

Project Update
and Reconfirm
Concurrence Point 1
Purpose and Need and Study Area Defined
and
Concurrence Point 2
Detailed Study Alternatives Carried Forward

TIP Project No. U-5811
WBS 44384.1.1

SR 1002 (Aviation Parkway) Widening
From NC 54 to I-40
Wake County



February 2024

Purpose of Today's Meeting:

The purpose of this meeting is to update the Merger Team since the last Merger meeting (2019), add FHWA to the Merger Team, and confirm Concurrence Points 1 and 2.

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Appendices

- Appendix A – Additional Merger Support Data
- Appendix B – Project Data Sheet
- Appendix C – 2024 CP 1 & CP 2 Concurrence Forms – Proposed
- Appendix D – 2015 External Scoping Meeting Summary
2018 CP 1 & CP 2 Concurrence Packets and Signed Forms

1. Introduction and Project Overview

1.1 Proposed Action

NCDOT proposes to widen 2.4-miles of Aviation Parkway, from NC 54 to I-40 in Wake County. The proposed project is included in our *2024-2033 State Transportation Improvement Program (STIP)* as Project U-5811.

1.2 Meeting Purpose

The purposes of today's meeting are:

1. Update the Merger Team since the last Merger meeting (2019)
2. Add FHWA to the Merger Team
3. Confirm concurrence on Purpose and Need and Study Area (Concurrence Point 1) and Detailed Study Alternatives (Concurrence Point 2)
4. Obtain any other new information from the Merger Team that could affect decision-making

1.3 Project History

- Project data sheets developed October 2015 (updated in 2023, included in Attachment B)
- [External scoping meeting](#) held December 2015 (summary included in Attachment D)
- Merger meetings held March 2018 through July 2019 (see history below; CP 1 and 2 summaries and signature sheets included in Attachment D)
- Coordinated with Wake County and NRCS regarding Wake County flood pool requirements
 - i) Compensatory mitigation (soil removal) needed for fill into the flood pool
 - ii) NRTR and permitting required for potential impacts of the compensatory mitigation
 - iii) PCB minimization and permitting
 - iv) Grading and revegetation plans
- SEPA scoping letter mailed April 2019
- Project suspended in 2019 and restarted June 2023

1.4 Merger History

- **CP 1: Met 3/22/2018, Signed 7/17/2018 (see packet and signatory sheet in Appendix C)**
 - i) Purpose and need:
 - (1) Congestion: The primary purpose of this project is to reduce congestion on Aviation Parkway in order to improve the LOS in the design year (2040) peak hours along the corridor and at signalized intersections.
 - (2) Mobility: A secondary benefit of this project is to improve east-west mobility through Morrisville and to I-40 and I-540/NC 540.
 - ii) Study area: a 1000'-foot wide corridor, 500 feet on either side of the Aviation Parkway centerline, with a wider area around the NC 54 intersection.
- **CP 2: Met 3/22/2018, Signed 7/17/2018 (see packet and signatory sheet in Appendix C)**
 - i) Build Alternative 1: Widen Aviation Parkway to a four-lane median divided best fit section with a 23' median and multimodal accommodations.
 - ii) No Build Alternative

- **CP 2A: Met 6/13/2019, Signed 6/24/2019**
 - i) Site 1 – Remove and replace existing culvert with 2 @ 8' x 8' RCBC
 - ii) Site 1A – Remove and replace existing culvert with 2 @ 10' x 7' RCBC OR change roadway grade and remove and replace existing culvert with 2 @ 8' x 8' RCBC
 - iii) Site 1B – Install 2 @ 8' x 8' RCBC
 - iv) Site 1C – Install 2 @ 8' x 8' RCBC
 - v) Site 2 – Remove and replace existing culvert with 2 @ 72" RCPs
 - vi) Site 4 – Remove and replace existing culvert with 2 @ 8' x 7' RCBC
 - vii) Site 5 – Extend existing culvert outlet
- **CP 3: Met 7/10/2019, Signed 7/26/2019**
 - i) Build Alternative 1: Widen Aviation Parkway to a four-lane median divided best-fit section with a 23-foot median and multimodal accommodations.
 - (1) With a minimized typical section across the NC 54/Railroad intersection with 11-foot inside travel lanes, 14-foot outside travel lanes, a 4-foot median, and 5-foot sidewalks on both sides.
 - (2) With a minimized typical section across the Lake Crabtree causeway with four 12-foot travel lanes, 10-foot shoulders, a 4-foot median, and a 10-foot multiuse path on the east side.
 - ii) Alternative A loop (northeast quadrant) at the Aviation Parkway/NC 54 intersection.

1.5 Study Area Description

Figure 1 shows the project vicinity, and Figure 2 shows the environmental and community features. The study area approved as part of CP 1 in 2018 is a 1,000-foot corridor (500 feet on either side of the Aviation Parkway centerline) with a larger area around the NC 54 intersection. No change is proposed to the study area at this time.

SR 1002 (Aviation Parkway) is a major east-west route through the Town of Cary and the Town of Morrisville in Wake County. Aviation Parkway connects I-40 with downtown Morrisville, becoming Morrisville-Carpenter Road west of NC 54. According to local planners, the transportation facilities in and surrounding the project area are mainly utilized by commuters.

The following projects have been completed since 2020:

- Widening on Aviation Parkway from Gateway Center to I-40, including the I-40 interchange (I-5506)
- Widening on Morrisville-Carpenter Road from Davis Drive to west of NC 54 (U-5618)
- McCrimmon Parkway Extension from Airport Boulevard to Aviation Parkway at Evans Road (U-5828)

Land uses surrounding the project corridor are primarily commercial and office, with a few residences and some park/open space. Development pressures have continued to be strong. Recent and proposed development along the corridor includes additional multi-family neighborhoods, a 420K-square foot life science development, expansion of the BAPS Mandir facility, and businesses. Morrisville envisions a town center area on the west end of the U-5811 corridor along Town Center Drive and Morrisville-Carpenter Road. The project corridor is located less than a mile from the Raleigh-Durham International Airport, approximately 5 miles southeast of Research Triangle Park, and 11 miles northwest of downtown Raleigh. Additional detail about the study area is in Appendix B.

2. Anticipated Schedule

With the change in the design year from 2040 to 2050 and the 3-year suspension of this project, NCDOT is re-evaluating traffic, determining if design changes are needed, and identifying potential environmental changes due to regulatory or design updates. **Based on the traffic forecast update and preliminary traffic analysis, the purpose and need, study area, and alternatives to carry forward for detailed study are not proposed to change.** However, the recommendations related to bridges/culverts and the LEDPA may be refined. Additional study is needed to determine potential changes, which will be presented to the Merger Team in the coming months.

- Project Updates and Merger Meetings:
 - Traffic Capacity Analysis – Winter 2023/24
 - Hydraulics, Noise, NRTR, Section 106 Analyses – Spring 2024
 - **CP 2A – June 2024**
 - Refine Alternatives – Summer 2024
 - Section 4(f), Compensatory Mitigation Evaluation – Summer 2024
 - Public Meeting – Fall 2024
 - Impact Assessment and Minimization Measures – Winter 2024/25
 - **CP 3 – March 2025**
 - **CP 4A – October 2025**
- NEPA Categorical Exclusion – December 2025
- Right of Way Acquisition – April 2026
- Construction – FY 2028

3. Merger Concurrence Point 1 – Purpose and Need and Study Area

3.1 Traffic Data and Analysis

Traffic Volumes

The project-level traffic forecast was completed in 2016 and updated in November 2023 (Table 1).

Table 1. Projected Traffic Volumes on Aviation Parkway

Section	2023 No Build Projected Volume Range (vehicles per day)	2050 No Build Projected Volume Range (vehicles per day)	2050 Build Projected Volume Range (vehicles per day)
West of NC 54	21,800 to 21,900	23,000 to 23,700	28,700 to 30,100
Between NC 54 and Evans Road	15,500 to 16,100	19,200 to 20,700	24,000 to 25,800
Between Evans Road and Lake Crabtree Park	26,700 to 31,500	28,300 to 32,400	38,100 to 42,600
East of Lake Crabtree Park	32,600	33,500	43,600

Level of Service

Based on 2040 No Build traffic forecast volumes, segments of Aviation Parkway are anticipated to operate at level of service (LOS) E in the PM peak hour, and the Aviation Parkway/NC 54 intersection is anticipated to operate at LOS F in the AM and PM peak hours. Based on the updated traffic forecast, delay is anticipated to be longer in 2050 than 2040 projections. The LOS analysis will be completed in March 2024.

3.2 Summary of Need

Congestion: In the design year (currently 2050), at least one segment on Aviation Parkway is anticipated to operate at LOS E or F, and one intersection is anticipated to operate at LOS F. Additional information on the NC 54 intersection is in Appendix A.

Mobility (secondary need): With adjacent recently completed projects in conjunction with U-5811, the Aviation Parkway/Morrisville Carpenter Road corridor will be a 4-lane median divided arterial road from Davis Drive to NC 54 (west of U-5811 corridor), and from I-40 to Brier Creek (east of U-5811 corridor).

3.3 Summary of Purpose

Congestion: The primary purpose of this project is to reduce congestion on Aviation Parkway and improve the level of service in the design year (currently 2050) peak hours along the corridor and at signalized intersections.

Mobility (secondary benefit): Another purpose of this project is to improve east-west mobility through Morrisville and to I-40 and I-540/NC 540.

NOTE: the specific design year has been updated in this purpose statement since CP 1 was signed in 2018

3.4 Proposed Study Area

The proposed study area is a 1,000-foot corridor wide, 500 feet on either side of the Aviation Parkway centerline, with a wider area around the NC 54 intersection.

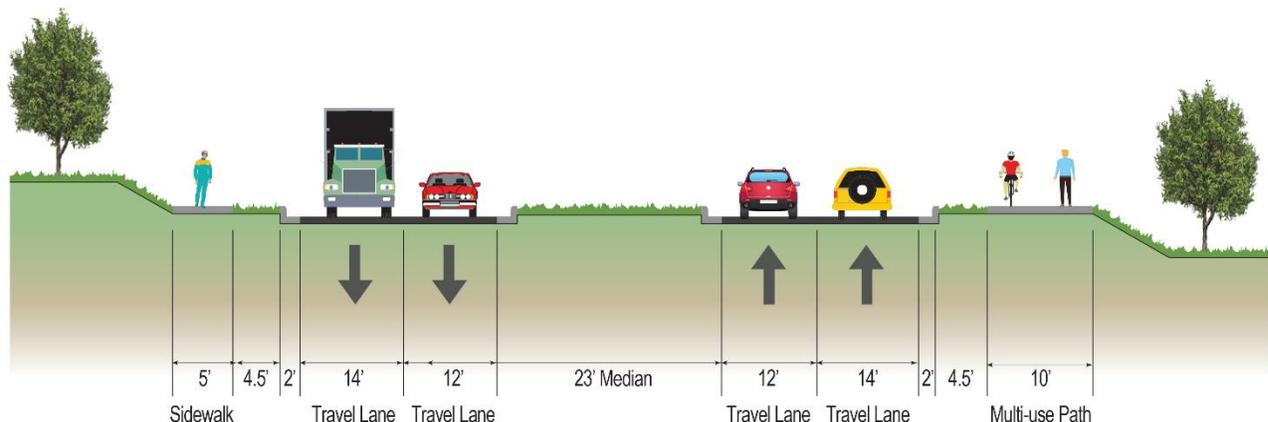
4. Merger Concurrence Point 2 – Alternatives Considered

4.1 Build Alternative to Carry Forward for Detailed Study

Build Alternative 1 is proposed to be carried forward for detailed study due to its lesser impacts to the environment (compared with other build alternatives) while still meeting the purpose of the project.

Build Alternative 1 would widen Aviation Parkway between NC 54 and I-40 (2.4 miles) to four lanes with a 23' median and curb and gutter. Turn lanes would be added/extended where needed. The median would be narrowed across the Lake Crabtree causeway. Multimodal accommodations are proposed, which currently are envisioned as a 5' sidewalk on the west side of Aviation Parkway, and a 10' multiuse path on the east side. Bicycles would be accommodated with 14' outside lanes.

4 Lane Divided (23' Raised Median) with Curb and Gutter, Wide Outside Lanes, and Sidewalks
Post Speed 45 MPH



4.2 No Build Alternative

The No Build Alternative is a baseline comparative alternative. The No Build Alternative would continue typical maintenance activities, but would not make any substantial improvements to the Aviation Parkway corridor. The No Build Alternative would not incur any right of way or construction costs. There would be no disruptions along existing roadways during construction. There would be no impacts to streams, wetlands, other natural and cultural resources, residences, or businesses. However, the No Build Alternative would not meet the purpose of the project. It would not reduce congestion issues or improve mobility through Morrisville. Projects to widen Aviation Parkway at both termini of U-5811 have been completed, and the No Build Alternative would result in congestion delay within the corridor.

Although the No Build Alternative would not meet the project purpose, it is recommended to be retained for additional screening to provide a basis for comparing the adverse effects and benefits of the detailed study build alternative.

4.3 Other Alternatives Considered and Dismissed

Other alternatives considered and dismissed included the following. These are described in more detail in Appendix A.

- Build Alternative 2 (30' median)
- New Location Alternative
- Transportation System Management (TSM) Alternative
- Transportation Demand Management (TDM) Alternative
- Mass Transit Alternative

5. Conclusion

NCDOT recommends the following, which are included in Appendix C.

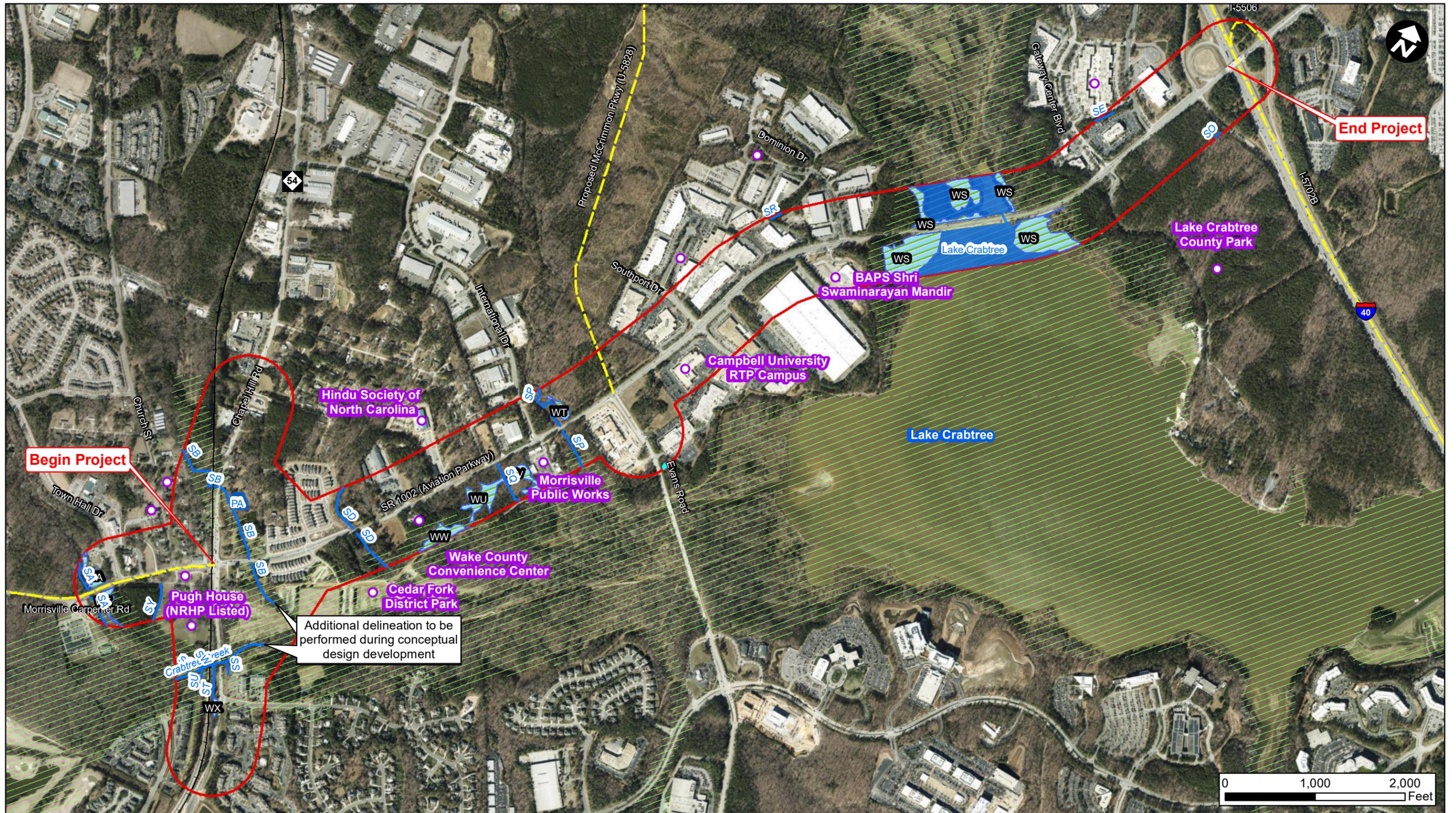
5.1 C.P. 1

- Purpose:
 - *Congestion*: The primary purpose of this project is to reduce congestion on Aviation Parkway to improve the level of service in the design year peak hours along the corridor and at signalized intersections.
 - *Mobility (secondary benefit)*: Another purpose of this project is to improve east-west mobility through Morrisville and to I-40 and I-540/NC 540.
- Study area: The proposed study area is a 1,000-foot wide corridor, 500 feet on either side of the Aviation Parkway centerline, with a wider area around the NC 54 intersection.

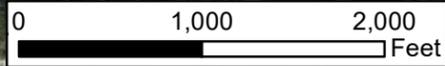
5.2 C.P. 2

- Build Alternative 1: Widen Aviation Parkway to a four-lane median divided section with a 23' median and multimodal accommodations.
- No Build Alternative.

Figures

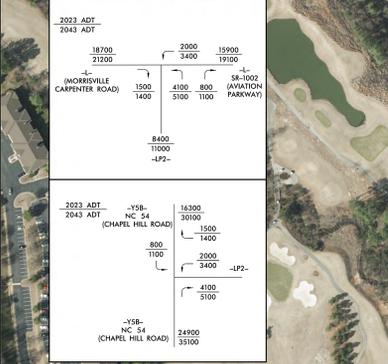
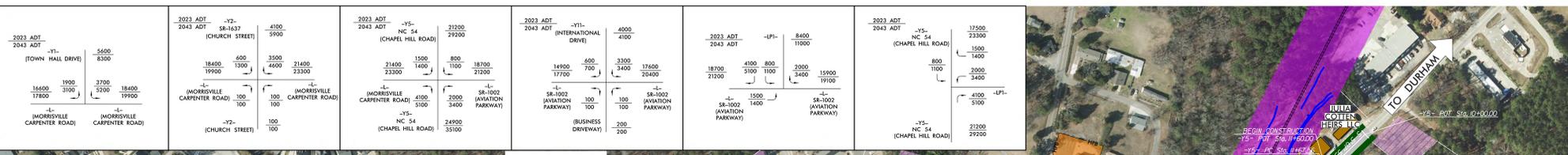
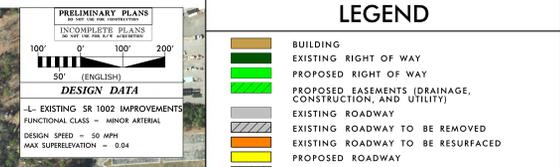


Additional delineation to be performed during conceptual design development



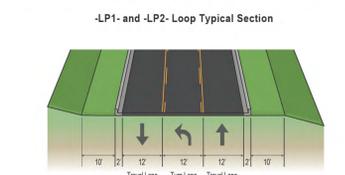
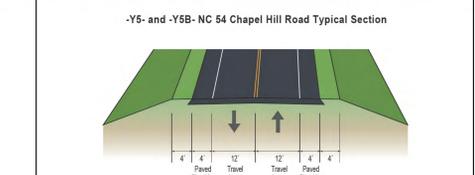
- Surrounding Community Features
- Adjacent Project
- + + Railroad
- Delineated Stream
- Delineated Wetland
- Open Water
- FEMA Flood Zone

Figure 2 - Environmental and Community Features
 Morrisville and Cary
 SR 1002 From NC 54 to I-40
 Wake County
 TIP Project U-5811



BEGIN TIP PROJECT U-5811
-L- Sta. 22 + 25.00

1	TOWN OF MORRISVILLE	24	GOLLA NARENDRA
2	TOWN OF MORRISVILLE	25	CHAIHAN
3	TOWN OF MORRISVILLE	26	FALCOCHIA
4	TOWN OF MORRISVILLE	27	SAGIL MURALI M.
5	TOWN OF MORRISVILLE	28	ZACHARY S.
6	TOWN OF MORRISVILLE	29	IMP. GRP. INVEST. LLC
7	NC RAILROAD CO.	30	BAGHAVAN, GURU.
8	WILLIAMS 54 LLC	31	MUSKESHUMAR
9	HOLMES OIL CO INC	32	MUSKESHUMAR
10	WILLIAMS 54 LLC	33	MUSKESHUMAR
11	HOLMES OIL CO INC	34	JONES, TRAVIS
12	WILLIAMS 54 LLC	35	PATEL, BHAKTI
13	HOLMES OIL CO INC	36	IMP. INVEST. LLC
14	PATEL, RANGI	37	JOHN THOMAS
15	PATEL, LATESH	38	PITTS, RONALD J.
16	SADAT, KAZIM	39	MANCHALA, KARTHIK
17	NEVANEK, L.C.	40	COTTEN PLACE HOA, INC.
18	PARKH, MSRAG	41	W.E. AL
19	SAGIL SUJATHA R.	42	COTTEN PLACE HOA, INC.
20	GOEL, SUMIT	43	COTTEN PLACE HOA, INC.
21	DAZ, CLAUDINE	44	COTTEN PLACE HOA, INC.
22	NGUYEN, KAREN	45	COTTEN PLACE HOA, INC.
23		46	EUPHORIA INVESTMENTS LLC



UTILITY INFORMATION:
TO PROVIDE GREATER VISUAL CLARITY, EXISTING AND PROPOSED UTILITIES ARE NOT SHOWN ON THIS MAP OR ON OTHER DISPLAYS. THE UTILITY INFORMATION SHOWN ON THIS MAP IS LIMITED TO LOCATIONS OF MAJOR EXISTING AND POTENTIAL UTILITY EASEMENTS. THE DESIGNERS WILL ATTEMPT TO MINIMIZE IMPACTS WHERE FEASIBLE USING FINAL GROUND SURVEYS. FINAL UTILITY LOCATIONS WILL ALSO BE DETERMINED DURING FINAL DESIGN SURVEYS.

IMPACTS AND DRIVEWAY TIES:
LIMITS OF CONSTRUCTION AND THEIR IMPACTS SHOWN ON THIS HEARING MAP ARE BASED OFF OF PRELIMINARY DESIGNS AND PRELIMINARY GROUND SURVEYS. DURING THE FINAL DESIGN STAGE, DESIGNERS WILL ATTEMPT TO MINIMIZE IMPACTS WHERE FEASIBLE USING FINAL GROUND SURVEYS. FINAL UTILITY LOCATIONS WILL ALSO BE DETERMINED DURING FINAL DESIGN SURVEYS.

SIDEWALK NOTE:
SIDEWALKS AND MULTI-USE PATHS SHOWN ARE PRELIMINARY AND SUBJECT TO A MUNICIPAL AGREEMENT WITH TOWN OF MORRISVILLE AND TOWN OF CARY.

PRELIMINARY PLANS
INCOMPLETE PLANS

DESIGN DATA
-L- EXISTING SR 1002 IMPROVEMENTS
FUNCTIONAL CLASS - MINOR ARTERIAL
DESIGN SPEED - 50 MPH
MAX SUPERELEVATION - 0.04

LEGEND

- BUILDING
- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- PROPOSED EASEMENTS (DRAINAGE, CONSTRUCTION, AND UTILITY)
- EXISTING ROADWAY
- EXISTING ROADWAY TO BE REMOVED
- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- FUTURE PROJECT
- PROPOSED STRUCTURES, ISLANDS, AND CURB & GUTTER, AND SIDEWALK AND SIDEWALK TO BE RETAINED
- EXISTING STRUCTURES, ISLAND, CURB AND GUTTER, AND SIDEWALK TO BE RETAINED
- EXISTING STRUCTURES, ISLAND, CURB AND GUTTER, AND SIDEWALK TO BE REMOVED
- LAKES, RIVERS, STREAMS, AND PONDS
- RAILROAD RIGHT OF WAY
- EXISTING UTILITY EASEMENTS
- CEMETERIES
- WETLANDS
- PROPOSED SIDEPATH/GREENWAY
- HISTORIC PROPERTY BOUNDARY
- PARKS
- PROPERTY LINES
- CITY AND TOWN LINES

2023 LET ADT
2043 FUTURE ADT

DESIGN DATA

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Δ = 2° 29' 53.2" (LT)
D = 7° 29' 53.2"
L = 165.00
T = 82.50
R = 4200.00
SE = 0.036 FT/FT

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D = 7° 29' 53.2"
L = 165.00
T = 82.50
R = 4200.00
SE = 0.036 FT/FT

PI Sta 98+95.47
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D = 5° 39' 02.3"
L = 100.00
T = 50.00
R = 1700.00
SE = 0.036 FT/FT

PI Sta 123+32.62
Δ = 10° 29' 32.2" (LT)
D = 4° 46' 28.7"
L = 70.00
T = 35.00
R = 1200.00
SE = 0.036 FT/FT

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L = 100.00
T = 50.00
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SE = 0.036 FT/FT

PI Sta 140+55.03
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SE = 0.036 FT/FT

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SR 1002 (AVIATION PARKWAY)

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2043 ADT -Y13-
SR 1693 (EVANS ROAD)
SR 1693 (EVANS ROAD)

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SR 1002 (AVIATION PARKWAY)
SR 1002 (AVIATION PARKWAY)

DESIGN DATA

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SR 1002 (AVIATION PARKWAY)

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SR 1002 (AVIATION PARKWAY)

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SR 1002 (AVIATION PARKWAY)

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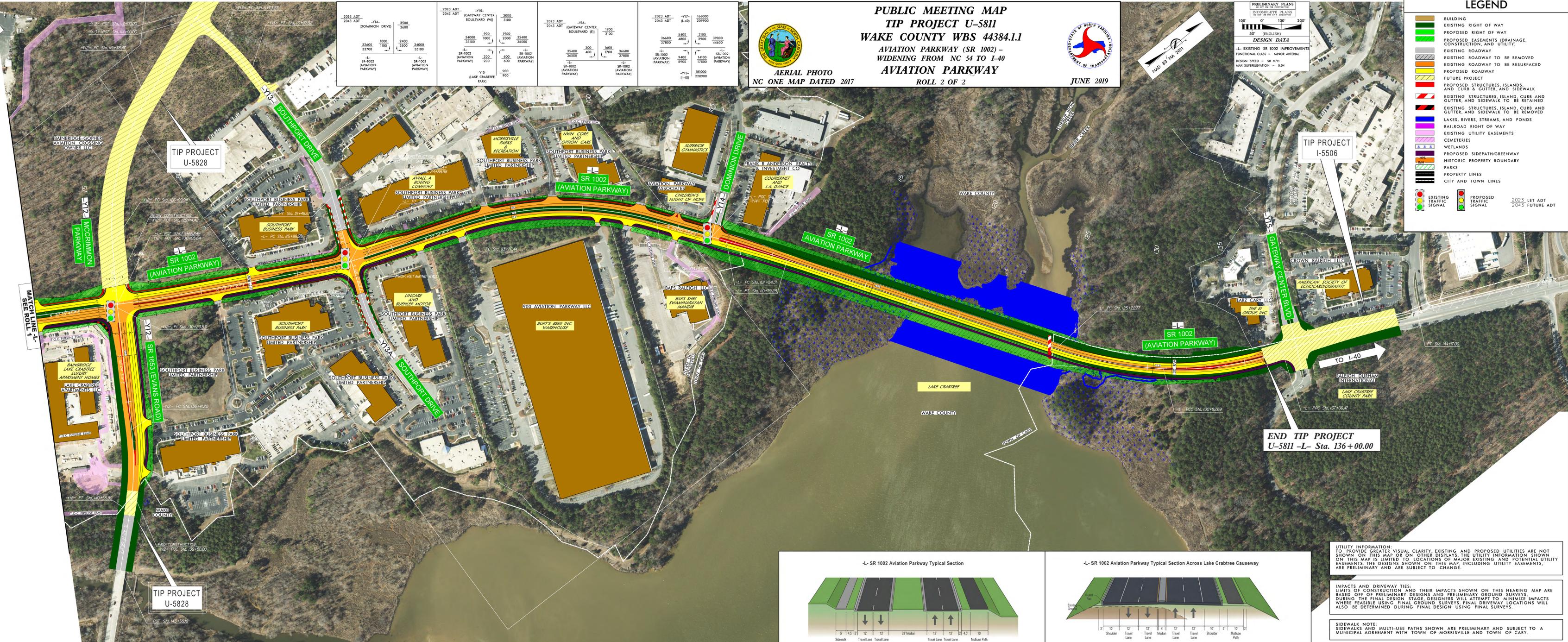
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SR 1002 (AVIATION PARKWAY)

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SR 1002 (AVIATION PARKWAY)

DESIGN DATA

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SR 1002 (AVIATION PARKWAY)

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2043 ADT -Y33-
SR 1002 (AVIATION PARKWAY)
SR 1002 (AVIATION PARKWAY)



PUBLIC MEETING MAP
TIP PROJECT U-5811
WAKE COUNTY WBS 44384.1.1
AVIATION PARKWAY (SR 1002) -
WIDENING FROM NC 54 TO I-40
AVIATION PARKWAY
ROLL 2 OF 2
JUNE 2019

PUBLIC MEETING MAP
TIP PROJECT U-5811
WAKE COUNTY WBS 44384.1.1
AVIATION PARKWAY (SR 1002) -
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AVIATION PARKWAY
ROLL 2 OF 2
JUNE 2019

PRELIMINARY PLANS
INCOMPLETE PLANS

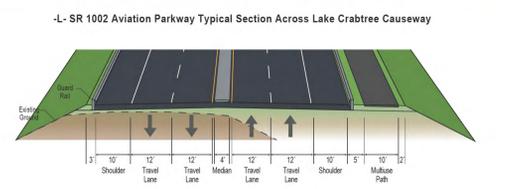
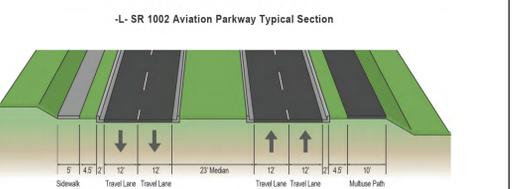
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DESIGN SPEED - 50 MPH
MAX SUPERELEVATION - 0.04

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WIDENING FROM NC 54 TO I-40
AVIATION PARKWAY
ROLL 2 OF 2
JUNE 2019



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TO PROVIDE GREATER VISUAL CLARITY, EXISTING AND PROPOSED UTILITIES ARE NOT SHOWN ON THIS MAP OR ON OTHER DISPLAYS. THE UTILITY INFORMATION SHOWN ON THIS MAP IS LIMITED TO LOCATIONS OF MAJOR EXISTING AND POTENTIAL UTILITY EASEMENTS. THE DESIGNERS SHOWN ON THIS MAP, INCLUDING UTILITY EASEMENTS, ARE PRELIMINARY AND ARE SUBJECT TO CHANGE.

IMPACTS AND DRIVEWAY TIES:
LIMITS OF CONSTRUCTION AND THEIR IMPACTS SHOWN ON THIS HEARING MAP ARE BASED OFF OF PRELIMINARY DESIGNS AND PRELIMINARY GROUND SURVEYS. DURING THE FINAL DESIGN STAGE, DESIGNERS WILL ATTEMPT TO MINIMIZE IMPACTS WHERE FEASIBLE USING FINAL GROUND SURVEYS. FINAL DRIVEWAY LOCATIONS WILL ALSO BE DETERMINED DURING FINAL DESIGN USING FINAL SURVEYS.

SIDEWALK NOTE:
SIDEWALKS AND MULTI-USE PATHS SHOWN ARE PRELIMINARY AND SUBJECT TO A MUNICIPAL AGREEMENT WITH TOWN OF MORRISVILLE AND TOWN OF CARY.

Appendix A
Additional Merger Support Data

Preliminary Traffic Analysis Results at NC 54/Aviation Parkway Intersection

The updated 2023 analysis is based on the updated traffic forecast which used 2050 for the future year scenarios. The quadrant left alternative has been carried forward and updated with 2050 traffic volumes and is in the process of being evaluated for potential design improvements. As expected, delays and queues have worsened with 2050 traffic volumes. Now, instead of LOS C/E (AM/PM), we are seeing LOS E/F (AM/PM) at the main intersection (NC 54 at Aviation Parkway/Morrisville Carpenter Road).

Table 1 below shows the results from the previous 2040 analysis as well as preliminary results for the updated 2050 analysis at this intersection.

Note that the 2050 PM peak LOS F (112.1), while unacceptable, is projected to be a substantial improvement over the 2050 No Build condition.

Table 1. Level-of-Service Summary		
Condition	AM Peak Hour LOS (Delay)	PM Peak Hour LOS (Delay)
NC 54 at Aviation Parkway/Morrisville Carpenter Road		
2023 No Build	D (43.4)	F (74.3)
2050 No Build	F (135.9)	F (259.6)
<i>2040 Build: NE Quadrant</i>	<i>C (34.5)</i>	<i>E (61.9)</i>
2050 Build: NE Quadrant	E (69.4)	F (112.1)
Aviation Parkway at Quadrant Roadway		
<i>2040 Build: NE Quadrant</i>	<i>B (16.7)</i>	<i>B (15.0)</i>
2050 Build: NE Quadrant	B (14.8)	C (21.1)
NC 54 at Quadrant Roadway		
<i>2040 Build: NE Quadrant</i>	<i>C (23.3)</i>	<i>D (40.5)</i>
2050 Build: NE Quadrant	C (26.8)	C (25.4)

Other Alternatives Considered and Dismissed

Build Alternative 2

Widen Aviation Parkway to four lanes with a 30' median between NC 54 and I-40. Add/extend turn lanes where needed. Narrow the median across the Lake Crabtree causeway. Add multimodal accommodations. The wider median allows for dual left-turn lanes. However, as shown in Table 2, environmental impacts are greater with the 30' median (Build Alternative 2) compared with the 23' median (Build Alternative 1), and the traffic benefits are minor. Therefore, Build Alternative 2 has been dismissed.

Table 2. Preliminary Environmental Impacts

Feature	Build Alternative 1 – 23' Median	Build Alternative 2 – 30' Median
Stream Impacts (linear feet, rounded to nearest 10 feet)		
SD	110	120
SB	310	310
SP	120	140
SQ	70	80
Total Stream Impacts	610 feet	650 feet
Wetland Impacts (acres, rounded to nearest 0.1 acres)		
WS	0.7	0.7
WT	<0.1	0.1
Total Wetland Impacts	0.7 acres	0.8 acres
Open Water Impacts (acres)		
Lake Crabtree	0.9	0.9
PA	0.5	0.5
Total Open Water Impacts	1.4 acres	1.4 acres

NOTE: Impacts to environmental resources were estimated using a 40' offset of the proposed edge of pavement.

New Location Alternative

It was determined that a new location alternative was not reasonable and feasible, nor would a new location alternative meet the purpose of the project.

Transportation System Management (TSM) Alternative

TSM Alternative improvements typically involve low-cost, minor transportation improvements to increase the capacity of an existing facility, such as intersection improvements (turning lanes, pavement striping, signage, and lighting), signal improvements (timing optimization, equipment upgrades, and detector repair/replacement), data collection to monitor system performance, and special events management strategies. A TSM Alternative is not recommended as a stand-alone detailed study alternative, since by itself it would provide little, if any, noticeable improvement to congestion on Aviation Parkway, and therefore would not meet the project purpose.

Transportation Demand Management (TDM) Alternative

TDM Alternative improvements typically involve strategies that increase the overall efficiency of the transportation system by changing traveler behavior, primarily through encouraging a shift from single-occupant vehicle trips to non-single-occupant vehicle trips, or by shifting auto trips out of peak periods. This is done primarily by improving transportation options (biking, walking, transit, and ridesharing) and providing incentives for drivers to use alternate modes, reduce driving, or shift their schedule. Ridesharing and incentives can provide a feasible option for some travelers, but the ability of these

programs to substantially reduce volumes on Aviation Parkway is unlikely. Bike and pedestrian facilities may be improved as part of this project, but those improvements alone would not provide any improvements in congestion on Aviation Parkway, and therefore would not meet the project purpose. Therefore, the TDM Alternative is not recommended as a detailed study alternative.

Mass Transit Alternative

The GoTriangle system has two bus routes along I-40 near the project. Neither of the routes operate along Aviation Parkway. Passenger rail service is not available in the county. Expanded bus service and new rail alignments would have a minimal effect on traffic volumes on Aviation Parkway. Increased transit service would have benefits because it would provide additional options for commuters, which may provide a minimal reduction in traffic volumes. But improved transit service, even if successful in attracting additional riders, would not be sufficient to reduce congestion on Aviation Parkway and therefore would not meet the project purpose. Therefore, the Mass Transit Alternative is not recommended as a detailed study alternative.

Appendix B
Project Data Sheet

Essential Project Information	
STIP Project Name	Aviation Parkway Widening
STIP Number	U-5811
WBS Number	44384.1.1
County	Wake
NCDOT Division	5
MPO/RPO	Capital Area MPO
ROW Date	FY 2026
LET Date	FY 2028
Cost Estimates	Updated estimates are underway
Funding Type	State funds are programmed for this project. A federal environmental document is being prepared to provide flexibility for changing the source of funds in the future if needed.

Proposed Project Details	
Project Description	Widen SR 1002 (Aviation Parkway) in Wake County
Project Limits	From NC 54 to I-40, approximately 2.4 miles
Typical Section	4 lanes, median divided with sidewalk and multi-use path
Access Control	I-40 at Aviation Parkway – Full Control Aviation Parkway – Partial Control
Design Speed	Aviation Parkway – 50 mph
Right-of-Way Width	TBD
Physical or Engineering Constraints	Residences, parks, place of worship, historic resource, Lake Crabtree, flood control district, and wetlands
Survey Request Date	Survey anticipated December 2023
Purpose and Need	The primary purpose of the project is to reduce congestion on Aviation Parkway. A secondary benefit is to improve east-west mobility.
Alternatives Evaluated	<p>Alternatives have been evaluated at the Aviation Parkway/NC 54 intersection to reduce congestion without further widening of Aviation Parkway over the railroad. Of the alternatives that achieved this goal to an acceptable level, the alternative with the fewest environmental impacts was carried forward (northeast corner loop).</p> <p>An initial alternative was evaluated to widen Aviation Parkway to a four-lane median divided best-fit section with a 23' median and multimodal accommodations. To minimize environmental impacts, a reduced typical section was carried forward over the railroad/NC 54 intersection and across Lake Crabtree.</p>

Project History	
Previous Studies	A feasibility study was conducted in 1995. Preconstruction for U-5811 began in 2015.
Adjacent Studies	This project will improve Aviation Parkway over the railroad tracks and NC 54 (Chapel Hill Road). Feasibility studies have been developed for separate projects to construct a grade separation at the crossing, but that project is not funded.

Public and Agency Coordination	
Anticipated Permits	Permitting is anticipated due to impacts to Lake Crabtree and other waters of the U.S., due to fill within the Wake County flood control district, and due to disturbance of PCBs in Lake Crabtree. Other potential permits will be determined through the planning and design phase.
Federal Agency Involvement	Originally, USACE was the lead federal agency. FHWA will now be the lead federal agency since a federal environmental document will be prepared.
Public Involvement Strategy	Engage the public early to provide information on the project purpose and need. Coordinate with stakeholders on anticipated impacts and access changes.
Merger Status	Merger meetings held March 2018 through July 2019 (CP 1 – CP 3). Concurrence points will be updated to include FHWA.

Existing Conditions	
Functional Classification	I-40 – Freeway Aviation Parkway – Arterial
Strategic Highway Corridor	N/A
AADT	21,900 (southwest of NC 54) 16,100 (southwest of McCrimmon Pkwy) 31,500 (southwest of Gateway Center Blvd)
Access Control	I-40 at Aviation Parkway – Full control Aviation Parkway – None
Typical Section	Aviation Parkway – 2 lanes, undivided
Right-of-Way Width	Varies
Posted Speed	Aviation Parkway – 45 mph
Existing Structures	1 @ 15'x14' RCBC – Stirrup Iron Creek 2-72" RCP – Unnamed Tributary to Crabtree Creek 1-48" RCP – Unnamed Tributary to Crabtree Creek 3-60" RCP – Morrisville Tributary 1-6'x6.5' RCBC – Morrisville Tributary (on NC 54)
Other Adjacent STIP Projects	U-5618, U-5750, U-5828, I-5506, I-5700, I-5702B, I-5966, I-6006, EB-5838, EB-5839

Preliminary Resource Inventory Table	
Railroads	Coordination has occurred with NCDOT Rail Division and the North Carolina Railroad regarding the existing at-grade crossing near the west terminus of the project. It has been agreed to retain an at-grade crossing. The proposed design modifies the crossing by shifting NC 54 slightly away from the railroad right-of-way, providing two through lanes on Aviation Parkway in both directions to reduce queuing and delays, and improving operations at the NC 54/railroad crossing by restricting left turns, limiting some truck movements, and narrowing the turn radii across the railroad tracks.
Utilities	Major utilities including power, water, sewer, and fiber are located along the corridor.
Hazardous Materials	Wake County Convenience Center Waste Drop off station is located less than 0.5 mile north of NC 54. Sediment in Lake Crabtree is contaminated with PCBs. No other sites are known at this time.
Known Potentially-Eligible National Register of Historic Places Sites/Districts	William Pugh House
Wetlands	19.2 acres are present in the study area – impacts to be determined
Streams	5 – Brier Creek/Lake Crabtree, crossing just north of NC 54 (culvert now), crossing north of International Drive (culvert now), potential crossings in NC 54 quadrants.
FEMA Floodplain Detailed Study Area	Yes
Water Supply Watersheds	None
Riparian Buffer Rules	Yes
Active Agriculture	No VADs present in project corridor
Parks, Greenways, Game Lands, Section 4(f) & Section 6(f) Properties	2 public parks in project corridor: Cedar Fork District Park Lake Crabtree Park (potentially not protected under Section 4(f)) The Indian Creek Greenway and Trailhead are located just south of NC 54. The trail is approximately 1.8 miles long and is adjacent to Town Hall Drive from Morrisville-Carpenter Road to McCrimmon Parkway in the town of Morrisville.
Environmental Justice Populations	Census data indicates a notable presence of minority and low-income populations meeting the criteria for Environmental Justice, and minority and low-income communities were observed near the project corridor. Minority communities are primarily of Indian descent.

Appendix C

2024

CP 1 & CP 2 Concurrence Forms – *Proposed*

Section 404/NEPA Interagency Agreement

Concurrence Point 1 Project Purpose and Need

Project Title: SR 1002 (Aviation Parkway), Widening from NC 54 to I-40
TIP Project No.: U-5811
WBS No.: 44384.1.1

Purpose and Need of the Proposed Action:

Congestion: The primary purpose of this project is to reduce congestion on Aviation Parkway in order to improve the LOS in the design year peak hours along the corridor and at signalized intersections.

Mobility: A secondary benefit of this project is to improve east-west mobility through Morrisville and to I-40 and I-540/NC 540.

The proposed study area is a 1,000-foot wide corridor, 500 feet on either side of the Aviation Parkway centerline, with a wider area around the NC 54 intersection, as shown on the attached map.

The Project Team has concurred on the above mentioned purpose and need and the attached study area map for the proposed project.

<u>Name</u>	<u>Agency</u>	<u>Date</u>
	FHWA	
	USACE	
	USFWS	
	NCDOT	
	NCWRC	
	NCDEQ	
	NCSHPO	
	CAMPO	
	USDA-NRCS	

Section 404/NEPA Interagency Agreement

**Concurrence Point 2
Detailed Study Alternative Carried Forward**

Project Title: SR 1002 (Aviation Parkway), Widening from NC 54 to I-40
TIP Project No.: U-5811
WBS No.: 44384.1.1

Alternative(s) to Study in Detail:

- Build Alternative 1: Widen Aviation Parkway to a four-lane median divided best fit section with a 23' median and multimodal accommodations.
- No Build Alternative

The Project Team has concurred with the above alternatives to be carried forward for the proposed project.

<u>Name</u>	<u>Agency</u>	<u>Date</u>
	FHWA	
	USACE	
	USFWS	
	NCDOT	
	NCWRC	
	NCDEQ	
	NCSHPO	
	CAMPO	
	USDA-NRCS	

Appendix D

2015 External Scoping Meeting Summary

2018

CP 1 & CP 2 Concurrence Packets and Signed Forms

STIP Project U-5811

SR 1002 (Aviation Parkway), From NC 54 to I-40
Cary & Morrisville, Wake County
WBS 44384.1.1

External Scoping Meeting Tuesday, December 17, 2015

Meeting Summary

Name	Agency	Phone	Email
Eric Alsmeyer	USACE	919-554-4884 x23	eric.c.alsmeyer@usace.army.mil
Gary Jordan	USFWS	919-856-4520 x32	gary_jordan@fws.gov
Kim Kroeger	USDA – NRCS	919-873-2128	kim.kroeger@nc.usda.gov
Alex Rickard	CAMPO	919-996-4396	alex.rickard@campo-nc.us
Bret Martin	CAMPO	919-996-4390	paul.black@campo-nc.us
Rob Ridings	NCDEQ	919-707-8786	rob.ridings@ncdenr.gov
Doumit Ishak	NCDOT – Congestion Mgt	919-329-8499	dishak@ncdot.gov
Harrison Marshall	NCDOT – HES	919-707-6079	hmarshall@ncdot.gov
Bill Elam	NCDOT – Hydraulics	919-07-6718	belam@ncdot.gov
Chris Rivenbark	NCDOT – NES	919-707-6152	crivenbark@ncdot.gov
Rob Hanson	NCDOT – PDEA	919-707-6024	rhanson@ncdot.gov
Jay McInnis	NCDOT – PDEA	919-707-6029	jmcinnis@ncdot.gov
Joseph Miller	NCDOT – PDEA	919-707-6031	josephmiller@ncdot.gov
Tony Houser	NCDOT – Roadway	919-707-6253	thouser@ncdot.gov
Bruce Payne	NCDOT – Roadway	919-707-6302	bbpayne@ncdot.gov
Mike Stanley	NCDOT – TIP	919-707-4642	mtstanley@ncdot.gov
Mark Staley	NCDOT – REU	919-707-2948	mstaley@ncdot.gov
Alan Shapiro	NCDOT – Division 5	919-220-4600	awshapiro@ncdot.gov
Jim Harris	NCDOT – Rail Division	919-707-4707	jbharris@ncdot.gov
Kyle Pleasant	NCDOT – Utilities	919-707-7179	kpleasant@ncdot.gov
Dennis Li	NCDOT - GeoEnvironmental	919-707-6857	dqli@ncdot.gov
Herman Huang	NCDOT – Community Services	919-707-6074	hfhuang@ncdot.gov
Aaron Heustess	Kimley-Horn	919-653-6634	aaron.heustess@kimley-horn.com
Erin Thompson	Kimley-Horn	919-677-2107	erin.thompson@kimley-horn.com
Heather Dunn	Kimley-Horn	678-533-3940	heather.dunn@kimley-horn.com
Attendees that joined by phone			
Renee Gledhill-Earley	SHPO	919-807-6579	renee.gledhill-earley@ncdcr.gov
Kathy Smith	NCDOT – ROW	919-220-4700	kmsmith2@ncdot.gov
Kendra Bridges	NCDOT - Bicycle/Pedestrian	919-707-2606	kcbridges@ncdot.gov

Purpose

The purpose of this meeting was to gather feedback from NCDOT and the external agencies and to conduct a pre-screening for Merger.

Overview

The proposed project is intended to improve SR 1002 (Aviation Parkway) from NC 54 to I-40. The current roadway corridor consists of alternating two and four-lane sections. , The project is scheduled for right of way in state fiscal year 2020 and construction in state fiscal year 2022 in the 2016-2025 State Transportation Improvement Plan (STIP).

Aviation Parkway is named Morrisville-Carpenter Road south of NC 54. South of the proposed project, the Town of Morrisville plans to widen Morrisville-Carpenter Road to four lanes with a median. The Town project will not widen Morrisville-Carpenter Road across the railroad, however. Project U-5811 will extend south of NC 54 across the railroad tracks to where the Town project ends to avoid a gap between the projects.

Project I-5506 will improve the I-40/Aviation Parkway interchange, and is currently underway. The project improves Aviation Parkway to the intersection of Gateway Centre Boulevard and the Lake Crabtree Park entrance south of the interchange. Project U-5811 would begin at this location at Gateway Centre Boulevard and continue south along Aviation Parkway.

Purpose and Need

The purpose of the proposed project is to improve the traffic carrying capacity of the subject section of SR 1002 (Aviation Parkway). Existing traffic volumes range from 14,000 to 29,000 vehicles per day with the higher volumes predominately on the north end of the project. It is anticipated traffic will exceed 30,000 vehicles per day on portions of Aviation Parkway by the year 2040.

Proposed Improvements

The project will widen Aviation Parkway to 4 lanes divided with a median (either 23 or 30 feet), curb and gutter, and 14-foot wide outside lanes. The median width is needed for turn lanes, but there is a desire to minimize impacts to adjacent businesses. The towns of Cary and Morrisville have expressed interest in a multi-use trail on the east side and a sidewalk on the other. Any new sidewalks or multi-use trail would require local participation per the NCDOT Pedestrian Policy.

Potential Impacts and Design Issues

Within the proposed project study corridor, known resources include three stream crossings, one wetland, two places of worship, and the Pugh House which is a National Register-listed historic site.

Natural Resources

Eric Alsmeyer with the Corps of Engineers mentioned there have been previous wetland delineations in the project area. Prior to delineations, it would be beneficial to call the Corps for this information.

Gary Jordan with USFWS noted that a bald eagle nest was found near Lake Crabtree a few years ago. The bald eagle is no longer a federally threatened listed species; however it is protected under The Bald and Golden Eagle Protection Act. If any nests are located within 660 feet of the project, the USFWS must be coordinated with.

Lake Crabtree

Brier Creek, which is on the 303(d) list, feeds into Lake Crabtree on the north side of the project. Lake Crabtree is a man-made lake that was built for flood control by the Soil Conservation Service, now Natural Resources Conservation Service (NRCS). Wake County owns Lake Crabtree up to the 100-year flood elevation and Lake Crabtree Park. The RDU Airport Authority

owns Lake Crabtree above the 100-year flood elevation. Lake Crabtree is contaminated with polychlorinated biphenyls (PCBs) and is 303(d) listed. Due to this, the fish are contaminated along with the soil. There is concern over disturbing the sediment in the lake during construction activities and what if any permitting or remediation may be required as a result. Currently a culvert is utilized along the causeway at Lake Crabtree. There was discussion in the meeting on what the least disruptive construction technique would be for widening the roadway through the causeway area at Lake Crabtree (i.e. extending the culvert, driving piles for bridges, etc.)

If digging is required in Lake Crabtree during construction, cleanup will be required. The soil removed would have to be sent off to a site in Michigan for hazardous waste which will be very expensive and difficult to deal with. EPA may need to be contacted for any permitting or construction requirements.

Rob Hanson with PDEA mentioned that NCDOT typically acquires right of way from contaminated property as easement rather than purchasing the property. Dennis Li of the Geotechnical Unit confirmed that is probably what will be done for the causeway at Lake Crabtree.

Kim Kroeger with NRCS noted mitigation would be required for loss of flood storage at Lake Crabtree. According to Mr. Kroeger, wherever fill is placed in a storage area or storage is removed, the storage capacity must be provided back in another location. It is unknown as to whether excess storage currently exists at Lake Crabtree. Approval will be needed from NRCS and USDA for construction in Lake Crabtree since federal funding was used to construct the reservoir.

Railroad Crossing

Another concern is with the at-grade railroad crossing on Morrisville-Carpenter Road at NC 54. This railroad crossing has a history of vehicular crashes. There have been past discussions about moving the NC 54 intersection out of the railroad right of way or providing a grade separation at the railroad. The concern is with the cost, impacts, and feasibility of either of these two options. According to Mr. Harris, from the railroad standpoint and based on industry standards, a grade separation is justified at this location. Mr. Harris noted that prior to looking at widening the intersection and crossing, NCDOT should first be able to dismiss the grade separation and intersection shift options as not feasible. The railroad will want to know any reasoning behind any of these considerations. Currently there is a feasibility study on-going for NC 54, FS-1005B, which should be completed in the spring of 2016.

There was also further discussion about whether there is enough existing pavement width at the railroad crossing to restripe for the additional through lanes without having to widen. This is another option that can be looked at. Mr. Harris noted that typically, the railroad wants to reduce the amount of roadway in their right of way, and any changes or work in the railroad right of way would require the railroad's review and approval. Quadrant gates would be needed at the crossing due to the amount of traffic on the corridor if a grade separation is not provided. Also, the signals at the intersection are tied into the grade crossing, so any changes to the intersection would affect them.

Community Impacts

A regional cumulative impacts assessment for this project and the surrounding projects is being completed. Individual indirect community effects studies will be completed for the proposed projects. Business parking may be affected by the project. Also, as a result of the proposed median, access will change in the corridor.

The National Register-listed William Pugh house is on the south side of Morrisville-Carpenter Road between NC 54 and Town Hall Drive. There are several other study list properties in the project area, including the Morrisville Historic District.

Greenways

On the south end of the project, outside the proposed project limits, the Indian Creek Greenway and Trailhead exist west of the project. As previously mentioned, the towns of Cary and Morrisville have expressed interest for a multi-use trail on the east side of the project. It was questioned whether the towns have considered the connection of the multi-use trail with the greenway. If the two facilities are not connected, it is not clear if there is a benefit to crossing the causeway with a multi-use trail. It was questioned whether the trail could end at Lake Crabtree Park.

Additional Comments

DEQ: Concern is for buffered streams, 303(d) listed resources, stormwater treatment, and sediment/erosion control.

CAMPO: Questioned whether the cost in the TIP assumed an at-grade crossing at the railroad. There is concern over scope creep. It is thought that an at-grade crossing was considered, but this could not be verified at the time of the meeting.

Roadside Environmental: Design standards in Sensitive Watersheds will need to be followed during construction.

TIP: Based on the railroad involvement, construction may be shifted out another year to 2023 in order to provide three years between right of way and construction. Additional sections of NC 54 may be funded during the next round of prioritization.

Traffic Control: Need to ensure traffic control and coordination with other projects going on in the area.

Merger Screening Discussion

USACE needs a rough design to determine the Section 404 permit type based on fill in surface waters and wetlands. Along with impact concerns at Lake Crabtree that could potentially warrant an individual permit, there is one stream near the NC 54 intersection that may be of concern if a grade separation is provided. The PCB contamination in Lake Crabtree won't affect 404/401 permitting decisions.

The threshold for an individual permit is 0.5 acres of wetland/surface water impacts or 300 linear feet of stream impacts. Whether wetlands surrounding the lake or the lake itself is affected, impacts would still need to fall under the 0.5 acres threshold for an individual permit. An individual permit does not necessarily mean merger is required. USACE would like to have an idea of the impacts to make a decision on merger.

Rob Ridings with the Department of Environmental Quality commented he is not inclined to use the merger process, because there are not a lot of alternatives. The biggest question is the Individual Permit threshold. Full agency coordination (at Concurrence Points 4A, 4B and 4C) still needs to occur if an Individual Permit is required and the merger process is not used. Since this is an urban area, additional impervious surface is a concern for stormwater.

Action items

Determine who is responsible for any permitting/remediation with construction in Lake Crabtree

Provide rough design to USACE for permitting/merger consideration – *Based on a rough calculation of widening the 1,200-foot long causeway only 25 feet for new pavement, there would be over 0.5 acre of new fill required in Lake Crabtree. It appears at this time that a nationwide permit would not be appropriate.*

Contact USACE prior to wetland delineations in order to obtain earlier delineations.

Concurrence Point 1
Purpose and Need and Study Area Defined
and
Concurrence Point 2
Detailed Study Alternatives Carried Forward

TIP Project No. U-5811
WBS 44384.1.1

SR 1002 (Aviation Parkway) Widening
From NC 54 to I-40
Wake County



March 2018

Purpose of Today's Meeting:

The purpose of this meeting is to discuss Concurrence Points 1 and 2, identifying a purpose and need and study area, and selecting alternatives to study in detail.

1. Introduction and Project Overview

1.1 Proposed Action

NCDOT proposes to widen Aviation Parkway from NC 54 to I-40 in Wake County. The proposed project is included in the North Carolina Department of Transportation's (NCDOT) *2016-2025 State Transportation Improvement Program (STIP)* as Project U-5811.

1.2 Meeting Purpose

The purpose of today's meeting is to reach concurrence on Purpose and Need and Study Area (Concurrence Point 1) and Detailed Study Alternatives (Concurrence Point 2).

Since the External Scoping Meeting in December 2015, NCDOT has completed the traffic forecast and traffic capacity analysis along the corridor. Additionally, the Community Characteristics Report, Indirect Screening Report, Cumulative Effects Report, and Natural Resources Technical Report have been completed. Functional designs have been prepared for two alternatives. At today's meeting, NCDOT will:

- Present a project purpose and need based on current traffic data,
- Present a study area, and
- Propose a build alternative to carry forward for detailed study.

1.3 Study Area Description

Figure 1 shows the project vicinity, and Figure 2 shows the environmental and community features. The proposed study area is a 1,000-foot corridor (500 feet on either side of the Aviation Parkway centerline). The study area is enlarged around the NC 54 intersection to allow for consideration of multiple intersection solutions.

SR 1002 (Aviation Parkway) is a major east-west route through the Town of Cary and the Town of Morrisville in Wake County. Aviation Parkway connects I-40 with downtown Morrisville, becoming Morrisville Carpenter Road west of NC 54. Project U-5811 proposes to widen 2.4 miles of Aviation Parkway to a four-lane median-divided roadway with curb and gutter, including bicycle and pedestrian accommodations from NC 54 (Chapel Hill Road) to I-40 in Morrisville.

A locally funded project by the Town of Morrisville will widen Morrisville Carpenter Road from Davis Drive to the western North Carolina Railroad right of way, just west of NC 54. NCDOT Project I-5506 will modify the interchange of I-40 with Aviation Parkway, extending along Aviation Parkway to Gateway Centre Drive. Therefore, improvements as part of Project U-5811 are proposed to tie into the Morrisville Carpenter Road widening project just west of NC 54, and tie into the I-40 interchange project at Gateway Centre Drive.

Land uses surrounding the project corridor are primarily commercial and office, with a few residences and some park/open space. The project corridor is located less than a mile from the Raleigh-Durham International Airport, approximately 5 miles southeast of Research Triangle Park, and 11 miles northwest of downtown Raleigh.

Within the study area (500 feet on either side of Aviation Parkway), there are 14 streams and 9 wetlands. Two open water features are in the study area. Lake Crabtree is a jurisdictional flood control reservoir created by an impoundment of Stirrup Iron Creek, Crabtree Creek, and Brier Creek. Lake Crabtree has a PCB fish tissue advisory, and is listed on the 2016 Draft 303(d) list for poor benthic community. Pond PA is in the northern quadrant of the NC 54/Aviation Parkway intersection with no connection to jurisdictional waters.

There are four federally protected species listed for Wake County. Northern long-eared bat has habitat present with a biological conclusion of May Affect, Likely to Adversely Affect. Michaux's suman has habitat present with a biological conclusion of No Effect. Red-cockaded woodpecker does not have habitat present, and dwarf wedgemussel habitat is unknown. More detail on the natural environment is in the *Natural Resources Technical Report* (December 2016); the NRTR will be amended to include additional study area around the NC 54/Aviation Parkway intersection as needed as intersection concepts are investigated.

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

2.1 Traffic Data and Analysis

Traffic Volumes

The project-level traffic forecast was completed in 2016. The projected future traffic volumes are summarized in Table 1.

Table 1. Projected Traffic Volumes on Aviation Parkway

Section	2015 No Build Projected Volume Range (vehicles per day)	2040 No Build Projected Volume Range (vehicles per day)	2040 Build Projected Volume Range (vehicles per day)
West of NC 54	15,600 to 20,200	16,400 to 21,800	17,600 to 23,000
Between NC 54 and Evans Road	13,000 to 15,600	13,400 to 16,000	17,300 to 20,000
Between Evans Road and Lake Crabtree Park	24,200 to 28,200	24,800 to 28,900	30,800 to 34,900
East of Lake Crabtree Park	29,600 to 35,100	30,300 to 41,800	36,300 to 43,800

Level of Service

Based on 2040 No Build traffic forecast volumes, the segment of Aviation Parkway between Dominion Drive and Gateway Centre Boulevard (south) is anticipated to operate at level of service (LOS) E in the PM peak hour, and the Aviation Parkway/NC 54 intersection is anticipated to operate at LOS F in the AM and PM peak hours.

The segment of Aviation Parkway between Dominion Drive and Gateway Centre Boulevard currently operates at LOS E in the PM peak hour, and the Aviation Parkway/NC 54 intersection operates at LOS D and F in the AM and PM peak hours respectively.

2.2 Summary of Need

Congestion: In the design year (2040), one segment on Aviation Parkway is anticipated to operate at LOS E, and one intersection is anticipated to operate at LOS F.

Mobility (secondary need): With adjacent planned projects, the Aviation Parkway/Morrisville Carpenter Road corridor will be a 4-lane median divided road from Davis Drive to NC 54 (west of U-5811 corridor), and from I-40 to Brier Creek (east of U-5811 corridor).

2.3 Summary of Purpose

Congestion: The primary purpose of this project is to reduce congestion on Aviation Parkway to improve the level of service in the design year (2040) peak hours along the corridor and at signalized intersections.

Mobility (secondary benefit): Another purpose of this project is to improve east-west mobility through Morrisville and to I-40 and I-540/NC 540.

2.4 Proposed Study Area

The proposed study area is a 1,000-foot corridor wide, 500 feet on either side of the Aviation Parkway centerline, with a wider area around the NC 54 intersection.

3. Merger Concurrence Point 2 – Alternatives Considered

3.1 Build Alternative to Carry Forward for Detailed Study

Conceptual designs for two alternatives were completed as described below. Both alternatives would meet the purpose of the project. One alternative (Build Alternative 1) is proposed to be carried forward for detailed study.

Both alternatives would widen Aviation Parkway to four lanes with a median between NC 54 and I-40. Turn lanes would be added/extended where needed. The median would be narrowed across the Lake Crabtree causeway. Multimodal accommodations are proposed, which currently are envisioned as a 5' sidewalk on the west side of Aviation Parkway, and a 10' multiuse path on the east side. Bicycles would be accommodated with 14' outside lanes. The two alternatives vary by median width:

Build Alternative 1:

Build Alternative 1 would add a 23' median. This alternative would minimize direct impacts compared with Build Alternative 2.

Build Alternative 2:

Build Alternative 2 would add a 30' median. The wider median allows for dual left-turn lanes.

As shown in Table 2, environmental impacts are anticipated with the crossing of Lake Crabtree. The project team has initiated coordination with regulatory associated agencies to discuss options to cross Lake Crabtree. As currently conceptualized, an Individual Permit may be needed based on other project impacts (without the Lake Crabtree wetland and open water impacts). Impacts will be minimized during future design phases.

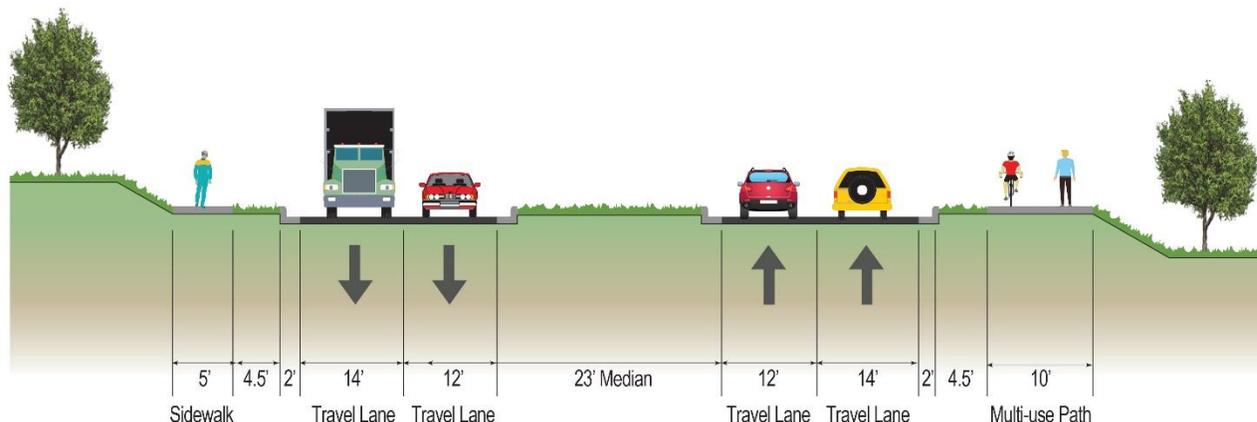
Table 2. Preliminary Environmental Impacts

Feature	Build Alternative 1 – 23' Median	Build Alternative 2 – 30' Median
Stream Impacts (linear feet, rounded to nearest 10 feet)		
SD	110	120
SB	310	310
SP	120	140
SQ	70	80
Total Stream Impacts	610 feet	650 feet
Wetland Impacts (acres, rounded to nearest 0.1 acres)		
WS	0.7	0.7
WT	<0.1	0.1
Total Wetland Impacts	0.7 acres	0.8 acres
Open Water Impacts (acres)		
Lake Crabtree	0.9	0.9
PA	0.5	0.5
Total Open Water Impacts	1.4 acres	1.4 acres

NOTE: Impacts to environmental resources were estimated using a 40' offset of the proposed edge of pavement.

Build Alternative 1 is recommended by NCDOT to be carried forward for detailed study due to its lesser impacts to the environment while still meeting the purpose of the project. The current typical section of the proposed alternative is shown below.

4 Lane Divided (23' Raised Median) with Curb and Gutter, Wide Outside Lanes, and Sidewalks
Post Speed 45 MPH



3.2 No Build Alternative

The No Build Alternative is a baseline comparative alternative. The No Build Alternative would continue typical maintenance activities, but would not make any substantial improvements to the Aviation Parkway corridor. The No Build Alternative would not incur any right of way or construction costs. There would be no disruptions along existing roadways during construction. There would be no impacts to streams, wetlands, other natural and cultural resources, residences, or businesses. However, the No Build Alternative would not meet the purpose of the project. It would not reduce congestion issues or improve mobility through Morrisville. Although the No Build Alternative would not meet the project purpose, it is recommended to be retained for additional screening to provide a basis for comparing the adverse effects and benefits of the detailed study build alternative.

3.3 Other Alternatives Considered and Dismissed

New Location Alternative

It was determined that a new location alternative was not reasonable and feasible, nor would a new location alternative meet the purpose of the project.

Transportation System Management (TSM) Alternative

TSM Alternative improvements typically involve low-cost, minor transportation improvements to increase the capacity of an existing facility, such as intersection improvements (turning lanes, pavement striping, signage, and lighting), signal improvements (timing optimization, equipment upgrades, and detector repair/replacement), data collection to monitor system performance, and special events management strategies. A TSM Alternative is not recommended as a stand-alone detailed study alternative, since by itself it would provide little, if any, noticeable improvement to congestion on Aviation Parkway, and therefore would not meet the project purpose.

Transportation Demand Management (TDM) Alternative

TDM Alternative improvements typically involve strategies that increase the overall efficiency of the transportation system by changing traveler behavior, primarily through encouraging a shift from single-occupant vehicle trips to non-single-occupant vehicle trips, or by shifting auto trips out of peak periods.

This is done primarily by improving transportation options (biking, walking, transit, and ridesharing) and providing incentives for drivers to use alternate modes, reduce driving, or shift their schedule. Ridesharing and incentives can provide a feasible option for some travelers, but the ability of these programs to substantially reduce volumes on Aviation Parkway is unlikely. Bike and pedestrian facilities may be improved as part of this project, but those improvements alone would not provide any improvements in congestion on Aviation Parkway, and therefore would not meet the project purpose. Therefore, the TDM Alternative is not recommended as a detailed study alternative.

Mass Transit Alternative

The GoTriangle system has two bus routes along I-40 near the project. Neither of the routes operate along Aviation Parkway. Passenger rail service is not available in the county. Expanded bus service and new rail alignments would have a minimal effect on traffic volumes on Aviation Parkway. Increased transit service would have benefits because it would provide additional options for commuters, which may provide a minimal reduction in traffic volumes. But improved transit service, even if successful in attracting additional riders, would not be sufficient to reduce congestion on Aviation Parkway and therefore would not meet the project purpose. Therefore, the Mass Transit Alternative is not recommended as a detailed study alternative.

4. Schedule

- Planning – State Environmental Assessment/State Finding of No Significant Impact (Summer 2019)
- Right of Way Acquisition – FY 2020
- Construction – FY 2023

5. Conclusion

NCDOT recommends the following:

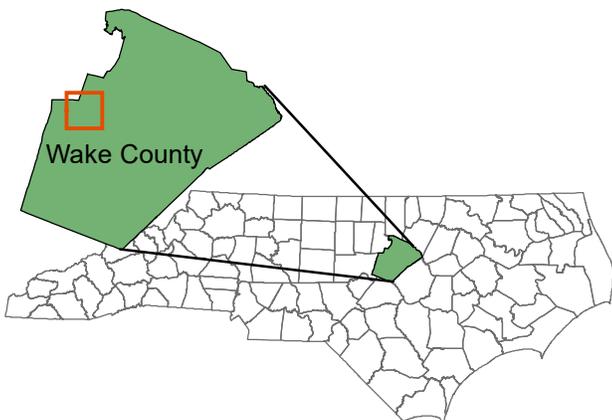
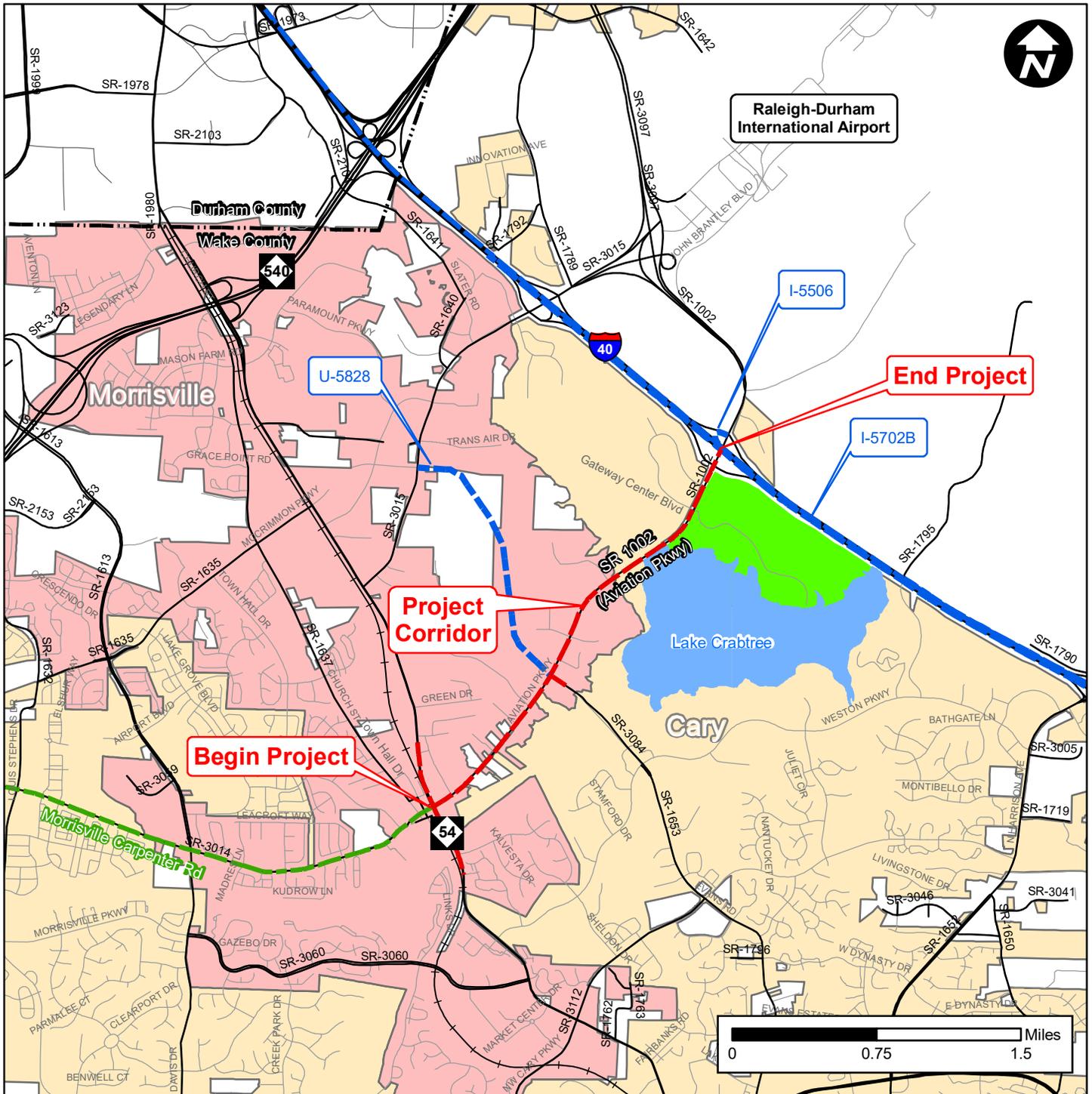
5.1 C.P. 1

- Purpose:
 - *Congestion*: The primary purpose of this project is to reduce congestion on Aviation Parkway to improve the level of service in the design year (2040) peak hours along the corridor and at signalized intersections.
 - *Mobility (secondary benefit)*: Another purpose of this project is to improve east-west mobility through Morrisville and to I-40 and I-540/NC 540.
- Study area: The proposed study area is a 1,000-foot corridor wide, 500 feet on either side of the Aviation Parkway centerline, with a wider area around the NC 54 intersection.

5.2 C.P. 2

- Build Alternative 1: Widen Aviation Parkway to a four-lane median divided section with a 23' median and multimodal accommodations.
- No Build Alternative: Although the No Build Alternative does not meet purpose and need, it is recommended to be carried forward for comparison.

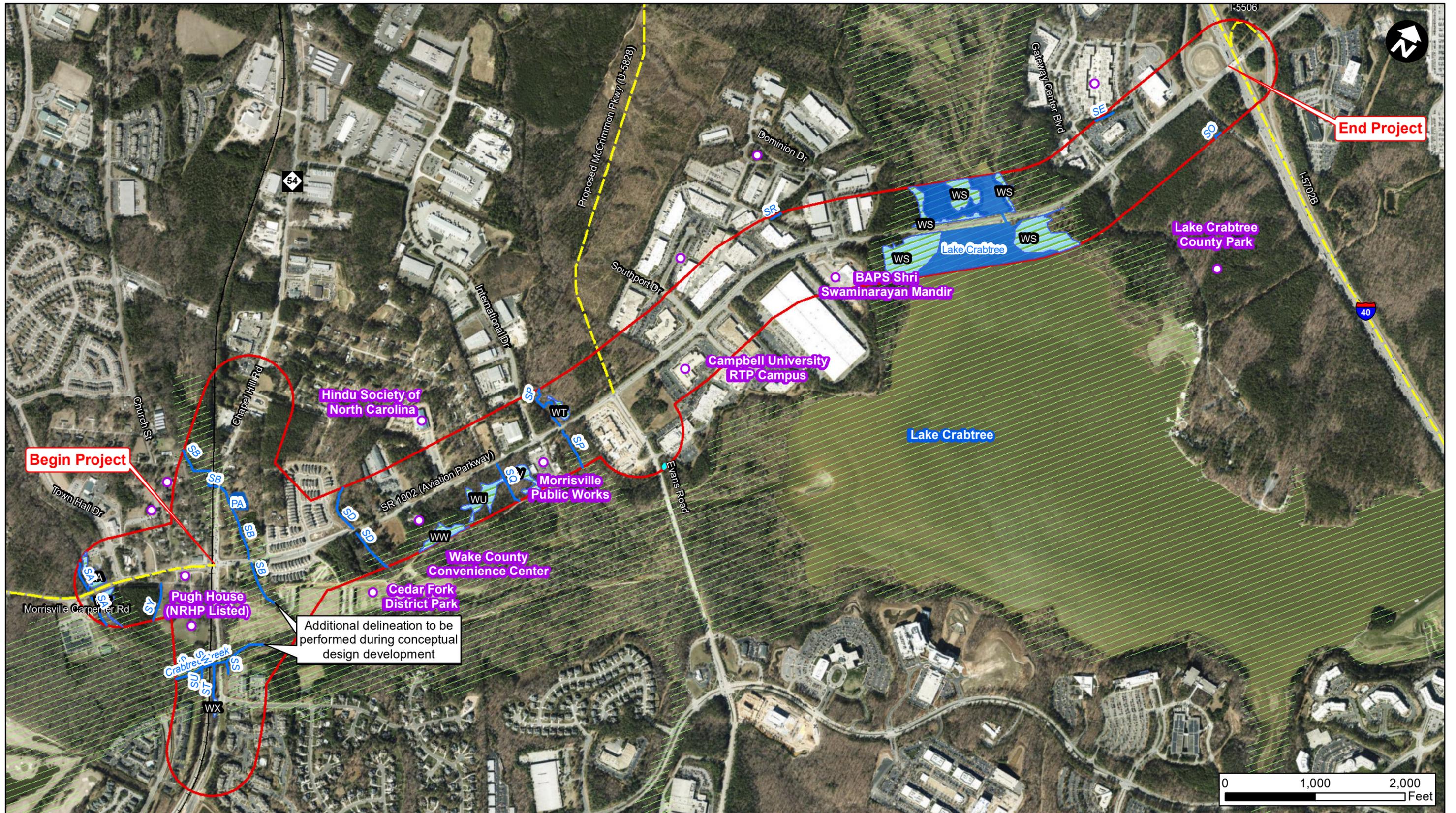
Figures



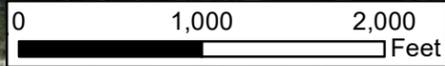
- - - Project Limits
- - - Adjacent Local Project
- - - Adjacent STIP Project
- Lake Crabtree County Park



Figure 1 - Project Vicinity
 Morrisville and Cary
 SR 1002 From NC 54 to I-40
 Wake County
 TIP Project U-5811



Additional delineation to be performed during conceptual design development



- Surrounding Community Features
- Adjacent Project
- + + Railroad
- Delineated Stream
- Delineated Wetland
- Open Water
- FEMA Flood Zone

Figure 2 - Environmental and Community Features
 Morrisville and Cary
 SR 1002 From NC 54 to I-40
 Wake County
 TIP Project U-5811

Appendix

Project U-5811 CP 1 & CP 2 Concurrence Forms

Section 404/NEPA Interagency Agreement

Concurrence Point 1 Project Purpose and Need

Project Title: SR 1002 (Aviation Parkway), Widening from NC 54 to I-40
TIP Project No.: U-5811
WBS No.: 44384.1.1

Purpose and Need of the Proposed Action:

Congestion: The primary purpose of this project is to reduce congestion on Aviation Parkway in order to improve the LOS in the design year (2040) peak hours along the corridor and at signalized intersections.

Mobility: A secondary benefit of this project is to improve east-west mobility through Morrisville and to I-40 and I-540/NC 540.

The proposed study area is a 1,000-foot wide corridor, 500 feet on either side of the Aviation Parkway centerline, with a wider area around the NC 54 intersection, as shown on the attached map.

The Project Team has concurred on the above mentioned purpose and need and the attached study area map for the proposed project.

<u>Name</u>	<u>Agency</u>	<u>Date</u>
	USACE	
	USFWS	
	NCDOT	
	NCWRC	
	NCDEQ	
	NCSHPO	
	CAMPO	
	USDA-NRCS	

Section 404/NEPA Interagency Agreement

**Concurrence Point 2
Detailed Study Alternative Carried Forward**

Project Title: SR 1002 (Aviation Parkway), Widening from NC 54 to I-40
TIP Project No.: U-5811
WBS No.: 44384.1.1

Alternative(s) to Study in Detail:

- Build Alternative 1: Widen Aviation Parkway to a four-lane median divided best fit section with a 23' median and multimodal accommodations.
- No Build Alternative

The Project Team has concurred with the above alternatives to be carried forward for the proposed project.

<u>Name</u>	<u>Agency</u>	<u>Date</u>
	USACE	
	USFWS	
	NCDOT	
	NCWRC	
	NCDEQ	
	NCSHPO	
	CAMPO	
	USDA-NRCS	

Section 404/NEPA Interagency Agreement

**Concurrence Point 1
Project Purpose and Need**

Project Title: SR 1002 (Aviation Parkway), Widening from NC 54 to I-40
 TIP Project No.: U-5811
 WBS No.: 44384.1.1

Purpose and Need of the Proposed Action:

Congestion: The primary purpose of this project is to reduce congestion on Aviation Parkway in order to improve the LOS in the design year (2040) peak hours along the corridor and at signalized intersections.

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<u>Name</u>	<u>Agency</u>	<u>Date</u>
	USACE	3/22/2018
	USFWS	3/22/2018
	NCDOT	3/22/2018
DocuSigned by: Travis Wilson 31585D0B682E438...	NCWRC	4/4/2018
	NCDEQ	3/22/18
DocuSigned by: Renee Gledhill-Earley 020A1550A275404...	NCSHPO	3/26/2018
DocuSigned by: Chris Lukasina 7BA5AEB0438D45D...	CAMPO	4/23/2018
DocuSigned by: Timothy Beard A415A20B3A42431...	USDA-NRCS	5/17/2018

Section 404/NEPA Interagency Agreement

Concurrence Point 2

Detailed Study Alternative Carried Forward

Project Title: SR 1002 (Aviation Parkway), Widening from NC 54 to I-40
 TIP Project No.: U-5811
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- Build Alternative 1: Widen Aviation Parkway to a four-lane median divided best fit section with a 23' median and multimodal accommodations.
- No Build Alternative

The Project Team has concurred with the above alternatives to be carried forward for the proposed project.

<u>Name</u>	<u>Agency</u>	<u>Date</u>
<i>Eric Adams</i>	USACE	3/22/2018
<i>Harry Jordan</i>	USFWS	3/22/2018
<i>Robert Denton</i>	NCDOT	3/22/2018
DocuSigned by: <i>Travis Wilson</i> 31565D0B602E436...	NCWRC	4/4/2018
<i>Rp Phillips</i>	NCDEQ	3/22/18
DocuSigned by: <i>Renee Gledhill-Earley</i> C26A1556A275464...	NCSHPO	3/26/2018
DocuSigned by: <i>Chris Lukasina</i> 7BA5AEB0438D45D...	CAMPO	4/23/2018
DocuSigned by: <i>Timothy Beard</i> A415A20B3A42431...	USDA-NRCS	5/17/2018