PROJECT TIP NO. _____ EFF. 01-15-18
COUNTY _____ REV. 10-02-17
PROJECT ENGINEER _____
PROJ. DESIGN ENGINEER _____

REVIEW LIST FOR FINAL CONSTRUCTION PLANS
LET UNDER THE 2018 SPECIFICATIONS

CLICK THE RIGHT BOX TO APPLY "CHECK MARK" WHEN COMPLETED APPLICABLE ITEMS ON THIS REVIEW LIST. USE THE DROPDOWN ARROW TO PLACE "N/A" BY NON-APPLICABLE ITEMS.

TITLE SHEET

(1) _____ LOCATION OF PROJECT IS COMPLETE AND ACCURATE
(2) _____ COUNTY IS SHOWN
(3) _____ TYPE OF WORK INCLUDES ALL ITEMS SHOWN ON CURRENT TENTATIVE LETTING LIST
(4) _____ GRAPHIC SCALES ARE SHOWN FOR PLAN AND PROFILE SHEETS
(5) _____ DESIGN DATA IS SHOWN
(6) _____ CONTROL OF ACCESS NOTE SHOWN (FULL OR PARTIAL)
(7) _____ SHOW ANY ADDITIONAL “CONVENTIONAL SYMBOLS” ON SHEET 1B
(8) _____ VICINITY MAP INCLUDES THE FOLLOWING:
- (A) _____ CITY AND CITY LIMITS
- (B) _____ INTERSTATE, U.S. AND STATE ROUTES
- (C) _____ NORTH ARROW
- (D) _____ BEGINNING AND END OF PROJECT
- (E) _____ TITLE BLOCK
- (F)_____ OFFSITE DETOURS

(9) _____ PROJECT LAYOUT ON NUMBERED SUPERIMPOSED SHEETS INCLUDES THE FOLLOWING:
- (A) _____ PROJECT ALIGNMENT FOR ALL PROPOSED CONSTRUCTION, (-L- LINES, -Y- LINES, SERVICE ROADS, DETOURS, ETC)
- (B) _____ EXISTING ROADS AND STREETS AFFECTED BY CONSTRUCTION BUT NOT A PART OF THE PROJECT
- (C) _____ ROUTE NUMBERS, SURVEY LINE NUMBERS, STREET NAMES, ETC.
- (D) _____ SYMBOLS FOR PROPOSED BRIDGES AND CULVERTS 20'/6 m AND OVER WITH BEGINNING AND ENDING STATIONS
- (E) _____ STREAMS AND RIVERS
- (F)_____ RAILROADS
- (G) _____ CITY LIMITS
- (H) _____ STATE AND COUNTY LIMITS
- (I) _____ BEGINNING AND ENDING STATIONS FOR EACH PROJECT
- (J)_____ BEGIN AND END CONSTRUCTION OUTSIDE PROJECT LIMITS
- (K) _____ DESTINATION POINTS AT BEGINNING AND ENDING OF PROJECT
- (L) _____ NORTH ARROW

(10) _____ PROJECT NUMBER INFORMATION INCLUDES THE FOLLOWING:
- (A) _____ PROJECT CONTRACT NUMBER AND T.I.P. NUMBER ON LEFT END OF SHEET
- (B) _____ P.E., R/W, UTILITY AND CONSTRUCTION F.A. PROJECT NUMBERS IN PROJECT IDENTIFICATION BLOCK (TOP RIGHT CORNER)
- (C) _____ P.E., R/W, UTILITY AND CONSTRUCTION WBS ELEMENTS IN PROJECT IDENTIFICATION BLOCK (TOP RIGHT CORNER)

(11) _____ LENGTH OF PROJECT CORRECT (LENGTH SHOWN FOR ROADWAY, STRUCTURE AND TOTAL PROJECT)
(12) _____ SHOWN PLANS PREPARED BY:
(13) _____ MONTH, DAY AND YEAR OF R/W AND LETTING SHOWN
(14) _____ AREAS NOT PART OF PROJECT NOTED
(15) _____ REMOVE CLEARING METHOD NOTE
(16) _____ REMOVE NOTE FOR MUNICIPAL BOUNDARIES

INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS

(1) _____ SUBMIT 8 ½" x 11" WORK SHEETS TO PLAN REVIEW (AFTER REVIEW RETURN WORKSHEETS AND COMPLETED SHEET 1-A TO PLAN REVIEW)

TYPICAL SECTIONS

(1) _____ PAVEMENT SCHEDULE CORRESPONDS WITH PAVEMENT DESIGN LETTER
(2) _____ PAVEMENT COMPOSITIONS LABELED TO CORRESPOND WITH PAVEMENT SCHEDULE
(3) _____ DIMENSIONS SHOWN ON PAVEMENT, SUBGRADES, STABILIZATION, SHOULDERS, DITCHES, SLOPES, CENTERLINE TO CENTERLINE, MEDIANS, SIDEWALKS, UTILITY STRIPS, CURB & GUTTER, ETC.
(4) _____ SLOPES SHOWN ON PAVEMENT, FLEXIBLE PAVEMENT EDGE, SHOULDERS, SUBGRADE, DITCHES, HINGE POINT GRADING, CUTS AND FILLS, RUMBLE STRIPS
(5) _____ STATION TO STATION SHOWN WITH CORRECT LINE REFERENCE
(6) _____ STATIONS ARE BROKEN FOR BRIDGES AND EQUALITIES
(7) _____ GRADING LIMIT LINES SHOWN
(8) _____ GRADE POINT SHOWN ON EACH TYPICAL SECTION
(9) _____ INFORMATION RELATED TO FUTURE CONSTRUCTION SHOWN
(10) _____ VARIABLE LIMITS SHOWN
(11) _____ NECESSARY NOTES OF EXPLANATION SHOWN
(12) _____ TEMPORARY PAVEMENT REQUIRES A TEMPORARY PAVEMENT DESIGN FROM THE PAVEMENT MANAGEMENT UNIT AND A TYPICAL SECTION

DETAILS (WHERE APPLIED)

(1) _____ INTERSECTIONS AND ISLANDS
(2) _____ LAYOUT OF SYMBOLS FOR TYPES OF CONCRETE PAVEMENT (THROUGH LANES, RAMPS AND MISCELLANEOUS)
(3) _____ RIP RAP NOT SHOWN BY STANDARDS
(4) _____ TEMPORARY SHORING

(5) _____ BENCH SLOPES
(6) _____ ROCK PLATING
(7) _____ SPECIAL DRAINAGE STRUCTURE OR ENDWALLS
(8) _____ SPECIAL DITCHES
(9) _____ GUARDRAIL NOT COVERED BY STANDARDS
(10) _____ ASPHALT WEARING SURFACE ON CORED SLAB AND BOX BEAM BRIDGES

PLAN SHEETS

(1) _____ BEGINNING AND ENDING STATIONS ARE SHOWN ON FIRST AND LAST PLAN SHEET TO AGREE WITH TITLE SHEET AND TYPICAL SECTIONS
(2) _____ EXISTING PAVEMENT WIDTH AND TYPE IS SHOWN
(3) _____ GRADE LINES AND DESIGN CORRECT
(4) _____ THE FOLLOWING ARE SHOWN ON EACH PLAN AND/OR PROFILE SHEET:
- (A) _____ NORTH ARROW
- (B) _____ BEARINGS
- (C) _____ CURVE DATA WITH SUPERELEVATION AND RUNOFF
- (D) _____ CONSTRUCTION LIMITS, BERM DITCHES AND LATERAL DITCHES
- (E) _____ PROPERTY OWNERS, PROPERTY LINES AND PARCEL NUMBERS
- (F)_____ R/W, EASEMENT, CONTROL OF ACCESS BREAKS BY STATION AND DISTANCE
- (G) _____ AREAS TO REMAIN UNDISTURBED WITHIN THE RIGHT-OF-WAY ARE CLEARLY MARKED
- (H) _____ FENCE AND TYPE
- (I) _____ STREETS, ROADS AND DRIVEWAYS
- (J)_____ ONSITE DETOURS
- (K) _____ DISPOSITION OF OLD ROADS IF PROJECT IS A RELOCATION
- (L) _____ DIMENSIONS OF PAVEMENT AND SHOULDERS IN RELATION TO PROPOSED BRIDGE WIDTH (SKETCH)
- (M) _____ PROPOSED PAVEMENT AND RIGHT-OF-WAY WIDTHS AT THE BEGINNING AND END OF EACH SHEET
- (N) _____ SHOW LANE LINES AT INTERSECTIONS, TAPERS, AUXILIARY LANES, ETC.
- (O) _____ -Y- LINES WITH BEGINNING AND ENDING CONSTRUCTION STATIONS AND STATION TIES WITH MAIN LINE
- (P)_____ TRAFFIC DATA FOR INTERSECTIONS
- (Q) _____ LIMITS OF PAVED SHOULDERS AT INTERSECTIONS
- (R) _____ NOTE WHERE SIGHT DISTANCE GRADING IS REQUIRED
- (S)_____ BORROW AND/OR WASTE AREAS IF FURNISHED BY DOT
- (T) _____ REMOVAL OF EXISTING PIPES
- (U) _____ PIPES TO BE PLUGGED
- (V) _____ CROSS REFERENCE NOTES CORRECT
- (W) _____ SYMBOL DENOTING PAVEMENT REMOVAL LOCATIONS
- (X) _____ BEGINNING AND END STATION FOR BRIDGES AND CULVERTS
- (Y) _____ UNDERCUT EXCAVATION ON PROFILE
- (Z) _____ STRUCTURAL SHEET NUMBERS, IF COMBINED BID
- (AA) _____ HYDRAULIC DATA (DRAINAGE AREA, FREQUENCY, ETC.)

(BB) _____ FALSE SUMP DETAIL [IF NOT SHOWN ON DITCH DETAILS SHEET (2D-SERIES)]
(CC) _____ BENCH MARKS (PROFILES AND/OR SURVEY CONTROL SHEETS)
(DD) _____ LABEL QUANTITIES AT EACH LOCATION AS FOLLOWS:
1._____RIP RAP
2._____DRAINAGE DITCH EXCAVATION
3._____GEOTEXTILE FOR DRAINAGE
(EE)_____ DRAINAGE
(FF) _____ REMOVE BASELINE AND BASELINE STATIONS
(GG) _____ ENSURE BASELINE DATA IS SHOWN WITH POINT SYMBOL AND POINT NUMBER
(HH) _____ LABEL WELLS TO BE SEALED AND ABANDONED.

INTERCHANGE SHEETS

(1) _____ INTERCHANGE SHEETS PROPERLY MATCHED WITH ADJACENT PLAN SHEET WITH NO OVERLAPPING COVERAGE, IF POSSIBLE
(2) _____ STRUCTURES CHECKED FOR VERTICAL AND HORIZONTAL CLEARANCES
(3) _____ THE FOLLOWING INFORMATION SHOWN ON THE INTERCHANGE DETAILS AND PROFILES:
(A) _____ TRAFFIC DATA
(B) _____ BAR SCALE
(C) _____ ADDITIONAL ITEMS AS LISTED UNDER PLAN SHEETS
(4) _____ CONTOUR GRADING DETAIL SHOWN, IF REQUESTED BY THE DIVISION
(5) _____ CROSS-SECTION LAYOUT DETAIL/SHEAR POINT DIAGRAM(NOT ALWAYS REQUIRED FOR DIAMOND INTERCHANGE)

INTERSECTION SHEETS

THE INFORMATION SHOWN ON THE INTERSECTION DETAILS SHALL BE RESTRICTED TO DESIGN DATA ONLY. THE FOLLOWING SHALL BE SHOWN:
(1) _____ SHOW INFORMATION FOR CONSTRUCTING THREE CENTERED CURVES
(2) _____ ISLAND DETAILS
(3) _____ LEGEND FOR ISLANDS, SIDEWALKS, CURB RAMPS
(4) _____ ALIGNMENT
(5) _____ LANE MARKINGS
(6) _____ BAR SCALE
(7) _____ PROPOSED EDGES OF PAVEMENT
(8) _____ NORTH ARROWS
(9) _____ SUPERELEVATION RATES
(10) _____ PAVED SHOULDER WIDTHS
(11) _____ SUFFICIENT DIMENSIONS AND TIE POINTS FOR FIELD LOCATION

CROSS-SECTIONS

(1) _____ SHOW EXISTING GROUND LINE, STATIONS AND ELEVATIONS
(2) _____ TEMPLATES SHOWING LABELED CUT AND FILL SLOPES, GUARDRAIL WIDENING, DITCHES, CHANNEL CHANGES, ETC.
(3) _____ GEOLOGY REPORT REVIEWED TO ASSURE CONFORMITY WITH PLANS

(4) _____ UNDERCUT EXCAVATION AND/ OR SHALLOW UNDERCUT SYMBOL IS SHOWN
(5) _____ NOTE ON CROSS-SECTION SUMMARY SHEET SHOULD INDICATE WHETHER OR NOT THE EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT
(6) _____ EARTHWORK COMPUTATION SHEETS COMPLETE
(7) _____ CROSS-SECTIONS CHECKED TO ASSURE ADEQUATE SIGHT DISTANCES AT BRIDGES AND INTERSECTIONS
(8) _____ NOTE SHOWN ON CROSS-SECTION SUMMARY SHEET
(9) _____ SCALE SHOWN ON EACH SHEET

GUARDRAIL DESIGN

(1) _____ GUARDRAIL SHOWN FOR BRIDGE PIERS, CULVERTS, LARGE PIPE, SIGN SUPPORTS AND OTHER FIXED OBJECTS
(2) _____ GUARDRAIL SHOWN FOR PONDS, RIVERS AND OTHER WATER RELATED HAZARDS
(3) _____ GUARDRAIL SHOWN ON PLANS
(4) _____ GUARDRAIL SHOWN ON THE GUARDRAIL SUMMARY SHEET
(5) _____ SPECIAL DETAILS SHOWN AS REQUIRED
(6) _____ ENSURE THAT THE STRUCTURE GUARDRAIL ANCHOR SHOWN ON THE PLANS ATTACHES TO THE BRIDGE BARRIER

SUMMARY OF QUANTITIES

(1) _____ COMPUTATION SHEET TOTALS FOR EACH PAY ITEM CHECKED AGAINST ESTIMATE
(2) _____ SUMMARY SHEETS INITIALED BY PERSON WHO WORKED AND CHECKED SUMMARIES
(3) _____ REFERENCE PAVEMENT STRUCTURE VOLUME (WHEN APPLICABLE) BELOW EARTHWORK SUMMARY
(4) _____ EARTHWORK SUMMARY (SHOW NOTE RELATED TO GEO-TECH DATA)
(5) _____ DRAINAGE SUMMARY
(6) _____ GUARDRAIL SUMMARY
(7) _____ SHOULDER DRAIN SUMMARY
(8) _____ PAVEMENT REMOVAL SUMMARY
(9) _____ FENCE SUMMARY (URBAN PROJECTS)
(10) _____ GEOTECHNICAL SUMMARIES (SHEET 3G-1)
(11) _____ MISCELLANEOUS SUMMARIES AS NECESSARY

ESTIMATES

(1) _____ ESTIMATE MADE FOR EACH WBS ELEMENT, FEDERAL PROJECT NUMBER, AND OTHER PARTS AS NECESSARY
(2) _____ FINAL TRNS*PORT ESTIMATE CHECKED AGAINST THE QUANTITY CALCULATIONS
(3) _____ DESCRIPTION NUMBER, SECTION NUMBER AND ITEM DESCRIPTION CHECKED AGAINST PAY ITEM LIST
(4) _____ FORCE ACCOUNT ITEMS INCORPORATED INTO THE ESTIMATE ON F.A. PROJECTS
(5) _____ TRNS*PORT ESTIMATE PLACED IN THE PROJECT FILE
(6) _____ PROJECT LENGTH SHOWN ON ESTIMATE AGREES WITH TITLE SHEET

(ROADWAY'S LENGTH ONLY)

(7) _____ COST BASED ESTIMATE QUANTITY BREAKDOWN SUMMARY SHEET COMPLETED

(8) _____ INCLUDE ON ROADWAY ESTIMATE ANY STRUCTURE REMOVAL PAY ITEMS NOT INCLUDED ON THE STRUCTURE ESTIMATE

GENERAL

(1) _____ CHECK SUBSURFACE PLANS WITH GRADE LINE AND EARTHWORK BALANCE SHEET AGAINST FINAL ROADWAY PLANS

(2) _____ ALL FILE FOLDERS IDENTIFIED BY CONSTRUCTION WBS ELEMENT, T.I.P. NUMBER, CONTRACT NUMBER AND COUNTY

(3) _____ ALL QUANTITY CALCULATION SHEETS IDENTIFIED BY THE T.I.P. NUMBER. SHOW CONSTRUCTION WBS ELEMENT AND SIGNATURE ON SHEET NO. 1

(4) _____ EXCAVATION QUANTITIES AT CULVERTS HAVE BEEN COORDINATED WITH STRUCTURE MANAGEMENT

(5) _____ REMOVE "PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION" NOTE FROM ALL SHEETS

(6) _____ DESIGN EXCEPTION REQUESTED, APPROVED, AND NOTED ON PLANS

(7) _____ RIGHT-OF-WAY REVISION NOTES REMOVED FROM THE PLANS

(8) _____ T.I.P. NUMBER IS SHOWN ON ALL SHEETS

(9) _____ COORDINATE FINAL PLANS WITH PLANNING & ENVIRONMENTAL AND HYDRAULICS UNIT TO ENSURE COMPLIANCE WITH PERMIT

(10) _____ UTILITY ITEMS ARE INCLUDED

(11) _____ LANDSCAPE AND EROSION CONTROL ITEMS ARE INCLUDED

(12) _____ SIGNING AND SIGNALIZATION ITEMS ARE INCLUDED

(13) _____ TRAFFIC CONTROL PLAN ITEMS ARE INCLUDED

(14) _____ SHOW RIGHT-OF-WAY PLAN SHEET NUMBER IN THE MARGIN ABOVE THE TITLE BLOCK IF DIFFERENT FROM CONSTRUCTION SHEET NUMBERS (EXAMPLE: R/W 12)

(15) _____ COMPLETE CHECKLIST FOR COORDINATION OF ROADWAY AND STRUCTURE PLANS (CIRCLE TYPE OF APPROACH FILL SPECIFIED IN STRUCTURE PLANS ITEM #8)

(16) _____ PLACE IMAGE OF PROFESSIONAL ENGINEER SEAL (MULTIPLE SEALS MAY BE REQUIRED ON A SINGLE SHEET) WITH ENGINEER'S NAME AND LICENSE NUMBER. ELECTRONIC SIGNATURES ARE NOT REQUIRED AT THE INITIAL TURN-IN TO PLAN REVIEW.

(17) _____ HAS PAVEMENT MANAGEMENT REVIEWED PLANS FOR SHOULDER DRAIN LOCATIONS?

(18) _____ SUBMIT FULL SIZE CROSS-SECTION SHEET IF 30 SHEETS OR LESS. SUBMIT LEDGER CROSS-SECTION SHEETS IF 31 SHEETS OR MORE.

(19) _____ ENSURE PLANS INCLUDE ANY "ENVIRONMENTAL COMMITMENTS".

(20) _____ ALL INDIVIDUAL PDF SHEETS MUST BE SCALED 34" WIDE X 22" HIGH.

(21) _____ BIND PLANS WITH BINDER CLIPS. NO SCREWS, PLEASE.

(22) _____ PROJECT FILE CONTAINS CORRESPONDENCE RELATED TO STANDARD SPECIFICATIONS SECTIONS 210 OR 215.

(23) _____ INCLUDE PARCEL INDEX SHEET (FOR PROJECTS WITH 2 OR MORE PLAN SHEETS AS 3P-1.

(24) _____ INCLUDE BRIDGE "FOUNDATION RECOMMENDATIONS" IN THE BOUND FILE.

(25) _____ RETAINING OR SOUND BARRIER WALLS PLANS INCLUDED AS SPECIFIED BY MR. ART MCMILLIAN, P.E. (PER MEMO 7-29-05)

(26) _____ REFER TO THE ROADWAY DESIGN MANUAL, PART II, CHAPTER 13, SECTION 13-1 FOR PROJECT FILE CONTENT.

(27) _____ AT THE TIME FINAL PLANS ARE SUBMITTED TO THE PLAN REVIEW SECTION, SEND A PDF OF THE TRANSPORT ESTIMATE FOR EACH OF THE DESIGN UNITS TO THE DIVISION CONSTRUCTION ENGINEER.

(28) _____ AT THE TIME FINAL PLANS ARE SUBMITTED TO THE PLANS CHECKING UNIT, NOTIFY LOCATION & SURVEYS (L & S) CENTRAL OFFICE THAT PLANS ARE COMPLETE OF THE CURRENT DIRECTORY OF THE ELECTRONIC DESIGN PLANS (EMAIL TO UNIT HEAD IS SUFFICIENT).

(29) _____ ONCE THE BALANCE SHEET HAS BEEN CHECKED BY THE PLANS AND STANDARDS MANAGEMENT SECTION, PLACE AN ELECTRONIC COPY (EXCEL FORMAT REQUIRED) OF THE EARTHWORK BALANCE SHEET IN THE "PRELETSTAGE\TIP#\ROADWAY\EARTHWORK BALANCE SHEET" FOLDER.

(30) _____ GEOTECHNICAL STANDARD DRAWINGS AND PROVISIONS ARE CURRENT. FOR STANDARD DRAWINGS, COMPARE DRAWING DATE TO EFFECTIVE LET DATE SHOWN HERE: https://connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx FOR STANDARD PROVISIONS, COMPARE PROVISION DATE TO EFFECTIVE LET DATE SHOWN HERE https://connect.ncdot.gov/resources/Geological/Pages/Geotech_Provisions_Notes.aspx

(31) _____ HAVE YOU COORDINATED THE "GEOTECHNICAL SUMMARY TABLES" WITH THE GEOTECHNICAL ENGINEERING UNIT? (PER GEOTECH. AUGUST 28, 2012 MEMO)

(32) _____ SEND A PDF OF YOUR PLANS TO PAVEMENT MANAGEMENT AND TO THE HYDRAULICS UNIT FOR REVIEW BEFORE SEALING THEIR PLANS

SPECIAL PROVISIONS

(1) _____ (SPECIAL PROVISIONS WRITTEN FOR ALL PAY ITEMS AND CONTRACT IMPLEMENTATION ITEMS NOT COVERED BY THE CURRENT "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES", PROJECT PROVISIONS OR STANDARD SPECIAL PROVISIONS.

PLANS PREPARED BY: _____

HNTB Corporation
Engineers Architects Planners

343 E. Six Forks Rd.
Suite 200
Raleigh, NC 27609

Telephone (919) 546-8997
Facsimile (919) 546-9421
www.hntb.com

July 27, 2017

MEMORANDUM TO: Karen Reynolds
Project Development Engineer
NCDOT PDEA

FROM: Matthew Quesenberry, PE
HNTB North Carolina, PC

SUBJECT: Traffic Forecast for STIP Project R-2577
US 158 (Reidsville Road) Widening, Forsyth/Guilford County

Please find attached the 2017/2040 Project-Level Traffic Forecast for State Transportation Improvement Program (STIP) Project R-2577, US 158 (Reidsville Road) widening in Forsyth and Guilford counties. This forecast for this project was requested by Karen Reynolds of the North Carolina Department of Transportation (NCDOT) Project Development and Environmental Analysis (PDEA) Unit on March 16, 2017 as part of the Traffic Forecasting Limited Services Agreement to be performed by HNTB North Carolina, P.C. This forecast was approved by the NCDOT Transportation Planning Branch on July 25, 2017.

STIP Project R-2577 is located within the Winston-Salem Urban Area Metropolitan Planning Organization (MPO) and Greensboro Urban Area MPO planning boundaries. This project includes the widening of US 158 (Reidsville Road) from north of US 421/I-40 Business in Winston-Salem (Forsyth County) to US 220 (Future I-73) in Stokesdale (Guilford County), approximately 20 miles. STIP Project R-2577 is planned to widen US 158 (Reidsville Road) from two to a four-lane divided facility, including a bypass on new location of Stokesdale. All the build scenarios in this traffic forecast assume that US 158 (Reidsville Road) will be widened to four-lane divided facility.

STIP Project R-2577 is divided into three project segments:

- R-2577A – multi-lane widening from north of US 421/I-40 Business in Winston-Salem to Belews Creek Road (SR 1965) in Walkertown (Forsyth County).
- R-2577B – multi-lane widening from Belews Creek Road (SR 1965) in Walkertown (Forsyth County) to Anthony Road (SR 2034) in Stokesdale (Guilford County).
- R-2577C – multi-lane widening (including a bypass of Stokesdale) from Anthony Road (SR 2034) to US 220 (Future I-73) in Stokesdale (Guilford County).

R-2577A, is tentatively scheduled for construction to begin in fiscal year 2025 in the 2016 – 2025 STIP and for construction to begin in fiscal year 2022 in the Draft 2018 – 2027 STIP. R-2577B is unfunded in the 2016 – 2025 STIP and is funded for construction to begin in fiscal year 2026 in the Draft 2018 – 2027 STIP. R-2577C is unfunded in both STIPs. STIP funding timelines provided are per information collected on July 7, 2017.

The traffic forecast study area includes US 158 (Reidsville Road), including the locations of the potential bypass, and all major intersections and interchanges within the STIP project boundaries (from north of US 421/I-40 Business in Winston-Salem to US 220/Future I-73 in Stokesdale).

The following scenarios are included in this traffic forecast:

- 2017 Base Year No-Build
- 2017 Base Year Build Alternative 2
- 2017 Base Year Build Alternative 3
- 2040 Future Year No-Build
- 2040 Future Year Build Alternative 2
- 2040 Future Year Build Alternative 3

The *R-2577ABC Project Level Traffic Forecast* (NCDOT, August 2012) was previously developed for Base Year 2012 and Future Year 2035.

Travel Demand Model

The Piedmont Triad Regional Model (PTRM) Version 4.2 (Adopted 10/17/16) was used as a tool in the development of the traffic forecast. TransCAD 5, Build 2110 was used to run the PTRM. The PTRM has a BY of 2013 and FY of 2040.

The North Carolina Statewide Travel Demand Model (NCSTM), Generation 2 (delivered in August 2016), was used to examine truck values. The loaded NCSTM network years used in this analysis were 2011 and 2040.

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.

Certain assumptions were made in the development of the forecast.

Fiscal Constraint

Within an MPO, future year traffic forecasts assume construction of projects listed within an MPO's Metropolitan Transportation Plan (MTP). This traffic forecast is consistent with the current Greensboro Urban Area MPO and Winston-Salem Urban Area MPO 2040 MTPs, which were both adopted in September 2015.

Development Activity

There are multiple potential developments in the study area, but none are anticipated to substantially affect traffic volumes in the study area. All recent and planned development are assumed to be included in the official Base Year and Future Year PTRM socioeconomic data sets.

Forecast Methodology

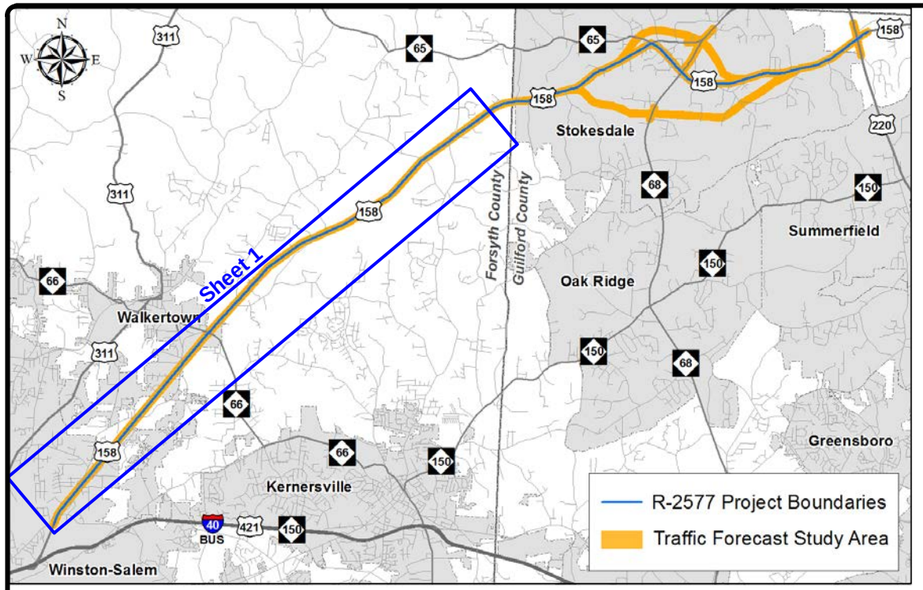
The 2017 Base Year No-Build (BYNB) traffic estimate volumes and design factors were developed primarily using field collected 2017 traffic count data, followed by comparing traffic count data with historical trend line estimates, extrapolating historical AADT volumes to 2017 using 10- and 20-year historic traffic growth rates, and applying engineering judgment. The 2017 Base Year Build (BYB) traffic forecast scenarios (for both Alternative 2 and Alternative 3) were completed by calculating the 2013 No-Build to 2013 Build PTRM diversion percentages. The model diversion percentages were then applied to the 2017 BYNB AADT to calculate unbalanced 2017 BYB AADT volumes, which were then balanced.

The 2040 Future Year No-Build (FYNB) traffic forecast volumes were developed using extrapolations of historic AADT data in the traffic forecast study area, 2040 PTRM model data, and by applying comparisons/adjustments from the 2017 BYNB volumes as applicable to the historic and model information. The 2040 Future Year Build (FYB) traffic forecast scenarios (for both Alternative 2 and Alternative 3) were completed by calculating the 2040 No-Build to 2040 Build PTRM model run diversion percentages. The model diversion percentages were then applied to the 2040 FYNB AADT to calculate unbalanced 2040 FYB AADT volumes, which were then balanced.

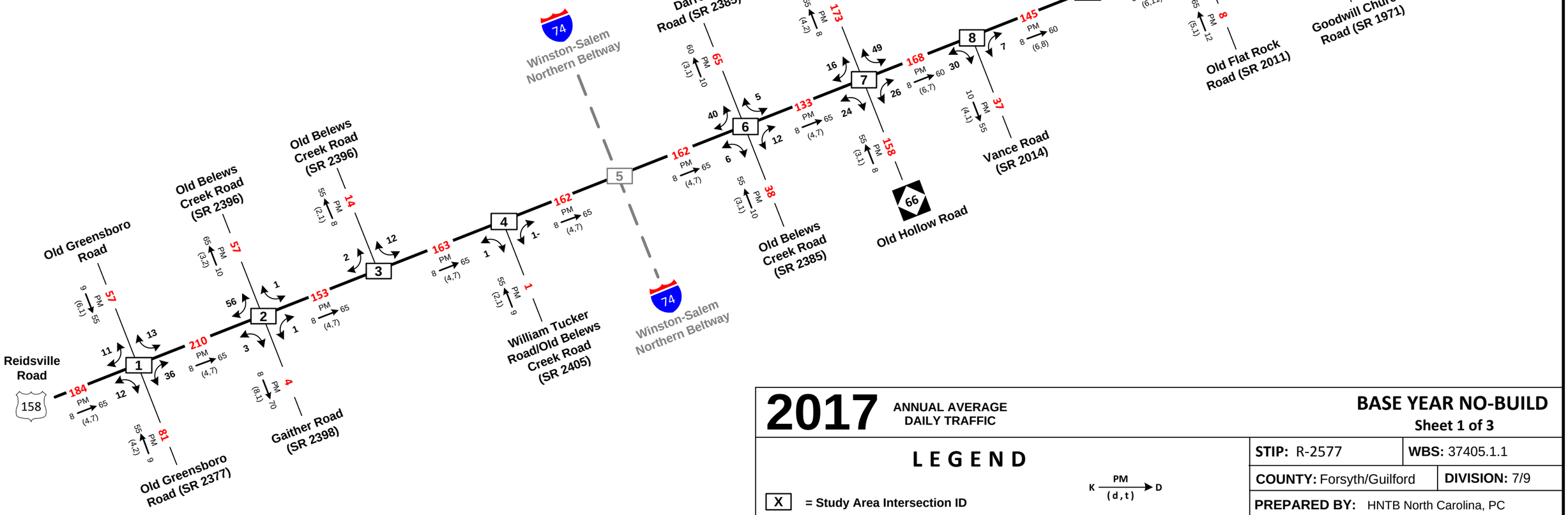
If it is determined that any of these assumptions have become inconsistent with the project and surrounding area activity, please request updated projections.

If you have any questions or I can be of further assistance, please do not hesitate to call me at (919) 424-0449 or e-mail me at mquesenberry@hntb.com.

cc:
Keith Dixon, NCDOT Transportation Planning Branch
Michael L Orr, NCDOT Transportation Planning Branch
Diane K Hampton, PE, NCDOT Division 9
Ed Lewis, NCDOT Division 7
Jim Dunlop, PE, NCDOT Congestion Management Section
Glenn Mumford, PE, NCDOT Roadway Design Unit
Clark Morrison, PhD, PE, NCDOT Pavement Management Unit
Fredrick Haith, Winston-Salem Urban Area MPO
Craig McKinney, Greensboro Urban Area MPO



NOT TO SCALE



2017 ANNUAL AVERAGE DAILY TRAFFIC

BASE YEAR NO-BUILD

Sheet 1 of 3

LEGEND

X	= Study Area Intersection ID
###	No. of Vehicles Per Day (VPD) in 100s
1-	Less than 50 VPD
------	Proposed Roadway

K PM (d,t) D

K	Design Hour Factor (%)
PM	PM Peak Period
D	Peak Hour Directional Split (%)
→	Indicates Direction of D
(d,t)	Duals, TT-STs (%)

STIP: R-2577	**WBS:** 37405.1.1
COUNTY: Forsyth/Guilford	**DIVISION:** 7/9
PREPARED BY: HNTB North Carolina, PC	
PROJECT: US 158 (Reidsville Road) Widening	
LOCATION: North of US 421/I-40 Business to US 220 (Future I-73)	
DATE: July 2017	

NOT TO SCALE

Ellisboro Road (SR 2046)

Lester Road (SR 2048)

Belews Creek Road

Oak Level Church Road (SR 2045)

Newberry Street (SR 2053)

Shilling Street (SR 2054)

Fidelity Bank Driveway

Purgason Lane

Matchline B

Bypass

Vaughn Street (SR 2051)

Newberry Street (SR 2053)

Shilling Street/ Stokesdale Street (SR 2054)

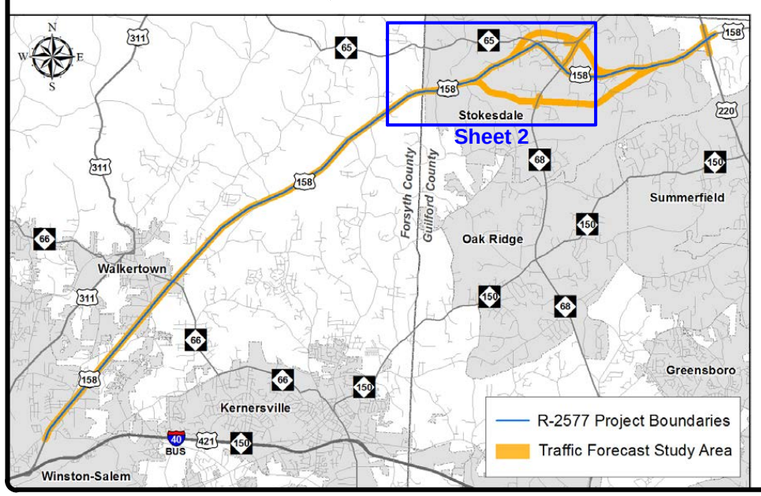
Clintwood Drive (SR 2056)

Angel-Pardue Road (SR 2102)

Matchline A

Anthony Road (SR 2034)

Dorsett Downs Drive (SR 4879)



2017 ANNUAL AVERAGE DAILY TRAFFIC

BASE YEAR NO-BUILD
Sheet 2 of 3

LEGEND

X = Study Area Intersection ID

= No. of Vehicles Per Day (VPD) in 100s

1- = Less than 50 VPD

------ = Proposed Roadway

K PM (d,t) → D

K = Design Hour Factor (%)

PM = PM Peak Period

D = Peak Hour Directional Split (%)

→ = Indicates Direction of D

(d,t) = Duals, TT-STs (%)

STIP: R-2577	**WBS:** 37405.1.1
COUNTY: Forsyth/Guilford	**DIVISION:** 7/9
PREPARED BY: HNTB North Carolina, PC	
PROJECT: US 158 (Reidsville Road) Widening	
LOCATION: North of US 421/I-40 Business to US 220 (Future I-73)	
DATE: July 2017	

NOT TO SCALE

Countryside Village Retirement Community

Southard Road (SR 2103)

Athens Road (SR 2101)

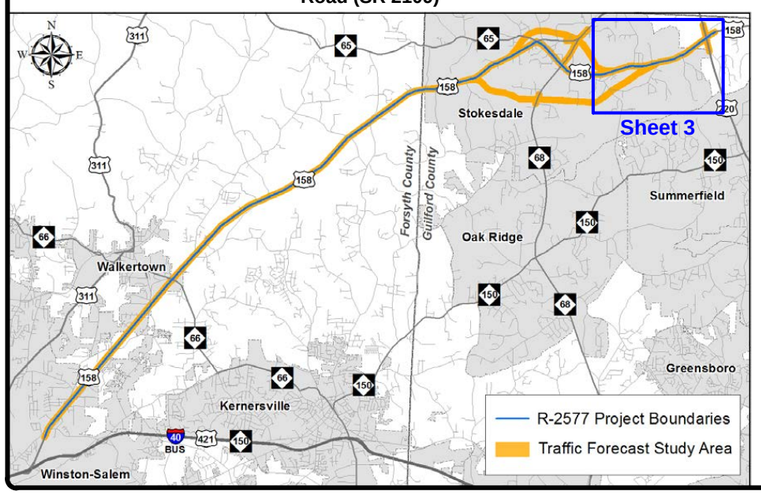
Ellison Road (SR 2107)

Flatrock Road (SR 2105)

Spotswood Road (SR 2104)

Eversfield Road (SR 2109)

Matchline B



2017 ANNUAL AVERAGE DAILY TRAFFIC

BASE YEAR NO-BUILD
Sheet 3 of 3

LEGEND

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1-	Less than 50 VPD
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STIP: R-2577	**WBS:** 37405.1.1
COUNTY: Forsyth/Guilford	**DIVISION:** 7/9
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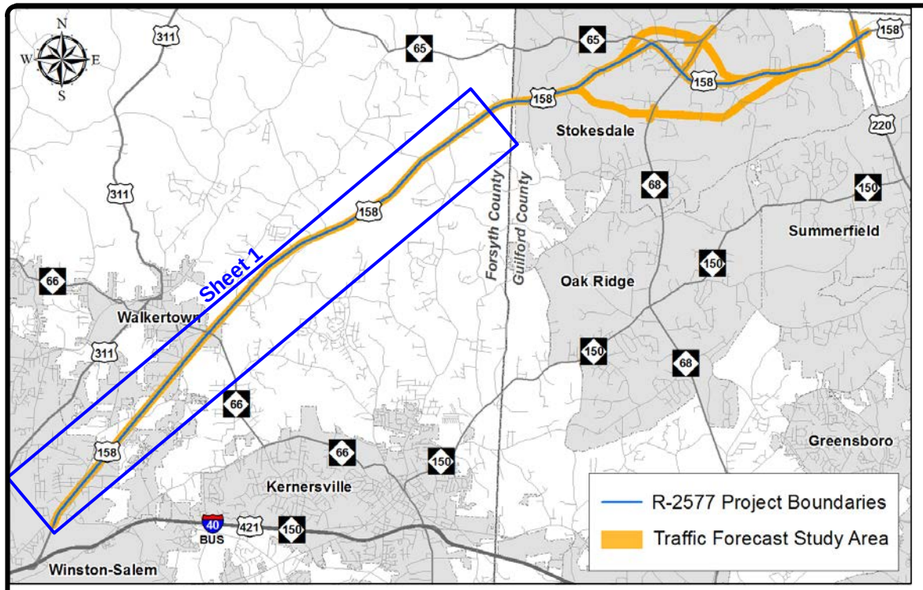

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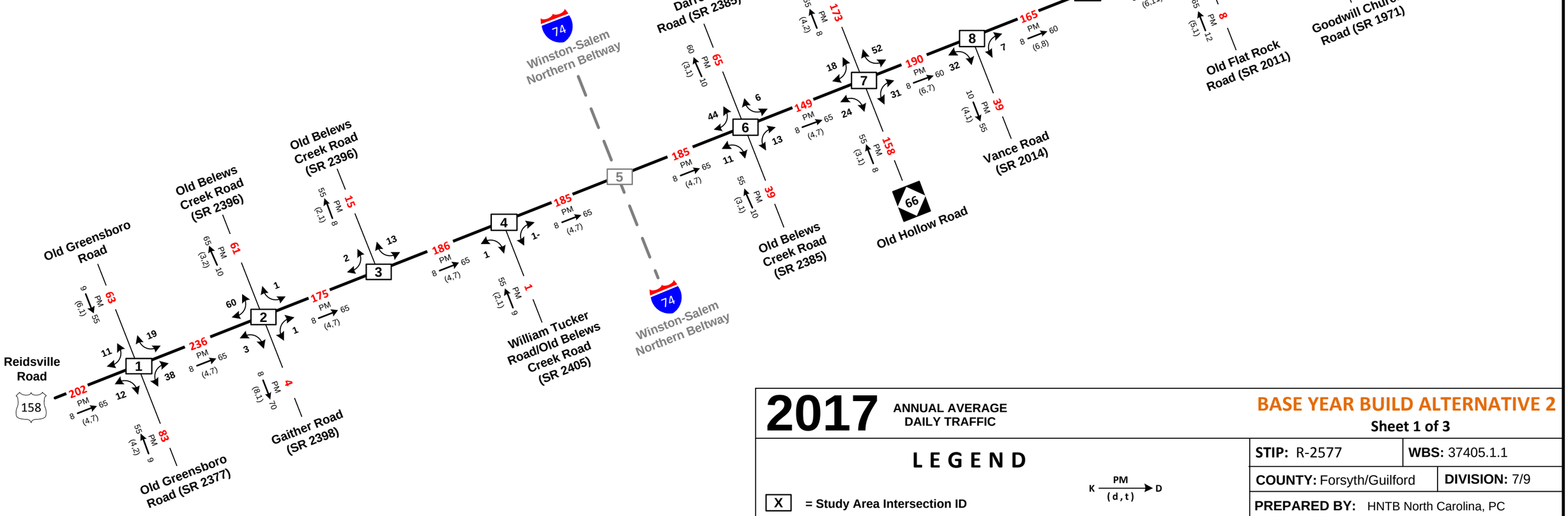

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BASE YEAR BUILD ALTERNATIVE 2

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Belews Creek Road

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Shilling Street (SR 2054)

Fidelity Bank Driveway

Purgason Lane

Matchline B

Matchline A

Vaughn Street (SR 2051)

Newberry Street (SR 2053)

Shilling Street/ Stokesdale Street (SR 2054)

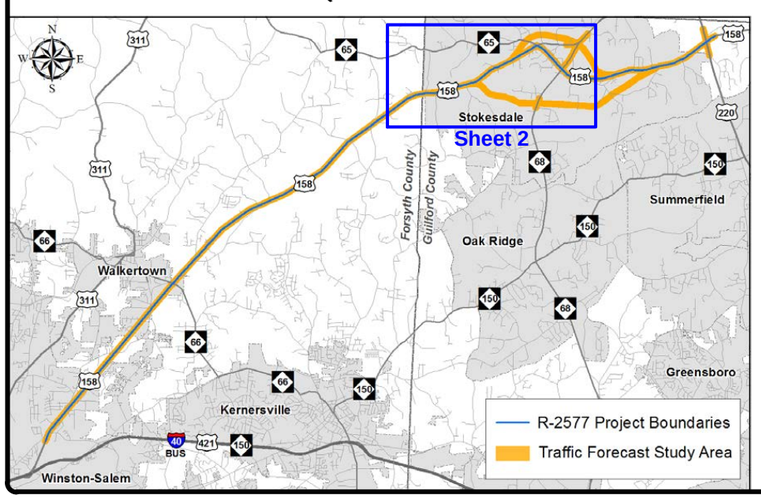
Clintwood Drive (SR 2056)

Angel-Pardue Road (SR 2102)

Anthony Road (SR 2034)

Dorsett Downs Drive (SR 4879)

158 Bypass



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BASE YEAR BUILD ALTERNATIVE 2

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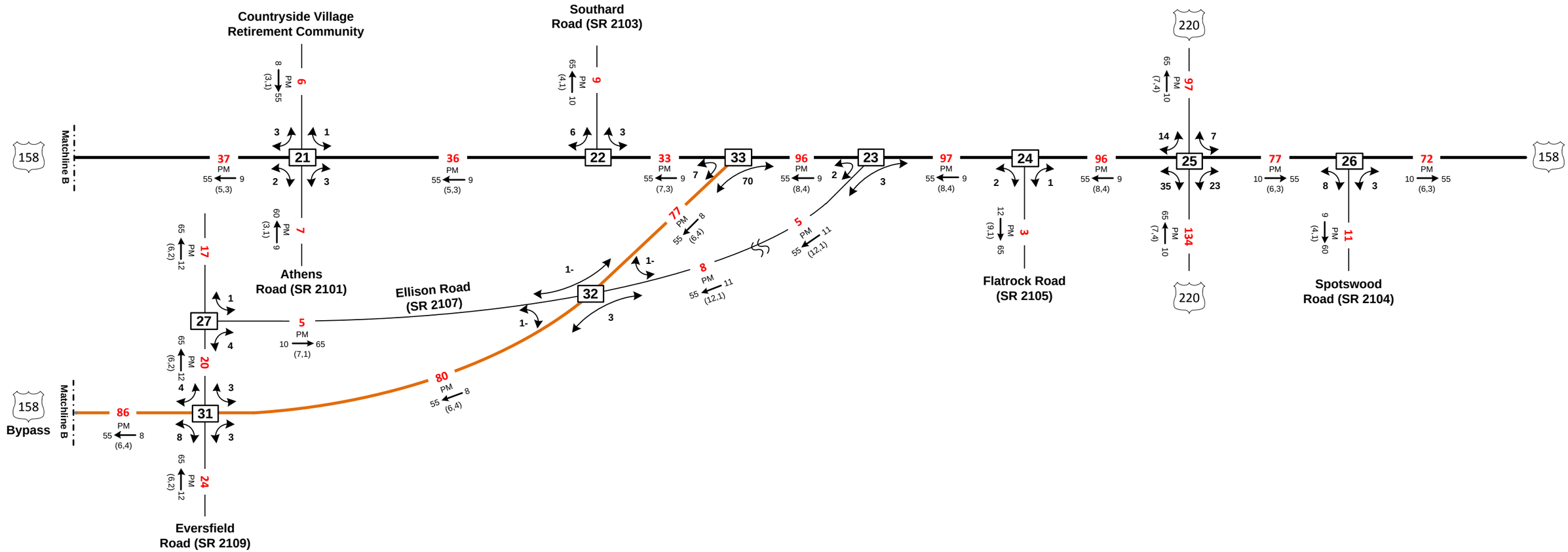

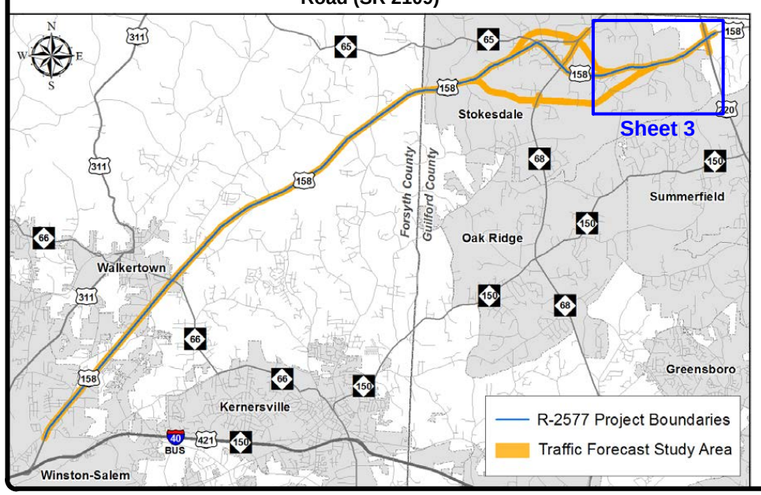

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BASE YEAR BUILD ALTERNATIVE 2

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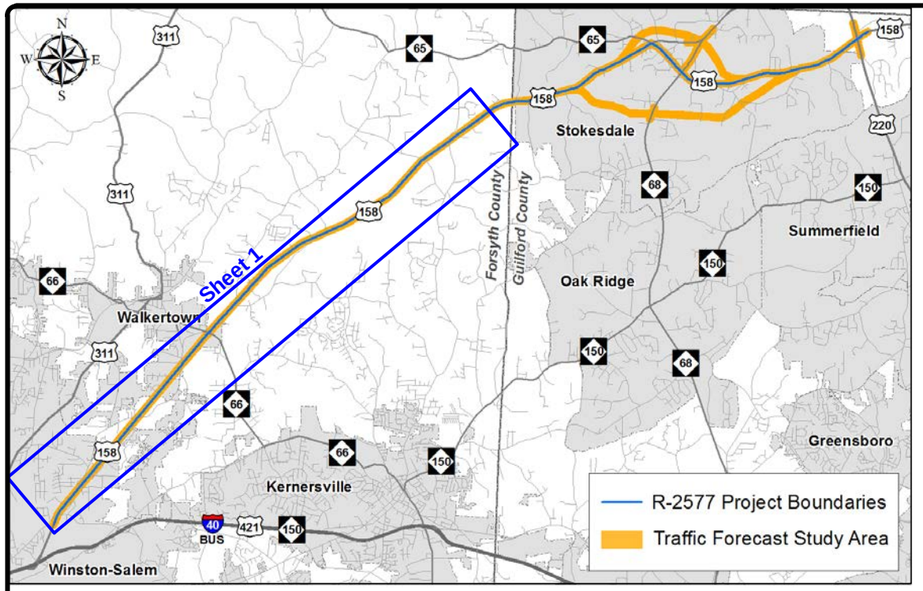

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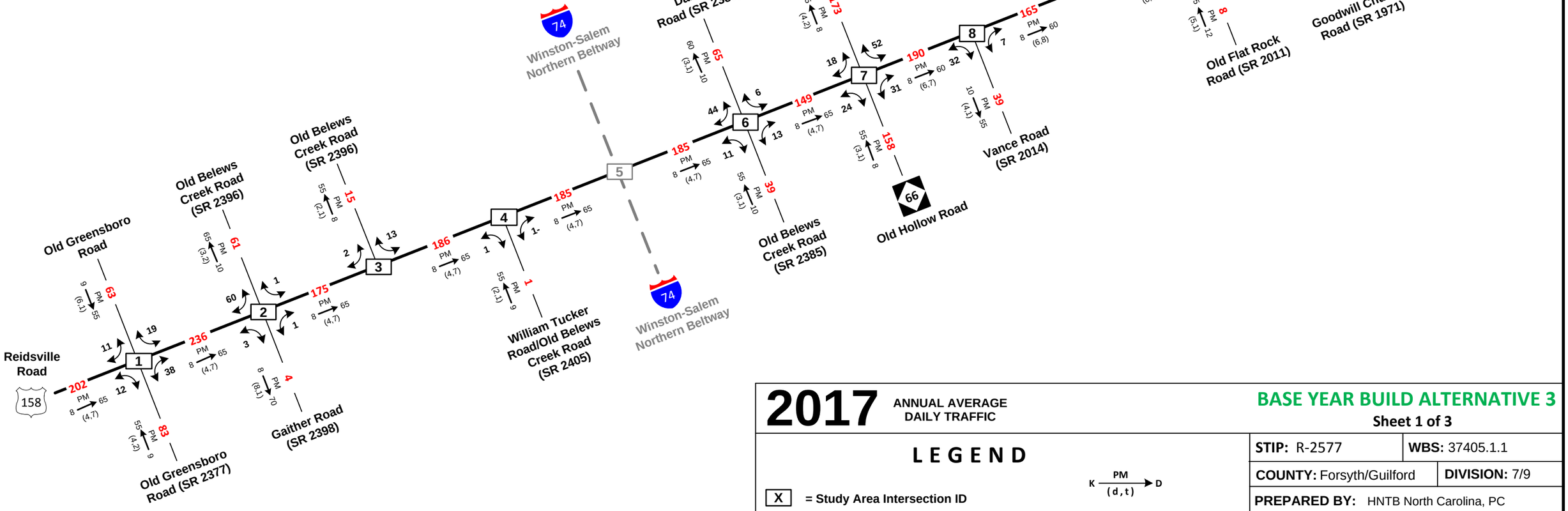

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BASE YEAR BUILD ALTERNATIVE 3

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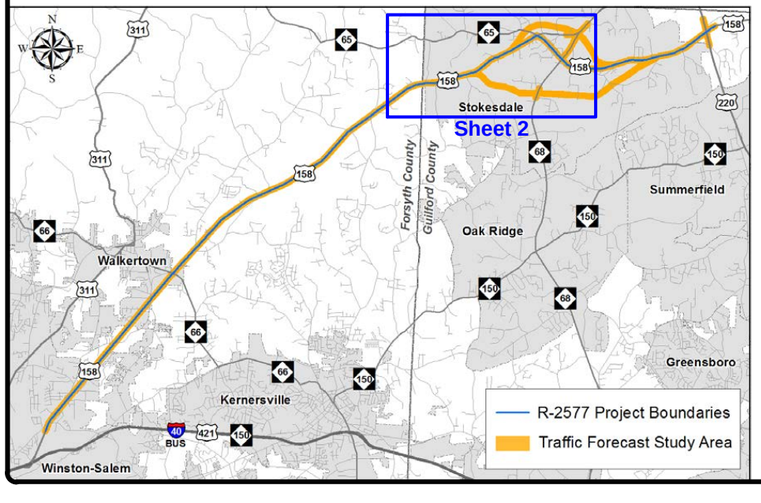

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BASE YEAR BUILD ALTERNATIVE 3

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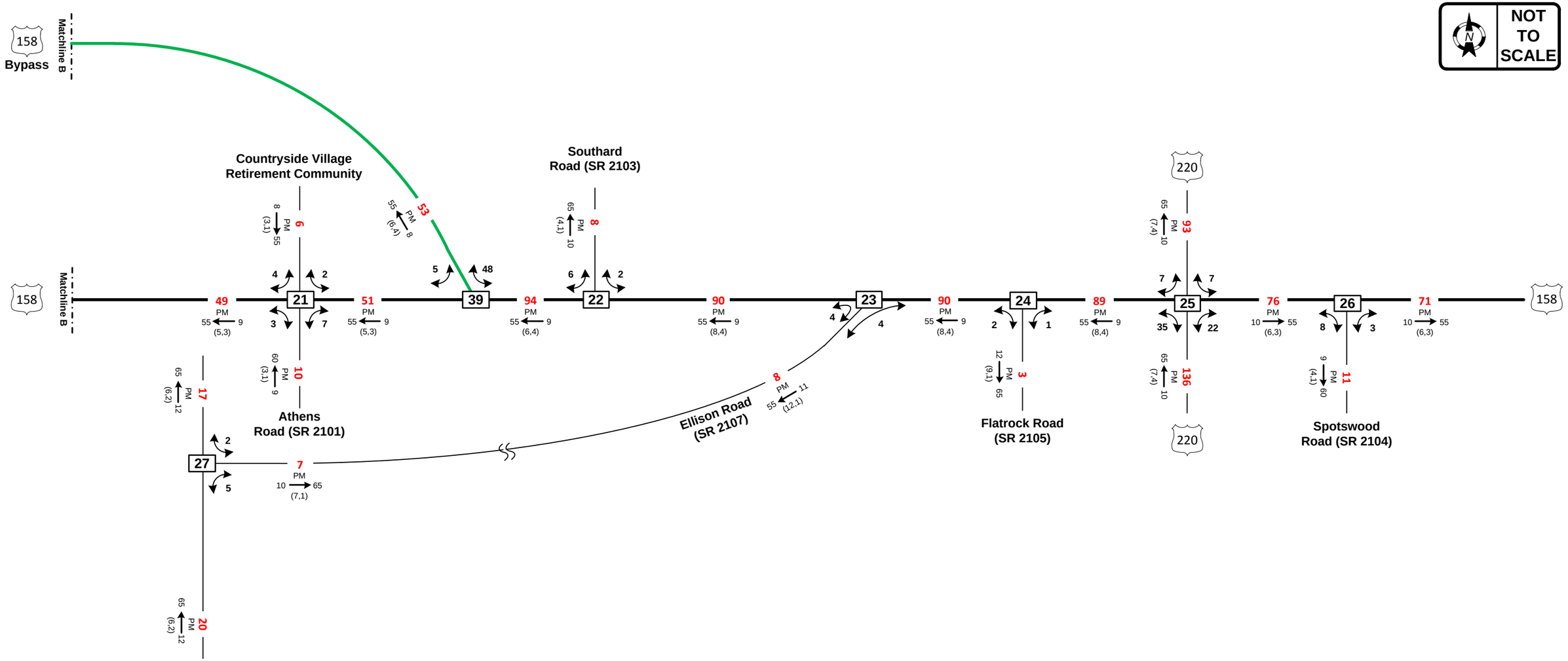

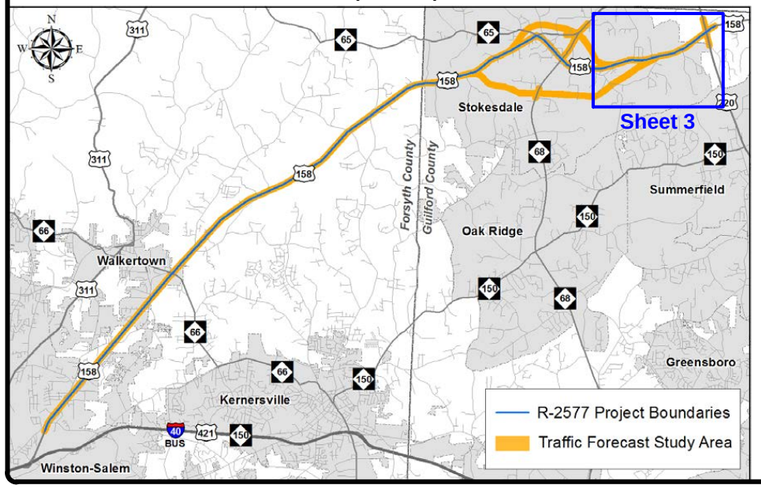

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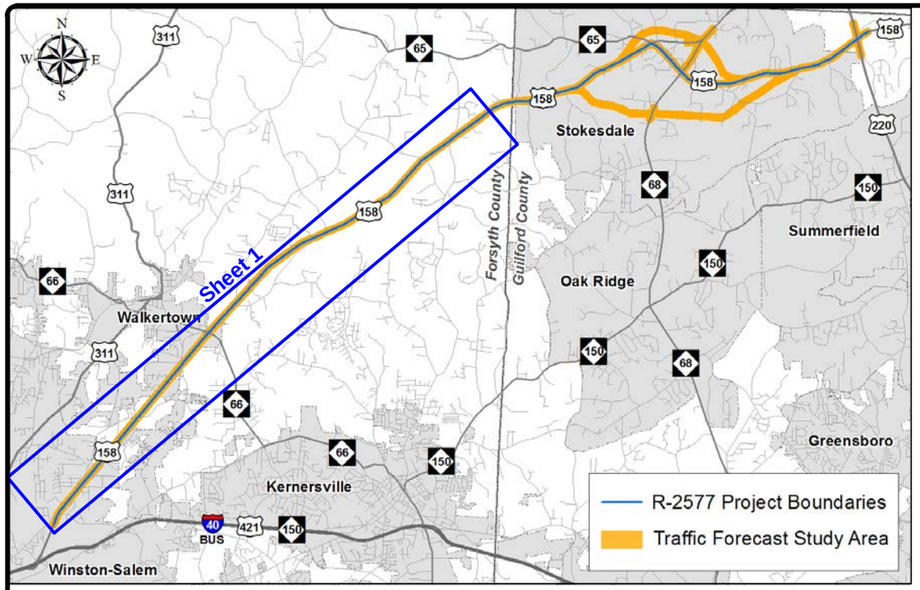

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FUTURE YEAR NO-BUILD

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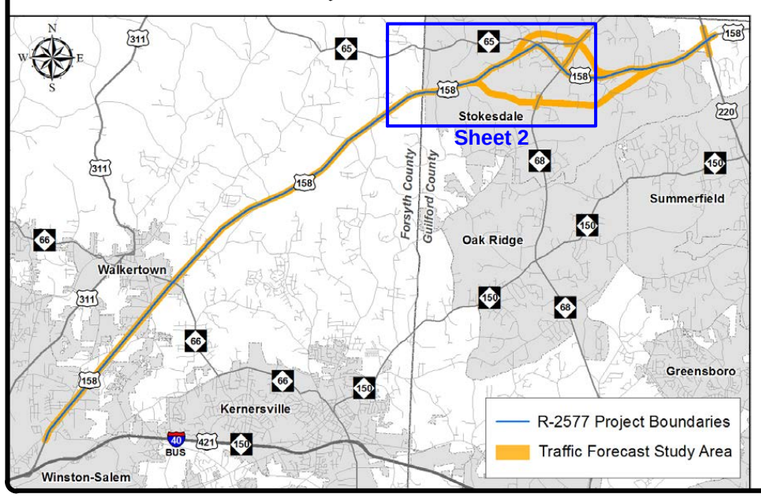

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158 Bypass — Matchline B

Countryside Village Retirement Community

Southard Road (SR 2103)

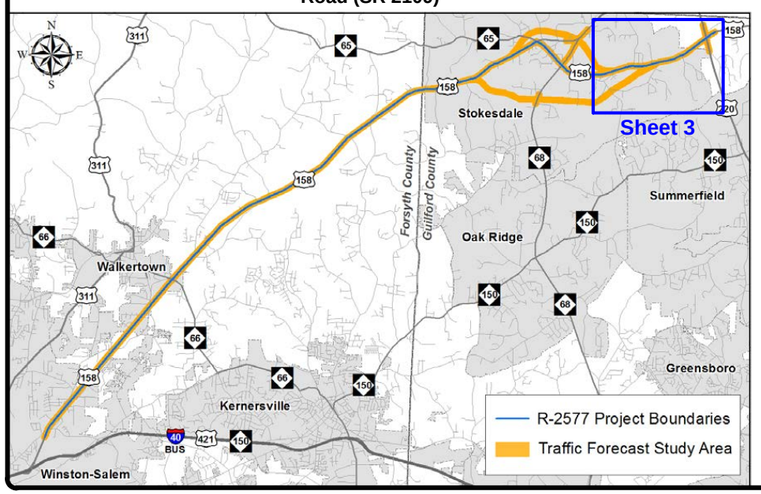
Athens Road (SR 2101)

Ellison Road (SR 2107)

Flatrock Road (SR 2105)

Spotswood Road (SR 2104)

Eversfield Road (SR 2109)



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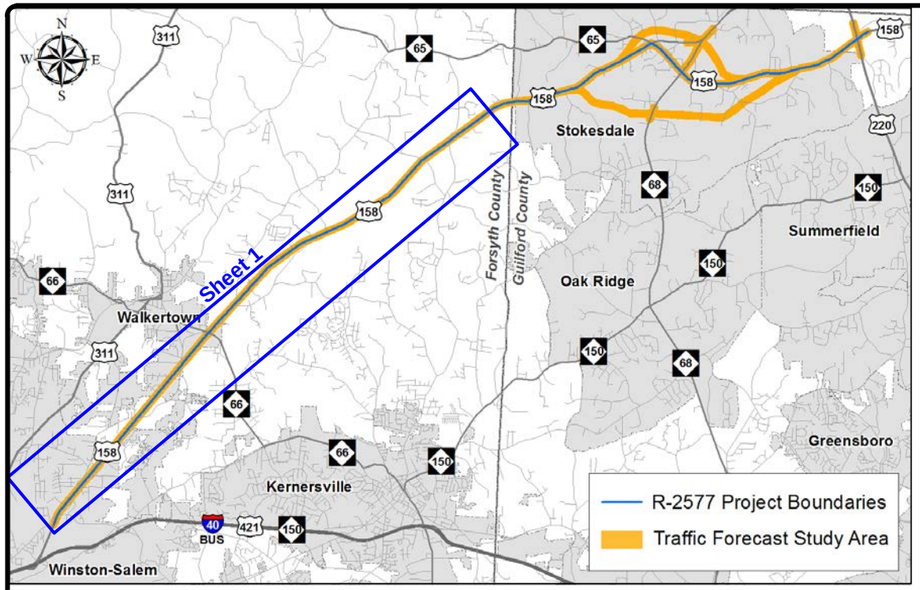

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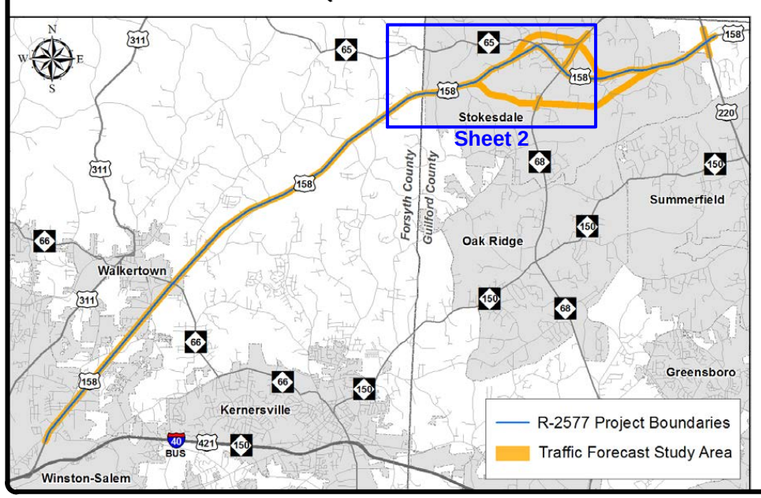

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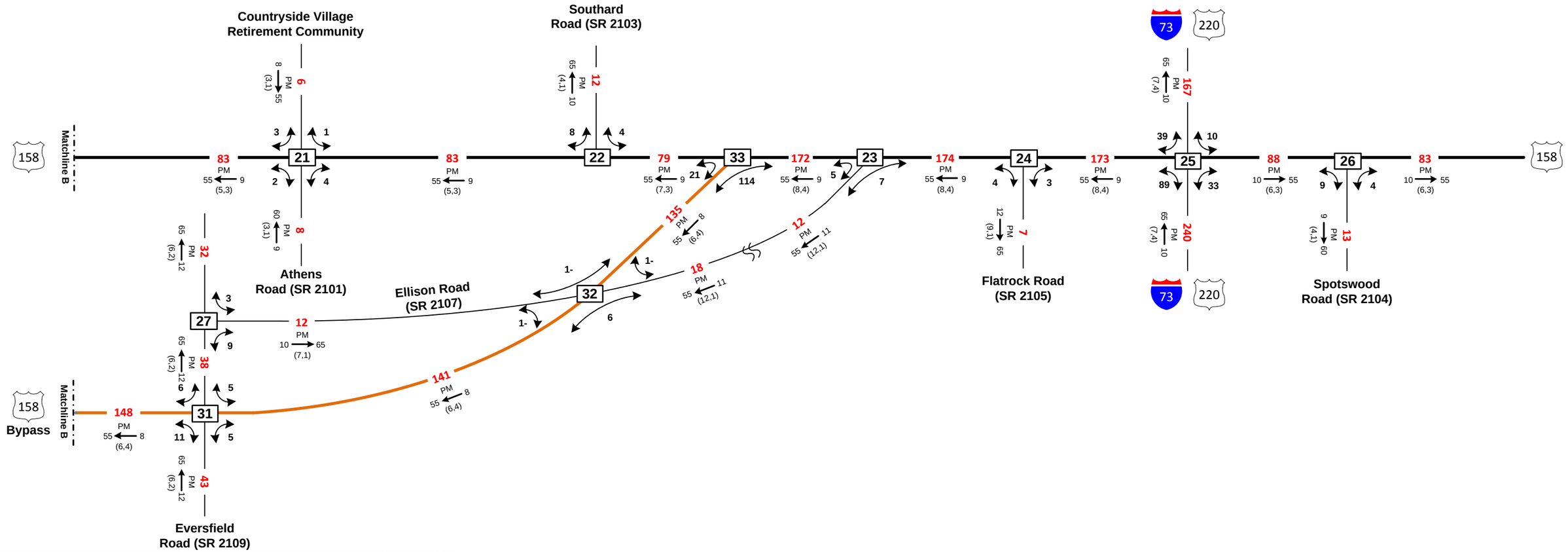

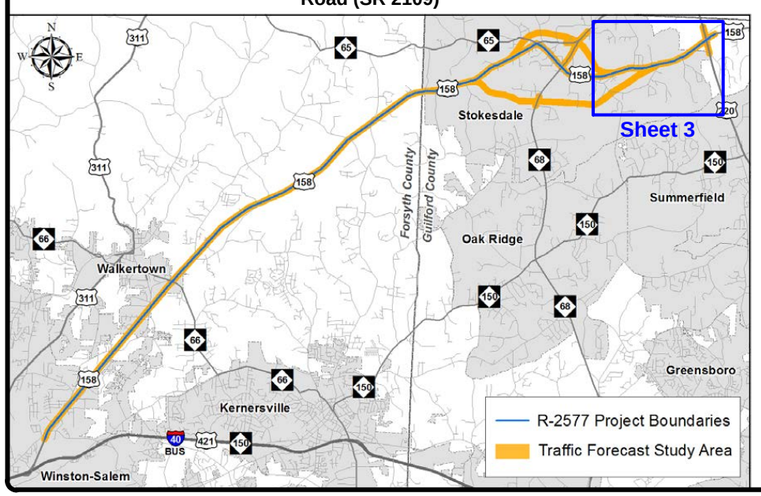

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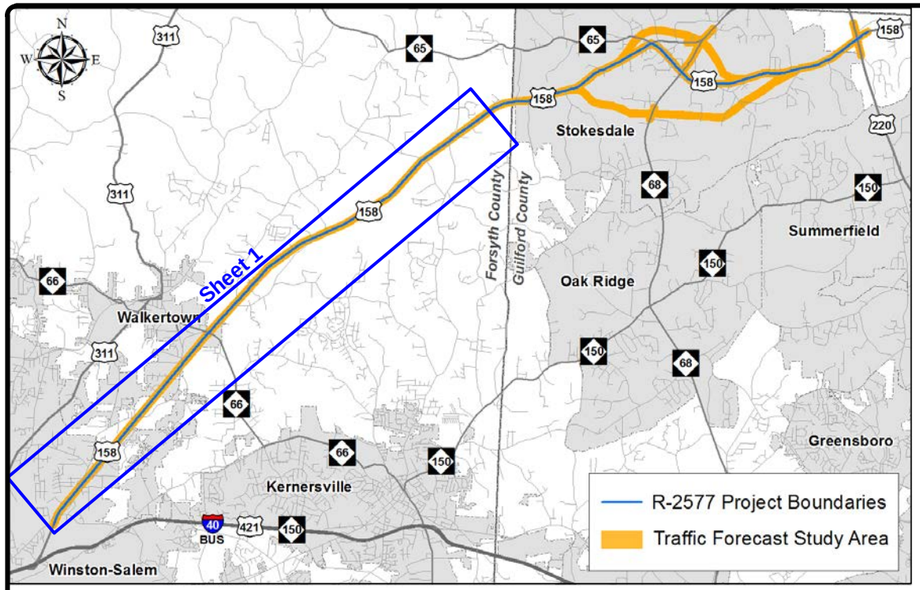

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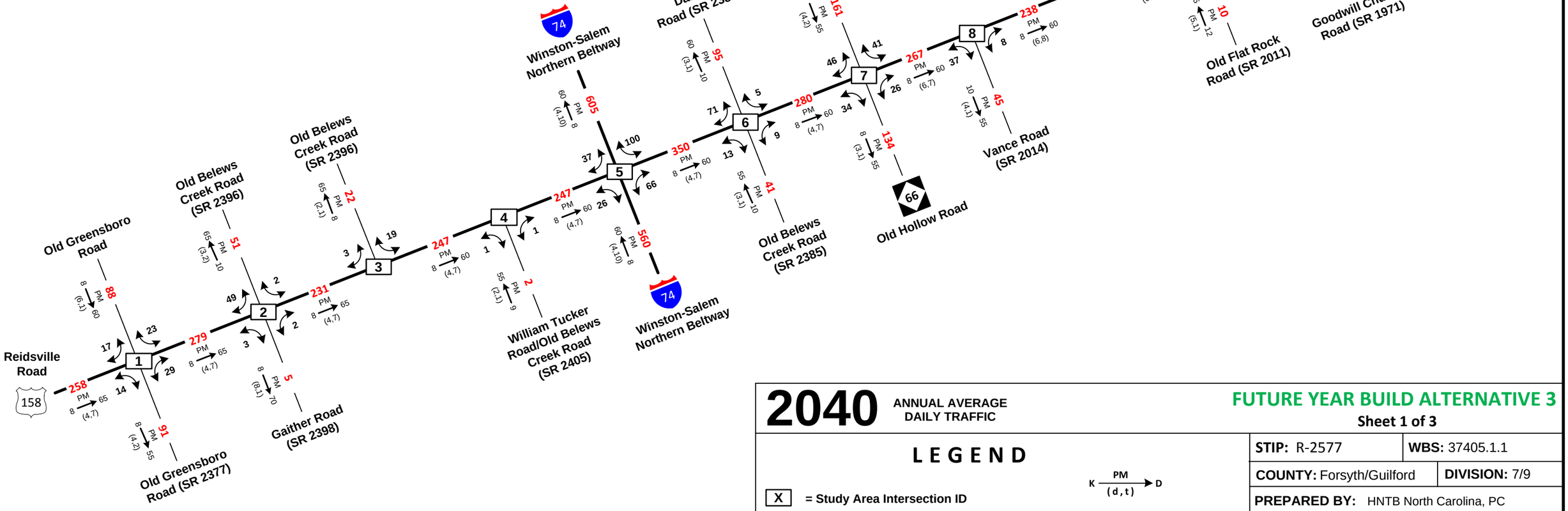

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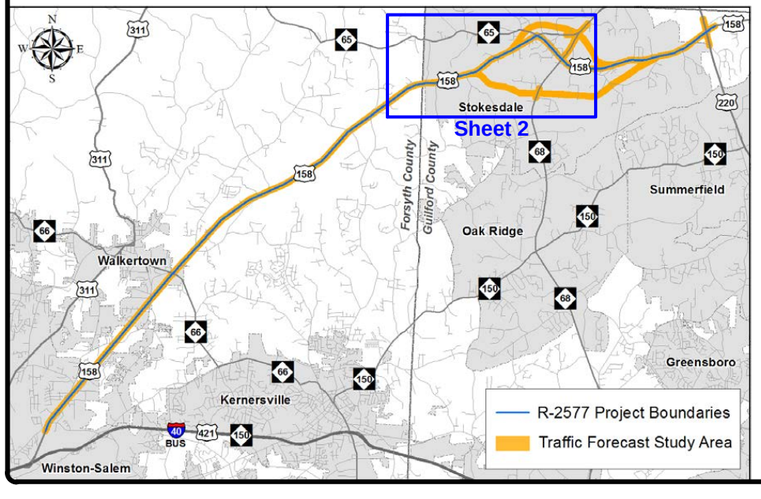

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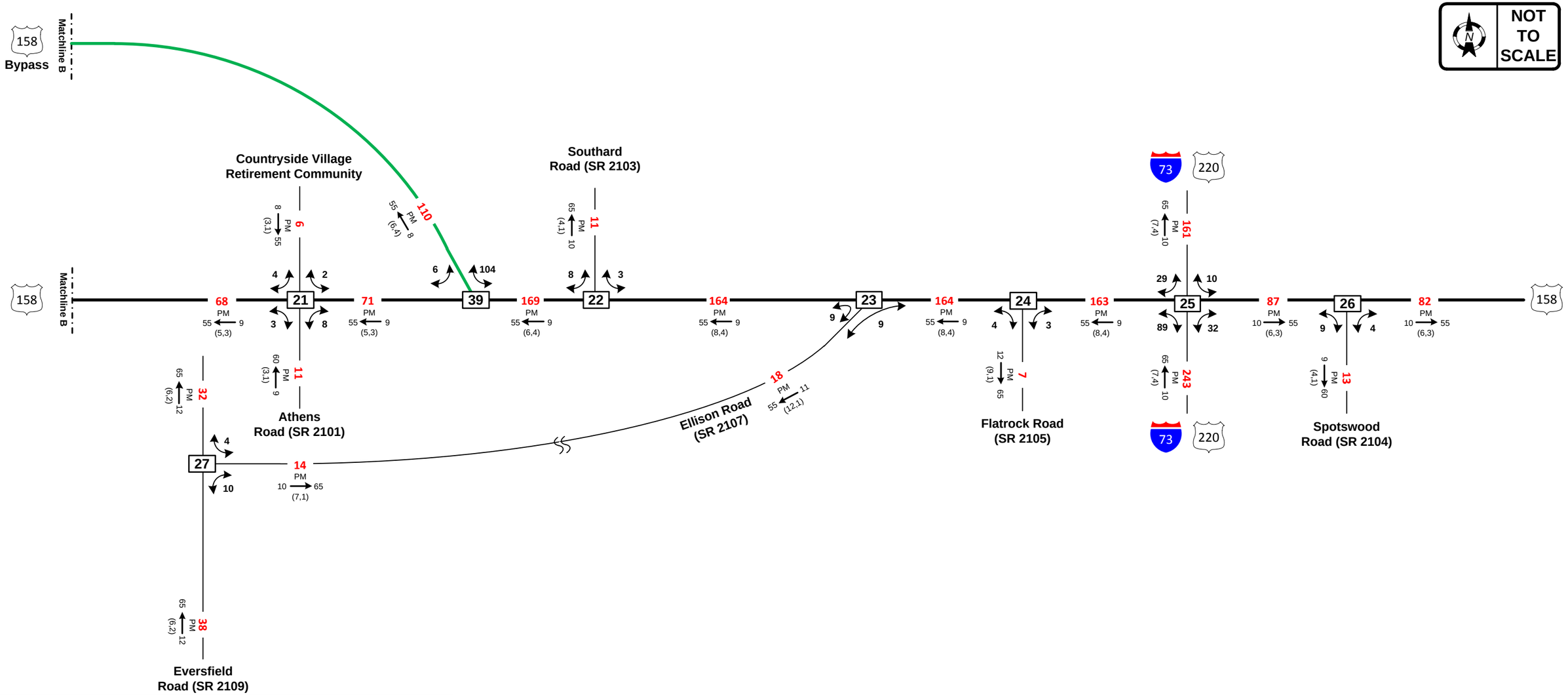

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PROPOSED DESIGN CRITERIA

TIP:

STATE PROJECT:
F. A. PROJECT: **PAGE:** 1 of __
COUNTY: FORSYTH **DIVISION:** 9
PROJECT DESCRIPTION: NC 66 (OLD HOLLOW ROAD) FROM HARLEY DRIVE TO US 158 **DATE:** 10/24/17

PREPARED BY: R.PATEL

ROUTE	NC 66				REFERENCE
LINE	-L-				OR REMARKS
TRAFFIC DATA					
ADT LET YR = 2020	22450				
ADT DESIGN YR = 2040	24200				
TTST	1%				
DUALS	3%				
DHV	8%				
DIR	55%				
CLASSIFICATION	MINOR ARTERIAL				FUNC CLASS MAP
TERRAIN TYPE	Rolling				
DESIGN SPEED km/hr or mph	50 MPH				
POSTED SPEED km/hr or mph	45 MPH				
PROP. R/W WIDTH m or ft	Var.				
CONTROL OF ACCESS	N				
RUMBLE STRIPS (Y/N)	N				
TYPICAL SECTION TYPE	C&G				
LANE WIDTH m or ft	12'				
SIDEWALKS (Y/N)	Y				
BICYCLE LANES (Y/N)	Y				
MEDIAN WIDTH m or ft	23'				
MED. PROTECT. (GR/BARRIER)	N				
SHOULDER WIDTH (total)					
MEDIAN m or ft	N/A				
OUTSIDE w/o GR m or ft	N/A				
OUTSIDE w/ GR m or ft	N/A				
PAVED SHOULDER					
OUTSIDE TOTAL/FDPS m or ft	N/A				
MEDIAN TOTAL/FDPS m or ft	N/A				
GRADE					
MAX.	7%				AASHTO Tbl.7-4
MIN.	0.3%				
K VALUE					
SAG	96				AASHTO Tbl.3-36
CREST	84				AASHTO Tbl.3-34
HORIZ. ALIGN.					
MAX. SUPER.	4%				RDM-I:1-15
MIN. RADIUS m or ft	926'				
SPIRAL (Y/N)	N				AASHTO Tbl.3-8
CROSS SLOPES					
PAVEMENT	2%				
PAVED SHOULDER	N/A				
TURF SHOULDER	N/A				
MEDIAN DITCH	N/A				
DITCH TYPICAL (A,B,C)	N/A				Y1-2A, F-1
CLEAR ZONE m or ft	15'				
TYPICAL SECTION NO.	1-3				

NOTES:

DESIGN EXCEPTION PROCESS CHECKLIST

Date: 10/24/17 Project Engineer: Tracy Parrott, PE

TIP No: U-5824 Functional Classification: Minor Arterials (Urban)

Posted Speed: 45mph Terrain: Rolling

Items requiring formal approval	Prop Design	AASHTO Std(1)	Exception Req'd
Design Speed(2)	50mph	50mph	No
Lane Width	12'	12'	No
Shoulder Width	n/a C& G	n/a	No
Bridge Width	n/a	n/a	No
Structural Capacity(3)	n/a	n/a	No
Maximum Grade	6.5478%	7%	No
Min. Horizontal Curve Radius	950'	926'	No
Sag Vertical Curve K	43 (30mph)	96	Yes
Crest Vertical Curve K	62 (45mph)	84	Yes
Horizontal SSD	425'	425'	No
Vertical SSD (crest only)	360' (45mph)	425'	Yes
Pavement Cross Slope	2%	2%	No
Superelevation	4%	4%	No
Vertical Clearance	n/a	n/a	No
Horizontal Clearance	15'	15'	No

Listed below are the known non-complying items not requiring an approved design exception.

(1) The AASHTO STD. as it relates to the design speed should be equal to the higher of either the posted speed or the minimum "Greenbook" value for design speeds.
(2) If design speed is less than the posted or statutory speed, a design exception is required.
(3) Structure Design's responsibility - be sure they have checked for need of design exception.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

July 5, 2018

MEMO TO: Al Blanton, PE, PLS
Division Project Team Lead

FROM: S.P. Ivey, P.E.
Division 9 Engineer

PROJECT: 44395.1.1 (U-5824) Forsyth County
Widen NC 66 (Old Hollow Rd) in Walkertown from Harley Dr. to US 158

SUBJECT: Final Design Field Inspection

The Final Design Field Inspection for Project U-5824 was held at 10:00am on Thursday, June 28, 2018 in the Division 9 Conference Room in Winston-Salem, N.C. The following people were in attendance:

Wright Archer	NCDOT-Division Construction Engineer
Brett Abernathy	NCDOT-Project Development Engineer
Al Blanton	NCDOT-Project Development
Connie James	NCDOT-Project Development
Mark Crook	NCDOT-Staff Maintenance Engineer
David Trantham	NCDOT-DUE
JP Couch	NCDOT-Division Traffic Engineer
Brandon Johnson	Summit
Jason Patskoski	Summit
Stuart Bourne	Summit
Tracy Parrott	Summit
Rekha Patel	Summit

The following is a synopsis of FDFI comments:

Sheet 1

- C & G Method III
- ROW let date February 22, 2020
- Let date February 15 ,2022
- ROW/ Utility project number

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
DIVISION 9
375 SILAS CREEK PARKWAY
WINSTON-SALEM, NC 27127

Telephone: (336) 747-7800
Fax: (336) 703-6693
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
375 SILAS CREEK PARKWAY
WINSTON-SALEM, NC 27127

- Construction project number

Sheet 1A thru 1B
- Update to 2018 Specifications

Sheet 2A-1
- Update pavement schedule to the 2018 pavement consolidation revision
- Partial Typical revise 14' to 16'
- Division will contact municipality to determine if grass or concrete are preferred

Sheet 2A-2
- Correct sheet number
- Correct station Y9 13+75.00 to 14+85

Street 2B-1
- Determine G/R location north side
- Determine G/R location handrail in lieu of fence

Sheet 3B-1
- No comment

Sheet 3B-2
Division request Lump Sum Grading

Sheet 3D-1 thru 3D-9
- See Hydro Comments

Sheet 3P-1
- No comment

Sheet 4
- Revise End sidewalk and drainage at beginning of project
- Remove wheelchair ramp symbols where not required (all plan sheets)
- Modify ROW marker symbol to Concrete by others (all plan sheets)
- Add PUE's (all sheets)
- Verify if PUE is within 25' of tower
- Pipe 0423 needs to be buried 20%
- Tie ditch to channel at 0423
- Relocate 0411 remove from radius relocate cross line pipe crossing Y-1
- Review drainage to determine if cross line pipes can be reduced (all Sheets)

Sheet 5

- Parcel 10 add TCE
- Add supper rated to all y lines (all Sheets)

Sheet 6

- Parcel 26 extend C/A to Parcel 27 property line
- Correct profile , see sheet 13 to 17

Sheet 7

- Parcel 31 pull in TCE
- Parcel 33 Pull in TCE
- 0713 relocate box
- Parcel 32 remove TCE in PUE
- Add signal symbol @ Y-7
- Review adding retaining wall on Parcel 32 and 34
- 0727 convert to DI
- Correct turn lane length

Sheet 8

- Review drainage across parcel 39 either add drainage structure in curb line or shift 0801 toward Y-8A
- Parcel 49 tie easements to existing ROW
- Add signal symbol

Sheet 9

- Parcel 53 add TCE
- Parcel 56 has a basement drain that drains toward roadway… **needs to be discussed during ROW negations**
- Review drainage to determine if cross line pipes can be reduced (all plan sheets)
- Add turn lane length

Sheet 10

- Parcel 66, 68 Add TCE to allow slope construction and pipe installation
- Parcel 68 show driveway improvements
- Revise drainage 1009 to 1002 remove extend 1001 to 1008
- Parcel 35 extend C/A to property line
- Parcel 74 review driveway location and C/G extension

Sheet 11

- Extend Island
- Concrete island to existing station 104+/-
- Show future improvements to US-158

Sheet 12 thru 19

- No comments

General Comments:
Summit Design will discuss curb line water spread NCDOT Hydro
Remove wheelchair ramp symbols where not required (all plan sheets)
Modify ROW marker symbol to Concrete by others (all plan sheets)
Review drainage to determine if cross line pipes can be reduced (all plan sheets)
Add supper rated to all y lines (all plan sheets)

For additional information, please contact Wright Archer, PE, Division Construction Engineer, at (336) 747-7800.

SPI/WRA:kp
Attachment

cc: Attendees

Revised 11/9/17

COMBINED FIELD INSPECTION

Construction WBS#: 44395.1.1

County: Forsyth

T.I.P. #: U-5824

Team Lead: Summit Design and Engineering

Management Group: Division Managed

Instructions

An answer must be provided for **all** questions. If the question is not relevant to the project, then check N/A. Where needed, reply to the requests for additional information with complete statements so that there is not the possibility of a misunderstanding or confusion.

General

Does this project contain any new or unique construction techniques, processes, and/or products that are unfamiliar to the Department, Division, or the assigned Resident Engineer? If "Yes", a draft project special provision, details along with a Technical Bulletin (if available) of this unique construction technique, process, and/or product should be supplied to you for review and comment during this field inspection.	☐Yes ☑ No
Does this project have any constructability issues that should be addressed? If "Yes", briefly describe the issue(s) in the space below: Click here to provide additional information.	☐Yes ☑ No
Based on your answers above, do you recommend: • An internal constructability review? • An external constructability review with representation from contractors affiliated with the Association of General Contractors (AGC)? • A Technical Bulletin to be prepared? • Training to be provided for the Resident Engineer and staff? Click here to provide additional information.	☐Yes ☑ No ☐Yes ☑ No ☐Yes ☑ No ☐Yes ☑ No
Are there any buildings on this project that would be candidates for deconstruction by the local Habitat for Humanity? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☑ No
Recommend completion date for project based on a tentative letting date of **Click here to enter the let date**.	Click here to select a completion date.
Recommend the contract method felt most suitable for this project: conventional, A & B, or incentive/disincentive.	Click here to choose method.
Should a floating date of availability be used for this project? If "Yes", provide any recommendations in the space below: Click here to provide additional information.	☐Yes ☑ No
Are there any issues with the beginning and end of project and construction? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☑ No

Are there any locations on this project that you believe may have potential for hydroplaning? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☑ No
Are there any issues with the street returns for width and radii? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☑ No
Are any roads along this project used for OVERSIZE VEHICLES? If "Yes", does the OVERSIZE VEHICLE ROUTE affect the proposed design? If "Yes", provide specifics in the space below: Click here to provide additional information.	☐Yes ☑ No ☐N/A ☐Yes ☑ No ☐N/A
Should cul-de-sacs or turnaround areas be constructed on existing roads which are terminated? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☐ No ☑N/A
Are any new walls, steps and/or house walks required? If "Yes", provide the location, type of construction required and quantities in the space below: Click here to provide additional information.	☑Yes ☐ No ☐N/A shown on plans
Will the construction surveying on this project be handled by the Department or the Contractor?	Click here to choose one.
Is the project survey line identified on the ground so it can be found and located by the prospective contractors? If "No", provide the location(s) where issues exist in the space below: Click here to provide additional information.	☐Yes ☐ No ?
Are there any existing hazardous waste sites or possible existing contaminated properties located within or immediately adjacent to the project right of way? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☐ No ?
Are any monitoring wells within project limits? If "Yes", provide locations in the space below so that abandoning work may be coordinated by the Geoenvironmental Section before construction. Click here to provide additional information.	☐Yes ☐ No ?
Do you have any suggestions for consideration that would reduce the future maintenance costs of this project? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☑ No
Should emergency crossovers be constructed as a part of this project? If "Yes", recommend the type of construction and locations in the space below: Click here to provide additional information.	☐Yes ☑ No ☐N/A

Barriers

The Roadway Standard Drawing, Std. 846.03 (Sheet 1 of 2), shows guardrail spanning an object that requires a post to be omitted. Does this project require this standard? If "Yes", list each location and the required standard in the space below: Click here to provide additional information.	☐Yes ☑ No
Will any additional, temporary guardrail or permanent guardrail be	☐Yes ☐ No ☑N/A

required? If "Yes", list locations and estimate quantity in the space below: Click here to provide additional information.	
Will removed existing guardrail be stockpiled? Click here to provide additional information.	☐Yes ☑No ☐N/A
Will any guardrail barricades be required on existing roads which are to be terminated or should earth berms be constructed? If "Yes", list the locations in the space below: Click here to provide additional information. If guardrail, are terminal sections to be used? If additional information required, please provide it in the space below: Click here to provide additional information.	☐Yes ☑No ☐N/A ☐Yes ☑No ☐N/A
Do you have any suggestion(s) for reducing the future vegetative maintenance around existing and / or proposed guardrail on this project? If "Yes", provide more detail on the suggestion(s) in the space below: Click here to provide additional information.	☐Yes ☑No
Will the Division be able to furnish the temporary concrete barrier to the contractor for his use during construction of the project? If "Yes", designate the location from which the contractor must take delivery of the barrier and the location to which the contractor must return the barrier at the conclusion of the project in the space below: Click here to provide additional information.	☐Yes ☑No ☐N/A
If the Contractor is to furnish the temporary concrete barrier, should barrier revert to the Contractor at the conclusion of the project? NOTE: If the Division wants to take possession of the barrier, it must reimburse the project for the salvage value of the barrier, this reimbursement must come from 100% State funds.	☑Yes ☐No ☐N/A

Berms, Gutters and Curbing

Are there any recommended changes for curb type and cover for raised islands? If "Yes", provide more detail on the suggestion(s) in the space below: Click here to provide additional information.	☐Yes ☐No IN REVIEW
Are additional shoulder berms, expressway gutters, or gutters and curbing on the outside edge of fill shoulder required? If "Yes", provide the location(s) on the plans or in the space below: Click here to provide additional information.	☐Yes ☑No
Truncated domes are required on all existing wheel chair ramps. Are there any existing wheel chair ramps which need to be retrofitted with truncated domes? If "Yes", provide how many in the space below: Click here to provide additional information.	☐Yes ☐No ☐N/A ?
Are pedestrian mitigation measures incorporated into the Design Plans? If "Yes", Are mitigation measures Americans with Disabilities Act (ADA) compliant? Provide an explanation below: Click here to provide additional information.	☑Yes ☐No

Drainage

Are there any pipe installations requiring **trenchless** construction? If "Yes", provide an estimated length and location of pipe requiring this type installation in soil in the space below: Click here to provide additional information. Note: A separate length of pipe is needed at each location, for installation, in materials other than soil.	☐Yes ☑No
Are there any recommended changes for berm ditches? If "Yes", provide more detail on the suggestion(s) in the space below: Click here to provide additional information.	☐Yes ☑No ☐N/A
Are there any recommended changes for type of paved ditches and ditch liner? If "Yes", provide more detail on the suggestion(s) in the space below: Click here to provide additional information.	☐Yes ☑No ☐N/A
Are any additional drainage easements required? If "Yes", show location, limits and specify whether it is temporary or permanent in the space below: Click here to provide additional information.	☑Yes ☐ No Shown in plan sheets
Are there any catch basins, drop inlets, manholes, meter boxes and valve boxes to be adjusted? (Article 858-1) If "Yes", Provide the location and number in the space below: Click here to provide additional information.	☑Yes ☐ No

Constructability/Permitting/Commitments

Has the method of construction for proposed bridges and / or culverts been addressed? (See CFI Checklist attached to field inspection letter.) If "Yes", provide more detail in the space below: Click here to provide additional information.	☐Yes ☐ No ☑N/A
Has the method of removal for bridge superstructure and substructure been discussed? (See CFI Checklist attached to field inspection letter.) If "Yes", provide more detail in the space below: Click here to provide additional information.	☐Yes ☐ No ☑N/A
Are any additional right of way, permanent easements and/or temporary construction easements required other than those shown on the plans for the issues discussed above? If "Yes", show location, limits and specify whether it is temporary or permanent in the space below: Click here to provide additional information.	☐Yes ☑ No
Does the proposed design take into consideration the constructability issues associated with constructing the roadway, drainage, structures, utilities, and maintaining traffic so that the right of way limits and permit application can be developed accordingly? If "No", provide more detail in space below: Click here to provide additional information.	☑Yes ☐ No
Have all environmental commitments been reviewed and can they be implemented? If "No", provide more detail below in the space below: Click here to provide additional information.	☐Yes ☐ No ☐N/A
Are any plan changes or modifications required that may jeopardize the status of the permit? If "Yes", list the locations in the space below: Click here to provide additional information.	☐Yes ☑ No ☐N/A
Are historic properties and / or archeological sites clearly identified on the plans? If "No", provide the location(s) where issues exist in the space	☐Yes ☐ No ☐N/A

below: Click here to provide additional information. Do the commitments clearly explain how the impacts to these sites will be avoided or minimized? If "No", provide suggestions on how the comments could be clarified below: Click here to provide additional information.	☑Yes ☐ No
Are there any temporary pedestrian impacts listed on the list of environmental commitments (green sheets)? Click here to provide additional information.	☐Yes ☐ No ?

Driveways

Are any changes needed for the location or width of driveways? If "Yes", provide more information in the space below: Click here to provide additional information.	☐Yes ☐ No ☐N/A ?
Will any driveway pavement be required for existing unpaved drives (due to steep grades caused by project construction)? If "Yes", provide location, type of construction required and quantities in the space below: Click here to provide additional information.	☐Yes ☐ No ☐N/A ?
Recommend radius or drop type curb for driveway turnouts. Select N/A if there are none on the project.	Click here to choose one.
Do you have any recommendations for channelization of commercial drives? If "Yes", provide more information in the space below: Click here to provide additional information.	☐Yes ☐ No ☐N/A ?
Will high strength or quick cure concrete be required for driveway during construction of replacement operations? Click here to provide additional information.	☑Yes ☐ No

Earthwork

Are there any ways which project generated debris (i.e. removed concrete/asphalt pavement: clearing and grubbing-mulch; native planting) can be safely and economically incorporated into the construction of the project? If "Yes", provide more information in the space below: Click here to provide additional information.	☐Yes ☑ No
Are there any approved alternative sources of fill material located in close proximity to the project (coal flyash generator, concrete pavement removal, recycle glass, steel slag, etc.)? If "Yes", provide more information in the space below: Click here to provide additional information.	☐Yes ☐ No ?
Can earthwork be utilized (as shown on the Earthwork Summary) during construction phasing of this project? For widening projects, this includes the ability of the contractor to haul earth material across traffic. If "No", provide more information in the space below: Click here to provide additional information.	☑Yes ☐ No ☐N/A
Is any pavement removal, breaking of existing pavements or obliteration required beyond what is shown in the plans? If "Yes", provide the locations in the space below:	☐Yes ☑ No

Click here to provide additional information.	
If this project fits within the guidelines, would you rather it go to contract under "Lump sum grading" or an individual item basis? Click here to provide additional information.	☑Yes ☐ No LS Grading
Is this project a good candidate for earthwork quantity determination using photogrammetric methods? Click here to provide additional information.	☐Yes ☑ No

Fencing

If access is to be controlled on the project, recommend the height and type of fence (woven wire or chain link) and if any gates are required in the space below: Click here to provide additional information.	☐Yes ☑ No ☐N/A
Is temporary fence required on the project? If "Yes", provide the height, type and recommended locations below: Click here to provide additional information.	☐Yes ☑ No
Is any security fence required (reset or replacement) on this project? If "Yes, furnish sketch showing size, post spacing, gates, etc. or provide this information in the space below: Click here to provide additional information.	☐Yes ☑ No

Geotechnical (Must answer if sub-surface information is not available.)

Are any underdrains anticipated? If "Yes", estimate total length below: Click here to provide additional information.	☐Yes ☑ No
Is additional undercut excavation needed beyond what is shown in the geotech recommendations. If so, provide an estimate of that quantity. (Article 225-4) Click here to enter quantity.	☐Yes ☐ No ?

Grading

Should grading be done in order to allow for vegetation removal and erosion on the future paving contract? If "Yes", provide the height above final subgrade below: Click here to provide additional information.	☐Yes ☑ No
Has any grading occurred since field surveys and contour mapping were made? If "Yes", have these areas been identified and taken into account? Provide additional information in the space below: Click here to provide additional information.	☐Yes ☐ No ?
Is a grading detail needed for the interchanges on this project? Click here to provide additional information.	☐Yes ☑ No

Lighting

Will the project require lighting and/or future lighting? If "Yes", provide	☐Yes ☑ No

locations in the space below: Click here to provide additional information.	

Noise Walls

Should NCDOT approved, alternative noise wall materials be considered for use in lieu of the standard pile and panel wall materials? Click here to provide additional information.	☐Yes ☐ No ☑N/A

Load Restrictions

Are there load limit restrictions on roads and/or bridges in the project vicinity which will limit the contractor in the hauling equipment and materials?	☐Yes ☑ No
If "Yes", will this be covered by Section 105-15 of the Standard Specifications? Click here to provide additional information.	☐Yes ☑ No

Material Usage and Measurement

Specify how borrow material will be measured. In place measurement, or truck measurement. (Article 230-5)	Click here to choose one.
On Federal Aid projects, are materials furnished by the contractor or salvaged from the project to become the property of the department? If yes, the salvage value must be reimbursed from State funds for the material as part of the Federal Aid Agreement if the salvage value exceeds $5,000.00 except where the salvaged item will be reused in future projects eligible under Title 23 USC until its useful life is expended.	☐Yes ☐ No ☐N/A LS

Pavement

Will incidental stone base be required? (Article 545-1) If "Yes", estimate quantity in the space below: Click here to provide additional information.	☑Yes ☐ No 50 TONS
Will asphalt plant mix pavement repair be required for repairing existing pavement? (Exclude pipe installations) If "Yes", estimate quantity in the space below: Click here to provide additional information.	☑Yes ☐ No 100 TONS
Do you have any recommendations for mobile string line or fixed string line for the asphalt plant mix paver? (Article 610-8) If "Yes", provide further details in the space below: Click here to provide additional information.	☐Yes ☑ No
Is milling of asphalt pavement feasible on this project? (A) If "No", explain in the space below. (B) If "Yes", provide recommended depths, widths, and locations in the space below. Click here to provide additional information.	☑Yes ☐ No

Highway Design Guidelines specify that trench sections be used on pavement designs that are 10" or less in depth. Is there any justification for deviating from these guidelines? If "Yes", provide more information in the space below: Click here to provide additional information.	☐Yes ☑ No
Has the method of rumble strip construction for concrete shoulders been clearly show in the plans? Click here to provide additional information. Do you agree with the method as shown? Click here to provide additional information. Is there another approved method more suitable for this project? If "Yes", provide more information in the space below: Click here to provide additional information.	☐Yes ☐ No ☑N/A ☐Yes ☐ No ☐Yes ☐ No
Are there any resurfacing areas where incidental milling will be required to make a suitable tie back to the existing pavement? If "Yes", estimate quantity in the space below: Click here to provide additional information.	☑Yes ☐ No 1 - 2 INCHES
Do you want Final Surface Testing performed on this project? Click here to provide additional information.	☐Yes ☑ No

Right of Way

Which method of clearing is to be used? If "Other", please specify in the space below: Click here to provide additional information.	Click here to choose one. III
Are there trees which are to be preserved on field inspection prints. (Article 200-3) If "Yes", show on field inspection prints or provide locations in the space below: Click here to provide additional information.	☐Yes ☑ No
Are there areas in the Right-of-Way that are not to be cleared? If "Yes", show on field inspection prints or provide locations below: Click here to provide additional information.	☐Yes ☑ No
What type of Right of Way marker installation is recommended for this project? NOTE: State forces place iron pin and caps as right of way markers. Placement of concrete/granite right of way markers shall be placed by contract. Click here to provide additional information.	Click here to choose one.

Traffic Operations

Is the Division aware of any traffic generating events that would require special design considerations and traffic control planning? If "Yes", provide the events below: Click here to provide additional information.	☐Yes ☑ No
Are there any locations where a non-gating impact attenuator should be specified (temporary detours, temporary traffic pattern, etc.) that the completed project would only require a gating device? If "Yes", provide the locations in the space below: Click here to provide additional information.	☐Yes ☐ No ☑N/A

Have traffic maintenance and constructability issues been reviewed to ensure they will have no bearings on the permit status? If there are any potential conflicts with the permit status, list them in the space below: Click here to provide additional information.	☑Yes ☐ No
Are any street signs and markers to be removed and stockpiled by the Contractor? If "Yes", provide the locations in the space below: Click here to provide additional information.	☐Yes ☑ No
Are there any signing and/or pavement marking to be performed by force account? If "Yes", notify the Division Traffic Engineer who will furnish a cost estimate to the Roadway Design Unit. Click here to provide additional information.	☐Yes ☑ No
Is the existing pavement adequate on proposed detours? If "No," provide any areas of concerns in the space below: Click here to provide additional information.	☐Yes ☐ No N/A
Are any contract signs needed on the project? If "Yes", provide the locations in the space below: Click here to provide additional information.	☐Yes ☐ No
Is a $250 penalty ordinance and/or speed reduction ordinance recommended? Click here to provide additional information.	☐Yes ☑ No
Are any route/name changes necessary on the project? If "Yes", provide the locations in the space below: Click here to provide additional information.	☐Yes ☑ No
Is a towing ordinance recommended? If "Yes", provide areas of concern in the space below: Click here to provide additional information.	☐Yes ☑ No
Is Right-of-Way adequate for sign/signal installation? If "No", provide the area(s) of concern below in the space: Click here to provide additional information.	☑Yes ☐ No
Has any development occurred recently to influence the project traffic volumes? If "Yes", advise what the impact is so that geometrics and pavement design can reflect the change in the space below: Click here to provide additional information.	☐Yes ☐ No 7.
What will be the probable posted speed limit for this project? Click here to provide additional information.	Click here to enter speed. 45
In addition to portable changeable message signs (per each), is there a need for *short term* portable changeable message signs (for road closures, girder delivery, etc.)? If "Yes", estimate the number of days in the space below: Click here to provide additional information.	☐Yes ☑ No ☐N/A

Typical Sections

Will full width usable paved shoulders be required at the interchange ramps? Click here to provide additional information.	☐Yes ☐ No ☑N/A

Temporary Shoring

Is Temporary Shoring for the maintenance of traffic required on this project? (Shoring required to maintain traffic is defined as shoring	☐Yes ☑ No

necessary to provide lateral support to the side of an excavation or embankment parallel to an open travelway when a theoretical 2:1 or steeper slope from the bottom of the excavation or embankment intersects the existing ground line closer than 5 feet (1.5m) from the edge of pavement of the open travelway.) List probable locations of this temporary shoring: Click here to provide additional information.	

Miscellaneous Comments

Click here to provide additional information.

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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List of Tables

Appendices

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.

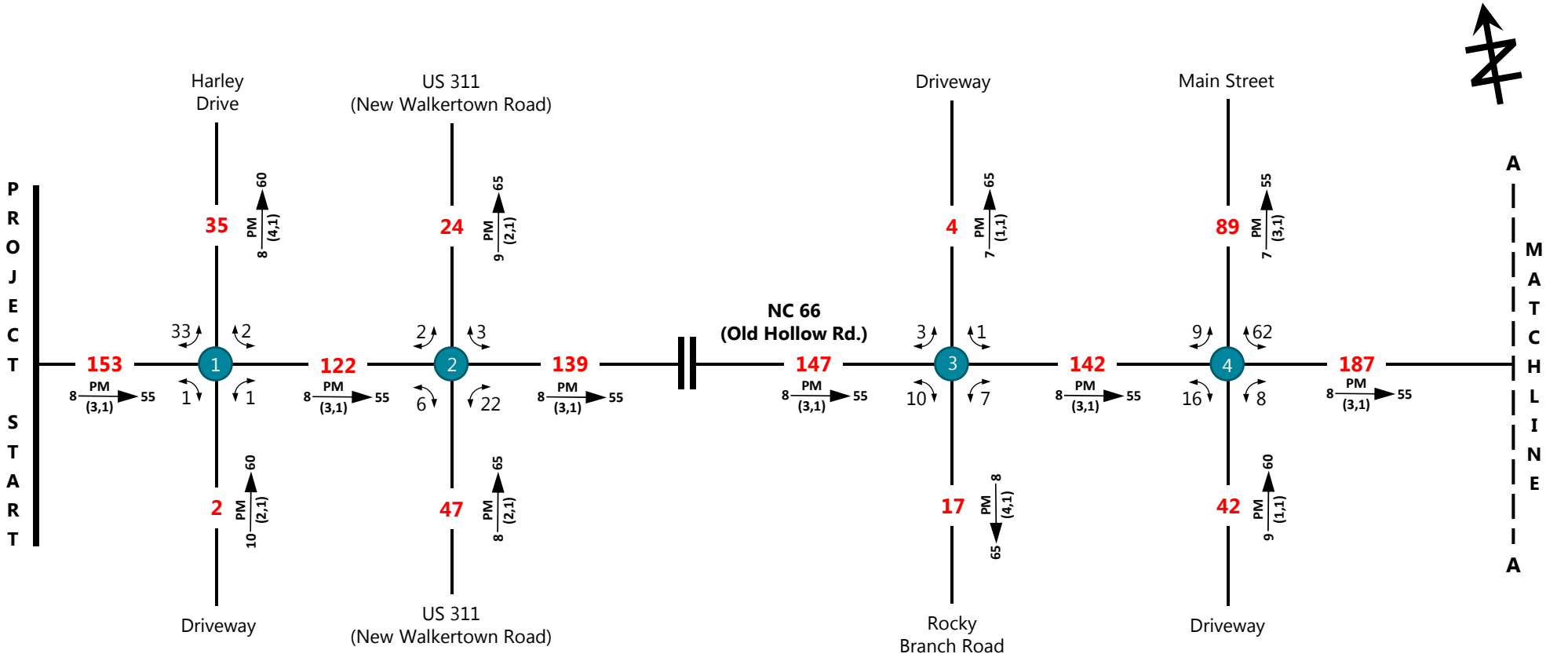
Interpolation: To determine any intermediate years straight-line interpolation may be used. AADT volumes may be extrapolated for up to two years immediately following 2040. If it is determined that any of these assumptions have become inconsistent with the project and surrounding area activity, please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

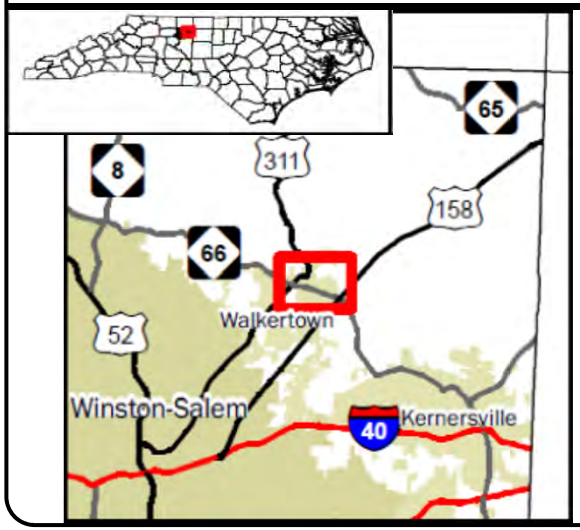
For future reference this forecast will be saved in Project Store in the LongRangePlanning\ Traffic Forecasts folder, under project U-5824.

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

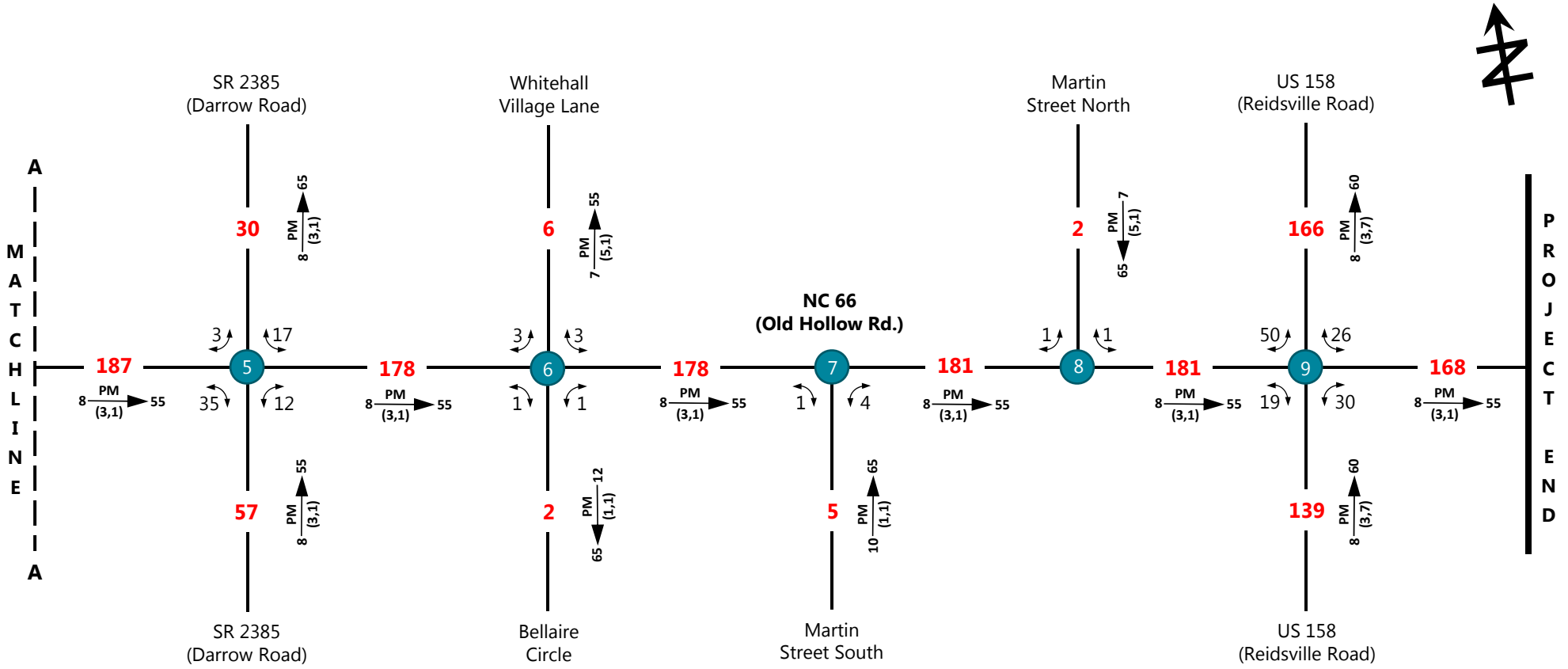
(Scenario 1) **SHEET 1 OF 2**

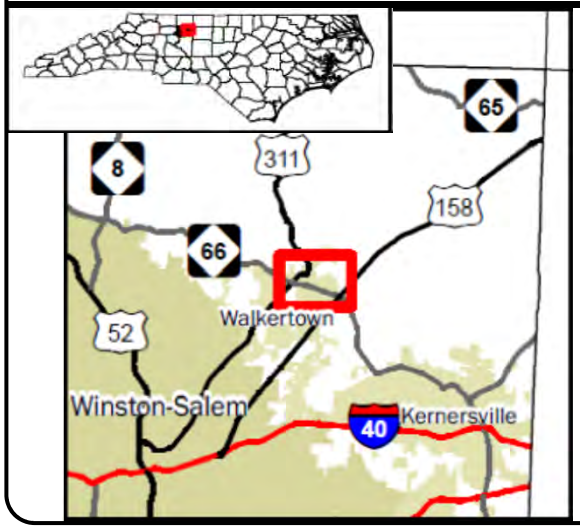
L E G E N D

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

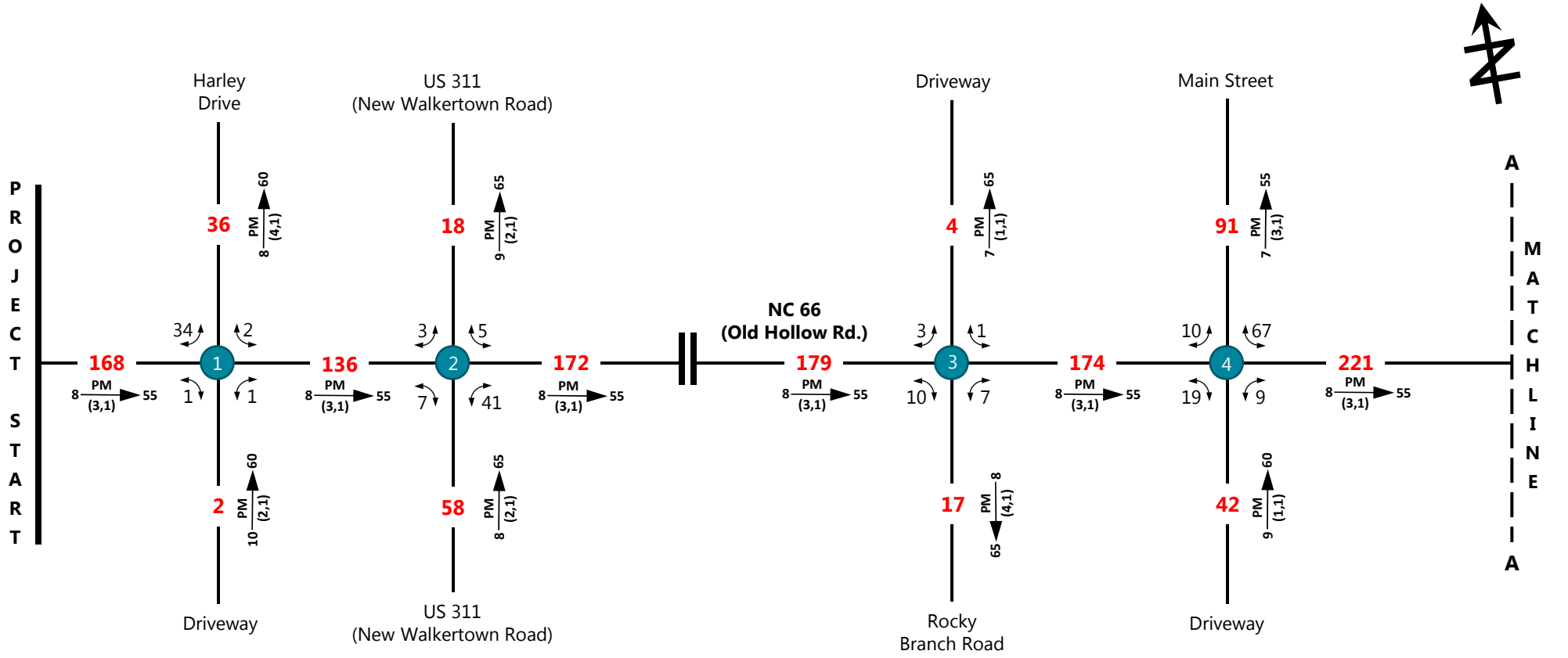
(Scenario 1) **SHEET 2 OF 2**

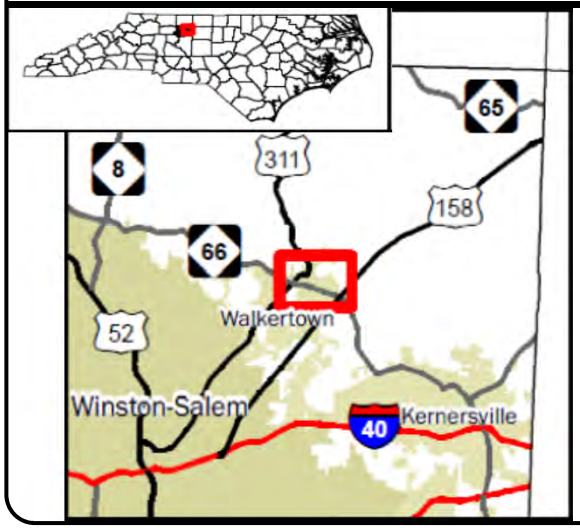
L E G E N D

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

Build Alternative

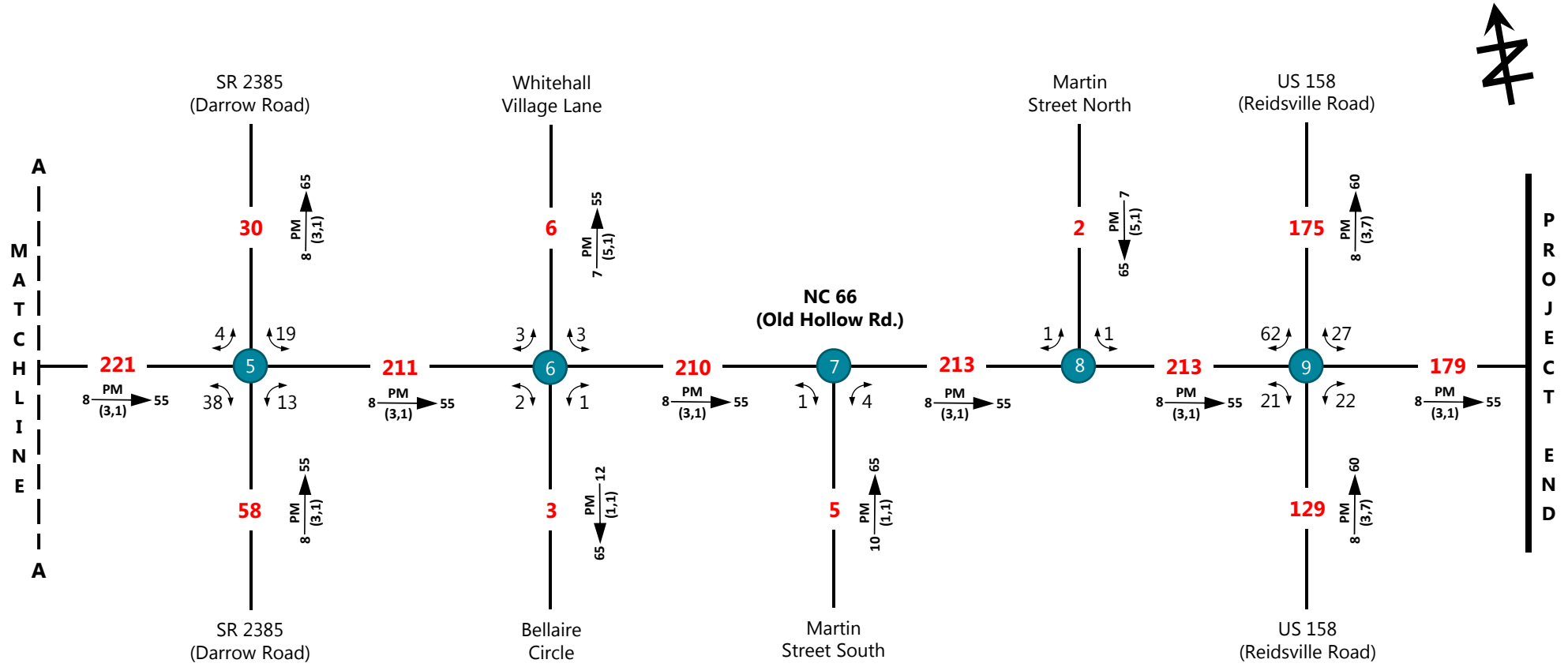
(Scenario 2) SHEET 1 OF 2

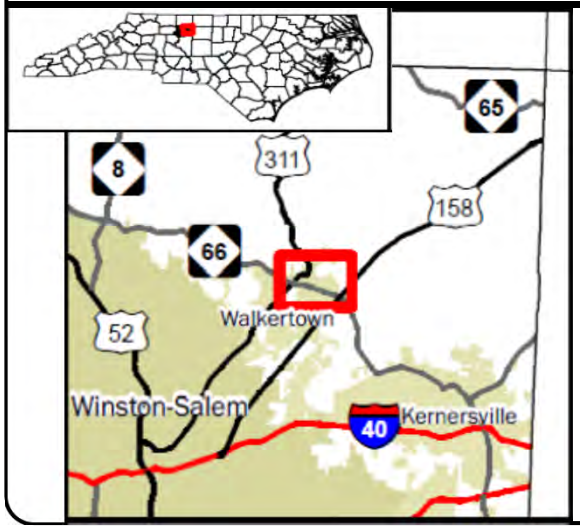
L E G E N D

K PM (d, t) D

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

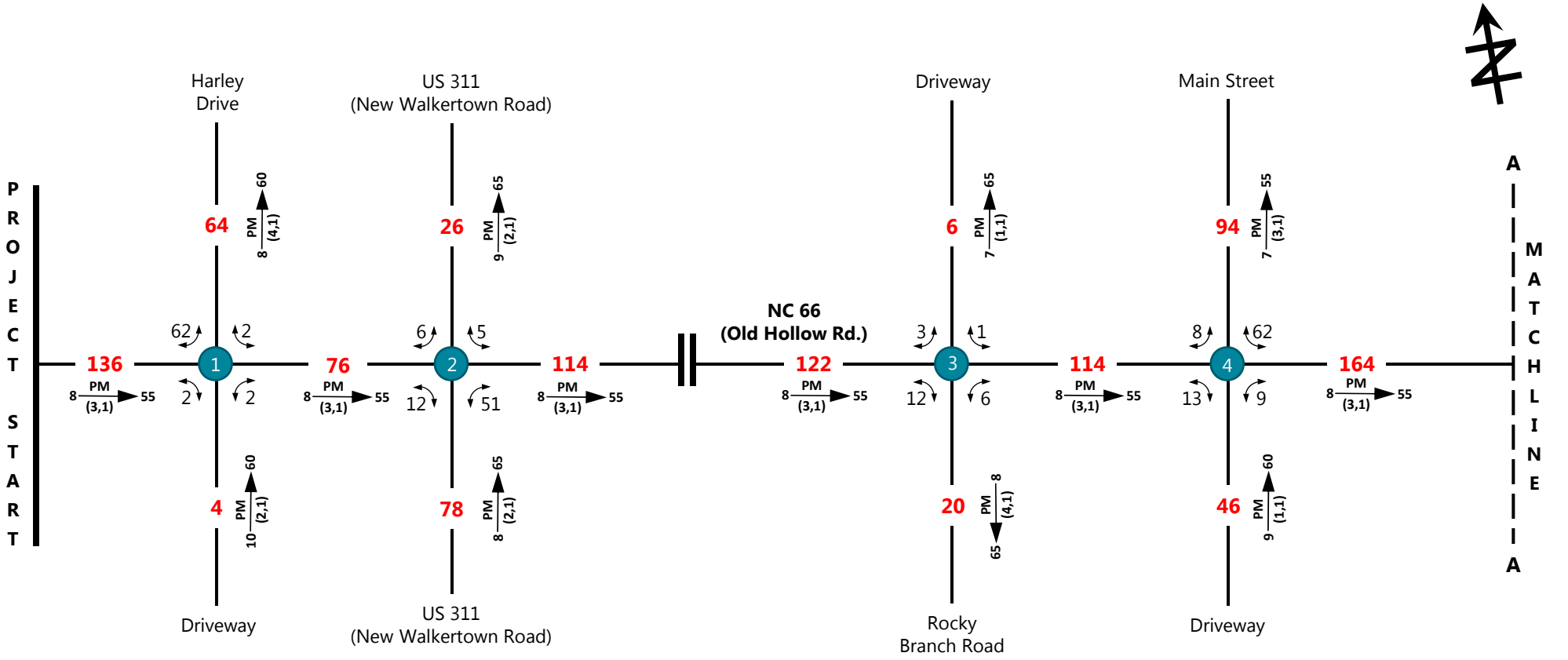
Build Alternative
(Scenario 2) SHEET 2 OF 2

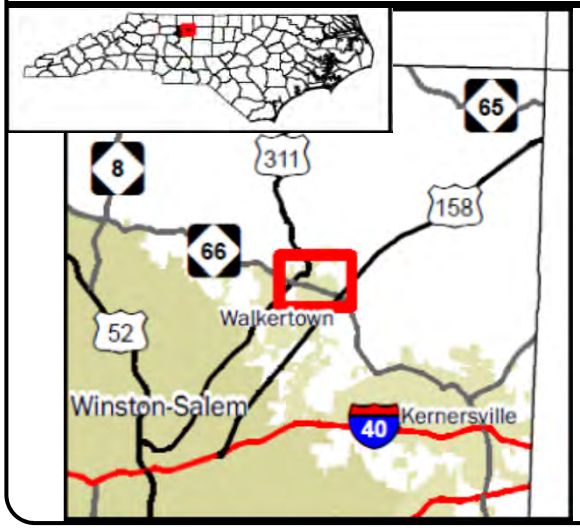
L E G E N D

K PM (d, t) D

###	No. of Vehicles per Day (VPD) in 100s	PM	PM Peak Hour
—	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

TIP: U-5824	**WBS:** 44395.1.1
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

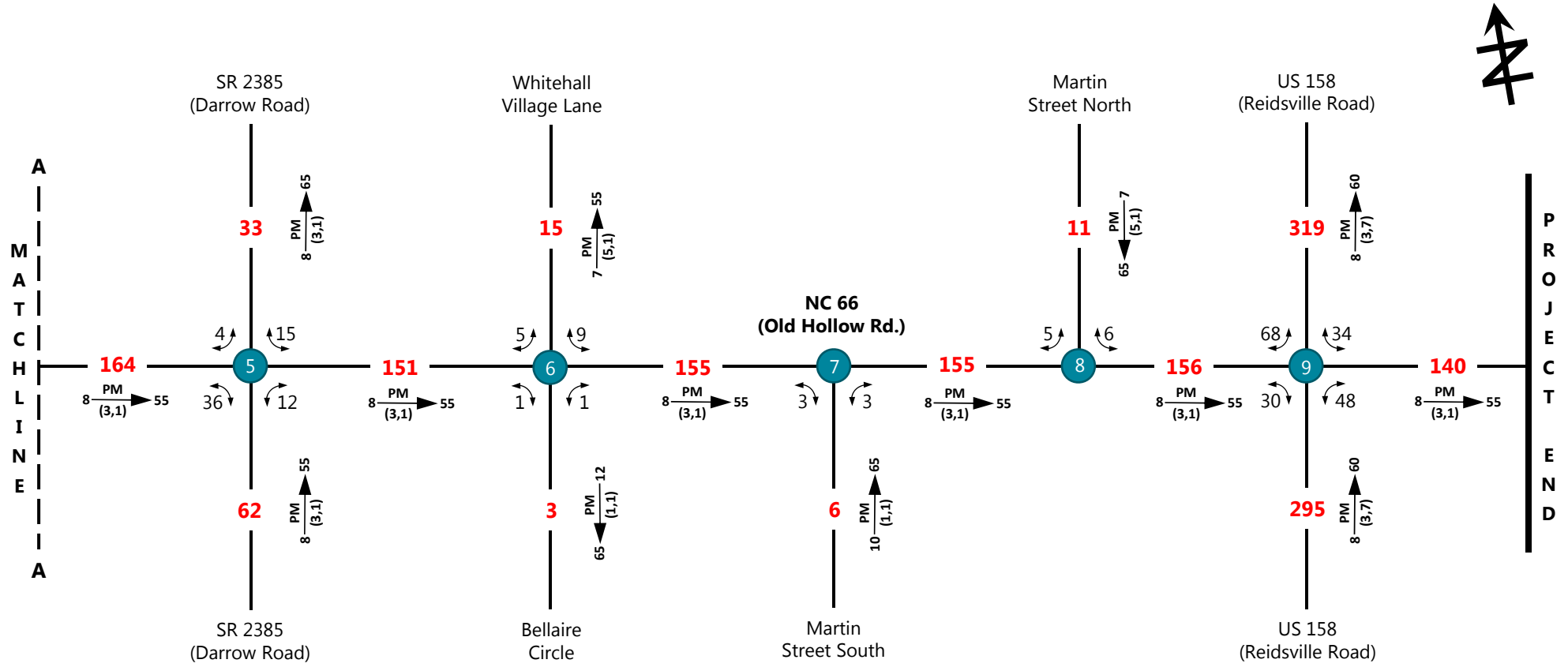
(Scenario 3) **SHEET 1 OF 2**

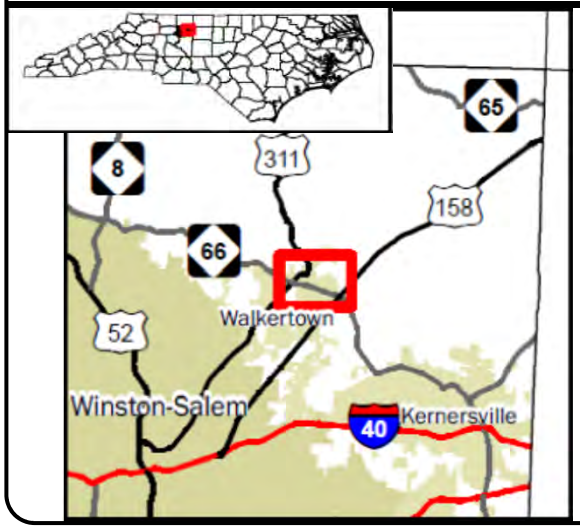
L E G E N D

K PM (d, t) D

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





2040 Average Annual Daily Traffic

No-Build Alternative

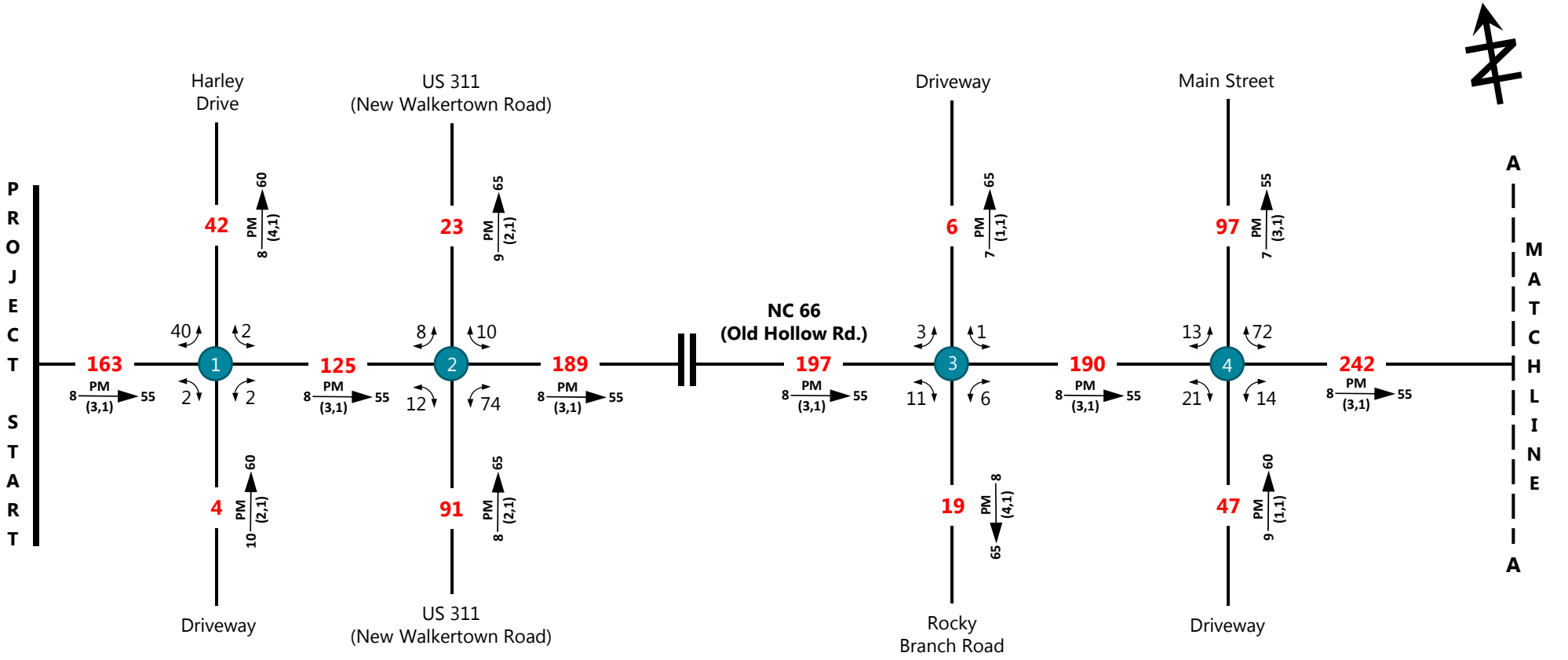
(Scenario 3) **SHEET 2 OF 2**

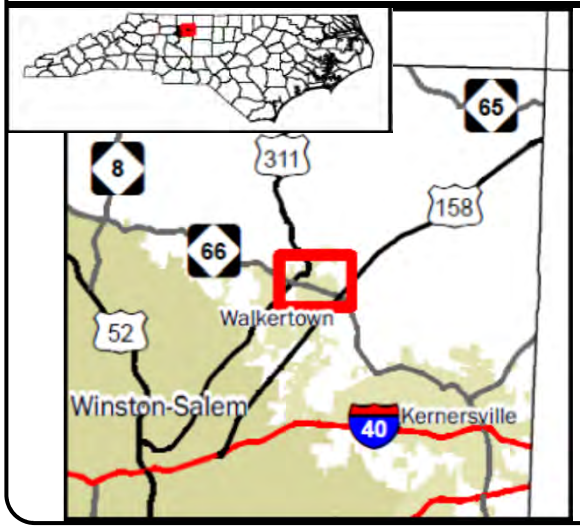
L E G E N D

K PM (d, t) D

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





2040 Average Annual Daily Traffic

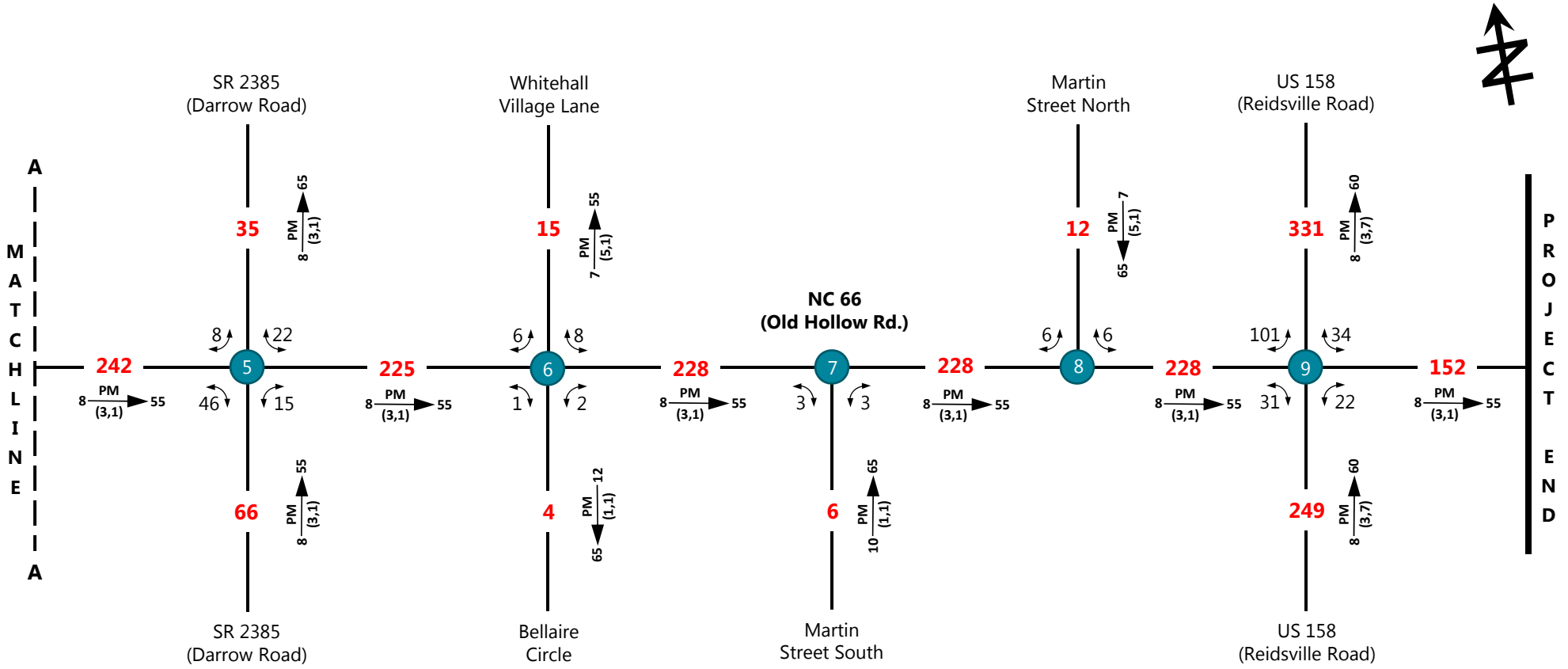
Build Alternative
(Scenario 4) SHEET 1 OF 2

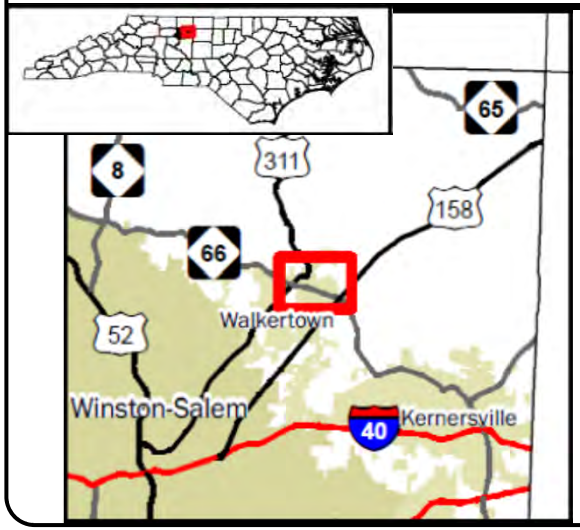
L E G E N D

K PM (d, t) D

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





2040 Average Annual Daily Traffic

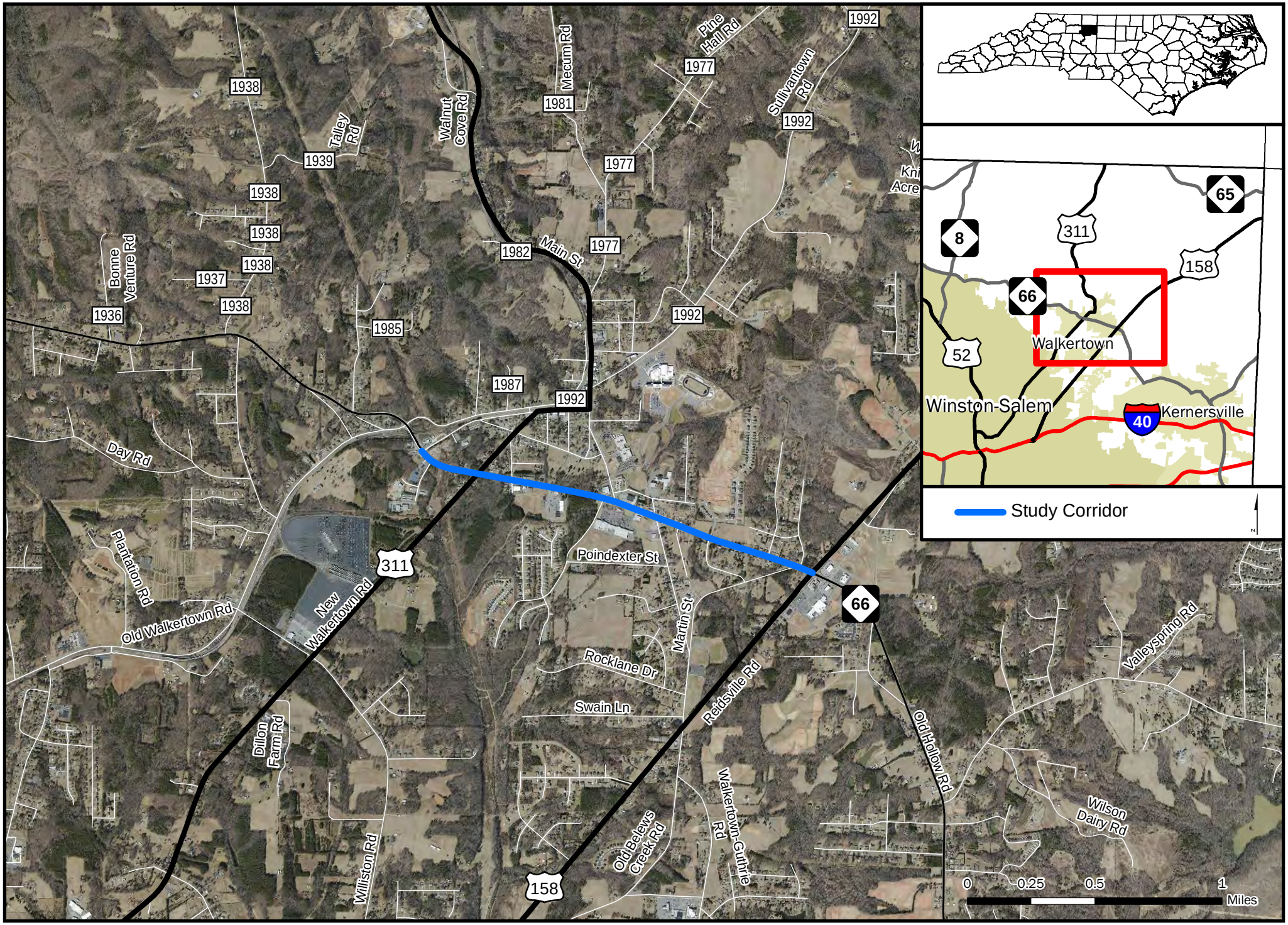
Build Alternative
(Scenario 4) SHEET 2 OF 2

L E G E N D

K PM (d, t) D

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



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.

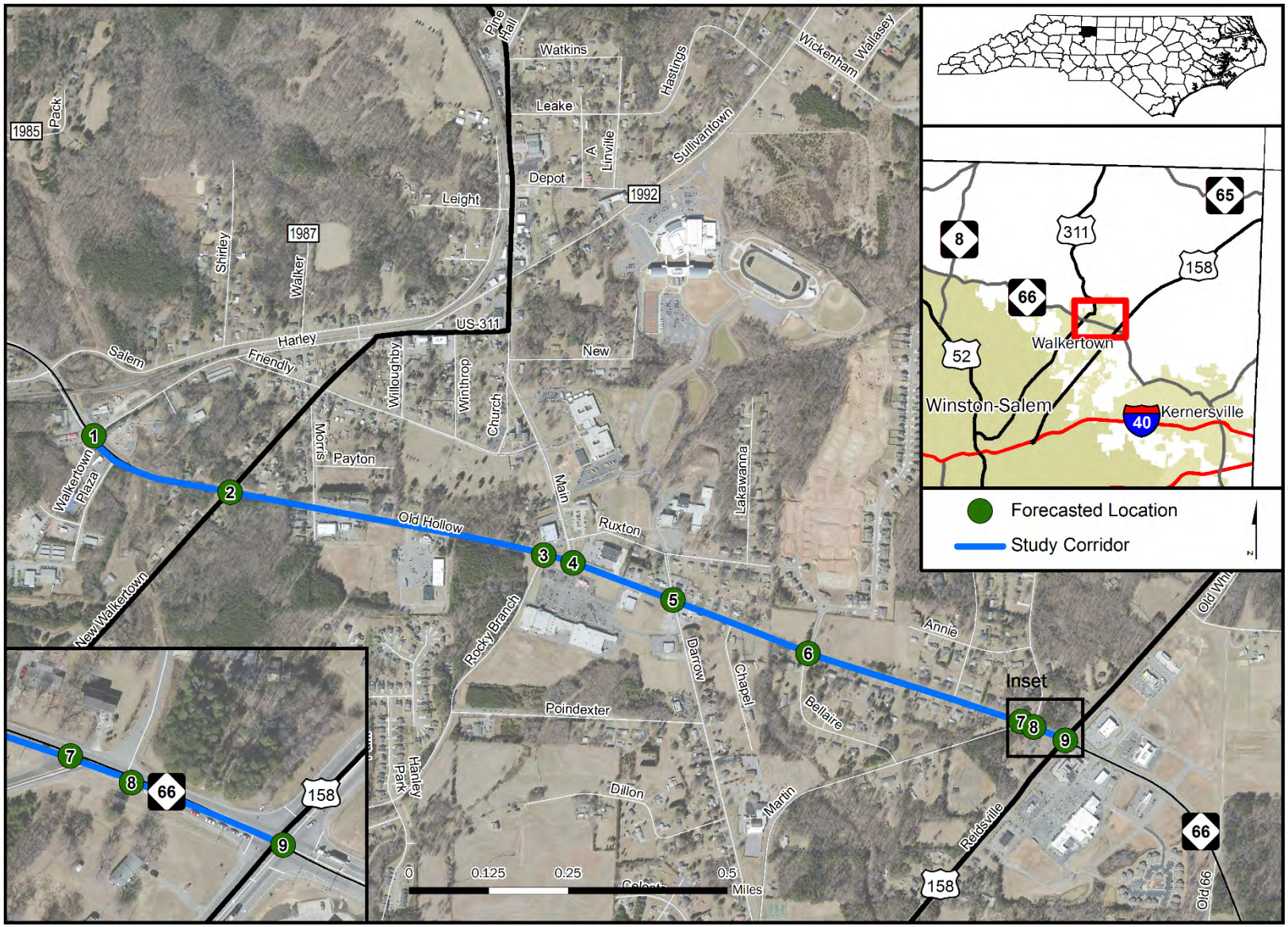
Nine (9) intersections were identified for analysis in the study area and listed below.

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.

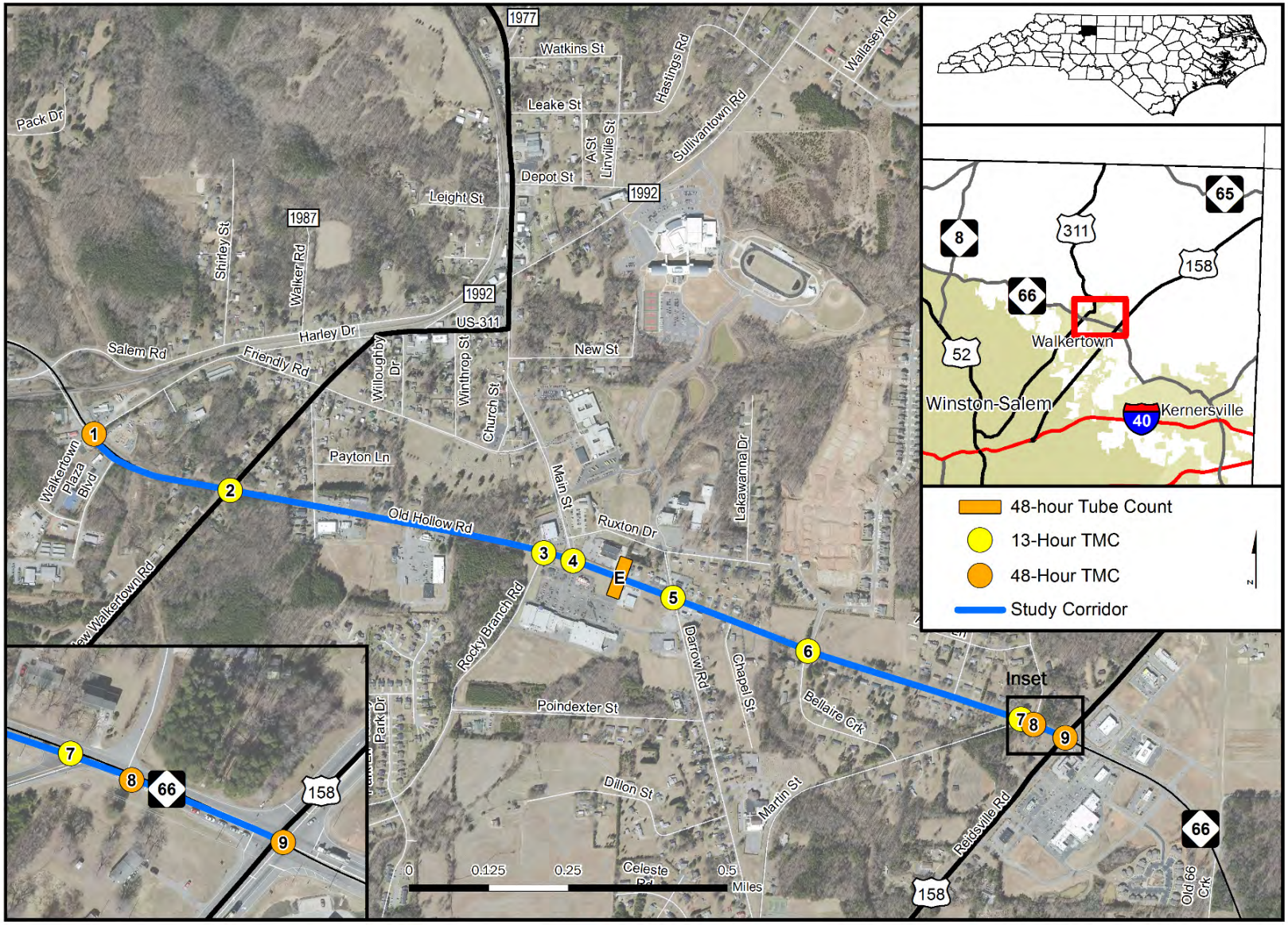
2.4 Field Investigation

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*

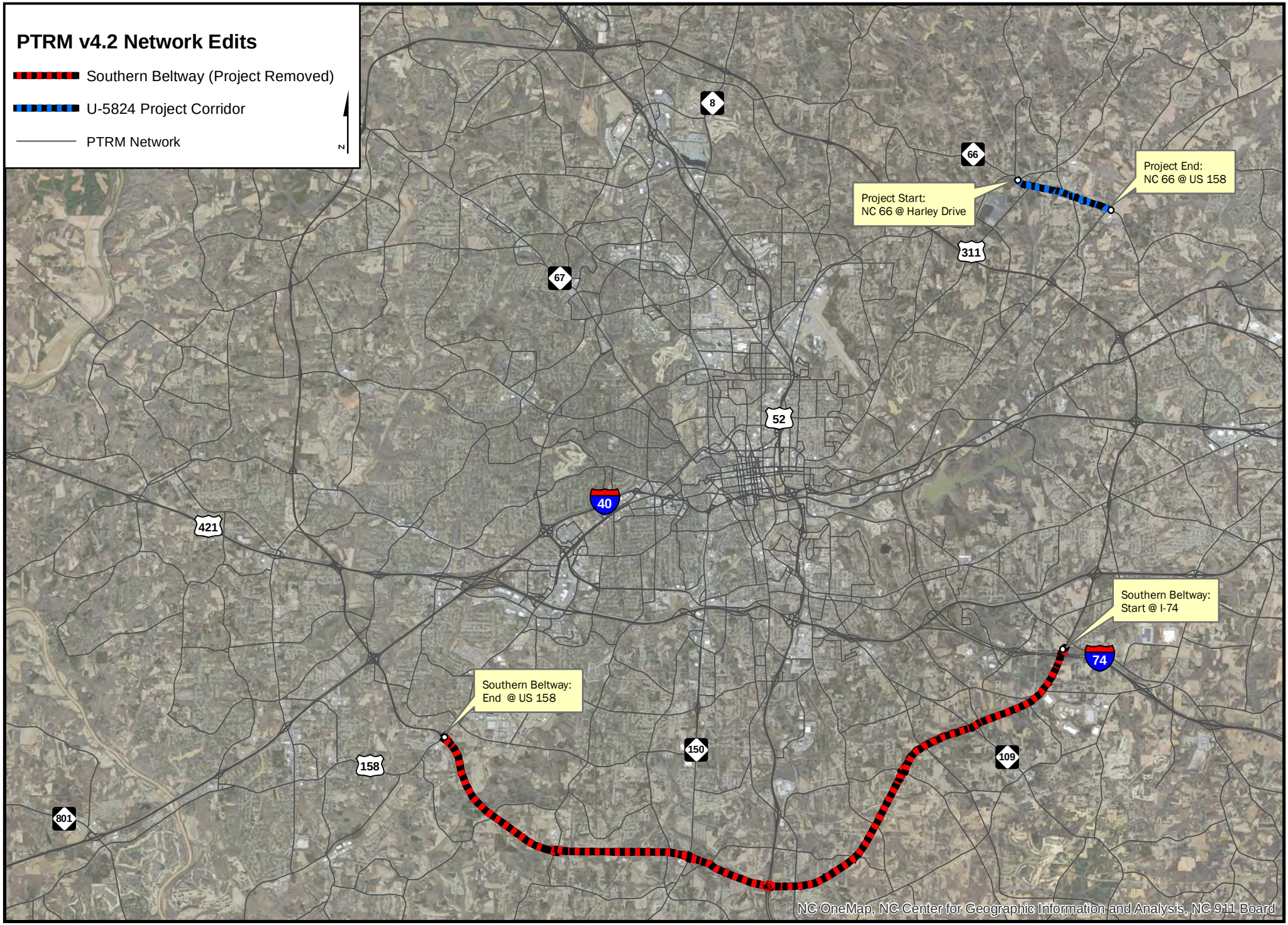
Appendix K: 2040 Design Year Build AADT Forecast Volumes and Growth Rates

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



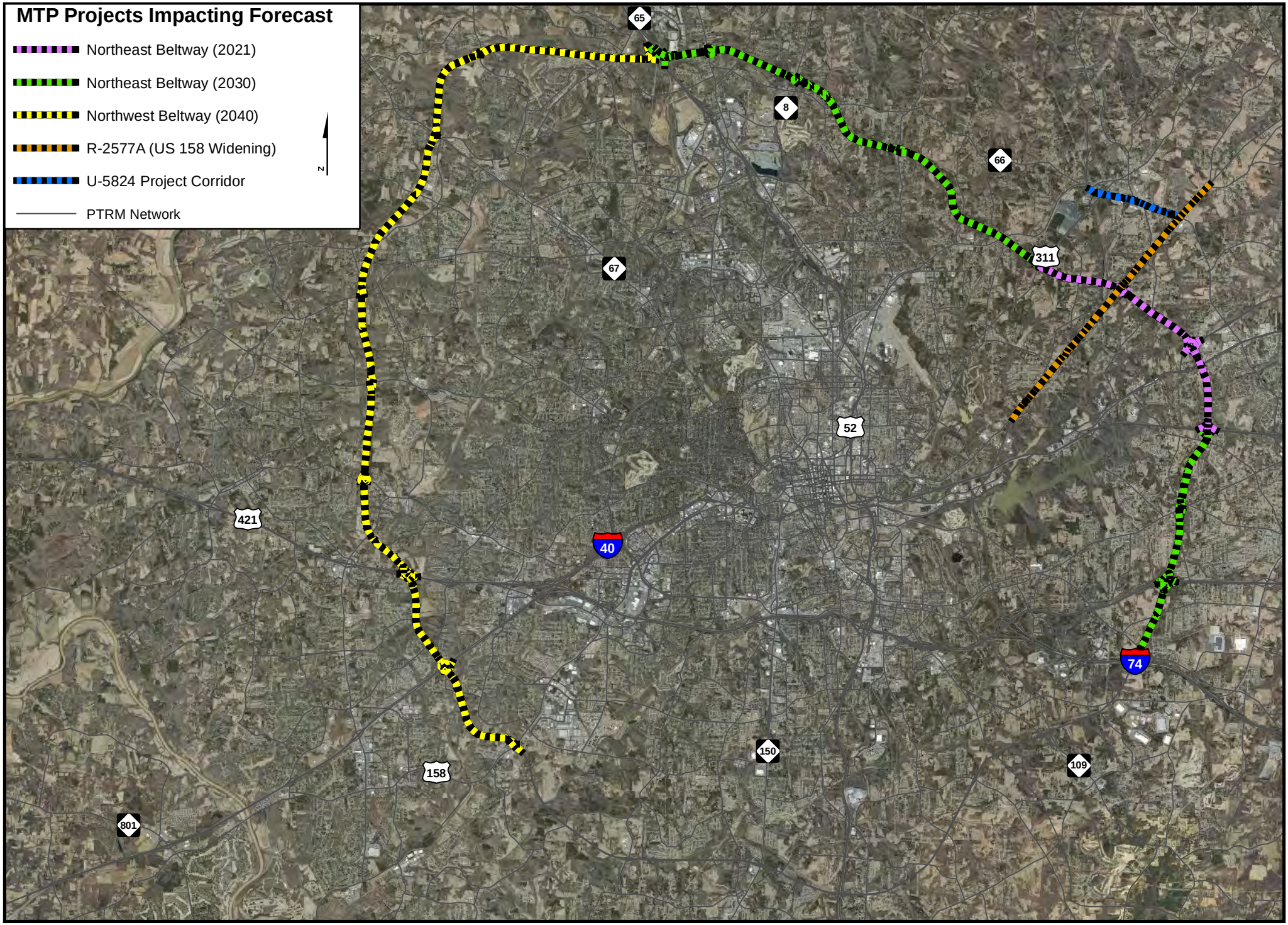
PIEDMONT TRIAD REGIONAL MODEL NETWORK EDITS

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

0 1 2 4 Miles

February 2017

Appendix M: MTP Projects Affecting Forecast



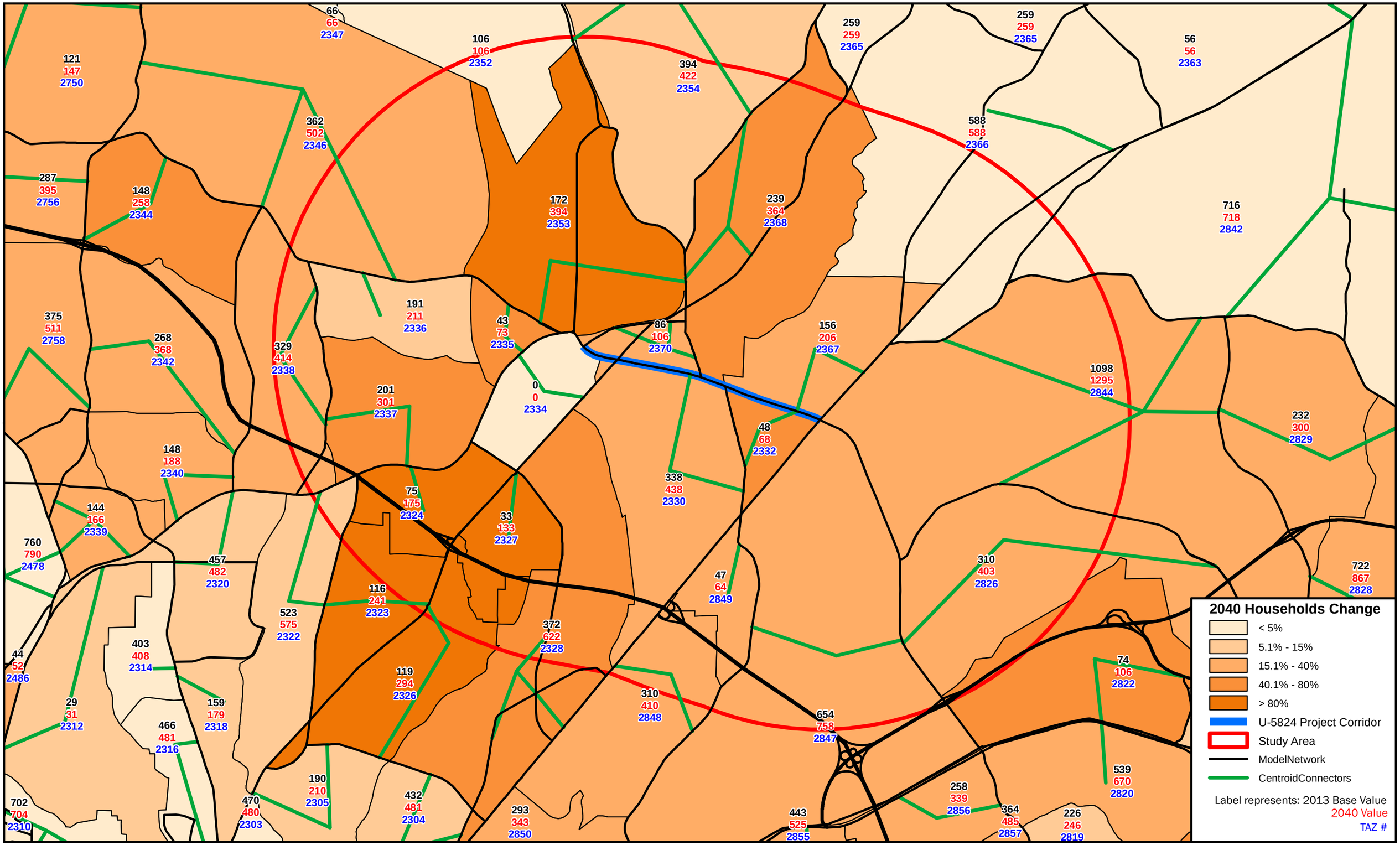
WSUAMPO MTP PROJECTS IMPACTING FORECAST

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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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Roy Cooper
Governor

J. Eric Boyette
Secretary

MEMO TO: PROJECT ENGINEER

FROM: Mr. Pat Ivey, PE

SUBJECT: Division 9 Final Pavement Design
U-5824, 44395.1.1
NC 66 From Harley Drive to US 158
Forsyth County, Division 9

DATE: 7/21/2023

The pavement designs for the above project are as follows:

Line	Surface	Intermed.	Base	ABC	Stab.	SN_{REQ}
NC 66	3.0" S9.5B	4.0" I19.0C	4.0" B25.0C	-	No	3.73
Y1, Y2, Y3, Y4, Y5, Y6, Y9, Y10, Y11A, Y11B	3.0" S9.5B	4.0" I19.0C	4.0" B25.0C	-	No	3.13
Y7A, Y7B, Y8A, Y8B, Y9	3.0" S9.5B	4.0" I19.0C	4.0" B25.0C	-	No	2.92
Temporary Pavement	2.5" S9.5B	-	5.0" B25.0C	-	No	2.53

Overlay the existing pavement with the following: 1.5" S9.5B

See Geotechnical Recommendations for Pavement Design dated January 14, 2019 for additional recommendations and details.
The mix designations provided for the above designs are in accordance with the 2018 NCDOT QMS manual.
If any additional information is needed, please contact: Connie James at 336-747-7800.

Design Information:

Initial Year:	2016	Projection Year:	2040
Initial Year ADT:	22,100	Proj. Yr. ADT:	24,200
% DUALS:	3.0	% TTST:	1.0
LANE/DIRECTION:	2	Des. Life (Years):	30
DIR %:	50	Subgrade M[r]:	8,043
Construction Year:	2023	Design TOT. 18K:	1,836,618
SN Required:	3.73	SN DESIGN:	4.28

SPI/ckj

cc: pavementrequests@ncdot.gov

Mailing Address:	*Telephone: 336-747-7800*	Location:
NC DEPARTMENT OF TRANSPORTATION	*Fax: (336)703-6693*	375 Silas Creek Parkway
Divison 9	*Customer Service: 1-877-368-4968*	Winston Salem, NC 27127
375 Silas Creek Parkway		
Winston Salem, NC 27127	*Website: www.ncdot.gov*	

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT: U-5824 COUNTY: Forsyth DATE: 9/5/2023 COMPILED BY: Josh Jernigan

CHAIN	STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
			TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. (+)15%		ROCK	SUITABLE	UNSUIT.	TOTAL
SUMMARY 1																
-L- LT	10+52.50	30+00.00	1,786				1,786	5,029		5,029	5,783	3,997				
-L- LT	30+00.00	50+50.00	2,709				2,709	9,935		9,935	11,425	8,716				
-L- LT	71+50.00	98+50.00	1,830				1,830	2,762		2,762	3,176	1,346				
-L- LT	100+00.00	106+50.00	551				551	89		89	102			449		449
-L- RT	10+52.50	15+50.00	231				231	640		640	736	505				
-L- RT	44+50.00	70+00.00	3,441				3,441	3,266		3,266	3,756	315				
-L- RT	70+00.00	98+50.00	967				967	5,394		5,394	6,203	5,236				
-L- RT	100+00.00	106+50.00	44				44	677		677	779	735				
-Y1-	10+75.00	12+00.00	46				46	57		57	66	20				
-Y3-	10+25.00	12+13.74	130				130	230		230	265	135				
-Y4-	10+00.00	11+34.42	82				82	46		46	53			29		29
-Y6-	10+51.94	12+00.00	181				181	27		27	31			150		150
-Y7A-	10+51.50	11+50.00	23				23	52		52	60	37				
-Y8A-	10+46.96	12+90.79	324				324	87		87	100			224		224
SUBTOTAL			12,345				12,345	28,291		28,291	32,535	21,041		852		852
SUMMARY 2																
-L- LT	50+50.00	71+50.00	158				158	1,154		1,154	1,327	1,169				
-L- RT	15+50.00	44+50.00	544				544	4,882		4,882	5,614	5,070				
-Y2-	10+33.92	11+75.00	90				90	160		160	184	94				
-Y3-	13+06.66	15+25.00	252				252	120		120	138			114		114
-Y4-	12+15.01	14+00.00	63				63	35		35	40			23		23
-Y5-	10+39.69	11+50.00	12				12	51		51	59	47				
-Y7B-	12+00.00	13+03.45	20				20	41		41	47	27				
-Y8B-	11+25.00	12+42.99	94				94	22		22	25			69		69
-Y9-	10+75.00	11+25.00	50				50	1		1	1			49		49
-Y9-	12+44.85	14+85.00	138				138	44		44	51			87		87
-Y10-	10+25.00	11+61.58	132				132	23		23	26			106		106
-Y11A-	10+45.47	12+25.00	233				233	67		67	77			156		156
-Y11B-	10+00.00	11+32.17	13				13	136		136	156	143				
SUBTOTAL			1,799				1,799	6,736		6,736	7,746	6,551		603		603
SHEET TOTALS			14,144				14,144	35,027		35,027	40,281	27,592		1,455		1,455

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT: U-5824 COUNTY: Forsyth DATE: 9/5/2023 COMPILED BY: Josh Jernigan

CHAIN	STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
			TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. (+)15%		ROCK	SUITABLE	UNSUIT.	TOTAL
SUMMARY 3																
-L- MED	17+00.00	22+00.00	55				55	94		94	108	53				
-L- MED	28+00.00	40+50.00	149				149	1,428		1,428	1,642	1,493				
-L- MED	43+00.00	54+00.00	157				157	528		528	607	450				
-L- MED	57+00.00	63+00.00						260		260	299	299				
-L- MED	66+00.00	75+50.00	63				63	304		304	350	287				
-L- MED	77+50.00	88+00.00	62				62	376		376	432	370				
-L- MED	90+50.00	93+50.00	44				44	60		60	69	25				
-L- (TEMP. PVMT	22+50.00	26+36.00	42				42							42		42
-L- (TEMP. PVMT	56+00.00	63+00.00	210				210							210		210
-L- (TEMP. PVMT	66+18.00	68+27.00	21				21							21		21
-TEMP1-	17+10.00	21+85.00	86				86							86		86
-TEMP2-	20+35.00	24+72.00	136				136							136		136
SUBTOTAL			1,025				1,025	3,050		3,050	3,508	2,978		495		495
SHEET TOTALS			1,025				1,025	3,050		3,050	3,508	2,978		495		495

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT: U-5824 COUNTY: Forsyth DATE: 9/5/2023 COMPILED BY: Josh Jernigan

CUMULATIVE TOTALS	EXCAVATION					EMBANKMENT				BORROW	WASTE			
	TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. (+)15%		ROCK	SUITABLE	UNSUIT.	TOTAL
SHEET 1 SUMMARY	14,144				14,144	35,027		35,027	40,281	27,592		1,455		1,455
SHEET 2 SUMMARY	1,025				1,025	3,050		3,050	3,508	2,978		495		495
SHEET TOTALS	15,169				15,169	38,077		38,077	43,789	30,569		1,950		1,950
LOSS DUE TO CLEARING AND GRUBBING	-6,000				-6,000					6,000				
EARTH WASTE IN LIEU OF BORROW										-1,950		-1,950		-1,950
PROJECT TOTAL	9,169				9,169	38,077		38,077	43,789	34,620				
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT										1,731				
GRAND TOTAL	9,169									36,351				
SAY	9,170									36,360				
ESTIMATED UNDERCUT	2,800													

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

North Carolina Department of Transportation
Preliminary Estimate

TIP No. U-5824 **Final** County: **FORSYTH**
Route NC 66 (Old Hollow Rd)
From West of Harley Dr to US 158
Typical Section 4-Ln divided with 23' raised median and c&g section

CONSTR. COST
$0

Prepared By: Summit Design & Engineering Services
Requested By:

Type	Item Number	Section	Description	Quantity	Unit	Price	Amount
M	0000100000-N	800	Mobilization	1	LS		$ -
M	0000400000-N	801	Construction Surveying	1	LS		$ -
G	0015000000-N	205	Sealing Abandoned Wells	1	EA		$ -
G	0043000000-N	226	Grading (Lump Sum)	1	EA		$ -
G	0050000000-E	226	Supplemental Clearing and Grubbing	1	Acre		$ -
G	0057000000-E	226	Undercut Excavation	2,800	CY		$ -
D	0134000000-E	240	Drainage Ditch Excavation	10	CY		$ -
G	0195000000-E	265	Select Granular Material	3,900	CY		$ -
G	0196000000-E	270	Geotextile for Soil Stabilization	3,900	SY		$ -
G	0241000000-E	505	Geotextile for Subgrade Stabilization	4,000	SY		$ -
D	0318000000-E	300	Foundation Conditioning Material, Minor Structures	1,730	Tons		$ -
D	0320000000-E	300	Foundation Conditioning Geotextile	5,430	SY		$ -
D	0335200000-E	305	15" Drainage Pipe	1,860	LF		$ -
D	0335300000-E	305	18" Drainage Pipe	136	LF		$ -
D	0335400000-E	305	24" Drainage Pipe	392	LF		$ -
D	0335500000-E	305	30" Drainage Pipe	92	LF		$ -
D	0335600000-E	305	36" Drainage Pipe	352	LF		$ -
D	0366000000-E	310	15" RC Pipe Culv, Class III	10,444	LF		$ -
D	0372000000-E	310	18" RC Pipe Culv, Class III	1,964	LF		$ -
D	0378000000-E	310	24" RC Pipe Culv, Class III	660	LF		$ -
D	0390000000-E	310	36" RC Pipe Culv, Class III	144	LF		$ -
D	0414000000-E	310	60" RC Pipe Culv, Class III	152	LF		$ -
D	0448200000-E	310	15" RC Pipe Culv, Class IV	76	LF		$ -
G	0995000000-N	340	Pipe Removal	4,829	LF		$ -
G	1099500000-E	505	Shallow Undercut	900	CY		$ -
G	1099700000-E	505	Class IV Subgrade Stabilization	2,600	Tons		$ -
G	1220000000-E	545	Incidental Stone Base	3,000	Tons		$ -
P	1330000000-E	607	Incidental Milling	6,300	SY		$ -
P	1491000000-E	610	Asphalt Conc. Base Course, Type B25.0C	18,320	Tons		$ -
E	1503000000-E	610	Asphalt Conc. Intermediate Course, Type I19.0C	17,270	Tons		$ -
P	1519000000-E	610	Asphalt Conc. Surface Course, Type S9.5B	14,120	Tons		$ -
P	1575000000-E	620	Asphalt Binder for Plant Mix PG 64-22	2,575	Tons		$ -
P	1693000000-E	654	Asphalt Plant Mix Pavement Repair	1,525	Tons		$ -
G	2000000000-N	806	Right-of-Way Markers	157	EA		$ -
D	2022000000-E	815	Subdrain Excavation	112	CY		$ -
D	2026000000-E	815	Geotextile for Subsurface Drains	500	SY		$ -
D	2036000000-E	815	Subdrain Course Aggregate	84	CY		$ -
D	2044000000-E	815	6" Perforated Subdrain Pipe	500	LF		$ -
D	2070000000-N	815	Subdrain Pipe Outlet	1	EA		$ -
D	2077000000-E	815	6" Outlet Pipe	6	LF		$ -
D	2190000000-N	828	Temporary Steel Plate Covers for Masonry Drainage Structure	20	EA		$ -
D	2209000000-E	838	Endwalls	6.2	CY		$ -
D	2220000000-E	838	Reinforced Endwalls	5.6	CY		$ -
D	2264000000-E	840	Pipe Plugs	0.116	CY		$ -
D	2275000000-E	SP	Flowable Fill	16	CY		$ -
D	2286000000-N	840	Masonry Drainage Structures	201	EA		$ -
D	2297000000-E	840	Masonry Drainage Structures	9.21	CY		$ -
D	2308000000-E	840	Masonry Drainage Structures	83.90	LF		$ -

D	2364000000-N	840	Frame w / Two Grates, Std 840.16	40	EA		$	-
D	2366000000-N	840	Frame w/ Two Grates, Std 840.24	1	EA		$	-
D	2367000000-N	840	Frame w/ Two Grates, Std 840.29	9	EA		$	-
D	2374000000-N	840	Frame w/Grate and Hood 840.03 Type E	13	EA		$	-
D	2374000000-N	840	Frame w/Grate and Hood 840.03 Type F	62	EA		$	-
D	2374000000-N	840	Frame w/Grate and Hood 840.03 Type G	69	EA		$	-
D	2396000000-N	840	Frame w / Two Grates, Std 840.54	9	EA		$	-
D	2440000000-N	852	Concrete Transitional Section For Catch Basin	15	EA		$	-
D	2451000000-N	852	Concrete Transitional Section For Drop Inlet	6	EA		$	-
D	2473000000-N	SP	Concrete Transitional Section for Traffic Bearing 2GI	9	EA		$	-
P	2535000000-E	846	8"x18" Concrete Curb	580	LF		$	-
P	2538000000-E	846	2'-9" Concrete Curb and Gutter	1,390	LF		$	-
P	2542000000-E	846	1'-6" Concrete Curb and Gutter	10,430	LF		$	-
P	2549000000-E	846	2'-6" Concrete Curb and Gutter	18,400	LF		$	-
P	2591000000-E	848	4" Concrete Sidewalk	9,790	SY		$	-
P	2605000000-N	848	Concrete Curb Ramps	80	EA		$	-
P	2612000000-E	848	6" Concrete Driveways	640	SY		$	-
D	2619000000-E	850	4" Concrete Paved Ditch	10	SY		$	-
P	2655000000-E	852	5" Mono. Islands (Keyed-in)	2,180	SY		$	-
D	2815000000-N	858	Adjustment of Drop Inlet	1	EA		$	-
D	2830000000-N	858	Adjustment of Manholes	28	EA		$	-
D	2845000000-N	858	Adjustment of Meter and Valve Boxes	76	EA		$	-
GR	3030000000-E	862	Steel Beam Guardrail	1,112.50	LF		$	-
GR	3045000000-E	862	Steel Beam Guardrail, Shop Curved	75.00	LF		$	-
GR	3150000000-N	862	Additional Guardrail Posts	10	EA		$	-
GR	3210000000-N	862	Guardrail Anchor, Type CAT-1	7	EA		$	-
GR	3287000000-N	SP	GRAU, Type 350 TL-3	7	EA		$	-
G	3628000000-E	876	Plain Rip Rap, Class I	35	Ton		$	-
G	3649000000-E	876	Plain Rip Rap, Class B	135	Ton		$	-
D	3656000000-E	876	Geotextile For Drainage	2,445	SY		$	-
S	4072000000-E	903	Supports, 3 LB Steel U-Channel	1,600	LF		$	-
S	4096000000-N	904	Sign Erection, Type D	5	EA		$	-
S	4102000000-N	904	Sign Erection, Type E	66	EA		$	-
S	4108000000-N	904	Sign Erection, Type F	23	EA		$	-
S	4116100000-N	904	Sign Erection, Relocate G.M. Sign	3	EA		$	-
S	4155000000-N	907	Disposal of Sign System, U-Channel	67	EA		$	-
S	4192000000-N	907	Disposal of Support, U-Channel	3	EA		$	-
Y	4400000000-E	1110	Work Zone Signs (Stationary)	1160	SF		$	-
Y	4405000000-E	1110	Work Zone Signs (Portable)	932	SF		$	-
Y	4410000000-E	1110	Work Zone Signs (Barricade Mounted)	272	SF		$	-
Y	4415000000-N	1115	Flashing Arrow Board	2	EA		$	-
Y	4420000000-N	1120	Portable Changeable Message Sign	2	EA		$	-
Y	4430000000-N	1130	Drums	522	EA		$	-
Y	4445000000-E	1145	Barricades (Type III)	152	LF		$	-
Y	4447000000-E	SP	Pedestrian Channelizing Devices	16	LF		$	-
Y	4455000000-N	1150	Flagger	1,080	DAY		$	-
Y	4465000000-N	1160	Temporary Crash Cushions	4	EA		$	-
Y	4470000000-N	1160	Remove and Reset Temporary Crash Cushion	2	EA		$	-
Y	4480000000-N	1165	TMA	2	EA		$	-
Y	4485000000-E	1170	Portable Concrete Barrier	975	LF		$	-
Y	4500000000-E	1170	Remove and Reset Portable Concrete Barrier	710	LF		$	-
Y	4507000000-E	1170	Water Filled Barrier	30	LF		$	-
Y	4510000000-N	1190	Law Enforcement	136	HR		$	-
Y	4585000000-N	SP	Transfer & Transport Vehicle	225	EA		$	-
Y	4600000000-N	SP	Generic Traffic Control Item - Audible Warning Devices	2	EA		$	-
Y	4650000000-N	1251	Temporary Raised Pavement Markers	150	EA		$	-
PM	4685000000-E	1205	Thermoplastic Pavement Marking Lines (4", 90 MILS)	36,270	LF		$	-
PM	4695000000-E	1205	Thermoplastic Pavement Marking Lines (8", 90 MILS)	4,600	LF		$	-

PM	4700000000-E	1205	Thermoplastic Pavement Marking Lines (12", 90 MILS)	920	LF		$	-
PM	4709000000-E	1205	Thermoplastic Pavement Marking Lines (24", 90 MILS)	575	LF		$	-
PM	4720000000-E	1205	Thermoplastic Pavement Marking Character (90 MILS)	8	EA		$	-
PM	4725000000-E	1205	Thermoplastic Pavement Marking Symbol (90 MILS)	136	EA		$	-
PM	4726110000-E	1205	Heated-In-Place Thermoplastic Pavement Marking Symbol (90 MILS)	50	EA		$	-
PM	4810000000-E	1205	Paint Pavement Marking Lines (4")	87753	LF		$	-
PM	4820000000-E	1205	Paint Pavement Marking Lines (8")	7250	LF		$	-
PM	4825000000-E	1205	Paint Pavement Marking Lines (12")	1,470	LF		$	-
PM	4835000000-E	1205	Paint Pavement Marking Lines (24")	1,370	LF		$	-
PM	4840000000-N	1205	Paint Pavement Marking Character	16	EA		$	-
PM	4845000000-N	1205	Paint Pavement Marking Symbol	239	EA		$	-
PM	4850000000-E	1205	Removal of Pavement Marking Lines (4")	31,665	LF		$	-
PM	4860000000-E	1205	Removal of Pavement Marking Lines (8")	690	LF		$	-
PM	4870000000-E	1205	Removal of Pavement Marking Lines (24")	790	LF		$	-
PM	4875000000-N	1205	Removal of Pavement Marking Symbols & Characters	110	EA		$	-
PM	4905500000-N	1253	Snowplowable Pavement Markers	755	EA		$	-
L	6000000000-E	1605	Temporary Silt Fence	30,010	LF		$	-
L	6006000000-E	1610	Erosion Control Stone, Class A	2,580	TON		$	-
L	6009000000-E	1610	Erosion Control Stone, Class B	1,710	TON		$	-
L	6012000000-E	1610	Sediment Control Stone	3,850	TON		$	-
L	6015000000-E	1615	Temporary Mulching	26	ACR		$	-
L	6018000000-E	1620	Seed For Temporary Erosion Control	1,300	LB		$	-
L	6021000000-E	1620	Fertilizer For Temporary Seeding	7.5	TON		$	-
L	6024000000-E	1622	Temporary Slope Drains	590	LF		$	-
L	6029000000-E	SP	Safety Fence	800	LF		$	-
L	6030000000-E	1630	Silt Excavation	8,140	CY		$	-
L	6036000000-E	1631	Matting for Erosion Control	24,000	SY		$	-
L	6037000000-E	SP	Coir Fiber Mat	100	SY		$	-
L	6038000000-E	SP	Permanent Soil Reinforcement Mat	4,110	SY		$	-
L	6042000000-E	1632	1/4" Hardware Cloth	9,000	LF		$	-
L	6046000000-E	1636	Temporary Pipe for Stream Crossing	50	LF		$	-
L	6070000000-N	1639	Special Stilling Basin	2	EA		$	-
L	6071010000-E	SP	Wattle	320	LF		$	-
L	6071012000-E	SP	Coir Fiber Wattle	560	LF		$	-
L	6071020000-E	SP	Polyacrylamide (PAM)	330	LB		$	-
L	6071030000-E	1640	Coir Fiber Baffle	1,140	LF		$	-
L	6071050000-E	SP	1-1/2" Skimmer	3	EA		$	-
L	6071050000-E	SP	2" Skimmer	3	EA		$	-
L	6084000000-E	1660	Seeding and Mulching	24	ACR		$	-
L	6087000000-E	1660	Mowing	21	ACR		$	-
L	6090000000-E	1661	Seed for Repair Seeding	300	LB		$	-
L	6093000000-E	1661	Fertilizer For Repair Seeding	1	TON		$	-
L	6096000000-E	1662	Seed for Supplementary Seeding	525	LB		$	-
L	6108000000-E	1665	Fertilizer Topdressing	15.25	TON		$	-
L	6111000000-E	SP	Impervious Dike	65	LF		$	-
L	6114500000-N	1667	Specialized Hand Mowing	10	MHR		$	-
L	6114800000-N	SP	Manual Litter Removal	12	MHR		$	-
L	6114900000-E	SP	Litter Disposal	3	TON		$	-
L	6117000000-N	1675	Response for Erosion Control	100	EA		$	-
L	6117500000-N	SP	Concrete Washout Structure	10	EA		$	-
L	6132000000-E	SP	Generic Erosion Control Item - Fabric Insert Inlet Protection Cleanout	132	EA		$	-
L	6132000000-E	SP	Generic Erosion Control Item - Fabric Insert Inlet Protection	44	EA		$	-
Z	7048500000-E	1705	Pedestrian Signal Head (16", 1 Section w/ Countdown)	24	EA		$	-
Z	7060000000-E	1705	Signal Cable	21,300	LF		$	-
Z	7120000000-E	1705	Vehicle Signal Head (12", 3 Section)	73	EA		$	-
Z	7132000000-E	1705	Vehicle Signal Head (12", 4 Section)	26	EA		$	-
Z	7144000000-E	1705	Vehicle Signal Head (12", 5 Section)	9	EA		$	-
Z	7264000000-E	1710	Messenger Cable (3/8")	4,750	LF		$	-
Z	7288000000-E	1710	Paved Trenching (1, 2")	50	LF		$	-
Z	7300000000-E	1715	Unpaved Trenching (1, 2")	3,475	LF		$	-
Z	7300000000-E	1715	Unpaved Trenching (2, 2")	500	LF		$	-

Z	7300000000-E	1715	Unpaved Trenching (3, 2")	125	LF		$	-
Z	7301000000-E	1715	Directional Drill (1, 2")	275	LF		$	-
Z	7301000000-E	1715	Directional Drill (2, 2")	125	LF		$	-
Z	7324000000-N	1716	Junction Box (Standard)	49	EA		$	-
Z	7348000000-N	1716	Junction Box (Over-Sized, Heavy Duty)	4	EA		$	-
Z	7360000000-N	1720	Wood Pole	15	EA		$	-
Z	7372000000-N	1721	Guy Assembly	32	EA		$	-
Z	7408000000-E	1722	1" Riser w/ Weatherhead	4	EA		$	-
Z	7420000000-E	1722	2" Riser w/ Weatherhead	8	EA		$	-
Z	7444000000-E	1725	Inductive Loop Sawcut	5,600	LF		$	-
Z	7456000000-E	1726	Lead-In Cable (14-2)	25,625	LF		$	-
Z	7481000000-N	SP	Site Survey	4	EA		$	-
Z	7481240000-N	SP	Camera Without Internal Loop Emulator Processing Unit	24	EA		$	-
Z	7481260000-N	SP	External Loop Emulator Processing Unit	4	EA		$	-
Z	7575142010-N	1736	900 MHz Ethernet Spread Spectrum Radio	4	EA		$	-
Z	7576000000-N	SP	Metal Strain Signal Pole	16	EA		$	-
Z	7613000000-N	SP	Soil Test	16	EA		$	-
Z	7614100000-E	SP	Drilled Pier Foundation	96	CY		$	-
Z	7636000000-N	1745	Sign for Signals	13	EA		$	-
Z	7642200000-N	1750	Type II Pedestal w/ Foundation (BLACK)	17	EA		$	-
Z	7684000000-N	1751	Signal Cabinet Foundation	4	EA		$	-
Z	7696000000-N	1751	Controller w/ Cabinet (2070LX, 332)	4	EA		$	-
Z	7708000000-N	1753	Detector Card (Type 170)	39	EA		$	-
Z	7901000000-N	1753	Cabinet Base Extender	4	EA		$	-
Z	7980000000-N	SP	Generic Signal Item - Ethernet Edge Switch	4	EA		$	-
Z	7980000000-N	SP	Generic Signal Item - Protective Coating for Strain Pole (Black)	8	EA		$	-
Z	7980000000-N	SP	Generic Signal Item - Protective Coating for Signal Pedestal (Black)	17	EA		$	-
W	8802040000-E	SP	Segmental Gravity Retaining Walls	4,735	SF		$	-
W	8839000000-E	SP	Handrail for Retaining Wall	760	LF		$	-
			Misc. & Mob (10% Str & Utilities)	1	LS			
			Misc. & Mob (25% Rdwy)	1	LS			

Lgth **Miles**

Contract Cost …….. …… …….. $ -

E. & C. 15% …….. …… ……..

Construction Cost …….. …… …….. **$ -**

COST BASED ESTIMATE

Date: 7/28/2023

MEMORANDUM TO: FILE

FROM: Summit Design and Engineering Services

SUBJECT: Project No. : U-5824

COST BASED ESTIMATE QUANTITY BREAKDOWNS

The breakdown of quantities for the following items have been prepared to assist the Design Services Unit in the preparation of the "Cost Based Estimate".

I Earthwork

The earthwork summary in the plans has been prepared in accordance with the following guidelines:

Yes	No	N/A	
Yes			a. Summary points do not exceed 3000'.
		N/A	b. Summary points end / begin at each bridge (stream or grade separation).
Yes			c. Summary points end / begin near each major at-grade multi-lane intersection or at-grade railroad crossing.
Yes			d. -Y- Lines are included in their respective summaries.
Yes			e. On widening projects separate summaries are provided for right and left sides.
Yes			f. On existing divided facilities to be widened separate summaries are provided for right side and median widening.

II. Pavement Quantities

Pavement quantity breakdowns have been prepared in accordance with the following chart:

	Full Lane Width (10' or more width) (any layer of material constructed to a width of 10' or more and along a continuous pull)		Miscellaneous Areas (0 to 10' widening width) (ramps, intersections, tapers, short auxillary lanes median x-over,Rt. & Lt. turn lanes driveways,etc.)		Wedging & Leveling	
ITEM	TONS	Subgrade Contact (sq.yds)	TONS	Subgrade Contact (sq.yds)	TONS	Total (TONS)
S9.5B	13759	89,188	50	454	310	14120
I19.0C	9,515	41731	1517	6653	6234	17270
B25.0C	10485	45986	2727	11961	5108	18320

Please note that on widening projects where I-2 or like is used 2" deep on the widening portion and 1" deep on the existing pavement the first 1" of material on the widening section (less than 10' wide) should be calculated and included in the miscellaneous area and the second 1" should be included with the resurfacing and included in the full lane width (if 10' wide or greater).

7/27/2023

PROJECT NO.: U-5824 SHEET OF

SECTION: 800

Mobilization

Mobilization	1 LS

COMPUTED BY: CHECKED BY:

7/27/2023

PROJECT NO.: U-5824 SHEET OF

SECTION: 801

Construction Surveying

Construction Surveying (Per PLFI Questions)	1 LS

COMPUTED BY: CHECKED BY:

PROJECT NO.: U-5824 SHEET OF
COMPUTED BY: Geotech
CHECKED BY: **SECTION: 205**

SEALING ABANDONED WELLS

LINE	STATION	LOCATION	PER EACH
L	87+05.00	LT	1
	Column Total		1

LINE	STATION	LOCATION	PER EACH
	Column Total		
	Total		1
	SAY		**1**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: JPM
CHECKED BY: FEJ **SECTION: 226**

GRADING (LUMP SUM)

(THIS COMPUTATION SHEET APPLIES ONLY TO PROJECTS WHICH HAVE BEEN PREDETERMINED TO USE THIS PAY ITEM. SEE ROADWAY DESIGN MANUAL, PART I, 11-6)

ITEM	QUANTITIES	UNIT	UNIT PRICE	PRICE
CLEARING AND GRUBBING	3.10	ACRES	$ 10,000.00	$ 31,000.00
UNCLASSIFIED EXCAVATION	9,170	YD^3	$ 6.00	$ 55,020.00
BORROW EXCAVATION	36,360	YD^3	$ 6.25	$ 227,250.00
SHOULDER BORROW		YD^3	$ 6.25	$ -
FINE GRADING	58,870	YD^2	$ 2.50	$ 147,175.00
REMOVAL OF EXISTING ASPHALT PAVEMENT	8,700	YD^2	$ 2.50	$ 21,750.00
REMOVAL OF EXISTING CONCRETE PAVEMENT		YD^2	$ 10.00	$ -
BREAKING OF EXISTING ASPHALT PAVEMENT		YD^2	$ 2.00	$ -
BREAKING OF EXISTING CONCRETE PAVEMENT		YD^2	$ 5.00	$ -
			TOTAL	$ 482,195.00

IF THE SUMMATION OF THE ITEM AMOUNTS IS $1,000,000.00 OR LESS, THEN THE GRADING MAY BE LET ON A "LUMP SUM" BASIS WITH CONCURRENCE OF THE DIVISION ENGINEER. IF THE COST OF ANY ONE OF THE ITEMS, EXCLUDING CLEARING AND GRUBBING AND FINE GRADING, IS 50% OR MORE OF THE TOTAL COST CALCULATED, THEN THAT ITEM SHALL BE INCLUDED AS AN INDIVIDUAL ITEM WITH THE OTHER ITEMS BEING DONE ON A "LUMP SUM GRADING" BASIS. A SPECIAL PROVISION WILL BE NEEDED IN THIS CASE AND THE PAY ITEM "GRADING" SHOULD BE INDICATED AS A "SP" IN THE ESTIMATE. IF THE SUM OF THE LUMP SUM ITEMS AMOUNTS EXCEEDS $1,000,000.00 OR IS 25% MORE OF THE TOTAL COST OF THE PROJECT, THE PROJECT SHALL CONTAIN THE INDIVIDUAL ITEMS, IT WILL BE NECESSARY TO CALCULATE AND SHOW THE PAVEMENT STRUCTURE VOLUME ON THE SUMMARY OF EARTHWORK.

OTHER CONSIDERATIONS FOR LUMP SUM GRADING MAY UTILIZE A DOLLAR LIMIT. FOR EXAMPLE 3R PROJECTS WITH "TRENCHING & WIDENING" AND MINOR GRADING SHOULD BE CONSIDERED WHEN USE OF CROSS-SECTIONS FOR EARTHWORK BY THE RESIDENT ENGINEER IS NOT PRACTICAL. WHEN APPLYING LUMP SUM GRADING TO THESE SPECIAL APPLICATIONS, APPROVAL BY THE ASSISTANT STATE ROADWAY DESIGN ENGINEER AND PROPOSALS AND CONTRACTS SECTION ENGINEER IS REQUIRED ON A PROJECT-BY-PROJECT BASIS.

*** LIST ALL QUANTITIES ON THE CALCULATION SHEET EVEN IF THE PAY ITEM PRICE EXCEEDS 50% OR MORE OF THE TOTAL COST.**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: FEJ **SECTION: 200**

CLEARING AND GRUBBING

LINE	STATION	STATION	LOCATION	AREA FROM CADD OR LENGTH	WIDTH	SQUARE FEET
L	16+93	18+41	RT	2,571.67		2,571.67
L	20+29	22+26	LT	6,806.53		6,806.53
L	23+11	23+33	LT	991.95		991.95
L	22+85	24+91	RT	2,106.56		2,106.56
L	24+84	26+84	LT	10,597.41		10,597.41
L	27+66	28+64	LT	4,547.28		4,547.28
Y3	14+17	14+68	LT	1,015.86		1,015.86
L	28+44	31+59	RT	4,474.36		4,474.36
L	38+40	38+97	LT	3,129.66		3,129.66
L	40+48	40+83	LT	2,907.61		2,907.61
L	41+64	51+09	LT	51,333.15		51,333.15
L	45+61	51+40	RT	24,161.54		24,161.54
L	74+53	74+86	RT	788.66		788.66
Y9	10+55	11+44	RT	967.92		967.92
L	81+35	83+84	LT	6,782.20		6,782.20
L	91+49	91+57	LT	200.79		200.79
L	91+53	93+01	RT	1,781.43		1,781.43
L	96+41	98+47	LT	5,735.46		5,735.46
L	95+07	96+84	RT	2,886.02		2,886.02

Total Sq. Feet = **43560 Sq. Feet/ACRE**

Total Sq. Feet	133,786.07
Acres	3.07
SAY	3.10

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT: U-5824 COUNTY: Forsyth DATE: 9/5/2023 COMPILED BY: Josh Jernigan

CHAIN	STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
			TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. (+)15%		ROCK	SUITABLE	UNSUIT.	TOTAL
SUMMARY 1																
-L- LT	10+52.50	30+00.00	1,786				1,786	5,029		5,029	5,783	3,997				
-L- LT	30+00.00	50+50.00	2,709				2,709	9,935		9,935	11,425	8,716				
-L- LT	71+50.00	98+50.00	1,830				1,830	2,762		2,762	3,176	1,346				
-L- LT	100+00.00	106+50.00	551				551	89		89	102			449		449
-L- RT	10+52.50	15+50.00	231				231	640		640	736	505				
-L- RT	44+50.00	70+00.00	3,441				3,441	3,266		3,266	3,756	315				
-L- RT	70+00.00	98+50.00	967				967	5,394		5,394	6,203	5,236				
-L- RT	100+00.00	106+50.00	44				44	677		677	779	735				
-Y1-	10+75.00	12+00.00	46				46	57		57	66	20				
-Y3-	10+25.00	12+13.74	130				130	230		230	265	135				
-Y4-	10+00.00	11+34.42	82				82	46		46	53			29		29
-Y6-	10+51.94	12+00.00	181				181	27		27	31			150		150
-Y7A-	10+51.50	11+50.00	23				23	52		52	60	37				
-Y8A-	10+46.96	12+90.79	324				324	87		87	100			224		224
SUBTOTAL			12,345				12,345	28,291		28,291	32,535	21,041		852		852
SUMMARY 2																
-L- LT	50+50.00	71+50.00	158				158	1,154		1,154	1,327	1,169				
-L- RT	15+50.00	44+50.00	544				544	4,882		4,882	5,614	5,070				
-Y2-	10+33.92	11+75.00	90				90	160		160	184	94				
-Y3-	13+06.66	15+25.00	252				252	120		120	138			114		114
-Y4-	12+15.01	14+00.00	63				63	35		35	40			23		23
-Y5-	10+39.69	11+50.00	12				12	51		51	59	47				
-Y7B-	12+00.00	13+03.45	20				20	41		41	47	27				
-Y8B-	11+25.00	12+42.99	94				94	22		22	25			69		69
-Y9-	10+75.00	11+25.00	50				50	1		1	1			49		49
-Y9-	12+44.85	14+85.00	138				138	44		44	51			87		87
-Y10-	10+25.00	11+61.58	132				132	23		23	26			106		106
-Y11A-	10+45.47	12+25.00	233				233	67		67	77			156		156
-Y11B-	10+00.00	11+32.17	13				13	136		136	156	143				
SUBTOTAL			1,799				1,799	6,736		6,736	7,746	6,551		603		603
SHEET TOTALS			14,144				14,144	35,027		35,027	40,281	27,592		1,455		1,455

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT: U-5824 COUNTY: Forsyth DATE: 9/5/2023 COMPILED BY: Josh Jernigan

CHAIN	STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
			TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. (+)15%		ROCK	SUITABLE	UNSUIT.	TOTAL
SUMMARY 3																
-L- MED	17+00.00	22+00.00	55				55	94		94	108	53				
-L- MED	28+00.00	40+50.00	149				149	1,428		1,428	1,642	1,493				
-L- MED	43+00.00	54+00.00	157				157	528		528	607	450				
-L- MED	57+00.00	63+00.00						260		260	299	299				
-L- MED	66+00.00	75+50.00	63				63	304		304	350	287				
-L- MED	77+50.00	88+00.00	62				62	376		376	432	370				
-L- MED	90+50.00	93+50.00	44				44	60		60	69	25				
_- (TEMP. PVMT	22+50.00	26+36.00	42				42							42		42
_- (TEMP. PVMT	56+00.00	63+00.00	210				210							210		210
_- (TEMP. PVMT	66+18.00	68+27.00	21				21							21		21
-TEMP1-	17+10.00	21+85.00	86				86							86		86
-TEMP2-	20+35.00	24+72.00	136				136							136		136
SUBTOTAL			1,025				1,025	3,050		3,050	3,508	2,978		495		495
SHEET TOTALS			1,025				1,025	3,050		3,050	3,508	2,978		495		495

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

Earthwork Balance Sheet

Volumes in Cubic Yards

PROJECT: U-5824 COUNTY: Forsyth DATE: 9/5/2023 COMPILED BY: Josh Jernigan

CUMULATIVE TOTALS	EXCAVATION					EMBANKMENT				BORROW	WASTE			
	TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. (+)15%		ROCK	SUITABLE	UNSUIT.	TOTAL
SHEET 1 SUMMARY	14,144				14,144	35,027		35,027	40,281	27,592		1,455		1,455
SHEET 2 SUMMARY	1,025				1,025	3,050		3,050	3,508	2,978		495		495
SHEET TOTALS	15,169				15,169	38,077		38,077	43,789	30,569		1,950		1,950
LOSS DUE TO CLEARING AND GRUBBING	-6,000				-6,000					6,000				
EARTH WASTE IN LIEU OF BORROW										-1,950		-1,950		-1,950
PROJECT TOTAL	9,169				9,169	38,077		38,077	43,789	34,620				
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT										1,731				
GRAND TOTAL	9,169									36,351				
SAY	9,170									36,360				
ESTIMATED UNDERCUT	2,800													

NOTE: EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: JPL **SECTION: 500**

FINE GRADING

NOTE: THE WIDTH IS MEASURED FROM EOP TO EOP

LINE	STATION	STATION	LOCATION	LENGTH	AREA FROM CADD OR WIDTH	SQUARE FEET
L	10+53	13+95	LT		1,476.21	1,476.21
L	10+53	13+95	RT		2,324.92	2,324.92
L	13+95	26+73	LT		39,049.19	39,049.19
L	13+95	26+73	RT		15,255.55	15,255.55
L	26+73	33+66	LT		26,387.79	26,387.79
L	26+73	33+66	RT		4,829.88	4,829.88
L	33+66	41+73	LT		29,340.15	29,340.15
L	33+66	41+73	RT		28,802.07	28,802.07
L	41+73	55+73	LT		43,383.74	43,383.74
L	41+73	55+73	RT		49,338.17	49,338.17
L	55+73	64+52	LT		5,195.33	5,195.33
L	55+73	64+61	RT		35,708.06	35,708.06
L	64+52	76+52	LT		15,581.98	15,581.98
L	64+61	76+52	RT		36,962.11	36,962.11
L	76+52	89+20	LT		41,388.49	41,388.49
L	76+52	89+20	RT		25,935.90	25,935.90
L	89+20	95+97	LT		22,586.49	22,586.49
L	89+20	94+43	RT		20,140.81	20,140.81
L	95+97	99+13	LT		6,913.32	6,913.32
L	94+43	99+13	RT		10,200.29	10,200.29
L	99+13	106+65	LT		9,300.60	9,300.60
L	99+13	106+65	RT		10,411.37	10,411.37
Y1	10+75	12+10	CL		1,578.88	1,578.88
Y2	10+40	11+75	CL		1,502.89	1,502.89
Y3	10+25	12+14	CL		5,209.95	5,209.95
Y3	13+07	15+25	CL		3,113.48	3,113.48
Y4	10+00	11+34	CL		3,074.86	3,074.86
Y4	12+15	13+75	CL		2,131.21	2,131.21
Y5	10+40	10+93	CL		1,198.65	1,198.65
Y6	10+53	12+00	CL		3,074.43	3,074.43
Y7A	10+52	12+00	CL		1,659.97	1,659.97
Y7B	12+00	13+03	CL		1,675.40	1,675.40
Y8A	10+48	12+93	CL		3,996.06	3,996.06
Y8B	11+25	12+43	CL		2,129.19	2,129.19
Y9	10+75	11+54	CL		2,845.79	2,845.79
Y9	12+33	13+75	CL		3,796.95	3,796.95
Y10	10+25	11+74	CL		4,000.38	4,000.38
Y11A	10+44	12+25	CL		5,291.25	5,291.25

Y11B	10+00	11+33	CL		2,986.43	2,986.43

TOTAL IN FT^2	529,778.20
TOTAL IN YD^2	58,864.24
SAY	**58,870.00**

PROJECT NO.: U5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: FEJ **SECTION: 250**

REMOVAL OF EXISTING ASPHALT PAVEMENT

LINE	STATION	STATION	LOCATION	LENGTH OR AREA	WIDTH	SQUARE YARDS
L	17+28	20+30	CENTER	2900.52		322.28
L	19+62	25+40	RT	2036.73		226.30
L	34+50	41+25	RT	17226.75		1914.08
L	43+16	47+06	RT	7351.52		816.84
L	43+16	49+99	CENTER	5678.14		630.90
L	49+99	52+00	LT	5891.53		654.61
L	50+52	54+19	CENTER	3382.96		375.88
L	60+66	62+85	CENTER	927.02		103.00
L	68+71	75+21	CENTER	7521.86		835.76
L	77+82	85+17	CENTER	8398.15		933.13
L	90+40	93+44	CENTER	3744.25		416.03
L	17+19	21+38	CENTER	2357.46		261.94
L	47+76	50+78	CENTER	3583.17		398.13
L	57+04	62+86	CENTER	5473.26		608.14
L	66+18	68+27	CENTER	876.96		97.44
Y11A	10+28	10+97	LT	944.13		104.90

					TOTAL	8,699.38
					SAY	**8,700**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: FEJ **SECTION: 226**

SUPPLEMENTARY CLEARING AND GRUBBING

CLEARING AND GRUBBING	=	SUPPLEMENTARY CLEARING AND GRUBBING
0 THRU 10 ACRES	=	1 ACRES
11 THRU 25 ACRES	=	2 ACRES
26 THRU 50 ACRES	=	3 ACRES
51 THRU 80 ACRES	=	4 ACRES
80 ACRES OR MORE	=	5 ACRES

ACRES SUPPLEMENTARY CLEARING AND GRUBBING **1 ACRES**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: AY
CHECKED BY: FEJ **SECTION: 240**

DRAINAGE DITCH EXCAVATION

LINE	SIDE	STATION	STATION	VOLUME CY^3
Y11B	LT/RT	10+57	10+67	7.00
			TOTAL	7.00
			SAY	**10**

PROJECT NO. : U-5824 **SHEET OF**
COMPUTED BY: NCR
CHECKED BY: FEJ **SECTION: 300**

FOUNDATION CONDITIONING MATERIAL MINOR STRUCTURES

16272	**LIN. FT**	**X**	**0.106**	**=**	1724.83	**TONS**
				SAY	1730	**TONS**

FOUNDATION CONDITIONING GEOTEXTILE

16272	**LIN. FT**	**X**	**6 FT / 18**	**=**	5424.00	**SY**
				SAY	5430	**SY**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: DIVISION
CHECKED BY: **SECTION: 545**

INCIDENTAL STONE BASE

(FURNISHED BY DIVISION)

Per Pre-Let Field Inspection Questions dated: July 25, 2023

SAY = 3,000 **TONS**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: DIVISION
CHECKED BY: **SECTION: 607**

INCIDENTAL MILLING

(FURNISHED BY DIVISION)

Per Pre-Let Field Inspection Questions dated: July 25, 2023

SAY = 6,300 **SY**

PROJECT NO.: U-5824 SHEET OF
COMPUTED BY: FEJ
CHECKED BY: JLJ SECTION: 607

1.5" MILLING

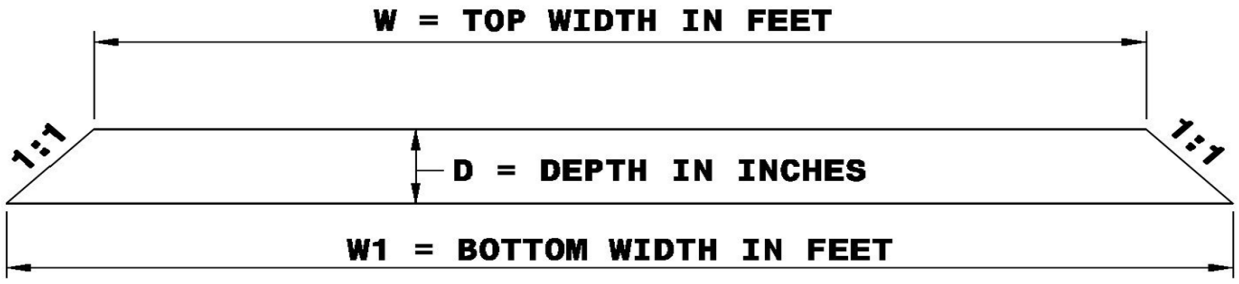
NOTE: THE WIDTH IS MEASURED FROM EX EOP TO EX EOP

LINE	STATION	STATION	LOCATION	LENGTH	AREA FROM CADD OR WIDTH	SQUARE FEET
L	106+65.31	108+40.00			9,796.93	9,796.93
					TOTAL IN FT^2	9,796.93
					TOTAL IN YD^2	1,088.55
					SAY	**1,090.00**

7/28/2023

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: FEJ **SECTION: 610**

ASPHALT CONCRETE BASE COURSE
TYPE B25.0C



CALCULATE:

LENGTH X ((W+W1)/2) X D X 114# / YD^2 / IN = _____ TONS

9 FT^2 / YD^2 X 2000# / TON

NOTE: IF USING AREA, NO LENGTH OR W1 FIGURE IS NEEDED IN COMPUTATION.

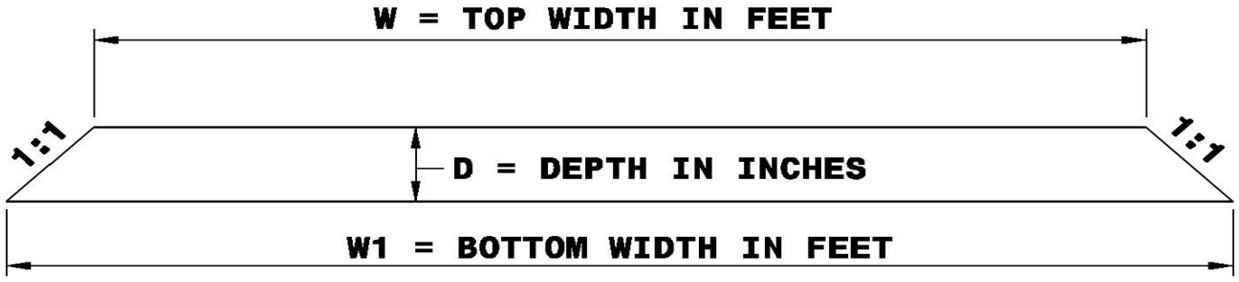
LINE	BEG STA.	END STA.	LENGTH	AREA / W	LOCATION	DEPTH	TONS
L	10+53	13+95	342.50	1374.795	LT	4	34.83
L	10+53	13+95	342.50	2271.536	RT	4	57.55
L	13+95	26+73	1278.24	39110.67	LT	4	990.80
L	13+95	26+73	1278.00	15485.55	RT	4	392.30
L	26+73	33+66	692.36	25805.14	LT	4	653.73
L	26+73	33+66	692.36	4595.941	RT	4	116.43
L	33+66	41+73	807.07	28397.49	LT	4	719.40
L	33+66	41+73	807.07	28662.37	RT	4	726.11
L	41+73	55+73	1400.59	41925.31	LT	4	1062.11
L	41+73	55+73	1400.08	49010.26	RT	4	1241.59
L	55+73	64+52	878.60	5123.077	LT	4	129.78
L	55+73	64+61	888.24	35356.01	RT	4	895.69
L	64+52	76+52	1199.67	15104.9	LT	4	382.66
L	64+61	76+52	1190.54	36598.96	RT	4	927.17
L	76+52	89+20	1268.33	40815.27	LT	4	1033.99
L	76+52	89+20	1268.33	25406.44	RT	4	643.63
L	89+20	95+97	676.90	22849.7	LT	4	578.86
L	89+20	94+43	523.48	19333.1	RT	4	489.77
L	95+97	99+13	315.75	6731.34	LT	4	170.53
L	94+43	99+13	469.17	10072.05	RT	4	255.16
L	99+13	106+65	752.80	9167.656	LT	4	232.25
L	99+13	106+65	752.80	10530.81	RT	4	266.78
Y1	10+75	12+10	134.50	1319.725	CL	4	33.43
Y2	10+40	11+75	135.50	1441.563	CL	4	36.52

Y3	10+25	12+14	188.74	5134.001	CL	4	130.06
Y3	13+07	15+25	217.96	3013.296	CL	4	76.34
Y4	10+00	11+34	134.27	3029.412	CL	4	76.75
Y4	12+15	13+75	160.18	2232.425	CL	4	56.55
Y5	10+40	10+93	53.05	1210.541	CL	4	30.67
Y6	10+53	12+00	147.38	3092.118	CL	4	78.33
Y7A	10+52	12+00	148.50	1267.127	CL	4	32.10
Y7B	12+00	13+03	103.24	1628.737	CL	4	41.26
Y8A	10+48	12+93	244.93	3735.640	CL	4	94.64
Y8B	11+25	12+43	117.99	1880.295	CL	4	47.63
Y9	10+75	11+54	78.84	2804.396	CL	4	71.04
Y9	12+33	13+75	142.15	3695.707	CL	4	93.62
Y10	10+25	11+74	148.59	4253.577	CL	4	107.76
Y11A	10+44	12+25	180.72	5161.892	CL	4	130.77
Y11B	10+00	11+33	132.88	2893.707	CL	4	73.31
Y1 WEDGE							47.10
Y4 WEDGE							103.45
Y7A WEDGE							40.66
Y7B WEDGE							65.19
Y8A WEDGE							10.58
Y8B WEDGE							26.60
Y11B WEDGE							215.67
L WEDGE							4598.79
						TOTAL	18319.94
						SAY	18320.00

7/28/2023

PROJECT NO.:U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: FEJ **SECTION: 610**

ASPHALT CONCRETE INTERMEDIATE COURSE TYPE I19.0C



CALCULATE:

LENGTH X ((W+W1)/2) X D X 114# / YD^2 / IN = _____ TONS

9 FT^2 / YD^2 X 2000# / TON

NOTE: IF USING AREA, NO LENGTH OR W1 FIGURE IS NEEDED IN COMPUTATION.

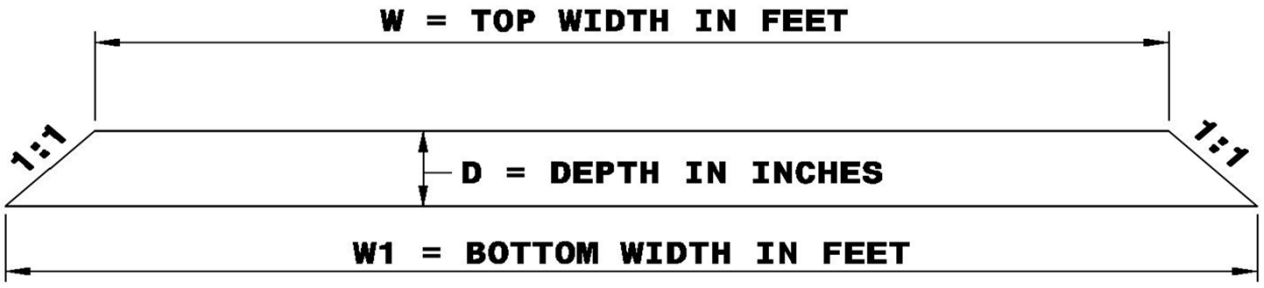
LINE	BEG. STA.	END STA.	LENGTH	AREA / W	LOCATION	DEPTH	TONS
L	10+53	13+95	342.50	470.83	LT	4	11.93
L	10+53	13+95	342.50	1404.92	RT	4	35.59
L	13+95	26+73	1278.24	29029.11	LT	4	735.40
L	13+95	26+73	1278.00	14303.76	RT	4	362.36
L	26+73	33+66	692.36	23378.34	LT	4	592.25
L	26+73	33+66	692.36	1681.864	RT	4	42.61
L	33+66	41+73	807.07	25211.12	LT	4	638.68
L	33+66	41+73	807.07	25133.72	RT	4	636.72
L	41+73	55+73	1400.59	35656.57	LT	4	903.30
L	41+73	55+73	1400.08	43435.77	RT	4	1100.37
L	55+73	64+52	878.60	2239.353	LT	4	56.73
L	55+73	64+61	888.24	32270.14	RT	4	817.51
L	64+52	76+52	1199.67	10057.96	LT	4	254.80
L	64+61	76+52	1190.54	33781.73	RT	4	855.80
L	76+52	89+20	1268.33	35309.71	LT	4	894.51
L	76+52	89+20	1268.33	19914.26	RT	4	504.49
L	89+20	95+97	676.90	19560.25	LT	4	495.53
L	89+20	94+43	523.48	17205.03	RT	4	435.86
L	95+97	99+13	315.75	5572.965	LT	4	141.18
L	94+43	99+13	469.17	9912.136	RT	4	251.11
L	99+13	106+65	752.80	7835.197	LT	4	198.49
L	99+13	106+65	752.80	8908.454	RT	4	225.68
Y1	10+75	12+10	134.50	589.47	CL	4	14.93
Y2	10+40	11+75	135.50	704.9781	CL	4	17.86

Y3	10+25	12+14	188.74	3980.048	CL	4	100.83
Y3	13+07	15+25	217.96	1827.905	CL	4	46.31
Y4	10+00	11+34	134.27	2248.85	CL	4	56.97
Y4	12+15	13+75	160.18	1636.138	CL	4	41.45
Y5	10+40	10+93	53.05	440.2573	CL	4	11.15
Y6	10+53	12+00	147.38	2383.373	CL	4	60.38
Y7A	10+52	12+00	148.50	538.133	CL	4	13.63
Y7B	12+00	13+03	103.24	798.446	CL	4	20.23
Y8A	10+48	12+93	244.93	2091.855	CL	4	52.99
Y8B	11+25	12+43	117.99	1030.040	CL	4	26.09
Y9	10+75	11+54	78.84	1891.569	CL	4	47.92
Y9	12+33	13+75	142.15	3067.028	CL	4	77.70
Y10	10+25	11+74	148.59	3333.040	CL	4	84.44
Y11A	10+44	12+25	180.72	4196.062	CL	4	106.30
Y11B	10+00	11+33	132.88	2422.375	CL	4	61.37
L WEDGE						4	5726.10
Y11B WEDGE						4	88.36
Y11A WEDGE						4	4.42
Y9 WEDGE						4	2.89
Y8B WEDGE						4	38.68
Y8A WEDGE						4	19.38
Y7B WEDGE						4	77.39
Y7A WEDGE						4	48.56
Y6 WEDGE						4	9.31
Y4 WEDGE						4	55.26
Y3 WEDGE						4	33.76
Y2 WEDGE						4	81.45
Y1 WEDGE						4	47.69
						TOTAL	17264.70
						SAY	17270.00

7/27/2023

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: FEJ **SECTION: 610**

ASPHALT CONCRETE SURFACE COURSE
TYPE S9.5B



CALCULATE:

LENGTH X ((W+W1)/2) X D X 110# / YD^2 / IN = _____ TONS

9 FT^2 / YD^2 X 2000# / TON

NOTE: IF USING AREA, NO LENGTH OR W1 FIGURE IS NEEDED IN COMPUTATION.

LINE	BEG. STA.	END STA.	LENGTH	AREA / W	LOCATION	DEPTH	TONS
L	10+53	13+95	342.50	12123.47	LT	3	222.26
L	10+53	13+95	342.50	13938.78	RT	3	255.54
L	13+95	26+73	1278.24	45443.07	LT	3	833.12
L	13+95	26+73	1278.00	44562.03	RT	3	816.97
L	26+73	33+66	692.36	24812.66	LT	3	454.90
L	26+73	33+66	692.36	21747.79	RT	3	398.71
L	33+66	41+73	807.07	25217.41	LT	3	462.32
L	33+66	41+73	807.07	29095.22	RT	3	533.41
L	41+73	55+73	1400.59	47351.08	LT	3	868.10
L	41+73	55+73	1400.08	53962.83	RT	3	989.32
L	55+73	64+52	878.60	32677.13	LT	3	599.08
L	55+73	64+61	888.24	33333.7	RT	3	611.12
L	64+52	76+52	1199.67	41811.17	LT	3	766.54
L	64+61	76+52	1190.54	41199.64	RT	3	755.33
L	76+52	89+20	1268.33	42934.76	LT	3	787.14
L	76+52	89+20	1268.33	43170.78	RT	3	791.46
L	89+20	95+97	676.90	27943.59	LT	3	512.30
L	89+20	94+43	523.48	19268.31	RT	3	353.25
L	95+97	98+99	302.36	13543.35	LT	3	248.29
L	94+43	98+78	434.85	20058.13	RT	3	367.73
L	99+41	106+65	724.43	33563.59	LT	3	615.33
L	99+41	106+65	724.43	30927.92	RT	3	567.01
L	106+65	108+40	175.00	3421.399	LT	1.5	31.36

L	106+65	108+40	175.00	6377.269	RT	1.5	58.46
Y1	10+75	12+10	134.50	6706.583	CL	1.5	61.48
Y2	10+40	11+75	135.50	5181.781	CL	1.5	47.50
Y3	10+25	12+14	188.74	8897.522	CL	1.5	81.56
Y3	13+07	15+25	217.96	9762.897	CL	1.5	89.49
Y4	10+00	11+34	134.27	5083.806	CL	1.5	46.60
Y4	12+15	13+75	160.18	5801.729	CL	1.5	53.18
Y5	10+40	11+50	110.31	7105.733	CL	1.5	65.14
Y6	10+53	12+00	147.38	5841.726	CL	1.5	53.55
Y7A	10+52	11+51	99.50	4665.935	CL	1.5	42.77
Y7B	12+00	13+03	103.24	5321.166	CL	1.5	48.78
Y8A	10+48	12+93	244.93	12844.216	CL	1.5	117.74
Y8B	11+25	12+43	117.99	5337.953	CL	1.5	48.93
Y9	10+75	11+54	78.84	3665.256	CL	1.5	33.60
Y9	12+33	14+85	252.15	8424.822	CL	1.5	77.23
Y10	10+25	11+74	148.59	6671.659	CL	1.5	61.16
Y11A	10+45	12+25	179.75	7319.356	CL	1.5	67.09
Y11B	10+00	11+33	132.88	5116.763	CL	1.5	46.90
Driveways							
L	21+74	21+89	15.69	524.454	RT	2	6.41
L	43+98	44+19	20.40	166.544	RT	2	2.04
L	68+14	68+30	16.00	153.128	LT	2	1.87
L	69+43	69+63	20.00	200.885	LT	2	2.46
L	70+41	70+61	20.00	179.091	LT	2	2.19
L	70+91	71+07	16.00	465.235	RT	2	5.69
L	71+96	72+12	15.90	321.987	RT	2	3.94
L	79+16	79+32	15.91	196.905	RT	2	2.41
L	81+40	81+56	16.01	148.805	RT	2	1.82
L	82+43	82+59	16.00	154.205	RT	2	1.88
L	85+93	86+09	15.90	138.655	LT	2	1.69
L	86+70	86+86	15.91	145.515	LT	2	1.78
L	87+63	87+78	15.78	394.811	LT	2	4.83
L	88+19	88+35	16.10	235.625	RT	2	2.88
L	90+46	90+62	15.90	157.331	RT	2	1.92
L	92+67	92+91	23.85	241.994	LT	2	2.96
L	91+74	93+89	215.78	257.677	LT	2	3.15
L WEDGE							273.61
Y11B WEDGE							5.12
Y9 WEDGE							3.20
Y8A WEDGE							4.91
Y7B WEDGE							1.36
Y7A WEDGE							15.59
Y6 WEDGE							0.52
Y3 WEDGE							4.82
Deduction for Islands				19547.4		1.5	182.44
						TOTAL	14118.36
						SAY	14120.00

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: FEJ
CHECKED BY: **SECTION: 620**

ASPHALT BINDER
FOR PLANT MIX

GRADE PG 64-22

SA-1		**TONS**	**X**	**0.068**	**=**		**TONS**
S4.75A		**TONS**	**X**	**0.070**	**=**		**TONS**
S9.5B	**14,120**	**TONS**	**X**	**0.065**	**=**	**917.80**	**TONS**
S9.5C		**TONS**	**X**	**0.059**	**=**		**TONS**
I19.0C	**17,270**	**TONS**	**X**	**0.048**	**=**	**828.96**	**TONS**
B25.0C	**18,320**	**TONS**	**X**	**0.045**	**=**	**824.40**	**TONS**
PADC, TYPE P-57		**TONS**	**X**	**0.030**	**=**		**TONS**
PADC, TYPE P-78M		**TONS**	**X**	**0.030**	**=**		**TONS**
PATCHING EXISTING PAVEMENT		**TONS**	**X**	**0.048**	**=**		**TONS**

SUBTOTAL TONS ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22	**=**	**2,571.16**	**TONS**

TOTAL TONS ASPHALT BINDER FOR PLANT MIX	**=**	**2,571.16**	**TONS**
	SAY	**2,575**	**TONS**

THIS SHEET IS SHOWING RATES FROM THE 2023 QMS ASPHALT MANUAL

PROJECT NO.: U-5824 SHEET OF

COMPUTED BY: DH

CHECKED BY: FEJ SECT. 654

ASPHALT PLANT MIX PAVEMENT REPAIR

(ROADS TO BE RESURFACED)

NOTE: USE STANDARD PAVEMENT CALCULATION FOR TYPE PAVEMENT USED FOR TONS

LINE	STATION	PIPE DIAMETER	LENGTH	X	TOTAL WIDTH	TONS
-L-	13+75	18	53.66	1.833	7.833	21.30
-L-	13+67	12	65.22	1.333	7.333	24.23
-L-	15+00	18	40.54	1.833	7.833	16.09
-L-	15+24	18	149.36	1.833	7.833	59.28
-L-	16+74	15	27.64	1.583	7.583	10.62
-L-	16+76	18	123.07	1.833	7.833	48.84
-L-	18+02	24	92.07	2.500	8.500	39.65
-L-	18+96	24	57.16	2.500	8.500	24.62
-L-	19+40	60	40.93	5.917	11.917	24.71
-L-	19+55	24	3.97	2.500	8.500	1.71
-L-	19+57	15	49.08	1.583	7.583	18.86
-L-	21+75	15	10.95	1.583	7.583	4.21
-L-	22+60	15	20.72	1.583	7.583	7.96
-L-	31+50	18	13.06	1.833	7.833	5.18
-L-	34+27	15	37.40	1.583	7.583	14.37
-L-	35+14	12	39.69	1.333	7.333	14.75
-L-	35+03	12	44.31	1.333	7.333	16.46
-L-	35+99	12	59.02	1.333	7.333	21.93
-L-	36+97	12	28.45	1.333	7.333	10.57
-L-	40+69	36	27.30	3.667	9.667	13.37
-L-	40+83	30	32.13	3.083	9.083	14.79
-L-	43+11	15	30.56	1.583	7.583	11.74
-L-	44+24	15	30.64	1.583	7.583	11.77
-L-	45+19	15	171.70	1.583	7.583	65.97
-L-	46+91	15	8.31	1.583	7.583	3.19
-L-	46+92	15	11.68	1.583	7.583	4.49
-L-	46+93	15	72.58	1.583	7.583	27.89
-L-	48+37	18	22.59	1.833	7.833	8.97
-L-	49+01	15	22.81	1.583	7.583	8.76
-L-	50+41	15	29.7	1.583	7.583	11.41
-L-	53+37	15	76.83	1.583	7.583	29.52
-L-	54+30	15	89.62	1.583	7.583	34.43
-L-	58+99	15	44.67	1.583	7.583	17.16
-L-	59+69	15	68.65	1.583	7.583	26.38
-L-	62+31	15	33.59	1.583	7.583	12.91
-L-	70+65	15	24.45	1.583	7.583	9.39

-L-	70+97	15	36.36	1.583	7.583	13.97
-L-	70+99	18	196.65	1.833	7.833	78.04
-L-	71+60	18	21.07	1.833	7.833	8.36
-L-	72+06	18	18.69	1.833	7.833	7.42
-L-	72+94	24	43.52	2.5	8.5	18.74
-L-	72+98	18	35.06	1.833	7.833	13.91
-L-	73+15	24	49.26	2.5	8.5	21.21
-L-	73+36	18	258.42	1.833	7.833	102.56
-L-	75+95	15	35.57	1.583	7.583	13.67
-L-	79+84	15	35.87	1.583	7.583	13.78
-L-	81+41	15	13.52	1.583	7.583	5.19
-L-	82+42	15	16.55	1.583	7.583	6.36
-L-	82+45	15	11.18	1.583	7.583	4.30
-L-	83+41	15	14.15	1.583	7.583	5.44
-L-	83+42	15	10.54	1.583	7.583	4.05
-L-	85+02	24	21.94	2.5	8.5	9.45
-L-	85+30	24	22.66	2.5	8.5	9.76
-L-	85+93	18	13.06	1.833	7.833	5.18
-L-	86+37	24	22.25	2.5	8.5	9.58
-L-	88+17	12	14.67	1.333	7.333	5.45
-L-	88+18	15	16.14	1.583	7.583	6.20
-L-	95+59	24	36.91	2.5	8.5	15.90
-L-	95+65	15	24.83	1.583	7.583	9.54
-L-	95+68	18	51.19	1.883	7.833	20.32
-L-	104+06	18	35.83	1.883	7.833	14.22
-Y1-	11+00	15	63.39	1.583	7.583	24.35
-Y2-	10+89	15	32.38	1.583	7.583	12.44
-Y3-	11+56	15	40.84	1.583	7.583	15.69
-Y3-	12+05	15	40.43	1.583	7.583	15.53
-Y5-	10+43	18	111.85	1.883	7.833	44.39
-Y5-	10+86	15	49.18	1.583	7.583	18.90
-Y6-	11+29	15	23.19	1.583	7.583	8.91
-Y9-	10+77	15	22.08	1.583	7.583	8.48
-Y9-	11+50	15	27	1.583	7.583	10.37
-Y10-	10+20	15	21.73	1.583	7.583	8.35
-Y10-	11+56	18	26.15	1.883	7.833	10.38
-Y10-	11+98	12	37.56	1.333	7.333	13.95
-Y11B-	11+46	15	24.6	1.583	7.583	9.45
Per Division based on PLFI questions dated 7/25/23						200
					TOTAL	1,521.27
					SAY	**1,525.00**

PROJECT NO.: U-5824 SHEET OF

SECTION: 806

Right-of-Way Markers

Right-of-Way Markers	157 EA

COMPUTED BY: CHECKED BY:

PROJECT NO.: U-5824 **SHEET OF**

SECTION: 815

SUBSURFACE DRAINS

SUBDRAIN EXCAVATION	**(USE 6' DEPTH FOR PROOF ROLLING AND 4' DEPTH ELSEWHERE)**	**112.0**	**YD^3**
GEOTEXTILE FOR SUBSURFACE DRAINS	**……...…...…...…....…**	**500**	**YD^2**
SUBDRAIN COARSE AGGREGATE	**(USE 3' DEPTH) ……..……..…**	**84.0**	**YD^3**
6" PERFORATED SUBDRAIN PIPE	**……..…....…..……..……**	**500**	**LIN. FT.**
6" OUTLET PIPE	**(6 LINEAR FT. PER PIPE OUTLET) …..…..…....…**	**6**	**LIN. FT.**
SUBDRAIN PIPE OUTLET	**(USE 1 PER 500' OF PIPE) ……..…..…**	**1**	**EACH**

EXCAVATION **500** **LIN. FT. x** **4** **DEPTH x 0.056 =** **112.0** **YD^3**

AGGREGATE **500** **LIN. FT. x** **3'** **DEPTH x 0.056 =** **84.0** **YD^3**

NOTE: USE 6" SUBDRAIN PIPE UNLESS ANOTHER SIZE IS SPECIFICALLY RECOMMENDED BY THE GEOTECHNICAL UNIT.

Calculated by : FEJ
Checked by : JLJ

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: dyp
CHECKED BY: **SECTION: 846**

1'-6" CURB & GUTTER

LINE	STATION	STATION	SIDE	GROSS LENGTH	DEDUCTIONS DRIVES	DEDUCTIONS OTHERS	NET LENGTH
L	17+28.72	21+71.71	CL	495			495
L	28+24.78	40+54.76	CL	2,461			2,461
L	43+08.81	54+20.22	CL	1,863			1,863
L	57+03.94	62+85.88	CL	1,165			1,165
L	66+17.92	75+21.77	CL	1,808			1,808
L	77+81.83	87+87.77	CL	2,013			2,013
L	90+39.82	93+46.91	CL	616			616
						TOTAL	10,420
						SAY	**10,430**

7/26/2023

PROJECT NO.: U-5824 **SHEET OF**

COMPUTED BY: JLJ

CHECKED BY: **SECTION: 846**

2'-6" CURB & GUTTER

LINE	STATION	STATION	SIDE	GROSS LENGTH	DEDUCTIONS		NET LENGTH
					DRIVES	OTHERS	
L	10+52.50	11+58.47	RT	106			106
L	10+52.50	13+57.26	LT	407			407
L	12+12.42	13+49.37	RT	164			164
L	13+96.26	16+57.62	RT	328			328
L	14+29.96	27+40.33	LT	1,416			1,416
L	16+91.98	25+71.94	RT	1,014	48.00		966
L	27+72.77	30+17.41	LT	319			319
L	30+39.41	33+21.92	LT	343			343
L	26+04.53	29+39.76	RT	418			418
L	29+61.76	33+68.65	RT	439			439
L	33+54.22	38+96.68	LT	606			606
L	34+02.05	36+21.78	RT	255			255
	36+55.39	37+08.70	RT	57			57
	37+44.31	41+55.95	RT	443			443
	39+32.69	51+16.31	LT	1,240			1,240
	51+42.02	51+77.46	LT	36			36
	52+03.17	52+48.39	LT	47			47
	42+13.38	43+53.02	RT	170			170
	43+89.68	43+95.42	RT	6			6
	44+21.90	44+97.06	RT	74			74
	45+23.50	52+81.76	RT	807			807
	52+83.53	54+94.91	LT	296			296
	53+20.25	55+51.27	RT	360			360
	55+28.70	59+12.06	LT	439			439
	55+97.13	60+00.02	RT	500			500
	59+53.06	60+14.93	LT	69			69
	60+31.05	65+43.34	RT	656			656
	60+50.93	61+19.57	LT	69			69
	61+55.57	61+91.66	LT	36			36
	62+27.66	62+63.16	LT	36			36
	62+99.16	63+67.91	LT	131			131
	63+86.88	66+11.79	LT	282			282
	66+41.78	67+52.50	LT	111			111
	66+13.65	66+98.45	RT	295			295
	67+34.45	69+50.85	RT	223	27.72	5.72	190
	67+74.50	68+11.20	LT	37			37
	68+33.20	69+11.20	LT	78			78
	69+33.34	69+39.87	LT	7			7
	69+65.83	70+37.86	LT	72			72
	70+63.86	71+58.13	LT	94			94

	71+80.26	72+04.86	LT	25			25
	69+84.81	70+87.66	RT	105			105
	71+09.60	71+93.28	RT	84			84
	72+15.16	73+62.56	RT	148			148
	73+84.43	76+34.93	RT	282			282
	72+26.99	76+41.96	LT	466			466
	76+67.95	85+90.37	LT	974			974
	76+72.89	79+13.31	RT	282			282
	79+35.19	79+49.93	RT	15			15
	79+71.86	79+89.32	RT	17			17
	80+11.32	81+36.79	RT	125			125
	81+58.79	82+39.62	RT	81			81
	82+61.62	83+37.65	RT	76			76
	83+59.65	84+36.94	RT	77			77
	84+58.94	85+86.83	RT	128			128
	86+08.95	87+09.52	RT	101			101
	87+31.65	88+15.53	RT	84			84
	86+12.25	86+67.06	LT	55			55
	86+88.93	87+60.00	LT	71			71
	87+81.70	88+95.20	LT	114			114
	88+37.65	90+42.79	RT	205			205
	90+64.67	93+65.57	RT	373			373
	93+89.28	97+00.00	RT	349			349
	89+33.60	90+68.72	LT	185			185
	90+90.84	92+31.40	LT	140			140
	92+55.40	92+64.45	LT	9			9
	92+94.27	93+70.61	LT	77			77
	93+92.33	95+26.76	LT	136			136
	95+48.47	95+90.78	LT	89			89
	96+27.45	97+00.00	LT	111			111
	100+30.00	101+82.41	RT	176			176
	100+32.05	102+65.10	LT	242			242
	102+98.13	104+07.14	LT	144			144
	102+24.65	106+65.31	RT	449			449
						TOTAL	18,399
						SAY	**18,400**

7/26/2023

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: FEJ **SECTION: 846**

2'-9" CURB & GUTTER

LINE	STATION	STATION	SIDE	GROSS LENGTH	DEDUCTIONS		NET LENGTH
					DRIVES	OTHERS	
L	15+18.00	21+32.26	RT	665			665
L	48+89.72	50+52.75	RT	164			164
L	52+24.14	54+20.22	LT	197			197
L	93+36.67	97+77.58	LT	363			363
			CL				
			CL				
			CL				
			CL				
Y Line Islands							
						TOTAL	1,389
						SAY	**1,390**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: FEJ **SECTION: 846**

8'-18" CURB & GUTTER

LINE	STATION	STATION	SIDE	GROSS LENGTH	DEDUCTIONS		NET LENGTH
					DRIVES	OTHERS	
L	34+02.00	37+89.00	RT	353			353
L	44+18.00	45+00.00	RT	95			95
L	100+94.32	102+19.37	LT	125			125
						TOTAL	573
						SAY	**580**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: FEJ **SECTION: 848**

4" CONCRETE SIDEWALK

LINE	STATION	STATION	LOCATION	LENGTH	AREA ($FT^{2)}$	SQUARE YARDS
L	11+07.86	13+46.65	RT	238.79	1321.223	146.80
L	11+32.71	13+79.72	LT	247.01	1284.134	142.68
L	14+33.31	26+88.58	LT	1255.27	6352.0553	705.78
L	14+02.05	16+55.13	RT	253.08	1537.017	170.78
L	16+94.48	25+69.39	RT	874.91	5008.4981	556.50
L	26+57.80	33+63.69	RT	705.89	3657.7411	406.42
L	27+75.31	33+19.52	LT	544.21	3352.6353	372.52
L	34+08.93	41+45.73	RT	736.8	3864.3481	429.37
L	33+72.55	52+49.18	LT	1876.63	9511.4027	1056.82
L	52+82.74	54+97.16	LT	214.42	1390.8856	154.54
L	42+17.53	52+78.73	RT	1061.2	5555.884	617.32
L	53+29.53	55+46.47	RT	216.94	1269.4346	141.05
L	55+99.16	59+93.04	RT	393.88	2067.0712	229.67
L	55+59.52	59+12.72	LT	353.2	1862.84	206.98
L	59+53.06	63+68.83	LT	415.77	2300.8069	255.65
L	60+40.75	64+81.37	RT	440.62	2291.3284	254.59
L	63+90.16	76+37.93	LT	1247.77	6572.1579	730.24
L	65+54.33	69+49.32	RT	394.99	2146.9447	238.55
L	69+86.35	76+31.93	RT	645.58	3387.4784	376.39
L	76+71.60	93+63.75	RT	1692.15	8895.9951	988.44
L	76+73.52	88+92.47	LT	1218.95	6504.759	722.75
L	89+37.19	95+84.63	LT	647.44	3483.3533	387.04
L	96+31.80	97+00.00	LT	68.2	520.495	57.83
L	94+37.71	97+00.00	RT	262.29	1376.9751	153.00
Y8A	11+31.65	12+98.99	LT	159	1079.1814	119.91
L	100+32.18	102+60.44	LT	228.26	1192.444	132.49
L	103+09.69	103+11.20	LT	1.51	240.2819	26.70
					TOTAL	9780.82
					SAY	9790.00

7/26/2023

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: FEJ **SECTION: 848**

CONCRETE CURB RAMP

LINE	STATION	LOCATION	NO. OF RAMPS
L	13+30	RT	1
L	13+56	LT	1
Y1	11+95	RT	1
Y1	11+82	LT	1
Y1	12+49	RT	1
Y1	12+49	LT	1
L	14+21	RT	1
L	14+59	LT	1
L	16+39	RT	1
L	16+98	RT	1
L	26+06	RT	1
Y3	13+70	RT	1
Y3	13+55	RT	1
Y3	13+35	LT	1
Y3	13+23	LT	1
Y3	13+29	RT	1
Y3	13+05	LT	1
Y3	12+12	RT	1
Y3	11+64	RT	1
Y3	11+92	LT	1
Y3	11+81.92	LT	1
Y3	11+50	LT	1
Y4	11+15	RT	1
Y4	11+25	LT	1
Y4	12+29	LT	1
Y4	12+18	RT	1
Y5	10+63	RT	1
Y5	10+58	LT	1
L	52+50	LT	1
L	52+80	LT	1
L	52+68	RT	1
L	53+29	RT	1
Y6	10+75	RT	1
Y6	10+68	LT	1
L	54+90	LT	1
L	55+23	RT	1
L	55+97	LT	1
L	56+17	RT	1
Column Total			38

LINE	STATION	LOCATION	NO. OF RAMPS
Y7B	12+60	RT	1
Y7B	12+91	LT	1
Y7A	10+61	RT	1
Y7A	10+60	LT	1
L	59+13	LT	1
L	59+53	LT	1
L	59+95	RT	1
L	60+35	RT	1
L	63+73	LT	1
L	64+68	RT	1
L	64+53	LT	1
L	65+48	RT	1
Y8B	11+94	RT	1
Y8B	12+31	LT	1
Y8A	10+59	RT	1
Y8A	11+04	LT	1
L	69+50	RT	1
L	69+85	RT	1
L	76+17	LT	1
L	76+03	RT	1
L	76+93	LT	1
L	76+92	RT	1
Y9	11+27	RT	1
Y9	11+25	LT	1
Y9	12+53	RT	1
Y9	12+53	LT	1
Y10	11+40	RT	1
Y10	11+40	LT	1
Y11A	10+79	RT	2
Y11A	10+56	LT	2
Y11B	11+22	RT	2
Y11B	11+13	LT	2
Column Total			36
Total			74
Say			80

PROJECT NO.: U-5824 SHEET OF
COMPUTED BY: SSL
CHECKED BY: FEJ SECTION: 848

6" CONCRETE DRIVEWAY

LINE	STATION	LOCATION	WIDTH	SQUARE YARDS
L	11+59	RT	20	12.798
L	19+99	RT	20	12.798
L	21+71	RT	16	10.576
L	29+40	RT	16	10.576
L	30+20	LT	16	10.576
L	38+97	LT	30	18.354
L	43+53	RT	30	18.354
L	43+95	RT	20	12.798
L	44+97	RT	20	12.798
L	51+16	LT	20	12.798
L	51+77	LT	20	12.798
L	60+15	LT	30	18.354
L	61+20	LT	30	18.354
L	61+92	LT	30	18.354
L	62+63	LT	30	18.354
L	66+12	LT	24	15.020
L	66+98	RT	30	18.354
L	67+53	LT	16	10.576
L	67+01	RT	36	21.687
L	67+53	LT	16	10.576
L	68+11	LT	16	10.576
L	68+23	RT	16	10.576
L	69+11	LT	16	10.576
L	69+40	LT	20	12.798
L	70+38	LT	20	12.798
L	70+88	RT	16	10.576
L	71+58	LT	16	10.576
L	72+05	LT	16	10.576
L	71+93	RT	16	10.576
L	73+63	LT	16	10.576
L	79+13	RT	16	10.576
L	79+50	RT	16	10.576
L	79+89	RT	16	10.576
L	81+37	RT	16	10.576
L	82+40	RT	16	10.576
L	83+38	RT	16	10.576
L	84+37	RT	16	10.576
L	85+87	RT	16	10.576
L	85+90	LT	16	10.576
L	86+67	LT	16	10.576

L	87+10	RT	16	10.576
L	87+60	LT	16	10.576
L	88+16	RT	16	10.576
L	90+43	RT	16	10.576
L	90+69	LT	16	10.576
L	92+31	LT	18	11.687
L	92+64	LT	24	15.020
L	93+71	LT	16	10.576
L	95+27	LT	22	13.909
Y10	10+79	RT	25	15.576
			TOTAL	630.465
			SAY	**640**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: NCR **SECTION: 850**

4" CONCRETE PAVED DITCH

(STD. DWG 850.10 = 11 YD^2 ; STD. DWG. 850.11 = 31 YD^2)

LINE	STATION	STATION	LOCATION	LENGTH	WIDTH	SQUARE YARDS
Y11B	10+59.00	10+67.00	LT	11.25	2	2.50
Y11B	10+57.00	10+67.00	RT	22.50	2	5.00
					TOTAL	7.50
					SAY	**10**

PROJECT NO.: U-5824 | **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: FEJ | **SECTION: 852**

5" MONOLITHIC ISLANDS (Keyed in)

LINE	STATION TO STATION	SQUARE FEET
L	14+38.02 TO 17+28.59	1564.43
L	21+79.71 TO 26+02.72	2767.25
Y3	13+32 TO 13+63	669.97
L	27+42.78 TO 28+24.78	545.94
Y3	11+59 TO 11+86	638.82
L	40+54.76 TO 41+36.78	546.39
L	42+26.78 TO 43+08.81	483.07
L	54+20.22 TO 55+01.00	535.29
Y7A	10+73.20 TO 11+50.00	303.83
L	56+21.92 TO 57+03.94	545.31
L	62+85.88 TO 63+67.91	546.39
Y8A	10+94.82 TO 12+23.42	739.06
L	65+35.88 TO 66+17.92	546.51
L	72+21.77 TO 76+03.74	546.38
L	76+99.79 TO 77+81.83	546.58
L	87+87.77 TO 88+69.79	546.74
L	89+57.79 TO 90+39.82	546.94
L	93+46.91 TO 97+00.00	1576.55
Y11A	10+49.87 TO 10+91.14	601.11
L	100+30.00 TO 104+58.68	4140.18
Y6	10+61 TO 10+85	352.43
Y11B	11+06 TO 11+26	258.26
	Column Total	19547.41

LINE	STATION TO STATION	SQUARE FEET
	Column Total	
	TOTAL IN SQUARE YARDS	2,171.93
	SAY	**2,180**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: NCR **SECTION: 858**

ADJUSTMENTS & RELOCATION

(FURNISHED BY DIVISION)

1 EA ADJUSTMENT OF DROP INLET DSS

28 EA ADJUSTMENT OF MANHOLES 20+61 RT 23+57 RT 33+87 RT 36+55 RT 39+98 RT
41+21 RT 41+47 RT 44+81 RT 46+02 RT 49+50 LT 56+35 RT 57+51 RT 60+88 RT
64+38 RT 66+14 RT 69+56 RT 73+43 RT 13+69 LT -Y9- 77+36 RT 79+46 RT 82+03 RT 85+46 RT
88+86 RT 92+31 RT 95+82 RT 97+37 RT 97+28 LT -Y11- 11+47

76 EA ADJUSTMENT OF METER BOXES AND VALVE BOXES
13+49 LT 13+71 LT 13+12 RT 16+58 RT 16+49 RT 22+21 RT 22+36 RT
24+20 LT, 13+95 LT -Y3-, 14+43 LT -Y3-, 14+85 LT -Y3-, 26+99 LT 29+17 LT, 30+33 RT,
33+54 RT, 12+80 RT -Y4-, 13+37 RT -Y4-, 34+75 RT, 35+98 LT 36+55 RT 37+53 RT 39+68 LT
41+06 LT 44+25 RT 55+30 LT 55+30 LT 55+59 RT 12+34 RT -Y7B-
11+91 RT -Y7A- 11+66 LT -Y7A- 58+81 LT 58+82 LT 60+11 LT 60+12 LT 61+75 LT 61+89 LT 63+02 LT 63+16 LT
11+91 LT -Y8A- 64+87 RT 64+14 LT 64+47 LT 11+97 LT -Y8B- 64+87 LT 66+52 LT 67+16 LT
67+90 LT 68+42 LT 69+38 RT 69+96 RT 69+61 LT 71+02 RT 71+02 LT 72+29 LT 73+91 RT
76+33 RT 76+57 LT 78+50 RT 80+36 RT 81+73 RT 82+87 RT 83+72 RT
87+17 LT 87+07 RT 87+68 RT 88+91 RT 10+90 -Y10- 89+64 RT 89+67 LT 90+94 RT 91+18 LT 96+02 LT 95+99 LT 95+77 RT
99+63 LT 102+25 LT 102+65 LT

7/27/2023

PROJECT NO.: U-5824 SHEET OF

SECTION: 862

Additional Guardrail Posts

Additional Guardrail Posts	10 EA

COMPUTED BY: CHECKED BY:

PROJECT NO.: U-5824 SHEET OF
COMPUTED BY: SSL
CHECKED BY: NCR SECTION: 876

PLAIN RIP RAP, CLASS I

(WITH OR WITHOUT FILTER FABRIC)

LINE	STATION	LOCATION	DITCH (Y/N)	PIPE DIAMETER	TONS
L	19+49	RT	Y	54	33
				TOTAL	33
				SAY	**35**

PROJECT NO.: U-5824 | **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: NCR | **SECTION: 876**

PLAIN RIP RAP, CLASS B

LINE	STATION TO STATION	LOCATION	LENGTH	TONS PER LIN. FT.	TONS
L	18+50 TO 19+00	LT	50		8
L	19+00 TO 19+15	LT	15		3
L	19+11 TO 19+29	LT	18		3
L	19+53 TO 21+00	LT	146		47
Y2	10+72 TO 11+50	RT	80		27
				TOTAL	88
				SAY	90

PROJECT NO.: U-5824
COMPUTED BY: SSL
CHECKED BY: NCR

SHEET OF

SECTION: 876

PLAIN RIP RAP, CLASS B

(WITH OR WITHOUT FILTER FABRIC)

LINE	STATION	LOCATION	DITCH (Y/N)	PIPE DIAMETER	TONS
Y2	11+25	LT	Y	15	2
Y3	11+94	RT	Y	15	2
Y3	14+50	RT	Y	15	2
L	31+38	RT	Y	18	3
Y6	11+50	LT	Y	15	2
L	61+90	LT	Y	18	3
L	85+35	RT	Y	36	11
L	92+72	RT	Y	15	2
Y11A	11+75	RT	Y	15	2
Y11A	11+75	LT	Y	15	2
L	95+58	RT	Y	15	2
L	73+18	RT	Y	30	8
				TOTAL	41
				SAY	**45**
		Grand Total Class B Rip Rap			**135**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: NCR **SECTION: 876**

GEOTEXTILE FOR DRAINAGE

LINE	BEG. STA.	END STA.	LOCATION	LENGTH	AVERAGE WIDTH	SQUARE YARDS
L	18+50	19+00	LT	50		18.00
L	19+00	19+15	LT	15		6.00
L	19+11	19+29	LT	18		6.00
L	19+53	21+00	LT	147		104.00
Y2	10+75	11+50	RT	80		60.00
					TOTAL	194
					SAY	**195**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: NCR **SECTION: 876**

GEOTEXTILE FOR DRAINAGE

(AT PIPE OUTLETS - CLASS B RIP RAP)

LINE	STATION	PIPE SIZE (in)	PIPE WITH DITCH (Y OR N)	SQUARE YARDS
Y2	11+25	15	Y	7
L	61+75	18	Y	10
Y6	11+50	15	Y	7
L	85+35	36	Y	28
L	92+72	15	Y	7
Y11A	11+75	15	Y	7
Y11A	11+75	15	Y	7
L	95+58	15	Y	7
L	73+18	30	Y	21
			TOTAL	101
			SAY	105

7/27/2023

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: NCR **SECTION: 876**

GEOTEXTILE FOR DRAINAGE

(AT PIPE OUTLETS - CLASS I RIP RAP)

LINE	STATION	PIPE SIZE (in)	PIPE WITH DITCH (Y OR N)	SQUARE YARDS
L	19+49	54	Y	62
			TOTAL	62
			SAY	**65**

Subtotal Geotextile for Drainage	365
Erosion Control Quantity	1745
Grand Total Geotextile for Drainage	**2110**

PROJECT NO.: U-5824 **SHEET OF**
COMPUTED BY: SSL
CHECKED BY: NCR **SECTION: SP**

PERMANENT SOIL REINFORCEMENT MAT

LINE	BEG. STA.	END STA.	LOCATION	LENGTH	AVERAGE WIDTH	SQUARE YARDS
L	31+00	33+06	LT	206.00	6	137.33
L	31+00	33+26	RT	229.00	6	152.67
Y4	10+25	11+00	RT	75.00	6	50.00
L	39+50	41+67	RT	217.00	6	144.67
L	40+49	40+70	LT	21.00	6	14.00
L	42+49	43+52	LT	103.00	6	68.67
L	49+00	52+00	RT	300.00	4	133.33
L	60+41	61+87	RT	146.00	4	64.89
L	67+37	69+50	RT	213.00	6	142.00
L	70+00	70+85	RT	85.00	6	56.67
L	80+00	85+94	LT	594.00	6	396.00
L	81+00	81+42	RT	42.00	6	28.00
L	81+54	82+45	RT	91.00	6	60.67
L	82+55	83+40	RT	85.00	6	56.67
L	93+00	93+50	RT	50.00	6	33.33
L	94+06	95+66	LT	200.00	6	133.33
L	104+02	106+50	LT	248.00	4	110.22
Y11 B	10+75	11+12	RT	37.00	6	24.67
					TOTAL	1807
					SAY	**1810**

7/27/2023

PROJECT NO.: U-5824 SHEET OF

SECTION: SP

Handrail for Retaining Wall

-L- Sta 53+00.00 to 54+50.00		150 LF
-L- Sta 53+70.00 to 55+39.79		169.79 LF
-L- Sta 56+17.20 to 59+00.00		282.80 LF
	Total	602.59 LF
	Say	**610 LF**

COMPUTED BY: CHECKED BY:

CALCULATION OF QUANTITIES

PROJECT TIP NUMBER: U-5824

CONSTRUCTION WBS NUMBER: 44395.3.1

COUNTY: Forsyth

FEDERAL AID NUMBER: _____

TOTAL LENGTH [USE EXACT THREE (3) FIGURES BEYOND DECIMAL]

STA.	10+52.500	**TO STA.**	98+74.060	=	8821.560	**LIN. FT.**
STA.	99+45.940	**TO STA.**	106+65.310	=	719.370	**LIN. FT.**
STA.		**TO STA.**		=		**LIN. FT.**
STA.		**TO STA.**		=		**LIN. FT.**
STA.		**TO STA.**		=		**LIN. FT.**
STA.		**TO STA.**		=		**LIN. FT.**
STA.		**TO STA.**		=		**LIN. FT.**
STA.		**TO STA.**		=		**LIN. FT.**

TOTAL LENGTH * = 9,540.930 **LIN. FT. / 5,280 =** 1.807 **MILES**

STRUCTURE LENGTHS

STA.		**TO STA.**		=		**LIN. FT.**
STA.		**TO STA.**		=		**LIN. FT.**
STA.		**TO STA.**		=		**LIN. FT.**
STA.		**TO STA.**		=		**LIN. FT.**
STA.		**TO STA.**		=		**LIN. FT.**

LENGTH OF STRUCTURES * = _____ **LIN. FT. / 5,280 =** _____ **MILES**

ROADWAY LENGTH (LESS STRUCTURES) = 1.807 **MILES**

NOTE: USED _____ **LANE FOR LENGTH**

*** LENGTH SHOWN TO THREE (3) DECIMAL PLACES USING NORMAL ROUNDING.**

Computed by: JLJ (**Please Print Name**)

Checked by: _____ **(Please Print Name)**

2018 English Standards & Quantity Estimates

Name: He Yang, PE **Date:** 08/15/23
Project Engineer: He Yang, PE

CONTRACT # **COUNTY** Forsyth DIV. 9 **MANAGEMENT UNIT** DDRL
TIP # U-5824 **LETTING** 11/21/2023 **MILEAGE** 1.821 miles
PRIMARY ROUTE? YES

STANDARDS NEEDED:

1605.01 (TSF)
1606.01 (SSCF)
1607.01 (GCE)
1622.01 (TSDN)
1630.03 (TSD)
1630.05 (T.DIV)
1630.06 (SP. STILL)
1631.01 (MATT)
1632.02 (RIST-B)
1632.03 (RIST-C)
1633.01 (SC-A)
1633.02 (SC-B)
1635.02 (PIST-B)
1640.01 (BAFFLE)
1645.01 (STREAM)

DETAILS NEEDED:
-Skimmer Basin
-Wattle with Polyacrylamide
-Coir Fiber Wattle with PAM
-TRSC-A with Matting & PAM

SUMMARY SHEETS NEEDED:
-Matting Summary Sheet
-PSRM Summary Sheet
-Stabilization Guidelines

REFORESTATION SHEETS:

 # OF YEARS FOR PROJECT CONSTRUCTION 2 YRS
MAINTENANCE FACTOR 2

CONSTRUCTION ENTRANCES
OF ENTRANCES: 10
FILTRATION GEOTEXTILE REQUIRED 750 SY
CLASS A STONE REQUIRED 250 TONS

SPECIAL STILLING BASINS
NO. OF DRILLED PIERS 0
OF SPECIAL STILLING BASINS 0 EA
FILTRATION GEOTEXTILE REQUIRED 0 SY
SEDIMENT CONTROL STONE 0 TON

 # OF SILT CHECKS TYPE A with MATTING & PAM 9
MATTING FOR EROSION CONTROL REQUIRED 45 SY
POLYACRYLAMIDE (PAM) REQUIRED 54 LB

 # OF WATTLES WITHOUT PAM 11
 # OF COIR FIBER WATTLES WITHOUT PAM 10

 # OF TEMPORARY STREAM CROSSINGS 2
FILTRATION GEOTEXTILE REQUIRED 200 SY
TEMPORARY PIPE FOR STREAM CROSSING 50 LF
SEDIMENT CONTROL STONE 90 TON
EROSION CONTROL STONE, CLASS B 80 TON

 # OF CSX RAILROAD BRIDGE CROSSINGS 0
TEMPORARY SILT FENCE REQUIRED 0 LF
FILTRATION GEOTEXTILE REQUIRED 0 SY

ADDITIONAL PROJECT INFORMATION

RIPARIAN BUFFERS (50 FT.) ON PROJECT NO
HIGH QUALITY WATER (HQW) ON PROJECT NO
DESIGN STANDARDS IN SENSITIVE WATERSHEDS (DSSW) NO 3
303(d) STREAM FOR CONSTRUCTION-RELATED TURBIDITY NO
BORROW EXCAVATION QUANTITY 0 CY

PROJECT IN FALLS LAKE WATERSHED NO
PROJECT IN JORDAN LAKE WATERSHED NO
WATTLES IN DITCHLINE WITHOUT PAM YES
WATTLES USED AS SILT FENCE BREAKS NO
AESTHETIC LITTER PICKUP REQU NO

CRIMPING SP NEEDED ON PROJECT: NO

CCPCUA PERMIT AND SP REQUIRED : **NO**

SPECIAL PROVISIONS NEEDED:

1. SEEDMIX TYPE: West
4. NATIVE SEEDING & MULCHING (add above Temp. Seeding): West
6. LAWNFINISH
12. RESPONSE
16. MINIMIZE
17. STOCKPILE/HAUL ROAD
18. MATERIALS MANAGEMENT
19. WASTE/BORROW
20. TEMP. DIVERSION
22. CLEAN WATER DIVERSION
23. SAFETY FENCE
24. PERM. SOIL REINFORCEMENT
25. SKIMMER BASIN
30. WATTLES WITH POLYACRYLAMIDE
32. COIR FIBER WATTLES WITH PAM
36. TRSC-A W/ MAT & PAM
39. IMPERVIOUS DIKE
41. COIR FIBER MAT
52. CONC. WASHOUT STR.
53. LITTER PICKUP (MOWING).
55. FABRIC INSERT INLET PROT
56. TACK FOR MULCH FOR ERC

Project Quantities

ITEM NUMBER	SECTION	TRNS-PORT ITEM DESCRIPTION					QUANTITY	UNIT
0196000000-E	270	GEOTEXTILE FOR SOIL STABILIZATION					800	SY
1077000000-E	1005	#57 STONE					0	TON
3628000000-E	876	RIP RAP, CLASS I					0	TON
3635000000-E	876	RIP RAP, CLASS II					0	TON
3642000000-E	876	RIP RAP, CLASS A					0	TON
3649000000-E	876	RIP RAP, CLASS B					0	TON
3651000000-E	SP	BOULDERS					0	TON
3656000000-E	876	GEOTEXTILE FOR DRAINAGE					2080	SY
6000000000-E	1605	TEMPORARY SILT FENCE					30010	LF
6006000000-E	1610	EROSION CONTROL STONE, CLASS A					2580	TON
6009000000-E	1610	EROSION CONTROL STONE, CLASS B					1710	TON
6012000000-E	1610	SEDIMENT CONTROL STONE					3850	TON
6015000000-E	1615	TEMPORARY MULCHING					26.00	ACR
6018000000-E	1620	SEED FOR TEMPORARY SEEDING					1300.00	LB
6021000000-E	1620	FERTILIZER FOR TEMPORARY SEEDING					7.50	TON
6024000000-E	1622	TEMPORARY SLOPE DRAINS					590	LF
6029000000-E	SP	SAFETY FENCE					800	LF
6030000000-E	1630	SILT EXCAVATION					8140	CY
6036000000-E	1631	MATTING FOR EROSION CONTROL	22265	SY+DITCH	4057	SY	24000	SY
6037000000-E	SP	COIR FIBER MAT					100	SY
6038000000-E	SP	PERMANENT SOIL REINFORCEMENT MAT	0 SY	+	2300	SY	2300	SY
6042000000-E	1632	1/4" HARDWARE CLOTH					9000	LF
6043000000-E	SP	LOW PERMEABILITY GEOTEXTILE					0	SY
6045000000-E	SP	"" TEMPORARY PIPE - (15")					0	LF
6045000000-E	SP	"" TEMPORARY PIPE - (18")					0	LF
6045000000-E	SP	"" TEMPORARY PIPE - (24")					0	LF
6045000000-E	SP	"" TEMPORARY PIPE - (36")					0	LF
6046000000-E	1636	TEMPORARY PIPE FOR STREAM CROSSING					50	LF
6048000000-E	SP	FLOATING TURBIDITY CURTAIN					0	SY
6069000000-E	1638	STILLING BASINS					0	CY
6070000000-N	1639	SPECIAL STILLING BASINS					2	EA
6071010000-E	SP	WATTLE					320	LF
6071012000-E	SP	COIR FIBER WATTLE					560	LF
6071013000-E	SP	WATTLE BARRIER					0	LF
6071014000-E	SP	COIR FIBER WATTLE BARRIER					0	LF
6071020000-E	SP	POLYACRYLAMIDE (PAM)					330	LB
6071030000-E	1640	COIR FIBER BAFFLE					1140	LF
6071050000-E	SP	"" SKIMMER - (1-1/2")					3	EA
6071050000-E	SP	"" SKIMMER - (2")					3	EA
6071050000-E	SP	"" SKIMMER - (2-1/2")					0	EA
6071050000-E	SP	"" SKIMMER - (3")					0	EA
6071050000-E	SP	"" SKIMMER - (4")					0	EA
6071050000-E	SP	"" SKIMMER - (5")					0	EA
6084000000-E	1660	SEEDING AND MULCHING					24.00	ACR
6087000000-E	1660	MOWING					21.00	ACR
6090000000-E	1661	SEED FOR REPAIR SEEDING					300.00	LB
6093000000-E	1661	FERTILIZER FOR REPAIR SEEDING					1.00	TON
6096000000-E	1662	SEED FOR SUPPLEMENTAL SEEDING					525.00	LB
6105000000-E	1663	WATER					0.0	M/G
6108000000-E	1665	FERTILIZER TOPDRESSING					15.25	TON
6111000000-E	SP	IMPERVIOUS DIKE					65	LF
6114500000-N	1667	SPECIALIZED HAND MOWING					10	MHR
6117000000-N	1675	RESPONSE FOR EROSION CONTROL					100	EA
6118000000-N	SP	ROOTWADS					0	EA
6120000000-E	SP	CULVERT DIVERSION CHANNEL					0	CY
6123000000-E	1670	REFORESTATION					0.00	ACR
6126000000-E	SP	STREAMBANK REFORESTATION					0.00	ACR
6129000000-E	SP	WETLAND REFORESTATION					0	ACR
6117500000-N	SP	CONCRETE WASHOUT STRUCTURE					10	EA
6114800000-N	SP	MANUAL LITTER REMOVAL					12	MHR
6114900000-E	SP	LITTER DISPOSAL					3	TON
6115000000-E	SP	MECHANICAL LITTER REMOVAL					0	SMI
6132000000-E	SP	GENERIC EROSION CONTROL ITEM - FABRIC INSERT INLET PROTECTION					44	EA
6125000000-E	SP	GENERIC EROSION CONTROL ITEM - FABRIC INSERT INLET PROTECTION CLEANOUT					132	EA
6135000000-E	SP	GENERIC EROSION CONTROL ITEM - DISKING					0	ACR
6135000000-E	SP	GENERIC EROSION CONTROL ITEM - RIPPING					0	ACR
6135000000-E	SP	GENERIC EROSION CONTROL ITEM - WETLAND GRASS PLANTING					0	ACR
6135000000-E	SP	GENERIC EROSION CONTROL ITEM - COMPOST BLANKET					0	ACR

Project Checklist

TIP

DATE

CHECKED BY

ROADWAY/PS/DDL

- SKIMMER/TIERED SKIMMER BASIN DETAIL(S) INCLUDED ☐
- EARTHEN DAM WITH SKIMMER DETAIL INCLUDED ☐
- INFILTRATION BASIN DETAIL INCLUDED ☐
- BORROW PIT DEWATERING BASIN DETAIL INCLUDED ☐
- WATTLE/COIR FIBER WATTLE DETAIL(S) INCLUDED ☐
- SILT CHECK TYPE A WITH MATTING AND PAM DETAIL INCLUDED ☐
- MATTING SUMMARY SHEET(S) AND STABILIZATION GUIDELINES INCLUDED ☐
- ENV. SENS. AREAS SHOWN ON PLAN SHEETS (TROUT/HQW/CA/303(d)/DSSW/STREAM RELOCATION) ☐
- NEUSE/TAR-PAM/JORDAN LAKE/RANDLEMAN/CATAWBA RIVER BASIN (ESA) ☐
- TREE REFORESTATION SHEET INCLUDED (APPROPRIATE WORDING IN SP) ☐
- STREAMBANK/WETLAND/BUFFER REFORESTATION SHEETS INCLUDED ☐
- STREAMBANK REFORESTATION SHOWN ON PLANS (MATTING ON SLOPE NOTE) ☐
- STILLING BASIN NOTE (BRIDGES OVER WATER) ☐
- EARTH BERMS/CLEAN WATER DIVERSION WITH DETAIL ON PLANS ☐
- CULVERT PHASING ON PLANS/QUANTITIES INCLUDED ☐
- TEMPORARY PIPE(S) QUANTITY (CULVERTS & STREAM CROSSING) ☐
- SKIMMER BASIN QUANTITIES INCLUDED ☐
- RISER BASIN QUANTITIES INCLUDED ☐
- GRAVEL CONST. ENT. QUANTITIES INCLUDED ☐
- STREAM RELOCATION QUANTITIES & SP'S INCLUDED ☐
- SAFETY FENCE QUANTITY INCLUDED ☐
- PLAN DESIGNED TO HQW/SENSITIVE WATERSHED STANDARDS ☐
- QUANTITIES MATCH ☐
- SPECIAL PROVISIONS MATCH ☐

TITLE SHEET

- CORRECT TIP PROJECT NUMBER ☐
- NOTES (HQW/ESA/303(d)/SENS WATER STD/C & G) ☐
- CORRECT STANDARDS ☐
- BEGIN & ENDING PROJ. TIP NUMBER ☐

- SPECIAL PROVISIONS (PDF) PUT IN CONTRACTS FOLDER ☐

LATE - EMAILED TO: _____

DATE: _____

BY: _____

COMMENTS & NOTES: _____