based on the No-Build scenario design factors, and the comparison of model design factors between No-Build and Build scenarios. There is not enough evidence to suggest that the 2016 Base Year Build design data in the study area will differ from the No-Build condition. Thus, it is assumed that the design data in the study area are constant between the Base Year No-Build and Build Scenarios.

6 2040 DESIGN YEAR FORECAST

6.1 No-Build Forecast

6.1.1 Assumptions

The 2040 Design Year No-Build forecast assumes that the subject project, the widening of NC 66 (Old Hollow Road), is not constructed. All other fiscally constrained projects identified in the WSUAMPO MTP expected to be completed by 2040 are constructed.

6.1.2 Model Development for No-Build Scenario

The 2040 No-Build forecast was based on the 2040 model run. The 2040 future year fiscally constrained model network was modified to create the 2040 No-Build network by editing the master network. The 2040 No-Build network included no specific additions/modifications to the existing 2040 No-Build network provided as part of PTRM v4.2 except removal of the Southern Beltway.

6.1.3 Development Activity

Scott Snow (Walkertown Town Manager) and Gary Robertson, (Walkertown Town Planner) were contacted to verify the approved future developments within the study area. The following approved developments in the study area were expected to be fully built out by 2040:

- WhiteHall Village Development is a proposed residential development off of NC 66, bordered by NC 66 to the south, Avalee Street to the east and Lakawanna Drive to the west. At present, the development contains low to moderate density, single-family and townhouse residential development and it is being expanded to the north of the study project. It is proposed as a residential development consisting a total of 218 units: 130 single-family and 88 duplex units. The development of this site has been delayed but has been recently approved, with completion anticipated by 2040.

The difference in the model socio-economic (SE) data between 2013 and 2040 years and the households proposed in approved development were compared. The socio-economic data for the TAZs listed in Table 2 and shown in Appendix N were modified in the 2040 model to add Household and Population to reflect the growth due to the approved WhiteHall Village development.

Table 2: Proposed Approved development and Modifications to 2040 SE Data in PTRM v4.2

TAZ	Dwelling Units from Whitehall Devp.	PTRM 2013 HH	PTRM 2040 HH	Additional HH in PTRM (2013 to 2040)	Difference	Proposed additional HH in PTRM
2367	218	156	206	50	-168	160

6.1.4 Methodology

6.1.4.1 2040 Design Year No-Build Mainline and Y-line AADT Forecast Volumes

Model volumes were used to determine the difference between the 2016 Base Year No-Build Model and the 2040 Design Year No-Build Model. Generally, the 2040 No-Build forecast volumes were determined through applying the absolute difference in the 2016 and 2040 model volumes.

The absolute difference and ratio growth rates were developed between the 2016 and 2040 No-Build model volumes for all the roadway sections, and absolute difference were applied to the 2016 No-Build AADT forecast volumes to produce 2040 No-Build AADT forecast volumes. The absolute difference method yielded more consistent results for balancing No-Build volumes than did the ratio growth method, which introduced unreasonably large changes on low volume roads. The estimated AADT volumes were adjusted as necessary to ensure the balancing of intersection volumes and factors. The 2040 Future Year No-Build AADT Mainline and Y-line forecast volumes are displayed in the diagram for Scenario 3.

Values in the table in Appendix J show the results of the growth rates between 2016 and 2040 No-Build scenarios. The 2040 Design Year No-Build model output for each roadway segment and the forecast volumes are also shown in this table. Several proposed roadway projects in the vicinity of the study area will affect the traffic pattern on roadways within the NC 66 (Old Hollow Road) corridor study area in 2040 especially the Winston-Salem Northern Bypass. The construction of U-2579 (Winston-Salem Northern Bypass) will have a significant impact on the traffic volume on subject project. This project results in the through traffic volumes on NC 66 (Old Hollow Road) in the future year being lower than the volumes in base year 2016. Without the Winston-Salem Northern Bypass NC 66 is the East West connector road between Kernersville and Bethania. The construction of Winston-Salem Northern Bypass provides a much faster access between these two areas hence reducing the traffic on NC 66.

6.1.4.2 2040 Design Year No-Build Turning Movement Forecast Volumes

Upon establishing the 2040 Design Year No-Build Mainline and Y-line AADT forecast volumes, each intersection was balanced to produce the turning movement forecast volumes. The turning movement percentages were taken from the field data collected in 2016.

Scenario 3 shows the 2040 Design Year No-Build turning movement forecast volumes for the study area intersections.

6.1.4.3 Determination of Design Data

The design factors for 2040 Design Year No-Build scenarios were developed based on the 2016 No-Build scenario design factors, and the comparison of model design factors between 2016 No-Build and 2040 No-Build scenarios. There is not enough evidence to suggest that the 2040 Design Year No-Build design data in the study area will differ from the existing condition. Thus, it is assumed that the design data in the study area are constant between 2016 and 2040.

6.2 Build Forecast

6.2.1 Assumptions

The 2040 Design Year Build forecast assumes that the subject project, the widening of US 66 (Old Hollow Road), is constructed. It also assumes that all other fiscally constrained projects expected to be completed by 2040 are open for travel.

6.2.2 Model Development for Build Scenario

The 2040 Build forecast was based on the 2040 model run. The 2040 future year fiscally constrained model network from PTRM v4.2 was used.

6.2.3 Methodology

6.2.3.1 2040 Design Year Build AADT Forecast Volumes from Model Output Difference

Model volumes were used to determine the difference between the 2040 Design Year No-Build Model and the 2040 Design Year Build Model. Generally, the 2040 Build forecast volumes were determined through applying the absolute difference in model volumes.

The absolute difference and ratio difference were developed between the 2040 No-Build and 2040 Build model volumes for all the roadway sections, and absolute difference was applied to the 2040 No-Build AADT forecast volumes to produce 2040 Build AADT forecast volumes. The absolute difference method yielded more consistent results for balancing Build volumes than did the ratio difference method, which introduced unreasonably large changes on low volume roads. The estimated AADT volumes were adjusted as necessary to ensure the balancing of intersection volumes and factors. The 2040 Future Year Build AADT Mainline and Y-line forecast volumes are displayed in the diagram for Scenario 4.

Values in the table in Appendix K show the results of the difference between 2040 No-Build and 2040 Build. 2040 Design Year Build model output for each roadway segment and the forecast volumes are also shown in this table. The absolute difference developed from the model outputs show that traffic pattern changes between the Build and No-Build scenarios are not very significant in the study area.

6.2.3.2 2040 Design Year Build Turning Movement Forecast Volumes

Upon establishing the 2040 Design Year Build Mainline and Y-line AADT forecast volumes, each intersection was balanced to produce the turning movement forecast volumes. The turning movement percentages were taken from the field data collected in 2016.

Scenario 4 shows the 2040 Design Year Build turning movement forecast volumes for the study area intersections.

6.2.4 Determination of Design Data

The design factors for 2040 Design Year Build scenarios were developed based on the 2016 No-Build scenario design factors, and the comparison of model design factors between 2016 No-Build and 2040 Build scenarios. There is not enough evidence to suggest that the 2040 Design Year Build design data in the study area will differ from the existing condition. Thus, it is assumed that the design data in the study area is constant between 2016 and 2040.

7 APPENDICES

Appendix A: Historic AADT

Appendix A: NCDOT Historical AADT Data

County	Label	ID	Road Name			Historical AADT							Historical AADT extrapolated to 2016 *(10-year)* +
			Intersection Location	Route	Selected Segment	2003	2005	2007	2009	2011	2013	2014	
A	B	C	D	E	F	G	H	J	K	L	M	N	P
Formula Calculations													IF(SUM(H:N)>0,MROUND(FORECAST(2016,H:N,H:N),200),"")
Forsyth	N	1	NC 66 (Old Hollow Rd) at Harley Drive	Harley Drive	NORTH of NC 66								
	E			NC 66	EAST of Harley Drive								
	S			Driveway	SOUTH of NC 66								
	W			NC 66	WEST of Harley Drive								
	N	2	NC 66 (Old Hollow Rd) at US 311 (New Walkertown Rd)	US 311	NORTH of NC 66	2,400	2,400	1,900	1,900	1,900	1,900	2,000	1,800
	E			NC 66	EAST of US 311	12,000	14,000	13,000	12,000	12,000	13,000	13,000	12,400
	S			US 311	SOUTH of NC 66	4,300	4,700	3,900	3,800	3,900	3,900	3,900	3,600
	W			NC 66	WEST of US 311	12,000	13,000	12,000	11,000	11,000	12,000	12,000	11,400
	N	3	NC 66 (Old Hollow Rd) at Rocky Branch Road	Driveway	NORTH of NC 66								
	E			NC 66	EAST of Driveway								
	S			Rocky Branch Road	SOUTH of NC 66								
	W			NC 66	WEST of Driveway	14,000	15,000	14,000	13,000	13,000	14,000	14,000	13,400
	N	4	NC 66 (Old Hollow Rd) at Main Street	Main Street	NORTH of NC 66								
	E			NC 66	EAST of Main Street								
	S			Driveway	SOUTH of NC 66								
	W			NC 66	WEST of Main Street								
	N	5	NC 66 (Old Hollow Rd) at SR 2385 (Darrow Rd)	SR 2385	NORTH of NC 66								
	E			NC 66	EAST of SR 2385								
	S			SR 2385	SOUTH of NC 66								
	W			NC 66	WEST of SR 2385	19,000	19,000	20,000	19,000	18,000	19,000	16,000	16,800
	N	6	NC 66 (Old Hollow Rd) at Bellaire Circle	Whitehall Village Lane	NORTH of NC 66								
	E			NC 66	EAST of Bellaire Circle								
	S			Bellaire Circle	SOUTH of NC 66								
	W			NC 66	WEST of Bellaire Circle								
	N	7	NC 66 (Old Hollow Rd) at Martin Street South										
	E			NC 66	EAST of Martin Street South								
	S			Martin Street South	SOUTH of NC 66								
	W			NC 66	WEST of Martin Street South								
	N	8	NC 66 (Old Hollow Rd) at Martin Street North	Martin Street North	NORTH of NC 66								
	E			NC 66	EAST of Martin Street North								
	S												
	W			NC 66	WEST of Martin Street North								
	N	9	NC 66 (Old Hollow Rd) at US 158 (Reidsville Road)	US 158	NORTH of NC 66	17,000	17,000	16,000	16,000	16,000	17,000	17,000	16,800
	E			NC 66	EAST of US 158	12,000	14,000	13,000	13,000	14,000	14,000	14,000	14,000
	S			US 158	SOUTH of NC 66								
	W			NC 66	WEST of US 158	13,000	16,000	16,000	16,000	16,000	16,000	16,000	16,000

+ Using 10 year trend line (2005-2014)

Appendix B: 2016 Data Collection

Appendix B: Turning Movement and Class Count Locations and Date					
ID	**Location**	**Type**	**Date(s)**	**Duration**	**County**
1	NC 66 (Old Hollow Rd) at Harley Drive	TMC	April 6 & 7, 2016	48-Hour; 12:00 AM - 12:00 AM	Forsyth
2	NC 66 (Old Hollow Rd) at US 311 (New Walkertown Rd)	TMC	April 6 & 7, 2016	48-Hour; 12:00 AM - 12:00 AM	Forsyth
3	NC 66 (Old Hollow Rd) at Rocky Branch Road	TMC	April 6, 2016	13-Hour; 6:00 AM - 7:00 PM	Forsyth
4	NC 66 (Old Hollow Rd) at Main Street	TMC	April 6, 2016	13-Hour; 6:00 AM - 7:00 PM	Forsyth
5	NC 66 (Old Hollow Rd) at SR 2385 (Darrow Rd)	TMC	April 6, 2016	13-Hour; 6:00 AM - 7:00 PM	Forsyth
6	NC 66 (Old Hollow Rd) at Bellaire Circle	TMC	April 6, 2016	13-Hour; 6:00 AM - 7:00 PM	Forsyth
7	NC 66 (Old Hollow Rd) at Martin Street South	TMC	April 6, 2016	13-Hour; 6:00 AM - 7:00 PM	Forsyth
8	NC 66 (Old Hollow Rd) at Martin Street North	TMC	April 6, 2016	13-Hour; 6:00 AM - 7:00 PM	Forsyth
9	NC 66 (Old Hollow Rd) at US 158 (Reidsville Road)	TMC	April 6 & 7, 2016	48-Hour; 12:00 AM - 12:00 AM	Forsyth
E	NC 66 (Old Hollow Rd), 400' East of Main Street	Class	April 6 & 7, 2016	48-Hour; 12:00 AM - 12:00 AM	Forsyth

Appendix C: 2016 Raw Counts and Seasonal Factors

Appendix C: 2016 Class Counts, Applied Seasonal Factors and Calculated 2016 AADT

County	Label	ID	Road Name			TMC/Class Count		13 Hour Count	13 Hr to Daily Factor**	Daily Counts	NCDOT Seasonal Factors		Annualized Daily Count	Estimated AADT
			Intersection Location	Route	Selected Segment	Date	Day				ATR Group	Factor*		
A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q
			Formula Calculations							J/K			N*L	MROUND(P,100)
Forsyth	N	1	NC 66 (Old Hollow Rd) at Harley Drive	Harley Drive	NORTH of NC 66	4/6/2016	Wednesday	2,841	0.80	3,565	1	0.98	3,493	3,500
	E			NC 66	EAST of Harley Drive			10,107	0.81	12,478	1	0.98	12,228	12,200
	S			Driveway	SOUTH of NC 66			104	0.80	130	1	0.98	128	100
	W			NC 66	WEST of Harley Drive			12,670	0.81	15,642	1	0.98	15,329	15,300
	N	2	NC 66 (Old Hollow Rd) at US 311 (New Walkertown Rd)	US 311	NORTH of NC 66	4/6/2016	Wednesday	1,924	0.79	2,448	1	0.98	2,399	2,400
	E			NC 66	EAST of US 311			11,486	0.81	14,180	1	0.98	13,897	13,900
	S			US 311	SOUTH of NC 66			3,738	0.79	4,756	1	0.98	4,661	4,700
	W			NC 66	WEST of US 311			10,232	0.81	12,632	1	0.98	12,379	12,400
	N	3	NC 66 (Old Hollow Rd) at Rocky Branch Road	Driveway	NORTH of NC 66	4/6/2016	Wednesday	336	0.80	422	1	0.98	413	400
	E			NC 66	EAST of Driveway			11,696	0.81	14,440	1	0.98	14,151	14,200
	S			Rocky Branch Road	SOUTH of NC 66			1,309	0.80	1,642	1	0.98	1,610	1,600
	W			NC 66	WEST of Driveway			12,185	0.81	15,043	1	0.98	14,742	14,700
	N	4	NC 66 (Old Hollow Rd) at Main Street	Main Street	NORTH of NC 66	4/6/2016	Wednesday	7,148	0.80	8,969	1	0.98	8,789	8,800
	E			NC 66	EAST of Main Street			15,006	0.81	18,526	1	0.98	18,155	18,200
	S			Driveway	SOUTH of NC 66			3,417	0.80	4,287	1	0.98	4,202	4,200
	W			NC 66	WEST of Main Street			11,699	0.81	14,443	1	0.98	14,154	14,200
	N	5	NC 66 (Old Hollow Rd) at SR 2385 (Darrow Rd)	SR 2385	NORTH of NC 66	4/6/2016	Wednesday	2,297	0.75	3,067	1	0.98	3,005	3,000
	E			NC 66	EAST of SR 2385			14,707	0.81	18,157	1	0.98	17,794	17,800
	S			SR 2385	SOUTH of NC 66			4,362	0.75	5,824	1	0.98	5,707	5,700
	W			NC 66	WEST of SR 2385			15,848	0.81	19,565	1	0.98	19,174	19,200
	N	6	NC 66 (Old Hollow Rd) at Bellaire Circle	Whitehall Village Lane	NORTH of NC 66	4/6/2016	Wednesday	472	0.80	592	1	0.98	580	600
	E			NC 66	EAST of Bellaire Circle			14,678	0.81	18,121	1	0.98	17,759	17,800
	S			Bellaire Circle	SOUTH of NC 66			173	0.80	217	1	0.98	213	200
	W			NC 66	WEST of Bellaire Circle			14,717	0.81	18,169	1	0.98	17,806	17,800
	N	7	NC 66 (Old Hollow Rd) at Martin Street South			4/6/2016	Wednesday							
	E			NC 66	EAST of Martin Street South			14,985	0.81	18,500	1	0.98	18,130	18,100
	S			Martin Street South	SOUTH of NC 66			376	0.80	472	1	0.98	462	500
	W			NC 66	WEST of Martin Street South			14,693	0.81	18,140	1	0.98	17,777	17,800
	N	8	NC 66 (Old Hollow Rd) at Martin Street North	Martin Street North	NORTH of NC 66	4/6/2016	Wednesday	64	0.80	80	1	0.98	79	100
	E			NC 66	EAST of Martin Street North			15,017	0.81	18,540	1	0.98	18,169	18,200
	S													
	W			NC 66	WEST of Martin Street North			15,011	0.81	18,532	1	0.98	18,161	18,200
	N	9	NC 66 (Old Hollow Rd) at US 158 (Reidsville Road)	US 158	NORTH of NC 66	4/6/2016	Wednesday	13,314	0.79	16,939	1	0.98	16,600	16,600
	E			NC 66	EAST of US 158			13,803	0.81	17,041	1	0.98	16,700	16,700
	S			US 158	SOUTH of NC 66			11,166	0.79	14,206	1	0.98	13,922	13,900
	W			NC 66	WEST of US 158			14,875	0.81	18,364	1	0.98	17,997	18,000
	E***			NC 66 (Old Hollow Road) between intersection 4 and 5		4/6/2016 & 4/7/2016	Wednesday/ Thursday			18,995	1	0.98	18,615	18,600

* *Seasonal factor taken from NCDOT_Seasonal Factors FEB 2011 U-2817.xls*

** *13Hr to Daily factors for NC 66 are calculated from field collected count data; for other facilities factors from Traffic_Factors_2015.xlsx are used*

*** *48-Hr Class Count and raw count value taken from 24-hr starting at 6am on Wednesday*

Appendix D: 2016 No-Build Forecast

Appendix D: 2016 Base Year Counts and No-Build Forecast

County	Label	ID	Road Name			Historical AADT extrapolated to 2016 (10-year)+	2016 Project Specific AADT	2016 Traffic Forecast
			Intersection Location	Route	Selected Segment		TMC ***	
A	B	C	D	E	F	G	H	J
Formula Calculations						Appendix A - Column P	Appendix C - Column Q	H or G or Manual
Forsyth	N	1	NC 66 (Old Hollow Rd) at Harley Drive	Harley Drive	NORTH of NC 66		3,500	3,500
	E			NC 66	EAST of Harley Drive		12,200	12,200
	S			Driveway	SOUTH of NC 66		100	200
	W			NC 66	WEST of Harley Drive		15,300	15,300
	N	2	NC 66 (Old Hollow Rd) at US 311 (New Walkertown Rd)	US 311	NORTH of NC 66	1,800	2,400	2,400
	E			NC 66	EAST of US 311	12,400	13,900	13,900
	S			US 311	SOUTH of NC 66	3,600	4,700	4,700
	W			NC 66	WEST of US 311	11,400	12,400	12,200
	N	3	NC 66 (Old Hollow Rd) at Rocky Branch Road	Driveway	NORTH of NC 66		400	400
	E			NC 66	EAST of Driveway		14,200	14,200
	S			Rocky Branch Road	SOUTH of NC 66		1,600	1,700
	W			NC 66	WEST of Driveway	13,400	14,700	14,700
	N	4	NC 66 (Old Hollow Rd) at Main Street	Main Street	NORTH of NC 66		8,800	8,900
	E			NC 66	EAST of Main Street		18,200	18,700
	S			Driveway	SOUTH of NC 66		4,200	4,200
	W			NC 66	WEST of Main Street		14,200	14,200
	N	5	NC 66 (Old Hollow Rd) at SR 2385 (Darrow Rd)	SR 2385	NORTH of NC 66		3,000	3,000
	E			NC 66	EAST of SR 2385		17,800	17,800
	S			SR 2385	SOUTH of NC 66		5,700	5,700
	W			NC 66	WEST of SR 2385	16,800	19,200	18,700
	N	6	NC 66 (Old Hollow Rd) at Bellaire Circle	Whitehall Village Lane	NORTH of NC 66		600	600
	E			NC 66	EAST of Bellaire Circle		17,800	17,800
	S			Bellaire Circle	SOUTH of NC 66		200	200
	W			NC 66	WEST of Bellaire Circle		17,800	17,800
	N	7	NC 66 (Old Hollow Rd) at Martin Street South					
	E			NC 66	EAST of Martin Street South		18,100	18,100
	S			Martin Street South	SOUTH of NC 66		500	500
	W			NC 66	WEST of Martin Street South		17,800	17,800
	N	8	NC 66 (Old Hollow Rd) at Martin Street North	Martin Street North	NORTH of NC 66		100	200
	E			NC 66	EAST of Martin Street North		18,200	18,100
	S							
	W			NC 66	WEST of Martin Street North		18,200	18,100
	N	9	NC 66 (Old Hollow Rd) at US 158 (Reidsville Road)	US 158	NORTH of NC 66	16,800	16,600	16,600
	E			NC 66	EAST of US 158	14,000	16,700	16,800
	S			US 158	SOUTH of NC 66		13,900	13,900
	W			NC 66	WEST of US 158	16,000	18,000	18,100

+ Using 10 year trend line (2005-2014)

**** Adjusted Project Specific Turning Movement Counts - collected in April 2016*

Appendix E: Design Factors (D,K)

Appendix E: Design Data (Peak Hour Factor and Directional Distribution)

						K – Peak Hour Factor		D – Directional Distribution		Selected Values	
County	Label	ID	Road Name			2016 TMCs[1]	Calculated Value	2016 TMCs[1]	Calculated Value	K - Peak Hour Factor	D - Directional Distribution
			Intersection Location	Route	Selected Segment						
A	B	C	D	E	F	G	H	J	K	L	M
Formula Calculations							IF(E="NC 66", AVERAGE of G for NC 66, G)		IF(E="NC 66",AVERAGE of J for NC 66, J)	H or Manual	K or Manual
Forsyth	N	1	NC 66 (Old Hollow Rd) at Harley Drive	Harley Drive	NORTH of NC 66	8%	8%	59%	60%	8%	60%
	E			NC 66	EAST of Harley Drive	9%	8%	56%	55%	8%	55%
	S			Driveway	SOUTH of NC 66	10%	10%	62%	60%	10%	60%
	W			NC 66	WEST of Harley Drive	9%	8%	56%	55%	8%	55%
	N	2	NC 66 (Old Hollow Rd) at US 311 (New Walkertown Rd)	US 311	NORTH of NC 66	9%	9%	73%	75%	9%	65%
	E			NC 66	EAST of US 311	9%	8%	58%	55%	8%	55%
	S			US 311	SOUTH of NC 66	8%	8%	72%	70%	8%	65%
	W			NC 66	WEST of US 311	10%	8%	56%	55%	8%	55%
	N	3	NC 66 (Old Hollow Rd) at Rocky Branch Road	Driveway	NORTH of NC 66	7%	7%	67%	65%	7%	65%
	E			NC 66	EAST of Driveway	8%	8%	52%	55%	8%	55%
	S			Rocky Branch Road	SOUTH of NC 66	8%	8%	79%	80%	8%	65%
	W			NC 66	WEST of Driveway	9%	8%	56%	55%	8%	55%
	N	4	NC 66 (Old Hollow Rd) at Main Street	Main Street	NORTH of NC 66	7%	7%	55%	55%	7%	55%
	E			NC 66	EAST of Main Street	8%	8%	54%	55%	8%	55%
	S			Driveway	SOUTH of NC 66	9%	9%	60%	60%	9%	60%
	W			NC 66	WEST of Main Street	8%	8%	54%	55%	8%	55%
	N	5	NC 66 (Old Hollow Rd) at SR 2385 (Darrow Rd)	SR 2385	NORTH of NC 66	8%	8%	69%	70%	8%	65%
	E			NC 66	EAST of SR 2385	8%	8%	51%	55%	8%	55%
	S			SR 2385	SOUTH of NC 66	8%	8%	57%	55%	8%	55%
	W			NC 66	WEST of SR 2385	8%	8%	52%	55%	8%	55%
	N	6	NC 66 (Old Hollow Rd) at Bellaire Circle	Whitehall Village Lane	NORTH of NC 66	7%	7%	57%	55%	7%	55%
	E			NC 66	EAST of Bellaire Circle	8%	8%	51%	55%	8%	55%
	S			Bellaire Circle	SOUTH of NC 66	12%	12%	96%	95%	12%	65%
	W			NC 66	WEST of Bellaire Circle	8%	8%	50%	55%	8%	55%
	N	7	NC 66 (Old Hollow Rd) at Martin Street South								
	E			NC 66	EAST of Martin Street South	8%	8%	50%	55%	8%	55%
	S			Martin Street South	SOUTH of NC 66	10%	10%	85%	85%	10%	65%
	W			NC 66	WEST of Martin Street South	8%	8%	51%	55%	8%	55%
	N	8	NC 66 (Old Hollow Rd) at Martin Street North	Martin Street North	NORTH of NC 66	5%	5%	75%	75%	7%	65%
	E			NC 66	EAST of Martin Street North	8%	8%	50%	55%	8%	55%
	S										
	W			NC 66	WEST of Martin Street North	8%	8%	50%	55%	8%	55%
	N	9	NC 66 (Old Hollow Rd) at US 158 (Reidsville Road)	US 158	NORTH of NC 66	8%	8%	61%	60%	8%	60%
	E			NC 66	EAST of US 158	8%	8%	50%	55%	8%	55%
	S			US 158	SOUTH of NC 66	8%	8%	64%	65%	8%	60%
	W			NC 66	WEST of US 158	8%	8%	50%	55%	8%	55%

[1] *Data extracted from turning movement count data collected in 2016*

Appendix F: Design Factor (Trucks)

Appendix F: Design Data (Truck Percentages)

						Truck Percentages (Duals)		Truck Percentages (TT-ST)		Selected Values	
County	Label	ID	Road Name			2016 TMCs[1]	Calculated Value	2016 TMCs[1]	Calculated Value	Truck Percentages (Dual)	Truck Percentages (TT-ST)
			Intersection Location	Route	Selected Segment						
A	B	C	D	E	F	G	H	J	K	L	M
Formula Calculations							IF(E="NC 66", AVERAGE of G for NC 66, G)		IF(E="NC 66",AVERAGE of J for NC 66, J)	H or Manual	K or Manual
Forsyth	N	1	NC 66 (Old Hollow Rd) at Harley Drive	Harley Drive	NORTH of NC 66	4%	4%	0%	0%	4%	1%
	E			NC 66	EAST of Harley Drive	3%	3%	1%	1%	3%	1%
	S			Driveway	SOUTH of NC 66	2%	2%	0%	0%	2%	1%
	W			NC 66	WEST of Harley Drive	4%	3%	1%	1%	3%	1%
	N	2	NC 66 (Old Hollow Rd) at US 311 (New Walkertown Rd)	US 311	NORTH of NC 66	2%	2%	1%	1%	2%	1%
	E			NC 66	EAST of US 311	3%	3%	1%	1%	3%	1%
	S			US 311	SOUTH of NC 66	2%	2%	1%	1%	2%	1%
	W			NC 66	WEST of US 311	4%	3%	1%	1%	3%	1%
	N	3	NC 66 (Old Hollow Rd) at Rocky Branch Road	Driveway	NORTH of NC 66	1%	1%	0%	0%	1%	1%
	E			NC 66	EAST of Driveway	4%	3%	1%	1%	3%	1%
	S			Rocky Branch Road	SOUTH of NC 66	4%	4%	1%	1%	4%	1%
	W			NC 66	WEST of Driveway	3%	3%	1%	1%	3%	1%
	N	4	NC 66 (Old Hollow Rd) at Main Street	Main Street	NORTH of NC 66	3%	3%	1%	1%	3%	1%
	E			NC 66	EAST of Main Street	4%	3%	1%	1%	3%	1%
	S			Driveway	SOUTH of NC 66	1%	1%	0%	0%	1%	1%
	W			NC 66	WEST of Main Street	4%	3%	1%	1%	3%	1%
	N	5	NC 66 (Old Hollow Rd) at SR 2385 (Darrow Rd)	SR 2385	NORTH of NC 66	3%	3%	0%	0%	3%	1%
	E			NC 66	EAST of SR 2385	3%	3%	1%	1%	3%	1%
	S			SR 2385	SOUTH of NC 66	3%	3%	1%	1%	3%	1%
	W			NC 66	WEST of SR 2385	3%	3%	1%	1%	3%	1%
	N	6	NC 66 (Old Hollow Rd) at Bellaire Circle	Whitehall Village Lane	NORTH of NC 66	5%	5%	0%	0%	5%	1%
	E			NC 66	EAST of Bellaire Circle	3%	3%	1%	1%	3%	1%
	S			Bellaire Circle	SOUTH of NC 66	1%	1%	0%	0%	1%	1%
	W			NC 66	WEST of Bellaire Circle	3%	3%	1%	1%	3%	1%
	N	7	NC 66 (Old Hollow Rd) at Martin Street South								
	E			NC 66	EAST of Martin Street South	3%	3%	1%	1%	3%	1%
	S			Martin Street South	SOUTH of NC 66	1%	1%	0%	0%	1%	1%
	W			NC 66	WEST of Martin Street South	3%	3%	1%	1%	3%	1%
	N	8	NC 66 (Old Hollow Rd) at Martin Street North	Martin Street North	NORTH of NC 66	5%	5%	0%	0%	5%	1%
	E			NC 66	EAST of Martin Street North	3%	3%	1%	1%	3%	1%
	S										
	W			NC 66	WEST of Martin Street North	3%	3%	1%	1%	3%	1%
	N	9	NC 66 (Old Hollow Rd) at US 158 (Reidsville Road)	US 158	NORTH of NC 66	3%	3%	7%	7%	3%	7%
	E			NC 66	EAST of US 158	3%	3%	1%	1%	3%	1%
	S			US 158	SOUTH of NC 66	3%	3%	8%	8%	3%	7%
	W			NC 66	WEST of US 158	3%	3%	1%	1%	3%	1%

[1] *Data extracted from turning movement count data collected in 2016*

Appendix G: PTRM v4.2 Model Validation

Appendix G: Model Validation

County	Label	ID	Road Name			Base Year 2016				Design Year 2040	
			Intersection Location	Route	Selected Segment	AADT	No-Build Model	No-Build Forecast	Percentage Difference	No-Build Model	No-Build Forecast
A	B	C	D	E	F	G	H	J	K	M	N
			Formula Calculations			Appendix C -Column Q	Appendix D - Column J	Appendix D - Column J	(H-G)/G	Appendix J - Column K	Appendix J - Column P
Forsyth	N	1	NC 66 (Old Hollow Rd) at Harley Drive	Harley Drive	NORTH of NC 66	3,500	1,102	3,500	-68.50%	3,981	6,400
	E			NC 66	EAST of Harley Drive	12,200	9,763	12,200	-19.98%	5,246	7,600
	S			Driveway	SOUTH of NC 66	100		200			400
	W			NC 66	WEST of Harley Drive	15,300	10,865	15,300	-28.99%	9,227	13,600
	N	2	NC 66 (Old Hollow Rd) at US 311 (New Walkertown Rd)	US 311	NORTH of NC 66	2,400	5,578	2,400	132.41%	5,822	2,600
	E			NC 66	EAST of US 311	13,900	16,740	13,900	20.43%	14,171	11,400
	S			US 311	SOUTH of NC 66	4,700	12,995	4,700	176.48%	16,173	7,800
	W			NC 66	WEST of US 311	12,400	9,763	12,200	-21.27%	5,246	7,600
	N	3	NC 66 (Old Hollow Rd) at Rocky Branch Road	Driveway	NORTH of NC 66	400		400			600
	E			NC 66	EAST of Driveway	14,200	15,909	14,200	12.03%	13,200	11,400
	S			Rocky Branch Road	SOUTH of NC 66	1,600		1,700			2,000
	W			NC 66	WEST of Driveway	14,700	16,740	14,700	13.88%	14,171	12,200
	N	4	NC 66 (Old Hollow Rd) at Main Street	Main Street	NORTH of NC 66	8,800	5,262	8,900	-40.21%	5,756	9,400
	E			NC 66	EAST of Main Street	18,200	20,310	18,700	11.59%	18,008	16,400
	S			Driveway	SOUTH of NC 66	4,200		4,200			4,600
	W			NC 66	WEST of Main Street	14,200	15,909	14,200	12.03%	13,200	11,400
	N	5	NC 66 (Old Hollow Rd) at SR 2385 (Darrow Rd)	SR 2385	NORTH of NC 66	3,000		3,000			3,300
	E			NC 66	EAST of SR 2385	17,800	17,356	17,800	-2.49%	14,462	15,100
	S			SR 2385	SOUTH of NC 66	5,700	2,954	5,700	-48.17%	3,546	6,200
	W			NC 66	WEST of SR 2385	19,200	20,310	18,700	5.78%	18,008	16,400
	N	6	NC 66 (Old Hollow Rd) at Bellaire Circle	Whitehall Village Lane	NORTH of NC 66	600		600		1,856	1,500
	E			NC 66	EAST of Bellaire Circle	17,800	17,883	17,800	0.47%	15,372	15,500
	S			Bellaire Circle	SOUTH of NC 66	200		200		302	300
	W			NC 66	WEST of Bellaire Circle	17,800	17,356	17,800	-2.49%	14,462	15,100
	N	7	NC 66 (Old Hollow Rd) at Martin Street South								
	E			NC 66	EAST of Martin Street South	18,100	17,883	18,100	-1.20%	15,372	15,500
	S			Martin Street South	SOUTH of NC 66	500		500		302	600
	W			NC 66	WEST of Martin Street South	17,800	17,356	17,800	-2.49%	14,462	15,500
	N	8	NC 66 (Old Hollow Rd) at Martin Street North	Martin Street North	NORTH of NC 66	100		200		1,856	1,100
	E			NC 66	EAST of Martin Street North	18,200	17,883	18,100	-1.74%	15,372	15,600
	S										
	W			NC 66	WEST of Martin Street North	18,200	17,356	18,100	-4.64%	14,462	15,500
	N	9	NC 66 (Old Hollow Rd) at US 158 (Reidsville Road)	US 158	NORTH of NC 66	16,600	18,605	16,600	12.08%	33,941	31,900
	E			NC 66	EAST of US 158	16,700	14,098	16,800	-15.58%	11,355	14,000
	S			US 158	SOUTH of NC 66	13,900	12,341	13,900	-11.21%	27,767	29,500
	W			NC 66	WEST of US 158	18,000	17,883	18,100	-0.65%	15,372	15,600

Appendix H: 2016 Base Year Build AADT Forecast Volumes

Appendix H: 2016 Base Year Build Growth and AADT Forecast Volumes

County	Label	ID	Road Name			2016 Base Year				2016 NB-2016 B Percentage Growth	2016 NB -2016 B Absolute Growth	2016 Build Average Value	2016 Build AADT Forecast Volume*
			Intersection Location	Route	Selected Segment	AADT	No-Build Model Volume	Build Model Volume	No-Build Forecast Volume				
A	B	C	D	E	F	G	H	J	K	L	M	N	P
Formula Calculations						Appendix D - Column H			Appendix D - Column J	K*J/H	K+(J-H)	AVERAGE(L:M)	M OR Manual
	N	1	NC 66 (Old Hollow Rd) at Harley Drive	Harley Drive	NORTH of NC 66	3,500	1,102	1,246	3,500	3,954	3,643	3,799	3,600
	E			NC 66	EAST of Harley Drive	12,200	9,763	11,169	12,200	13,957	13,606	13,782	13,600
	S			Driveway	SOUTH of NC 66	100			200				200
	W			NC 66	WEST of Harley Drive	15,300	10,865	12,414	15,300	17,482	16,849	17,166	16,800
	N	2	NC 66 (Old Hollow Rd) at US 311 (New Walkertown Rd)	US 311	NORTH of NC 66	2,400	5,578	5,013	2,400	2,157	1,835	1,996	1,800
	E			NC 66	EAST of US 311	13,900	16,740	19,917	13,900	16,538	17,077	16,807	17,200
	S			US 311	SOUTH of NC 66	4,700	12,995	14,128	4,700	5,110	5,834	5,472	5,800
	W			NC 66	WEST of US 311	12,400	9,763	11,169	12,200	13,957	13,606	13,782	13,600
	N	3	NC 66 (Old Hollow Rd) at Rocky Branch Road	Driveway	NORTH of NC 66	400			400				400
	E			NC 66	EAST of Driveway	14,200	15,909	19,104	14,200	17,052	17,395	17,224	17,400
	S			Rocky Branch Road	SOUTH of NC 66	1,600	1,692	1,671	1,700	1,679	1,679	1,679	1,700
	W			NC 66	WEST of Driveway	14,700	16,740	19,917	14,700	17,489	17,877	17,683	17,900
	N	4	NC 66 (Old Hollow Rd) at Main Street	Main Street	NORTH of NC 66	8,800	5,262	5,414	8,900	9,157	9,052	9,104	9,100
	E			NC 66	EAST of Main Street	18,200	20,310	23,659	18,700	21,784	22,049	21,916	22,100
	S			Driveway	SOUTH of NC 66	4,200			4,200				4,200
	W			NC 66	WEST of Main Street	14,200	15,909	19,104	14,200	17,052	17,395	17,224	17,400
	N	5	NC 66 (Old Hollow Rd) at SR 2385 (Darrow Rd)	SR 2385	NORTH of NC 66	3,000			3,000				3,000
	E			NC 66	EAST of SR 2385	17,800	17,356	20,562	17,800	21,088	21,006	21,047	21,100
	S			SR 2385	SOUTH of NC 66	5,700	2,954	3,097	5,700	5,976	5,843	5,909	5,800
	W			NC 66	WEST of SR 2385	19,200	20,310	23,659	18,700	21,784	22,049	21,916	22,100
	N	6	NC 66 (Old Hollow Rd) at Bellaire Circle	Whitehall Village Lane	NORTH of NC 66	600	1,045	1,050	600	603	605	604	600
	E			NC 66	EAST of Bellaire Circle	17,800	17,883	20,972	17,800	20,875	20,889	20,882	21,000
	S			Bellaire Circle	SOUTH of NC 66	200	204	287	200	281	282	281	300
	W			NC 66	WEST of Bellaire Circle	17,800	17,356	20,562	17,800	21,088	21,006	21,047	21,100
	N	7	NC 66 (Old Hollow Rd) at Martin Street South										
	E			NC 66	EAST of Martin Street South	18,100	17,883	20,972	18,100	21,227	21,189	21,208	21,300
	S			Martin Street South	SOUTH of NC 66	500	204	287	500	701	582	642	500
	W			NC 66	WEST of Martin Street South	17,800	17,356	20,562	17,800	21,088	21,006	21,047	21,000
	N	8	NC 66 (Old Hollow Rd) at Martin Street North	Martin Street North	NORTH of NC 66	100	1,045	1,050	200	201	205	203	200
	E			NC 66	EAST of Martin Street North	18,200	17,883	20,972	18,100	21,227	21,189	21,208	21,300
	S												
	W			NC 66	WEST of Martin Street North	18,200	17,356	20,562	18,100	21,444	21,306	21,375	21,300
	N	9	NC 66 (Old Hollow Rd) at US 158 (Reidsville Road)	US 158	NORTH of NC 66	16,600	18,605	19,507	16,600	17,405	17,503	17,454	17,500
	E			NC 66	EAST of US 158	16,700	14,098	15,237	16,800	18,157	17,939	18,048	17,900
	S			US 158	SOUTH of NC 66	13,900	12,341	11,364	13,900	12,799	12,923	12,861	12,900
	W			NC 66	WEST of US 158	18,000	17,883	20,972	18,100	21,227	21,189	21,208	21,300

** Note: Absolute Growth is used to calculate the Forecast Volume*

Appendix J: 2016-2040 No-Build Growth Rates

Appendix J: 2040 Design Year No-Build AADT Forecast Volumes and Growth

County	Label	ID	Road Name			2016 Base Year			2040 No-Build Model Volume	2016-2040 Percentage Growth	2016-2040 Absolute Growth	2040 No-Build Average Value	2040 No-Build AADT Forecast Volume*
			Intersection Location	Route	Selected Segment	AADT	No-Build Model Volume	No-Build Forecast Volume					
A	B	C	D	E	F	G	H	J	K	L	M	N	P
Formula Calculations						Appendix D - Column H	Appendix H - Column H	Appendix D - Column J		K*J/H	K+(J-H)	AVERAGE(L:M)	M OR Manual
Forsyth	N	1	NC 66 (Old Hollow Rd) at Harley Drive	Harley Drive	NORTH of NC 66	3,500	1,102	3,500	3,981	12,638	6,378	9,508	6,400
	E			NC 66	EAST of Harley Drive	12,200	9,763	12,200	5,246	6,555	7,683	7,119	7,600
	S			Driveway	SOUTH of NC 66	100		200					400
	W			NC 66	WEST of Harley Drive	15,300	10,865	15,300	9,227	12,993	13,662	13,327	13,600
	N	2	NC 66 (Old Hollow Rd) at US 311 (New Walkertown Rd)	US 311	NORTH of NC 66	2,400	5,578	2,400	5,822	2,505	2,644	2,574	2,600
	E			NC 66	EAST of US 311	13,900	16,740	13,900	14,171	11,766	11,331	11,549	11,400
	S			US 311	SOUTH of NC 66	4,700	12,995	4,700	16,173	5,850	7,878	6,864	7,800
	W			NC 66	WEST of US 311	12,400	9,763	12,200	5,246	6,555	7,683	7,119	7,600
	N	3	NC 66 (Old Hollow Rd) at Rocky Branch Road	Driveway	NORTH of NC 66	400		400					600
	E			NC 66	EAST of Driveway	14,200	15,909	14,200	13,200	11,782	11,491	11,636	11,400
	S			Rocky Branch Road	SOUTH of NC 66	1,600	1,692	1,700	1,918	1,928	1,927	1,927	2,000
	W			NC 66	WEST of Driveway	14,700	16,740	14,700	14,171	12,444	12,131	12,287	12,200
	N	4	NC 66 (Old Hollow Rd) at Main Street	Main Street	NORTH of NC 66	8,800	5,262	8,900	5,756	9,735	9,394	9,564	9,400
	E			NC 66	EAST of Main Street	18,200	20,310	18,700	18,008	16,580	16,398	16,489	16,400
	S			Driveway	SOUTH of NC 66	4,200		4,200					4,600
	W			NC 66	WEST of Main Street	14,200	15,909	14,200	13,200	11,782	11,491	11,636	11,400
	N	5	NC 66 (Old Hollow Rd) at SR 2385 (Darrow Rd)	SR 2385	NORTH of NC 66	3,000		3,000					3,300
	E			NC 66	EAST of SR 2385	17,800	17,356	17,800	14,462	14,832	14,906	14,869	15,100
	S			SR 2385	SOUTH of NC 66	5,700	2,954	5,700	3,546	6,841	6,291	6,566	6,200
	W			NC 66	WEST of SR 2385	19,200	20,310	18,700	18,008	16,580	16,398	16,489	16,400
	N	6	NC 66 (Old Hollow Rd) at Bellaire Circle	Whitehall Village Lane	NORTH of NC 66	600	1,045	600	1,856	1,066	1,411	1,238	1,500
	E			NC 66	EAST of Bellaire Circle	17,800	17,883	17,800	15,372	15,301	15,289	15,295	15,500
	S			Bellaire Circle	SOUTH of NC 66	200	204	200	302	296	298	297	300
	W			NC 66	WEST of Bellaire Circle	17,800	17,356	17,800	14,462	14,832	14,906	14,869	15,100
	N	7	NC 66 (Old Hollow Rd) at Martin Street South										
	E			NC 66	EAST of Martin Street South	18,100	17,883	18,100	15,372	15,559	15,589	15,574	15,500
	S			Martin Street South	SOUTH of NC 66	500	204	500	302	739	598	668	600
	W			NC 66	WEST of Martin Street South	17,800	17,356	17,800	14,462	14,832	14,906	14,869	15,500
	N	8	NC 66 (Old Hollow Rd) at Martin Street North	Martin Street North	NORTH of NC 66	100	1,045	200	1,856	355	1,011	683	1,100
	E			NC 66	EAST of Martin Street North	18,200	17,883	18,100	15,372	15,559	15,589	15,574	15,600
	S												
	W			NC 66	WEST of Martin Street North	18,200	17,356	18,100	14,462	15,082	15,206	15,144	15,500
	N	9	NC 66 (Old Hollow Rd) at US 158 (Reidsville Road)	US 158	NORTH of NC 66	16,600	18,605	16,600	33,941	30,284	31,937	31,110	31,900
	E			NC 66	EAST of US 158	16,700	14,098	16,800	11,355	13,531	14,057	13,794	14,000
	S			US 158	SOUTH of NC 66	13,900	12,341	13,900	27,767	31,274	29,326	30,300	29,500
	W			NC 66	WEST of US 158	18,000	17,883	18,100	15,372	15,559	15,589	15,574	15,600

** Note: Absolute Growth is used to calculate the Forecast Volume*

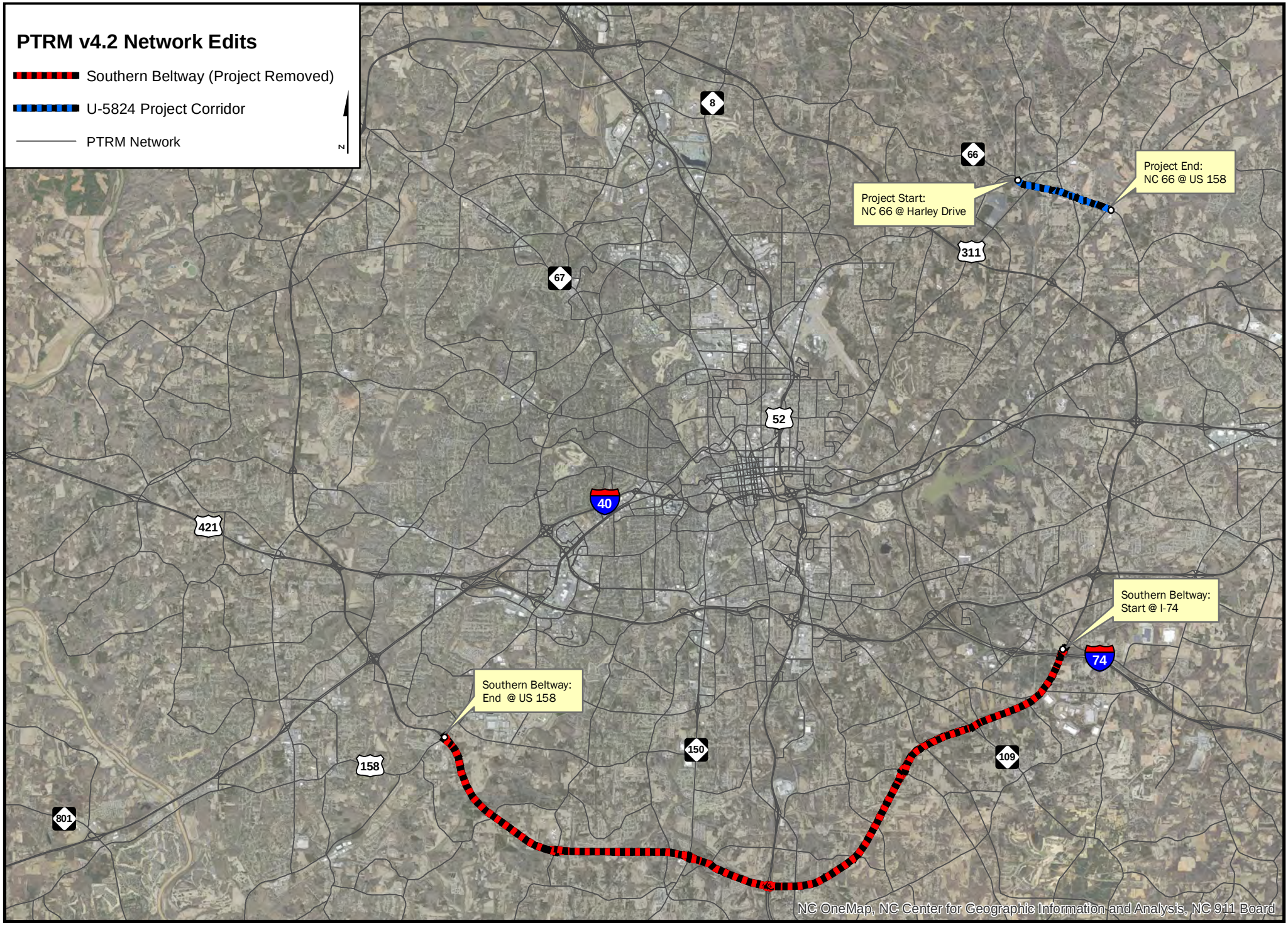
Appendix K: 2040 Design Year Build AADT Forecast Volumes and Growth Rates

Appendix K: 2040 Design Year Build AADT Forecast Volumes and Growth

County	Label	ID	Road Name			2040 Design Year			2040 NB - 2040 B Percentage Growth	2040 NB - 2040 B Absolute Growth	2040 Build Average Value	2040 Build AADT Forecast Volume*
			Intersection Location	Route	Selected Segment	No-Build Forecast Volume	No-Build Model Volume	Build Model Volume				
A	B	C	D	E	F	G	H	J	K	L	M	N
Formula Calculations						Appendix J-Column P	Appendix J - Column K		G*J/H	G+(J-H)	AVERAGE(K:L)	L OR Manual
	N	1	NC 66 (Old Hollow Rd) at Harley Drive	Harley Drive	NORTH of NC 66	6,400	3,981	1,791	2,880	4,210	3,545	4,200
	E			NC 66	EAST of Harley Drive	7,600	5,246	10,140	14,691	12,494	13,593	12,500
	S			Driveway	SOUTH of NC 66	400						400
	W			NC 66	WEST of Harley Drive	13,600	9,227	11,931	17,587	16,305	16,946	16,300
	N	2	NC 66 (Old Hollow Rd) at US 311 (New Walkertown Rd)	US 311	NORTH of NC 66	2,600	5,822	5,565	2,486	2,344	2,415	2,300
	E			NC 66	EAST of US 311	11,400	14,171	21,658	17,423	18,887	18,155	18,900
	S			US 311	SOUTH of NC 66	7,800	16,173	17,470	8,425	9,097	8,761	9,100
	W			NC 66	WEST of US 311	7,600	5,246	10,140	14,691	12,494	13,593	12,500
	N	3	NC 66 (Old Hollow Rd) at Rocky Branch Road	Driveway	NORTH of NC 66	600						600
	E			NC 66	EAST of Driveway	11,400	13,200	20,750	17,921	18,950	18,435	19,000
	S			Rocky Branch Road	SOUTH of NC 66	2,000	1,918	1,854	1,933	1,935	1,934	1,900
	W			NC 66	WEST of Driveway	12,200	14,171	21,658	18,646	19,687	19,167	19,700
	N	4	NC 66 (Old Hollow Rd) at Main Street	Main Street	NORTH of NC 66	9,400	5,756	6,031	9,850	9,675	9,762	9,700
	E			NC 66	EAST of Main Street	16,400	18,008	25,835	23,528	24,227	23,878	24,200
	S			Driveway	SOUTH of NC 66	4,600						4,700
	W			NC 66	WEST of Main Street	11,400	13,200	20,750	17,921	18,950	18,435	19,000
	N	5	NC 66 (Old Hollow Rd) at SR 2385 (Darrow Rd)	SR 2385	NORTH of NC 66	3,300						3,500
	E			NC 66	EAST of SR 2385	15,100	14,462	21,840	22,803	22,478	22,641	22,500
	S			SR 2385	SOUTH of NC 66	6,200	3,546	3,995	6,986	6,649	6,818	6,600
	W			NC 66	WEST of SR 2385	16,400	18,008	25,835	23,528	24,227	23,878	24,200
	N	6	NC 66 (Old Hollow Rd) at Bellaire Circle	Whitehall Village Lane	NORTH of NC 66	1,500	1,856	1,882	1,521	1,526	1,524	1,500
	E			NC 66	EAST of Bellaire Circle	15,500	15,372	22,533	22,721	22,661	22,691	22,800
	S			Bellaire Circle	SOUTH of NC 66	300	302	342	340	340	340	400
	W			NC 66	WEST of Bellaire Circle	15,100	14,462	21,840	22,803	22,478	22,641	22,500
	N	7	NC 66 (Old Hollow Rd) at Martin Street South			0						
	E			NC 66	EAST of Martin Street South	15,500	15,372	22,533	22,721	22,661	22,691	22,800
	S			Martin Street South	SOUTH of NC 66	600	302	342	679	640	660	600
	W			NC 66	WEST of Martin Street South	15,500	14,462	21,840	23,407	22,878	23,143	22,800
	N	8	NC 66 (Old Hollow Rd) at Martin Street North	Martin Street North	NORTH of NC 66	1,100	1,856	1,882	1,116	1,126	1,121	1,200
	E			NC 66	EAST of Martin Street North	15,600	15,372	22,533	22,867	22,761	22,814	22,800
	S					0						
	W			NC 66	WEST of Martin Street North	15,500	14,462	21,840	23,407	22,878	23,143	22,800
	N	9	NC 66 (Old Hollow Rd) at US 158 (Reidsville Road)	US 158	NORTH of NC 66	31,900	33,941	35,176	33,061	33,135	33,098	33,100
	E			NC 66	EAST of US 158	14,000	11,355	12,582	15,513	15,227	15,370	15,200
	S			US 158	SOUTH of NC 66	29,500	27,767	23,030	24,468	24,763	24,616	24,900
	W			NC 66	WEST of US 158	15,600	15,372	22,533	22,867	22,761	22,814	22,800

** Note: Absolute Growth is used to calculate the Forecast Volume*

Appendix L: PTRMv4.2 Network Edits



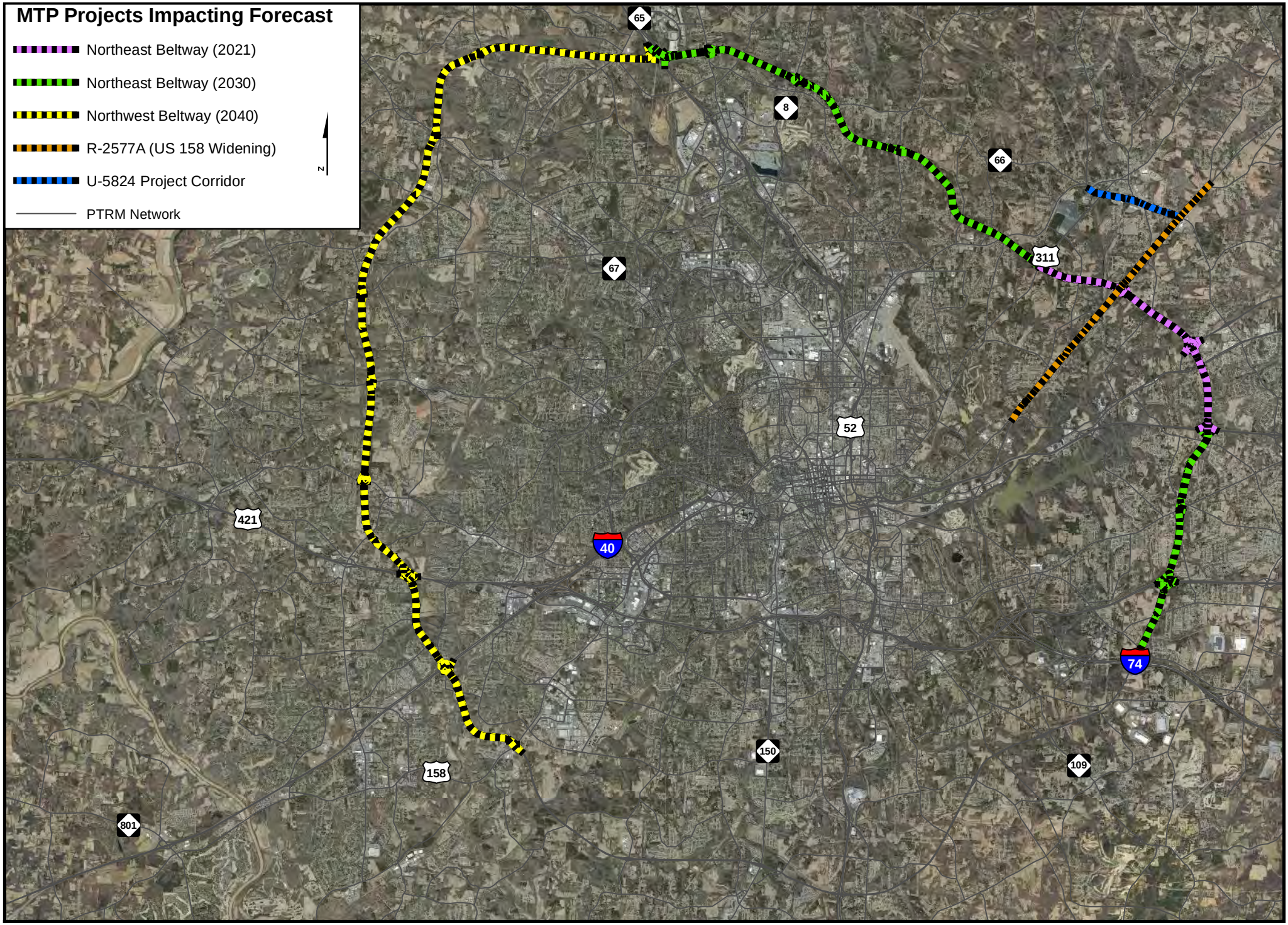
PIEDMONT TRIAD REGIONAL MODEL NETWORK EDITS

TIP No. U-5824 NC 66 (Old Hollow Road) Widening

0 1 2 4 Miles

February 2017

Appendix M: MTP Projects Affecting Forecast



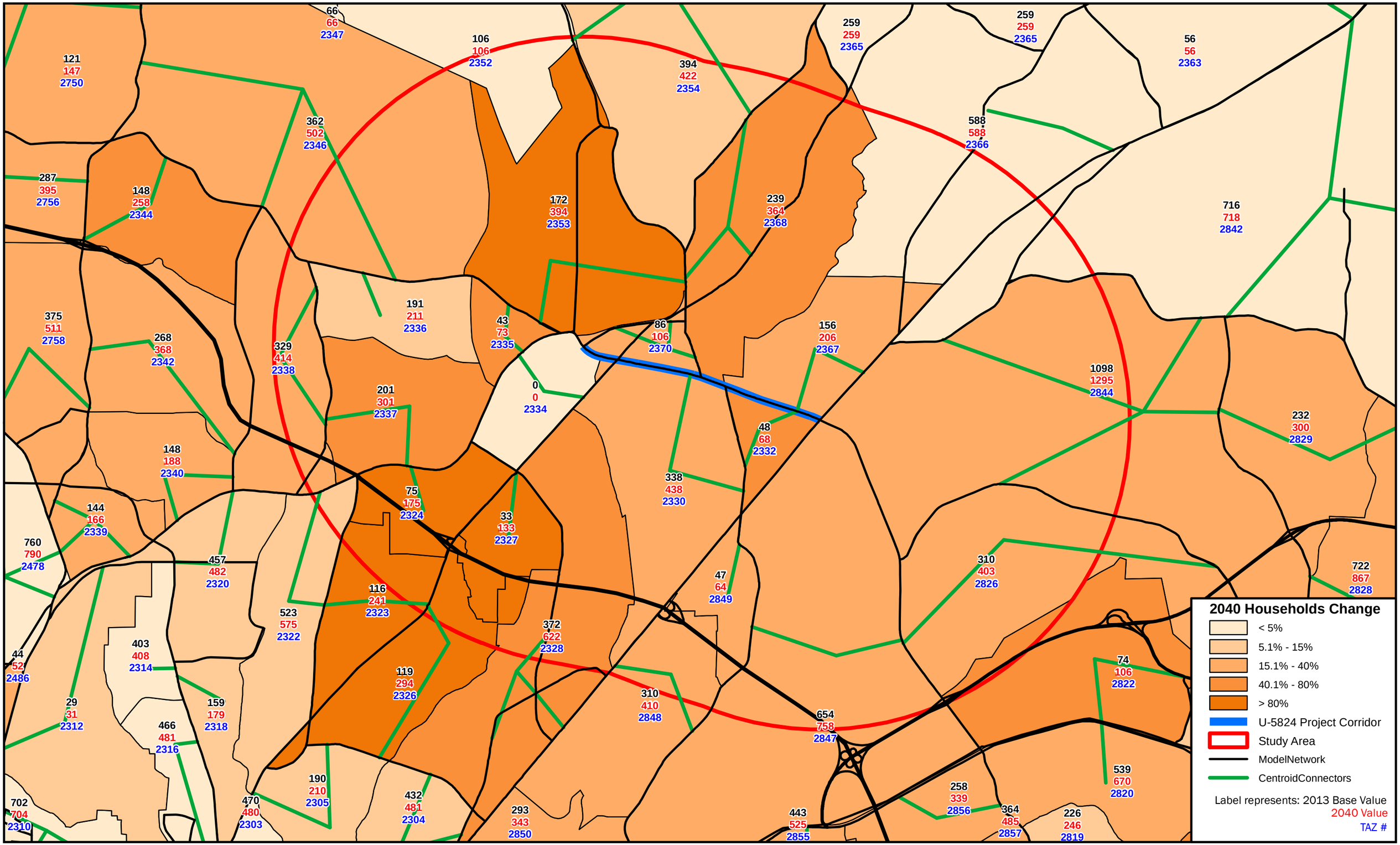
WSUAMPO MTP PROJECTS IMPACTING FORECAST

TIP No. U-5824 NC 66 (Old Hollow Road) Widening

0 1 2 4 Miles

February 2017

Appendix N: SE Data Modifications



SOCIO-ECONOMIC DATA (2013-2040)

TIP No. U-5824, NC 66 Capacity Improvement

February 2017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