

NEPA/404 Merger Team Meeting Agreement

Concurrence Point 2A: Bridging and Alignment Review

Project Name/Description: US 1 Upgrade to Controlled Access Highway from I-540 to Harris/Purnell Road, Wake County, NC

TIP Project No.: U-5307

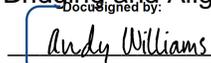
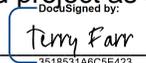
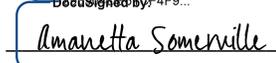
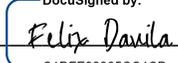
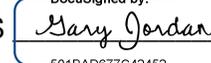
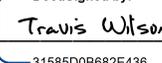
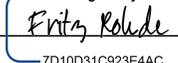
Federal Aid Project No.: NHS-0001(138)

WBS No.: 47027.1.1

Bridging and Alignment Decisions

Site #	Stream or Feature / Crossing Roadway	Existing	Proposed Structure	Wetland Impacts (acres)	Stream Impacts (lf)
1	UT to Perry Creek / I-540	72" RCP	Retain existing	0.1	70
2	UT to Perry Creek / I-540	2 @ 8' x 6' RCBC	Retain existing and add 72" supp. pipe	0	180
3	Perry Creek / Gresham Lake Road Extension	N/A	300' bridge	0	260
4	Perry Creek / US 1	3 @ 8' x 8' RCBC	Retain and extend existing; add 84" supp. pipe	0	190
5	UT near Neuse / US 1	2 @ 8' x 8' RCBC	Retain existing and add 84" supp. pipe	0	100
6	UT near Neuse / Y10 (Service Road)	N/A	48'W x 60'L bridge	0	120
7	UT near Neuse / Y10 (Service Road)	N/A	1 @ 6' x 7' RCBC with a notched sill	0.1	300
8	Neuse River / US 1	Dual 250' bridges	345' dual bridges and service road bridge	0	430
9	UT to Smith Creek / Y18 (Star Road Extension / Service Road)	N/A	1 @ 7' x 8' RCBC	0.6	810
10	Richland Creek / US 1	4 @ 10' x 11' RCBC	Retain and extend existing RCBC and 72" supp. pipes	0	160
11	UT near Neuse / Driveway	N/A	DELETED	N/A	N/A
12	US 1 over CSX Rail Line (eligible for NR)	Dual bridges carrying US 1	300' dual bridges and service road bridge	0	0
Total				0.8	2,620

The Project Team reviewed the CP 2A materials via email and concurred on this date of 11/17/2021 with the Bridging and Alignment decisions for the proposed project as stated above:

USACE		NCDOT	
USEPA		NCDOT	N/A
FHWA		NCDWR	
USFWS		NCWRC	
NMFS		CAMPO	

Meeting Summary Memorandum



Meeting Date: August 18, 2021

Subject: Concurrence Point 2A Meeting
U-5307 (US 1, Wake County)

Attendees:

Felix Davila	FHWA	felix.davila@dot.gov
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James Mason	Three Oaks Engineering	james.mason@threeoaksengineering.com
Byron Levan	Three Oaks Engineering	byron.levan@threeoaksengineering.com

Terry Farr opened the meeting, and attendees introduced themselves. Terry Farr thanked everyone for attending and turned the meeting over to Meredith Van Duyn.

Meredith began the Concurrence Point (CP) 2A presentation starting with a brief overview of the project as well as a summary of CP 1 and CP 2.

Project Overview

- Project U-5307 proposes to upgrade US 1 to a controlled access highway from I-540 in Raleigh to Harris/Purnell Road in Wake Forest. Proposed interchanges are located at Durant/Perry Creek Road, Burlington Mills Road, Falls of Neuse Road/US 1A (Main Street), and Purnell/Harris Road with modifications to existing I-540, NC 98 Bypass, and NC 98 Business interchanges. Project U-5307 also includes a grade separation at Stadium Drive/Jenkins Road and the addition of a third westbound lane on I-540 at the US 1 interchange.
 - Meredith noted a change from the CP2A packet: Division 5 and NCDOT PMU decided on 7/23/2021 that the bridges carrying US 1 over NC 98 Business (Durham Road) will be replaced, given the age of the structures will be when this portion of the project is scheduled to be constructed and the constructability / maintenance of traffic issues with widening on both sides of each structure.
 - There are no hydraulic features or resources nearby
 - In addition, the replacements of the bridges will allow for sidewalk and turn lane improvements on NC 98 Business.
 - FHWA inquired if consideration was given to putting a sidewalk behind the piers with vertical abutment walls.
 - NCDOT responded that considering the potential constructability issues with widening the bridges to the median as well as the outside and knowing the life cycle of the bridges will be nearing completion when the project is planned to be constructed, this project would be a best time to replace the bridges. The sidewalk and turn lane improvements are additional benefits of the replacement.
- Project segments and corresponding schedule are as follows as stated in NCDOT's Current 2020-2029 STIP:
 - Segment A
 - Right-of-Way and Construction scheduled to begin in Federal Fiscal Year (FFY) 2025 (October 2024)
 - Segment B and Segment C
 - Right-of-Way scheduled to begin in FFY 2025 (October 2024)
 - Construction scheduled to begin in FFY 2027 (October 2026)
 - Segment D
 - Right-of-Way scheduled to begin in FFY 2029 (October 2028)
 - Construction scheduled is unfunded in STIP
- The proposed typical section for the US 1 mainline includes 12-foot travel lanes with 12-foot full-depth paved shoulders and a 3-foot concrete median barrier. The number of lanes in each direction varies based on traffic needs with most of the US 1 mainline having three lanes in each

direction. Auxiliary lanes are proposed on US 1 between I-540 and Burlington Mills Road interchanges, and service / connector roads will be provided.

Concurrence Point 1

- At CP 1 (June 14, 2018), the Merger Team reached consensus on the Purpose & Need and Study Area for U-5307.
 - Need for Proposed Action:
 - Traffic congestion and trip time unreliability
 - Purpose of Proposed Action:
 - Improve traffic congestion and travel times
 - Maintain regional mobility and local connectivity
- Following CP 1, the project team held two open house public meetings (on October 9 and October 29, 2018) with 477 attendees total and over 150 comments received in-person, online, and via email. The most common themes of the comments included questions / concerns about access (including service roads), questions about or requests to minimize property impacts, questions about noise barriers and when studies will be conducted, requests for bike/pedestrian/transit accommodations, and requests for additional connections / interchanges.

Concurrence Point 2

- CP 2 was signed in November 2019. Following CP 2 signatures, the project team corresponded with property owners and stakeholders along the corridor and concluded that an update to the CP 2 agreement was in order. The revisions included five minor study area modifications because of service road designs and two new interchange types at previously agreed upon proposed interchange locations (US 1 at Durant Road / Perry Creek Road and US 1 at Burlington Mills Road).
- CP 2 was revised and agreed upon by the Merger Team in March 2020. The approved detailed study alternatives carried forward are as follows:
 - US 1 Mainline (No change from CP 2 signed in 2019):
 - Conversion to a controlled-access highway; best fit alignment for centerline with consideration for maintenance of traffic during construction
 - Service Roads/Connecting Streets (No change from CP 2 signed in 2019):
 - Service roads and connecting streets are under study to maintain regional mobility and local connectivity and will be presented at Concurrence Point 2A. The Project Team is considering a combination of existing streets and new location.
 - New / Proposed Interchanges:

New Interchange	Approved at CP 2 (2019)	Proposed / Revised CP 2
US 1 / Durant / Perry Creek Rd	Option A: DDI Option B: Diamond Interchange	Option A: Minimized DDI
US 1 / Burlington Mills Rd	Option A: DDI Option B: Diamond Interchange	Option B: Diamond Interchange Option C: Skewed Partial Cloverleaf
US 1 / Falls of Neuse / US 1A	DDI	DDI (no change)
US 1 / Purnell / Harris Rd	Partial Cloverleaf	Partial Cloverleaf (no change)

- Grade Separation at Stadium Drive / Jenkins Road (No change from CP 2 signed in 2019):
 - An interchange is not proposed at this location at this time, but the Project Team is working with stakeholders not to preclude possible future improvements by others.
- I-540 Westbound Lane Addition (No change from CP 2 signed in 2019):
 - Between Triangle Town Boulevard Interchange and the US 1 southbound on-ramp at I-540

Concurrence Point 2A

The purpose of this meeting was to reach consensus on Bridging Decisions and Alignment Review for major hydraulic structures for STIP Project U-5307, which are presented in the CP 2A packet. The proposed bridging sites 3, 5, 6, 7, 8, 9, and 11 were reviewed in the field on July 7, 2021. Discussion on all sites is as follows:

Site 1

Site 1 is an existing 72" reinforced concrete pipe located under I-540 that conveys flow from an unnamed tributary to Gresham Lake. NCDOT recommends retaining the existing 72" RCP with no modifications or extensions upstream or downstream.

While slopestakes + 40' would encroach into Wetland WC and onto Stream SD, this culvert is recommended to be retained with minor rehabilitation inside slopestakes. Little impacts are anticipated to Wetland WC or the stream.

No other options were considered at this location.

Discussion:

- USACE inquired about the three joints of existing culvert that would be replaced.
 - NCDOT Hydraulics responded that at this point there are no recommendations regarding existing RCP to be replaced. The current preliminary recommendation is to retain the existing culvert.

Site 2

Site 2 is an existing double-barrel reinforced concrete box culvert at 8' wide x 6' high under I-540 conveying flow from an unnamed tributary to Perry Creek. NCDOT recommends retaining the existing RCBC, extending the headwalls both upstream and downstream, adding bank stabilization, and installing a supplemental 72" pipe by trenchless installation. The pipe will be benched above the low flow channel. The existing box culvert will continue to convey the low flow channel, and the 72" welded steel pipe will be the overflow pipe at this site.

It is anticipated that approximately 180 feet of Stream SC will be impacted. No wetland impacts are anticipated. Impacts were measured 40' from end of bank stabilization.

Discussion:

- The group had no comments or questions on Site 2 at this time.

Site 3

Site 3 will convey flow from Perry Creek under the Gresham Lake Road extension to Triangle Town Boulevard. This site is contingent upon further discussions with the City of Raleigh but is currently proposed as a crossing. A bridge length of 300 feet is needed due to the hydraulic analysis and FEMA floodplain requirements.

No other options were considered at this location due to FEMA compliance requirements.

Discussion:

- USACE inquired if the anticipated impacts were for bank stabilization.
 - o RS&H clarified that for the purposes of this meeting, stream impacts were measured from proposed R/W lines.
 - o NCDOT added that if there are any impacts that they would be due to the bank stabilization.

Site 4

Site 4 is an existing triple-barrel 8' x 8' RCBC conveying Perry Creek under US 1. NCDOT recommends retaining the existing RCBC, extending the box culvert approximately 40 feet downstream, adding bank stabilization, and installing a supplemental / overflow 84" pipe by trenchless installation.

It is anticipated that there will be approximately 190 feet of stream impacts to Perry Creek. No wetland impacts are anticipated.

No other options were considered at this location because the existing culvert is structurally adequate.

Discussion:

- The group had no comments or questions on Site 4 at this time.

Site 5

Site 5 is an existing double-barrel 8' x 8' RCBC that conveys flow from an unnamed tributary near the Neuse River under US 1. NCDOT recommends retaining and extending the existing box culvert approximately 30 feet downstream, adding bank stabilization, and installing a supplemental 84" pipe by trenchless installation with a standard floodplain bench.

It is anticipated that there will be approximately 100 linear feet of stream impacts. No wetland impacts are anticipated.

Discussion:

- The group had no comments or questions on Site 5 at this time.

Site 6

Site 6 will convey flow from an unnamed tributary near the Neuse River under the proposed new access road (Y10). NCDOT previously recommended (in the CP2A packet) a triple-barrel 10' x 10' RCBC and bank stabilization. Two of the barrels would convey the low flow channel, and the third barrel will act as the overflow. The recommended structure was sized based on the 100-year design event to avoid impacting upstream development.

Site 6 was reviewed in the field, and more information on bridging options was requested. It was initially thought that bridging would impact the adjacent stream on the south side of the proposed site (lateral encroachment onto another stream) but since does not appear to extend that far.

Triple-barrel 10' x 10' RCBC

- Estimated cost = \$384,200

- 190 feet of stream impacts

Bridge with raised MUP (analyzed as a potential cored slab at 48 feet wide)

- Estimated cost = \$432,000
- 120 feet stream impacts (measured from R/W to R/W)

Discussion:

- The group concurred with the bridge option and had no comments or questions on Site 6 at this time.

Site 7

Site 7 conveys flow from the unnamed tributary under the proposed access road (Y10) near Perry Creek Road. NCDOT recommends a single-barrel 6' x 7' RCBC with an estimated construction cost of \$163,000.

It is anticipated that there will be approximately 300 linear feet of stream impacts to Stream SY with the recommended culvert. The mitigation cost for Stream SY with a culvert is \$603.87 per linear foot x 300 feet = \$181,161.

It is anticipated that there will be approximately 0.1 acre of wetland impacts to Wetland WP with the recommended culvert. The mitigation cost for the wetland impact with a culvert is anticipated to be \$106,619.36 per acre x 2:1 ratio x 0.1 acre = \$21,323.87.

Total estimated construction cost plus mitigation costs = \$163,000 + \$181,161 + \$21,323.87 = \$365,484.87.

NCWRC requested notched sills to maintain the normal channel flow width. RS&H re-analyzed the hydraulic model and confirmed the culvert size as recommended is sufficient and meets the design year requirements with the new effective opening. The existing channel flow width is variable.

Discussion:

- USACE requested additional information on bridging options at this location.
 - Bridge with raised MUP (analyzed as potential cored slab at 48 feet wide)
 - 55' long x 48' wide cored slab bridge cost
 - Estimated cost = \$462,000 (construction only)
 - 195 feet of stream impacts to Stream SY (measured from R/W to R/W)
 - 0.1 acre of wetland impacts to Wetland WP
- USACE requested that mitigation costs be included (see above)
 - From the NRTR, for culvert impacts, Wetland WP has a NCWAM Classification of Headwater Forest with a rating of higher and classification of riparian servicing the Neuse River Basin.
 - The DMS rate per credit for this type of resource is \$106,619.36 per credit. 2:1 wetland mitigation is assumed for unavoidable impacts.
 - Source-<https://deq.nc.gov/about/divisions/mitigation-services/dms-customers/fee-schedules>
 - \$106,619.36 per acre x 2:1 ratio x 0.1 acre = \$21,323.87.
 - The statewide standard stream mitigation rate is \$603.87 per linear foot. \$603.87 x 195 lf = \$117,754.65

- Total estimated construction cost plus mitigation costs for a bridge = \$462,000 + \$21,323.87 + \$117,754.65 = \$601,078.52.
- Mitigation ratios for impacted features will be revisited with USACE during permitting once final design is available.
- NCDOT still recommends a culvert instead of a bridge at this site due to the bridge being on a horizontal curve and issues with providing adequate sight distance prior to the intersection. Additionally, the drainage area is well below the threshold for considering a bridge, and the cost of a bridge at this location is almost double that of a culvert.

Site 8

Site 8 is the Neuse River crossing consisting of existing 250-foot dual bridges that carry US 1 over the Neuse River. North side setback is currently (existing) 30 feet. NCDOT recommends two bridges at 280 feet each to carry the southbound and northbound US 1 lanes over the Neuse River. If the access road on the east side of US 1 is constructed across the Neuse River, a third bridge was also recommended at 280 feet. Access road is pending further discussion with the City of Raleigh and Town of Wake Forest, who own properties on the south and north sides of the river, respectively.

It is anticipated that there will be approximately 100 linear feet of stream impacts to Stream SDD and 330 linear feet of stream impacts to the Neuse River. Wetland impacts are not anticipated. Impacts to Wetland WGG and WR, located just south of the recommended crossing are considered impacts due to roadway improvements. Additionally, the presence of barn and cliff swallow nests and suspected bat guano were observed. The NCDOT Biological Surveys Group will assess the bridge beforehand to minimize impacts to existing wildlife.

Note: The NCDOT Biological Surveys Group (Chris Manley, Cheryl Knepp, and Melissa Miller) assessed the bridge and determined that the suspected bat guano observed was roadway debris. The group found no evidence of the presence of bats. Gary Jordan (USFWS) reiterated his concerns for the migratory birds present (barn and cliff swallows) at this location and advocated for deck and superstructure demolition to take place sometime between October 1 and February 28 or, alternatively, that the existing nests are removed during that timeframe and exclusionary devices (i.e., netting) be used to keep the swallows from re-nesting.

Discussion:

- Regarding the lengthening of bridges, it would cost approximately \$155k for every additional 10 feet to extend each proposed US 1 mainline bridge to the south (total two bridges extended by 10 feet = \$155k x 2 = \$310k each 10-foot increment) and approximately \$80k for every additional 10 feet to extend the access road bridge to the south (approximate total \$400,000).
 - Currently there is open space on the south side of the Neuse River near the greenway, making the south side a better accommodation of wildlife passage.
 - Pam noted that the current design is providing approximately 40 feet from the top of bank and inquired what width of passage should be provided.
 - NCWRC responded that it is typical to provide a bank stabilization free section on riparian corridors and reiterated that US 1 is a barrier to wildlife.
 - Alex added that providing a 100-foot total setback on the south side would result in a 370-foot bridge.

- From the NRTR, Wetland WU has NCWAM Classification of Headwater Forest with rating of high and classification of riparian servicing the Neuse River Basin.
 - The DMS rate per credit for this type of resource is \$106,619.36 per credit, assuming 2:1 mitigation for unavoidable impacts.
 - Source-<https://deq.nc.gov/about/divisions/mitigation-services/dms-customers/fee-schedules>
- Mitigation ratios for impacted features will be revisited with USACE during permitting once a more advanced design is available.
- NCDOT noted that this is a small drainage area, and a culvert will be sufficient and remains the recommendation. In addition, a bridge will cost substantially more, require more maintenance, and impacts a commercial property.

Site 10

Site 10 is an existing quadruple-barrel 10' x 11' RCBC conveying Richland Creek under US 1. NCDOT recommends extending the existing RCBC as well as the two 72" reinforced concrete overflow pipes approximately 10' upstream and 10' downstream.

It is anticipated that there will be 160 feet of impacts to Richland Creek. No wetland impacts are anticipated.

No other options were considered at this location.

Discussion:

- The group had no comments or questions on Site 10 at this time.

Site 11

NCDOT decided not to provide access to this property at 7900 Capital Boulevard and intends to acquire the property. A culvert at this location is no longer needed. As a result, there will be no stream impacts associated with this crossing.

Site 12

Site 12 is the US 1 crossing of the CSX Rail Line. Note that the structure at this site will require further evaluation with special consideration to the historic rail corridor included in the construction bid documents, as it is eligible for the National Register. There are no stream or wetland impacts associated with this crossing. The proposed bridges account for the future plan to double track the corridor and have been coordinated with NCDOT Rail.

Discussion:

- The group had no comments or questions on Site 12 at this time.

Summary Table of Potential Impacts at major crossings

Site	Wetland Impacts (ac)	Stream Impacts (feet)
1	0.1	70
2	0	180
3	0	260
4	0	190

5	0	100
6 (bridge)	0	120
7	0.1	300
8	0	430
9 (culvert)	0.6	810
10	0	160
11	0	240
12	0	0
Total	0.8	2,620

Key Project Dates

Winter 2021	Public Meeting #2
March 2022	Concurrence Point 3 (LEDPA) / 4A (Avoidance and Minimization)
May 2022	Environmental Document (CE)

The concurrence form will be sent to the Merger Team for signatures following distribution of the minutes and collection of comments. If any recipient of the meeting notes would like to add comments or feels a statement is erroneous or needs to be expanded, please feel free to contact Terry Farr at 919-707-6017 or tefarr@ncdot.gov.

Copies to: Meeting Attendees

Attachments: CP 2A PowerPoint presentation