PURPOSE AND NEED AND STUDY AREA DEFINED

Proposed Improvements to Wilson Road (SR 1540) from US 276 to SR 1504 (Old US 64/Old Hendersonville Highway)

Transylvania County

STIP Project R-5763

North Carolina Department of Transportation
Division 14

MERGER CONCURRENCE POINT NUMBER 1

January 23, 2019

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Figures

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1. Introduction

The North Carolina Department of Transportation (NCDOT) proposes to improve SR 1540 (Wilson Road) from US 276 to SR 1504 (Old US 64/Old Hendersonville Highway), approximately 3.7 miles, as shown on **Figure 1**. This state-funded project is included in the State Transportation Improvement Program (STIP) as project number R-5763. The project proposes to upgrade Wilson Road moving it out of the 50-year floodplain associated with the French Broad River and improve the the safety of Wilson Road. The anticipated environmental document for this project is a combined State Environmental Analysis/ Finding of No Significant Impacts (SEA/FONSI).

Because of the potential impacts to human and natural resources, STIP Project R-5763 will follow the Section 404/NEPA Merger Process. A Merger Screening Packet was provided to the lead federal resource agency, US Army Corps of Engineers (USACE), in June 2018. Based on the information provided, the USACE requested that the project follow the Merger process.

1.1 Project Background

The project is in the 2018-2027 NCDOT STIP which was approved by the NCDOT Board of Transportation on August 3, 2017 and most recently revised January 2018. NCDOT-Division 14 anticipates State Highway Trust Funds will be utilized for this project. Right-of-way (ROW) and Construction funding are scheduled for Fiscal Year (FY) 2019 and 2021, respectively. The proposed draft 2020 -2028 STIP will move the right of way and construction funding to FY 2021 and 2023, respectively. The current STIP cost estimate is presented in **Table 1**.

Table 1. 2018-2027 STIP R-5763 Cost Estimate

Phase	Cost Estimate
Right of Way	$270,000
Utilities	$100,000
Construction	$34,500,000
Total*	**$36,080,000**
*includes $1,210,000 in prior years costs. Note: cost estimates are subject to change.	

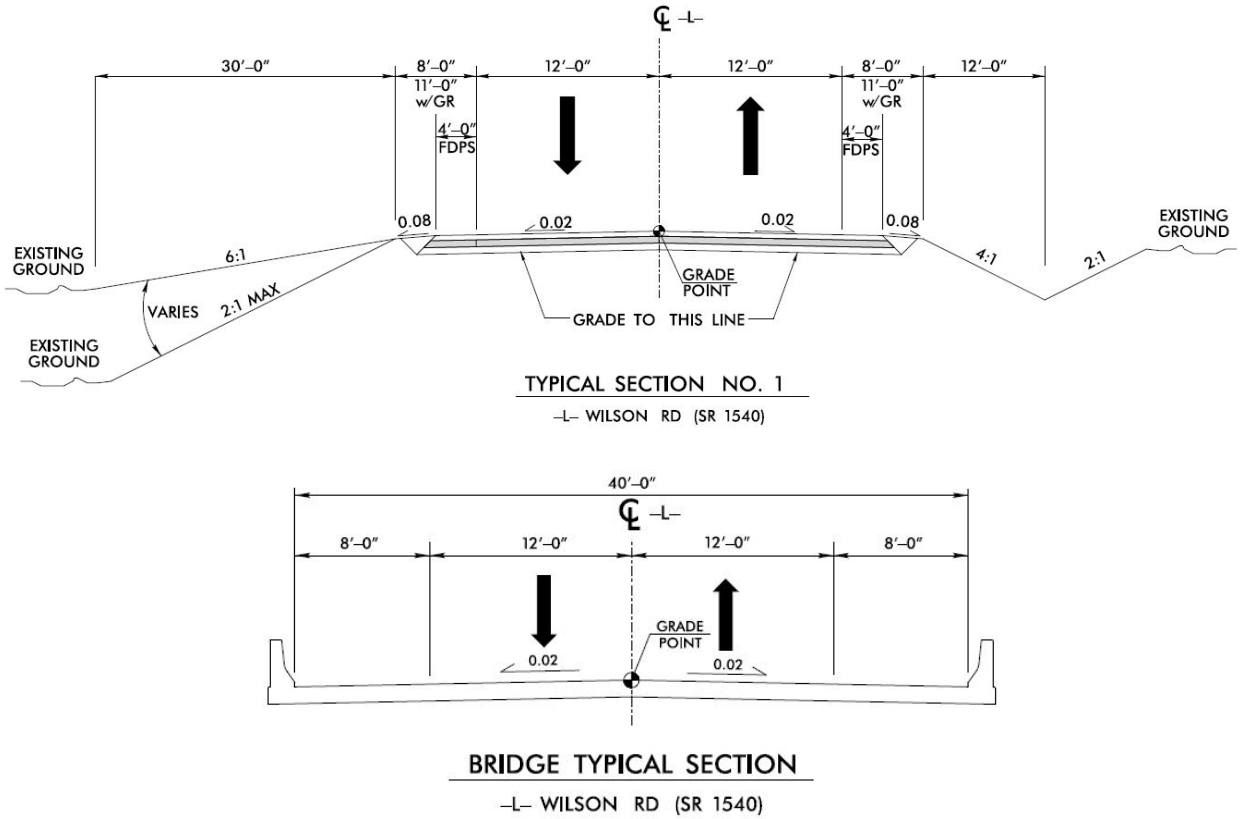
A Feasibility Study, finalized in December 2016, defined a preliminary purpose and need and analyzed three possible concepts for the subject project. The first concept would make minor upgrades and improvements using NCDOT's Resurfacing, Restoration, and Rehabilitation (3R) guidelines. The second concept proposed upgrading Wilson Road to Major Collector design standards. The third concept proposed to upgrade Wilson Road to Principal Arterial (US Route) design standards. A public meeting was held on September 26, 2016, to gather public input on these concepts.

The Feasibility Study determined that the first concept (3R) did not meet the preliminary purpose and need of the project, to move the roadway out of the 50-year floodplain and upgrade to current Major Collector Standards. Public opposition and the number of residential relocations associated with the third concept (Principal Arterial) eliminated this concept. Based on the Feasibility Study analysis, NCDOT chose to move forward with the second concept, upgrading the roadway to Major Collector standards.

The selected concept will correct the horizontal curvature by increasing the radii to meet minimum American Association of State Highway Transportation Officials (AASHTO) design standards. In addition, the vertical design would be improved to meet minimum design standards and move Wilson Road out of the 50-year floodplain. The bridges over Williamson Creek and the French Broad River would be replaced on new alignment. Finally, this concept will add paved shoulders. The design speed of the

road will remain the same at 45 miles per hour. **Exhibit 1** illustrates the proposed typical section of the roadway and proposed bridge.

Exhibit 1. Proposed Typical Sections



1.2 Project Setting

Within the project study area, Wilson Road is a two-lane facility connecting US 276 and Old US 64/Old Hendersonville Highway, a distance of approximately 3.7 miles. Wilson Road is located east of Brevard and serves as a bypass around the city in conjunction with Ecusta Road, connecting US 276 to US 64 (to the east)/US 276 (to the west) north of Brevard. The posted speed limit is 40 mph. The Land of Sky Regional Planning Organization (RPO) currently classifies Wilson Road as a Major Collector; however, the roadway does not currently meet the design standards for this classification. Wilson Road is included as part of each of the six bicycle routes provided by the City of Brevard. Transylvania County has designated Old US 64/Old Hendersonville Highway as bicycle Route 1.

Land use along Wilson Road is predominantly pastoral with the French Broad River and farmland along the western side of the road and houses and subdivisions along the eastern side. The French Broad River follows a sinuous path and is immediately adjacent to Wilson Road in two locations for approximately 1.0 mile and 0.25 mile, respectively. These sections lie within the FEMA designated 100-year floodplain of the French Broad River. Where the river diverges from the road, agricultural fields are adjacent to the floodplain. Wilson Road crosses the French Broad River at the northern end of the project, approximately 0.25 mile south of its intersection with Old US 64/Old Hendersonville Highway. From the southern terminus of the project, single family houses are located to the east, generally upslope of the floodplain. Subdivisions, including Knob Creek, Middlemount, and Glen Cannon, are also located to the east of Wilson Road. Single family homes, including some manufactured

houses, are located between the French Broad River bridge crossing and the intersection of Wilson Road with Old US 64/Old Hendersonville Highway. In addition, there are several business and retail locations as well as a U.S. Post Office on Old US 64/Old Hendersonville Highway between the Wilson Road and Ecusta Road intersections.

1.3 Nearby STIP Projects and Local Transportation Plans

The 2018-2027 STIP lists five projects in the area of R-5763 (**Table 2**).

Table 2. Nearby STIP Projects*

STIP	Route	Location/Description	Funding Schedule	
			ROW	Construction
U-5104	US 64 Business (Caldwell Street)	SR 1348 (Probart Street) to US 64 in Brevard. Widening.	*Complete*	On-going
R-5605	Davidson River Village Connector	US 64 to US 276/US 64 in Pisgah Forest.	*Complete*	On-going
R-5799	US 64/US 276/NC 280	US 64/US 276/NC 280 and US 64. Intersection improvements	2020	2021
R-5800	US 64/US 276	Fortune Cove Road to US 64 Business (N. Caldwell Street). Construct median and access control measures.	2020	2024
EB-5858		Construct bike/pedestrian bridge from City of Brevard existing shared use path across Davidson River		2022

*NCDOT 2018-2027 STIP

2. Merger Concurrence Point 1 – Purpose and Need and Study Area Defined

2.1 Proposed Action

Per the 2017-2028 STIP, NCDOT proposes to upgrade SR 1540 (Wilson Road) from US 276 to SR 1504 (Old US 64/Old Hendersonville Highway).

2.2 Summary of Purpose

The purpose of this project is to raise the roadway out of the 2 percent annual chance (50-year) flood zone and address facility deficiencies throughout the corridor, bringing the roadway up to minimum design standards.

2.3 Need for the Proposed Project

2.3.1 Flooding

Wilson Road is located within the 50-year floodplain of the French Broad River. Consequently, sections of Wilson Road flood during 10-year and 50-year flood events, making the road impassable to residents, those traveling to or from businesses, and to the City of Brevard's wastewater treatment plant (WWTP). The WWTP is located near the northern terminus of the project at 3226 Wilson Road, Pisgah Forest. The NCDOT-Division 14 County Maintenance Engineer noted that the road is flooded, particularly at the northern terminus (**Exhibit 2**), four to five times per year. In addition, the French Broad River is beginning to undercut the roadway in areas that are immediately adjacent to the river (**Exhibit 3**).

Exhibit 2. Wilson Road closure at the bridge abutment (facing south) due to flooding December 2018 (NCDOT).

Exhibit 3. Wilson Road, between US 276 and Elm Bend Road, collapses after heavy rains May 2018 (*Transylvania Times*).

In addition, the Transylvania Transportation Advisory Committee identified other concerns and interests in its January 26, 2016 committee meeting, including: the need for guard rails where Wilson Road is adjacent to the river; raising and extending the bridge over the river at the northern end of the project, out of the floodplain; increasing the travel lane width; straightening or realigning curves; providing paved bike lanes and shoulders; and improving the intersection of Wilson Road at US 276 and realigning Wilson Road at Ecusta Road.

2.3.2 Safety Issues

A crash analysis of the Wilson Road corridor was conducted during the Feasibility Study utilizing crash data provided by the NCDOT Traffic Safety Unit for a five-year period from October 1, 2010 to September 30, 2015.

Between October 2010 and September 2015, a total of 75 crashes were reported along Wilson Road. Of the 75 total crashes in the study area during the five-year period, none were fatal and 22 reported non-fatal injuries. Fixed object collisions accounted for the majority of incidents, with 38 crashes or 51 percent of total crashes. Among the objects struck ditches accounted for 12 crashes, or 32 percent, and embankments accounted for 10 crashes, or 26 percent, of the total fixed object crashes.

Between October 2010 and September 2015, a total crash rate of 384.35 per 100 million vehicle miles traveled (MVMT) was reported in the study area. The total crash rate for Wilson Road is higher than the total critical crash rate of 253.10 for rural secondary roads identified by NCDOT. The crash rate for non-fatal injury, 112.74, and for wet crashes, 71.75, is higher than the critical crash rates of 73.41 for non-fatal injury and 42.77 for wet crashes. Statewide and critical crash rates are not calculated for property damage only crashes.

Crash data for fatal, non-fatal, property damage, and wet crashes are provided in **Table 3** for the period of October 1, 2010 to September 30, 2015. **Table 4** provides similar crash data for an overlapping time period of May 1, 2013 to April 30, 2018.

Table 3. Crash Data Analysis Summary (10/1/2010 to 9/30/2015)

Crash Type	Number of Crashes	R-5763 Crash Rate	Statewide Crash Rate[1]	Critical Crash Rate[2]
Fatal	0	0	2.57	3.19
Non-Fatal Injury	22	**112.74**	70.26	73.41
Property Damage Only	53	-	-	-
Wet Crashes	14	**71.75**	40.38	42.77
Total[3]	75	**384.35**	247.22	253.10

[1] 2012-2014 Statewide crash rates in crashes per 100 million vehicle miles for urban interstates in North Carolina.
[2] Based on the statewide crash rate (95% confidence interval).
[3] Crash types are not mutually exclusive to each other and therefore the total is not the sum of the crash types, but of the crashes within the 5-year period.

Table 4. Crash Data Analysis Summary (5/1/2013 to 4/30/2018)

Crash Type	Number of Crashes	R-5763 Crash Rate	Statewide Crash Rate[1]	Critical Crash Rate[2]
Fatal	0	0	2.57	3.19
Non-Fatal Injury	15	**74.31**	69.34	102.30
Night Crashes	12	59.45	100.16	139.28
Wet Crashes	13	**64.40**	39.01	64.35
Property Damage Only	44	-	-	-
Total[3]	59	**292.28**	237.10	295.95

[1] 2015-2017 Statewide crash rates in crashes per 100 million vehicle miles for two-lane undivided rural secondary routes in North Carolina.
[2] Based on the statewide crash rate (95% confidence interval).
[3] Crash types are not mutually exclusive to each other and therefore the total is not the sum of the crash types, but of the crashes within the 5-year period.

Table 5 provides the total number of crashes at the Wilson Road and Old Hendersonville Highway/Old US 64 intersection and at the Old Hendersonville Highway/Old US 64 and Ecusta Road intersection. Crash types at the Wilson Road and Old Hendersonville Highway/Old US 64 intersection were primarily angle crashes (8) and rear-end crashes (4). There were no fatal or severe injury crashes at this intersection. No crashes involving pedestrians and one (1) crash involving a bicyclist were also recorded. At the Old Hendersonville Highway/Old US 64 and Ecusta Road intersection the crash types were primarily angle crashes (4) and rear-end crashes (4). There were no fatal or severe injury crashes at this intersection. No crashes involving pedestrians or bicyclists were observed.

Table 5. Intersection Crash Summary (5/1/2013 to 4/30/2018)

	Number of Crashes	Crashes per 100 Million Vehicles Entered
SR 1504 (Old Hendersonville Hwy) at SR 1540 (Wilson Rd)	14	64.97
SR 1504 (Old Hendersonville Hwy) at SR 1512 (Ecusta Rd)	10	42.13

2.4 Project Study Area

The study area for this project encompasses approximately 200 feet on either side of the existing Wilson Road centerline. It extends approximately 250 additional feet to the east of the centerline as it approaches Old US 64/Old Hendersonville Highway to include the Ecusta Road intersection. Where the French Broad River is closer to the road than the 200-foot boundary, the study area stops at the French Broad River, as discussed in Section 5 the project will not encroach into the river. The Study Area is shown on **Figure 2**.

3. Project Schedule

Table 6 provides the tentative milestone schedule for this project (subject to change). The funding schedule is consistent with the 2018-2027 STIP.

Table 6. STIP Project R-5763 Milestone Targets

Milestone	**Schedule***
Concurrence Point 2/2A	February 2019
Biological Assessment	February 2019
Concurrence Point 3/4A	April 2019
Biological Opinion	June 2019
State EA/FONSI	July 2019
Begin ROW Acquisition[1]	FY 2019
Begin Construction[1]	FY 2021

*tentative, subject to change;
[1]This schedule is expected to change to FY 2023/FY 2027

4. References

NCDOT. Feasibility Study STIP Project FS-1514A, Proposed Improvements to Wilson Road (SR 1540) from US 276 to Old US 64/Old Hendersonville Highway (SR 1504). December 2016.

5. Avoidance and Minimization Tracking for Projects Going through Merger

Avoidance and Minimization (A&M) measures to reduce impacts to the natural and human environment regularly occur throughout the planning and design stages of a project. The following are questions provided by NCDOT Environmental Analysis Unit (EAU) – Environmental Coordination and Permitting (ECAP) to consider and record A&M measures throughout the life of the project and at particular concurrence points in the Merger process.

These measures (where applicable) shall be discussed with the merger team at each merger point for concurrence on projects. In addition, discussion on these measures could generate additional avoidance and minimization to be included for the project. No signatures are required for these measures.

Features noted in the A&M measures are shown on **Figure 3**.

Project Feasibility, Internal and External Scoping, CP1	
404 & 401 A&M	
Did NCDOT choose a certain alignment for the project based on avoiding streams, buffers and wetlands?	The study area does not extend into the French Broad River as NCDOT has determined that the roadway alignment will be shifted away from the river where necessary to improve horizontal and vertical alignment.
Are there any red flags concerning protected streams, conservation easements, or mitigation property?	The French Broad River provides habitat for the Appalachian elktoe, a federally protected species (endangered), which has been found in the stretch of the river adjacent to Wilson Road. NCDOT is conducting a Biological Assessment (BA) to evaluate the potential effects of this project on the elktoe.
Does the study area suit the purpose and need and has it been minimized, reducing impacts to streams and wetlands, and keeping with the purpose of the project?	The study area has been minimized to avoid impacts to the French Broad River where it is adjacent to the roadway. The study area is sized to accommodate an improvement of Wilson Road on existing alignment where possible and realignment where necessary to bring the horizontal and vertical alignment up to current design standards.
Is it feasible to expand existing transportation facilities, reducing impacts to all resources rather than new location?	The 2016 Feasibility Study evaluated a new location concept and found it to have substantial additional impacts to the human and natural environment when compared to the proposed upgrade of the existing alignment.

Project Feasibility, Internal and External Scoping, CP1	
Non-404/401 A&M	
Where/Why did NCDOT decide to focus on a certain alignment for the project?	The Feasibility Study analyzed three concepts: Concept 1 – Minor upgrades and improvements using 3R guidelines Concept 2 – Upgrade the road to Major Collector design standards Concept 3 – Upgrade the road to Principal Arterial design standards The Feasibility Study determined that: Concept 1 did not meet proposed purpose and need of project. Concept 2 meets purpose and need and has fewer impacts and is less costly than Option 3. Concept 3 required the road to be realigned on new location, resulting in higher residential relocations and a higher cost. Therefore, NCDOT recommended Concept 2 be carried forward, which includes adjustments to the horizontal and vertical alignment while retaining current alignment to the extent feasible.
Are there any red flags due to utilities, rail, or human environment resources?	Mobile home community at northern terminus of project.
Are there any Red flags due to known threatened and endangered (T&E) species locations?	Appalachian elktoe (E) found in the French Broad River
Are there parks, recreational areas, refuges, or historic properties that qualify for Section 4(f) or Section 106 consideration?	Three resources were recommended as eligible for listing on the National Register of Historic Places.
Are FEMA Hazard Mitigation Grant Program (HMGP) properties, aka, FEMA Buy-out properties, avoided?	No known FEMA buy-out parcels are located within the study area.
Are there any red flags associated with encroachment into 100-year floodplain including potential longitudinal encroachment into the FEMA regulated floodplain?	Majority of the project is within the 100-year floodplain currently and will remain in the 100-year floodplain in the future.

Section 404/NEPA Merger Project Team Meeting Agreement
Concurrence Point No. 1
Project Purpose and Need and Study Area Defined

Project Name/Description: SR 1540 (Wilson Road) between US 276 and SR 1504 (Old US 64/Old Hendersonville Highway). **STIP Project: R-5763**

Project Need:

Currently, Wilson Road is flooded during 10-year and 50-year flood events making the road impassable to residents, those traveling to or from businesses, and to the City of Brevard's wastewater treatment plant (WWTP). In addition, Wilson Road exceeds the statewide and critical crash rates for similar roadways in non-fatal injury and wet crashes.

Project Purpose:

The purpose of this project is to bring the roadway out of the 2 percent annual chance (50-year) flood zone of the French Broad River and address facility deficiencies throughout the corridor, bringing the road up to minimum design standards.

Project Study Area

The project study area boundaries are shown on **Figure 2**. The study area for this project encompasses approximately 200 feet on either side of the existing Wilson Road centerline. It extends approximately 250 additional feet to the east of the centerline as it approaches Old US 64/Old Hendersonville Highway to include the Ecusta Road intersection. Where the French Broad River is closer to the road than the 200-foot boundary, the study area stops at the French Broad River. The resultant study area encompasses approximately 173 acres, including sufficient area to pursue alignment shifts and apply avoidance and minimization measures during design development.

The Merger Team has concurred on this date of January 23, 2019, on the above project purpose and need and the study area as shown in **Figure 2** for STIP Project R-5763.

USACE	NCHPO
USEPA	Land of Sky RPO
USFWS	Eastern Band of Cherokee Indians
NCDWR	Cherokee Nation
NCWRC	United Keetowah Band
NCDOT	Land of Sky RPO