



NORTH CAROLINA
Department of Transportation



R-2577 U.S. 158 (Reidsville Road) Improvements Forsyth and Guilford Counties

Merger Concurrence Points 3 and 4A

May 16, 2018

AGENDA

1. Meeting Purpose
2. Project Description
3. Purpose of and Need for the Project
4. Project History and Status
5. Project Cost
6. CP 3: Least Environmentally Damaging Practicable Alternative
7. CP 4A: Avoidance and Minimization

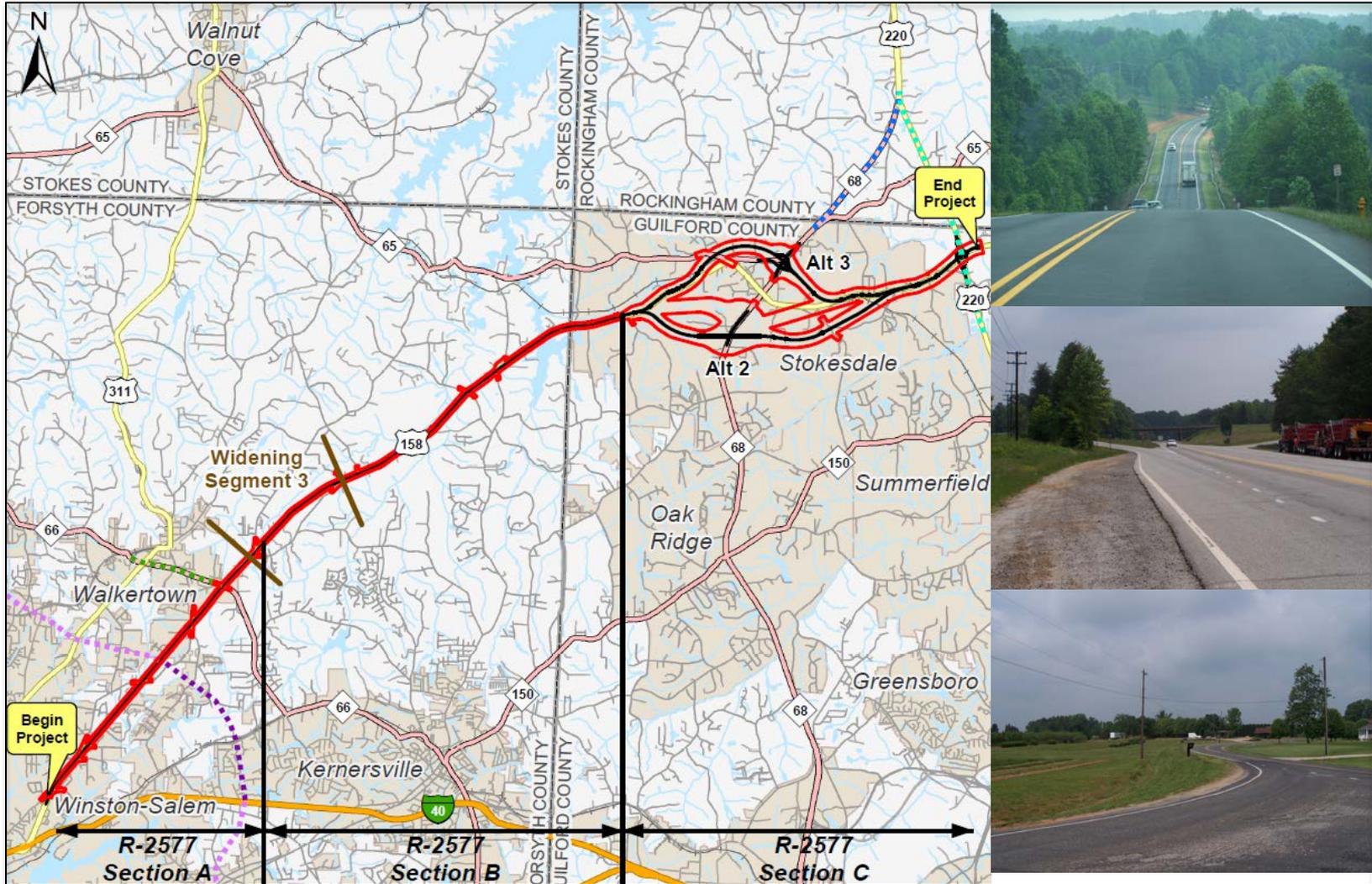
Meeting Purpose

- Present relevant project information
- Discuss potential impacts
- Reach Concurrence on Least Environmentally Damaging Practicable Alternative (LEDPA)
- Reach Concurrence on Avoidance and Minimization Measures

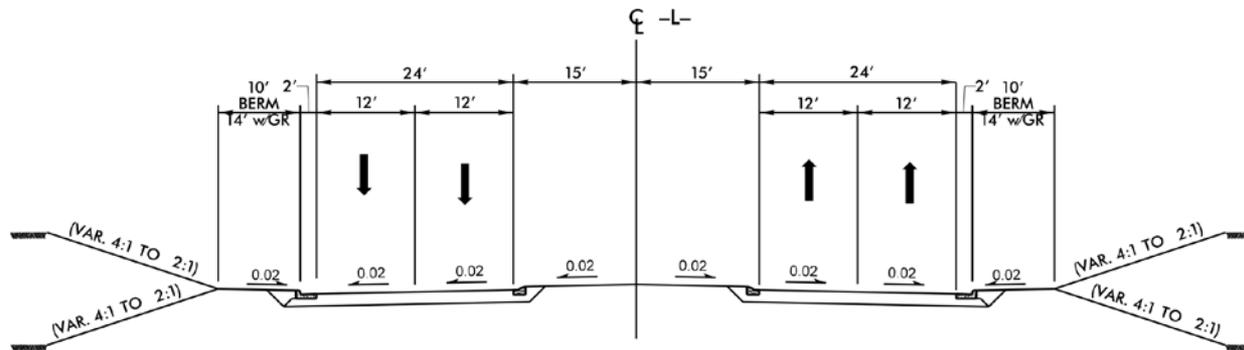
Project Description

- Proposed widening of U.S. 158 (Reidsville Road) to a multi-lane facility with a proposed bypass around Stokesdale.
- Project starts north of U.S. 421/I-40 Business in Forsyth County and ends at U.S. 220 (Future I-73) in Guilford County.
- Total length = 18.8 miles, project will be constructed in 3 parts, A, B, and C.
- Improvements consist of a four-lane median divided section of varying widths.

Vicinity Map



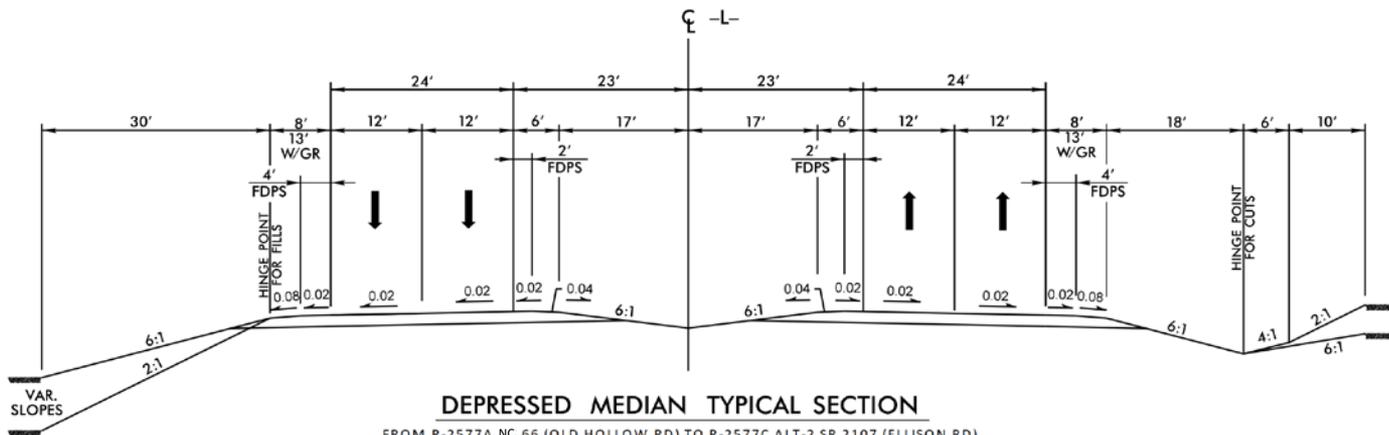
Proposed Typical Section



RAISED MEDIAN WITH CURB & GUTTER TYPICAL SECTION

FROM R-2577A SR 2357 (OLD GREENSBOO RD) TO R-2577A NC 66 (OLD HOLLOW RD)

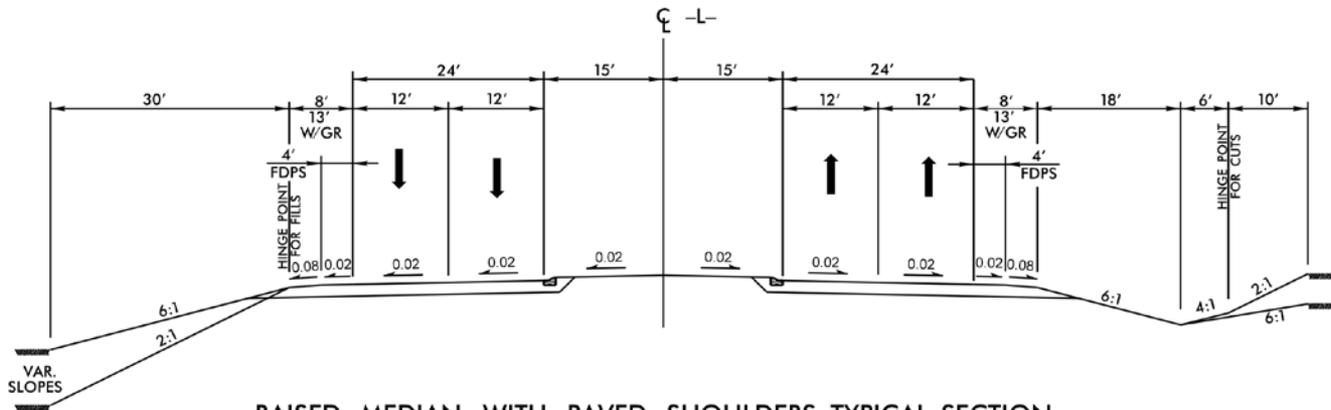
Proposed Typical Section



DEPRESSED MEDIAN TYPICAL SECTION

FROM R-2577A NC 66 (OLD HOLLOW RD) TO R-2577C ALT-2 SR 2107 (ELLISON RD)
 FROM R-2577A NC 66 (OLD HOLLOW RD) TO R-2577C ALT-3 SR 2034 (ANTHONY RD)
 FROM R-2577C ALT-3 BRANSON RD TO R-2577C ALT-3SR 2101 (ATHENS RD)

Proposed Typical Section



RAISED MEDIAN WITH PAVED SHOULDERS TYPICAL SECTION

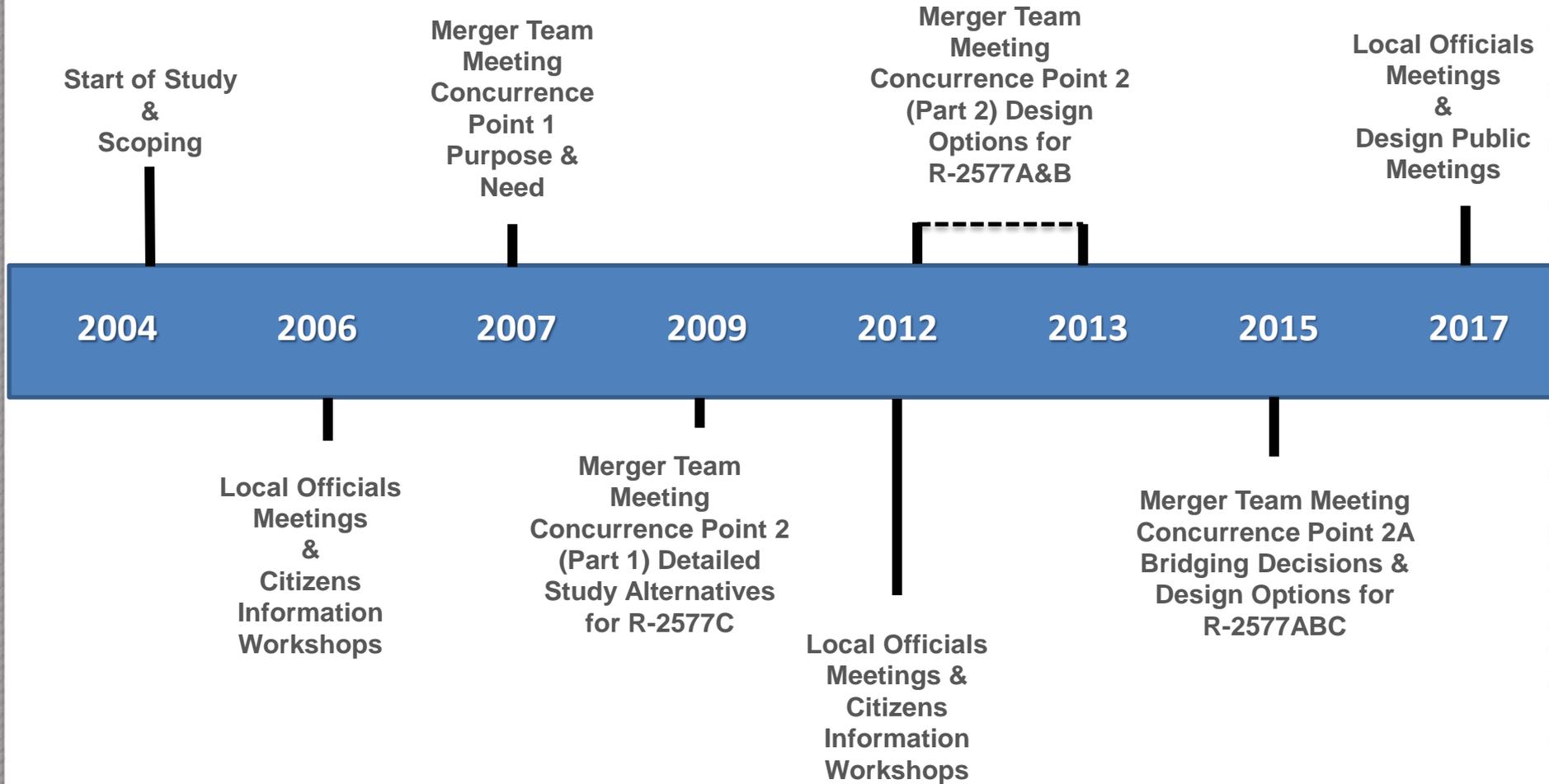
FROM R-2577C ALT-2 SR 2107 (ELLISON RD) TO R-2577C ALT-2 I-73 (US 220)
 FROM R-2577C ALT-3 SR 2034 (ANTHONY RD) TO R-2577C ALT-3 BRANSON RD
 FROM R-2577C ALT-3 SR 2101 (ATHENS RD) TO R-2577C ALT-3 I-73 (US 220)

Purpose and Need

- Purpose of project is to improve the traffic carrying capacity and level of service along U.S. 158 in Forsyth and Guilford Counties.
- Project need stems from existing transportation deficiencies along U.S. 158, that will cause travel delays, increase in potential accidents, and contribute to the inefficient operation of motor vehicles.



Project History and Status

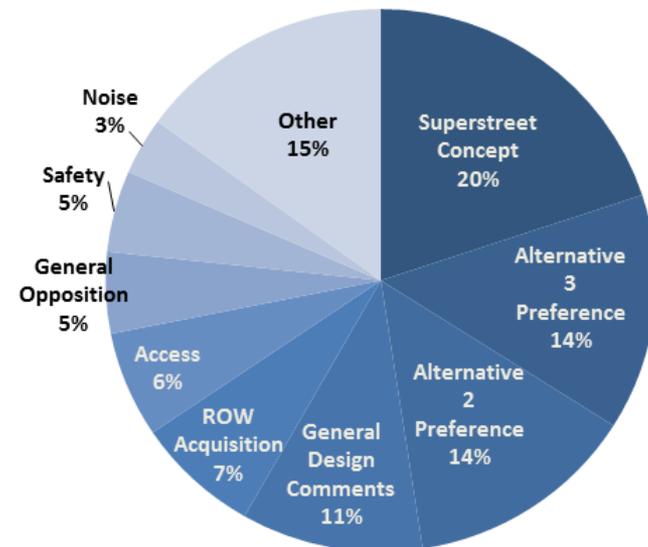


Merger Team Meetings

Project Section	Concurrence Point	Date	Concurrence Reached (Yes/No)
R-2577A, B, & C	1	August 14, 2007	Yes
R-2577C	2	February 17, 2009	Yes
R-2577A&B	2	December 12, 2012 August 22, 2013	No Yes
R-2577A, B, & C	2A	September 29, 2015	Yes

Public Meetings

- Citizens Informational Workshops (CIWs) were held in April 2006 and April 2012
- Design Public Meetings (DPMs) held in October 2017
 - 700 attendees
 - 168 written comments



Project Schedule

Project Section	Right of Way	Construction
R-2577A	2020	2022
R-2577B	2024	2026
R-2577C	unfunded	unfunded
Note: Schedule is based on 2018-2027 State Transportation Improvement Program (STIP)		

Combined State EA/FONSI – August 2018

Project Cost

R-2577	Right of Way + Utilities (Millions)	Construction (Millions)	Total Project Cost (Millions)
Part A:	\$11.1*	\$35.5*	\$46.6*
Segment 3 Southern Widening Option	\$27.2 + \$0.53	\$45.0	\$72.73
Segment 3 Transitional Widening Option	\$27.0 + \$0.53	\$35.4	\$62.93
Part B:	\$7.3*	\$49.4*	\$56.7*
Segment 3 Southern Widening Option	\$24.2 + \$0.72	\$46.2	\$71.12
Segment 3 Transitional Widening Option	\$26.3 + \$0.33	\$40.9	\$67.53
Part C:	\$4.8*	\$25.4*	\$30.2*
Alternative 2 Southern Bypass	\$42.0 + \$0.76	\$49.8	\$92.56
Alternative 3 Northern Bypass	\$61.1 + \$0.73	\$48.4	\$110.23
Note: *Cost is based on 2018-2027 State Transportation Improvement Program (STIP)			

CP 3 LEDPA – Impact Summary

R-2577ABC Project Impacts	Segment 3 R-2577A&B Southern Widening	Segment 3 R-2577A&B Transitional Widening	Bypass Alt 2 R-2577C South of Stokesdale	Bypass Alt 3 R-2577C North of Stokesdale
Proposed Interchange	0	0	0	1
Rest (Retirement) Homes	0	0	0	1
Cemeteries	0	0	2	3
Major Utilities	0	0	0	0
Residential Relocations	19	14		
Business Relocations	1	2		
Church/Non-Profit Relocations	1	0		
Floodplain Areas	-	-	1 - Kings Creek	-
100-year Floodplain & Floodway (Ac)*	0.0	0.0	0.3	0.0
Streams (No. of Crossings / LF)*	3 / 460	4 / 636 535	13 / 3334.5 3325.5	12 / 2842-2821
Wetlands (Ac)*	0.0	0.0	1.5	0.6
Ponds / Lake (Ac)*	0.2	0.5	0.6	0.0
Stream Buffers (Yes/No)	No	No	Yes - Jordan Lake	Yes - Jordan Lake
Zone 1 Stream Buffers*	0	0	1.9	4.1
Zone 2 Stream Buffers*	0	0	1.4	3.0
River Basins	Yadkin / Roanoke	Yadkin / Roanoke	Roanoke / Cape Fear	Roanoke / Cape Fear
VAD (No. of Impacts/Ac)**	1 / 1.5	1 / 0.9	0 / 0.0	0 / 0.0
UST Sites***	0	0	1	4
Inactive Hazardous Sites***	0	0	1	1
Forested Area (Ac)*	9.3	12.7	75.0	65.3
Federally Listed Species	NLEB & SAB	NLEB & SAB	NLEB & SWP	NLEB & SWP
Right of Way + Utility Cost (\$ Millions)	51.4 + 1.25	53.3 + 0.86	42.0 + \$0.76	61.1 + 0.73
Construction Cost (\$ Millions)	91.2	76.3	49.8	48.4
Total Cost (\$ Millions)	143.85	130.46	92.56	110.23

Note:
 * Impacts calculated using slopestakes + 25 feet; ** Impacts calculated using ROW+Easement width
 *** Information from NCDWR website
 VAD – Voluntary Agricultural District; NLEB – Northern long-eared bat
 SAB – Small-anthered bittercress; SWP – Small-whorled pogonia; Numbers and costs highlighted in YELLOW is preliminary and is being updated.

CP 3 LEDPA – Impact Summary

- R-2577A&B Segment 3
 - Transitional widening option impacts 1 more stream and has 75 LF of additional stream impacts than Southern widening option.
 - Transitional widening has fewer relocations than Southern widening option (21 vs. 16).
 - Transitional widening option costs ~\$13.4M less than Southern widening option.

CP 3 LEDPA – Impact Summary

- R-2577C New Location Alternatives
 - Alternative 3 (Northern Bypass) impacts 0.9 Ac. less wetland area and 504.5 LF less stream length than Alternative 2 (Southern Bypass).

Impact	Alternative 2 (Southern Bypass)	Alternative 3 (Northern Bypass)
Wetlands (Ac.)	1.5	0.6
Streams (LF)	3,325.5	2,821
Ponds (Ac.)	0.6	0.0

CP 3 LEDPA – Impact Summary

- R-2577C New Location Alternatives
 - Alternative 3 (Northern Bypass) has fewer residential and business relocations than Alternative 2 (Southern Bypass).

Impact	Alternative 2 (Southern Bypass)	Alternative 3 (Northern Bypass)
Residential relocations		
Business relocations		
Church/Other relocations		

CP 3 LEDPA – Impact Summary

- R-2577C New Location Alternatives
 - Alternative 3 (Northern Bypass) costs ~ \$17.7 M more than Alternative 2 (Southern Bypass).

Cost	Alternative 2 (Southern Bypass)	Alternative 3 (Northern Bypass)
Right of way (\$ Millions)	42.0	61.1
Utility (\$ Millions)	0.76	0.73
Construction (\$ Millions)	49.8	48.4
Total (\$ Millions)	92.56	110.23

CP 3 LEDPA – Concurrence Form

TIP Project: R-2577

WBS No.: 37405

Least Environmentally Damaging Practicable Alternative (LEDPA): Based upon the current project development information, the Project Team has concurred that the following checked alternatives are the Least Environmentally Damaging Practicable Alternative (LEDPA):

R-2577, Section AB, Segment 3 – NC 66 to Flat Rock Road (Forsyth County)

- Transitional widening
- Southern widening

Comments

R-2577, Section C – Anthony Road to US 220 (Guilford County)

- Alternative 2 (South of Stokesdale)
- Alternative 3 (North of Stokesdale)

Comments

CP 4A Avoidance & Minimization

Proposed Bridge Lengths

Location	Existing Structure	Proposed Structure Concurred to at CP 2A	Proposed Structure Length
Lowery Mill Creek Sta. 140+50	3-Barrel, 7'X10' bottomless culvert	Dual bridges	Total bridge length = 200' to allow for the restoration of natural stream channel
Belews Creek Sta. 494+00	6-Barrel, 9'x7' culvert	Dual bridges	Total bridge length = 275' to allow for restoration of natural stream channel
Belews Lake Sta. 607+00	Bridge 164 - 3 span bridge: 1@31', 1@32'-6", 1@31' Total bridge length = 94'-6"	Retain & widen Bridge 164 or build New adjacent bridge	Coordination with Duke Energy for conveyance permit has led to NCDOT recommending existing bridge to be replaced with dual bridges at equal or greater length. New bridges will be 4' higher than existing bridge. Total bridge length = 100'

Bridge 164 over Belews Lake



CP 4A Avoidance & Minimization Utility Impacts

- Relocation of Overhead Utilities
- Possible relocation of Winston-Salem station pump north side of U.S.158 along R-2577A
- Relocation of pipe bridge for 12" water main over Belews Lake located south of Bridge 164

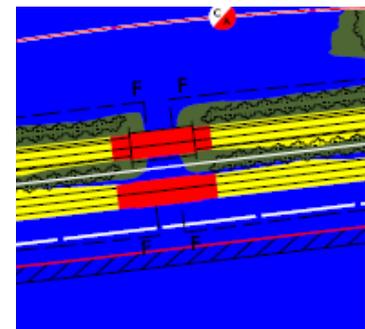
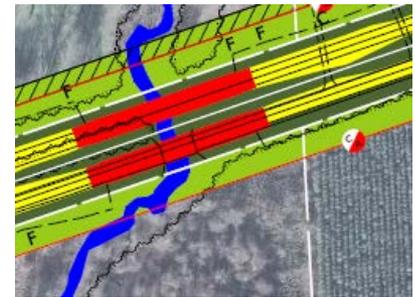
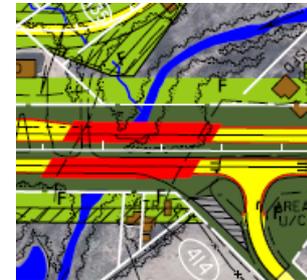


CP 4 Avoidance & Minimization Pipe Bridge over Belews Lake



CP 4A Avoidance & Minimization Additional Measures

- Proposed Bridge Lengths
 - Lowery Mill Creek – proposed bridge length of 200' is 125' longer than minimum hydraulic length
 - Belews Creek – proposed bridge length of 275' is 200' longer than minimum hydraulic length
 - Belews Lake – proposed dual bridges will be 5.5' longer and 4' higher than existing bridge



CP 4A Avoidance & Minimization

Additional Measures

- Tightened side slopes to 2:1 where possible:
 - R-2577 A&B – a reduction of 96 LF of overall stream impacts (from 3,026 LF to 2,930 LF)
 - R-2577 A&B segment 3 transitional widening – a reduction of 101 LF of stream impacts (from 636 LF to 535 LF)
 - R-2577C Alternative 2 – a reduction of 9 LF of stream impacts (from 3,334.5 LF to 3,325.5 LF)
 - R-2577C Alternative 3 – a reduction of 21 LF of stream impacts (from 2,842 LF to 2,821 LF)

CP 4A Avoidance & Minimization

On-site Mitigation

On-site mitigation is possible at two of the major stream crossings where existing culverts will be replaced with dual bridges, Lowery Mill Creek and Belews Creek.

Existing Culvert at Lowery Mill Creek



Existing Culvert at Belews Creek



Existing Culvert at Belews Creek



CP 4A Avoidance & Minimization Concurrence Form

TIP Project: R-2577

WBS No.: 37405

Avoidance and Minimization: Based upon the current project development and design information, the jurisdictional impacts have been avoided and minimized to the maximum extent practicable. The following avoidance and minimization measures have been utilized:

1. Replace Bridge 164 over Belews Lake with dual bridges (100'); raise vertical alignment with 4'
2. Replace existing culverts at the following locations with dual bridges:
 - Lowery Mill Creek – proposed bridge length of 174' is 99' longer than minimum hydraulic recommended structure.
 - Belews Creek – proposed bridge length of 275' is 200' longer than minimum hydraulic recommended structure.
3. Reduce sideslopes, from 6:1 to 2:1 without requiring the installation of guardrail, to further minimize stream and wetland impacts.
 - R-2577 A&B – a reduction of 96 LF of overall stream impacts (from 3,026 LF to 2,930 LF)
 - R-2577 A&B segment 3 transitional widening – a reduction of 101 LF of stream impacts (from 636 LF to 535 LF)
 - R-2577C Alternative 2 - a reduction of 9 LF of stream impacts (from 3,334.5 LF to 3,325.5 LF)
 - R-2577C Alternative 3 - a reduction of 21 LF of stream impacts (from 2,842 LF to 2,821 LF)

Comments:

Discussion & Questions