



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

June 13, 2018

Memo to: Merger Team
From: Wilson Stroud, Project Manager
Project Management Unit
SUBJECT: STIP Project U-5768 - Supplemental Information for CP1 and CP2 for Merger Team Consideration (proposed NC 49 and Back Creek Church Road improvements in Charlotte, Mecklenburg County)

During the November 16, 2017 Section 404/NEPA Merger Team CP1 and CP2 meeting for STIP Project U-5768, potential realignment alternatives for Back Creek Church Road (BCCR) were discussed. These options included the original route reserved by the City of Charlotte for the corridor ("Yellow" option), as well as two other corridors that were evaluated in 1989 as part of the Eastern Circumferential Road (ECR) study: (1) the "improve existing" option ("Blue" option) and (2) an option that would follow John Kirk Drive north of NC 49 and John Russell Road south of NC 49 ("Orange" option).

The Merger Team requested additional written documentation be submitted to support CP1 and CP2 concurrence. The supplemental information should include:

- written documentation for each of the ECR options (i.e., Blue and Orange options) as they relate to the proposed realignment of BCCR under project U-5768;
- revisions to the Orange option in light of current development;
- new alignment north of Back Creek be considered (i.e., "Purple" option, introduced below); and
- BCCR logical termini analysis.

Based on the Merger Team's requests during the CP1/CP2 meeting, NCDOT has:

- revised the "Orange" option to improve potential feasibility, following existing neighborhood street rights of way in an effort to minimize impacts to existing residents. (Note that the proposed BCCR realignment typical section would exceed the existing neighborhood street typical.);
- developed a "Red" option, which utilizes the railroad grade separation constructed as part of project P-5208, following parts of the "Yellow" and "Orange" options;

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- developed a “Purple” option, which is similar to the “Yellow” option, but which widens more of existing BCCR; and
- analyzed the project’s logical termini.

The supplemental information presented in this memorandum will assist the Merger Team in determining which of these options should be included for detailed study and which should be screened out of future consideration. USACE will require detailed study of all potential alignment options unless it can be demonstrated that those alternatives:

- 1) Do not meet the Purpose and Need or
- 2) Are not practicable from a design perspective or
- 3) Are not potentially the least environmentally damaging practicable alternative (LEDPA)

This supplemental information will also support the evaluation for logical termini.

All five of the above options (Yellow, Blue, Orange, Red, and Purple) are shown in Figure 1 and summarized below. Please note that these reviews are based on conceptual alignments and these options were evaluated using best engineering judgement. Preliminary designs will be developed for all alternatives carried forward for detailed study, and avoidance and minimization measures will be explored for each alternative.

1. Discussion of Operability and Geometrics

Blue Option. The Blue option would improve existing BCCR and construct a new location spur from Pavilion Boulevard to connect with Mallard Creek Church Road north of NC 49 (see Figure 1). Blue option 1 would require a new grade separation of BCCR over existing North Carolina Railroad/Norfolk Southern Railroad (NCR/NS) tracks and over NC 49; Blue option 2 would construct a new railroad bridge to grade separate the NCR/NS tracks over NC 49.

There are substantial operational issues associated with both Blue options. In Blue option 1, the structure required to span both NCR/NS and NC 49 would require more than 600 feet of vertical realignment on each approach, which would effectively remove access to the northernmost Back Creek Church parking lot south of NC 49 and the 7-Eleven north of NC 49. Access would also be changed to University Meadows Elementary School, University Meadows Neighborhood Park, and the Pavilion at UC Apartment Complex north of NC 49. It would also impact the connection between existing BCCR and Hanberry Boulevard south of NC 49.

To maintain a connection between NC 49 and Pavilion Boulevard/BCCR, a new roadway connecting to NC 49 via Sams Lane (not shown in the figure) in the northwest quadrant of the intersection would be required. A quadrant roadway would not be feasible on the east side of Pavilion Boulevard/BCCR due to the proximity of the interstate ramps or the south side of NC 49 due to the proximity of the railroad. This connection would force northbound BCCR travelers to drive over the railroad and NC 49 bridges, then back track an additional

2,200 feet to access NC 49 via a full-movement intersection at Sams Lane. This quadrant roadway would result in impacts to an unnamed tributary to Mallard Creek, and it could potentially disrupt operations at the Back Creek Centre shopping center, both of which are on the north side of NC 49.

As noted in the CP1 and CP2 Merger Packet, the P-5208 Environmental Assessment (EA) previously considered and dismissed two alternatives to grade-separate BCCR over (Blue option 1) and under NCCR/NS (Blue option 2) due to topographical constraints, access requirements, and potential impacts to nearby residential and business properties. Regarding Blue option 2, the P-5208 EA stated:

“A railroad bridge over Back Creek Church Road (SR 2827) would require the road to be lowered and, most likely, the railroad to be raised. The tracks would need to be nearly 25 feet above the road. Allowable grades used in railroad design are flatter than those for roadways. The railroad track construction limits could extend one-half mile or more beyond each end of the bridge. This could potentially require reconstruction of the railroad bridge over I-485 which would also require a temporary detour for trains during construction. Lowering Back Creek Church Road (SR 2827) would also require NC 49 to be lowered to intersect with Back Creek Church Road (SR 2827), further expanding the footprint of construction. The required roadway and railroad work would be much more extensive and have much greater impacts than those described for a roadway bridge. For these reasons both alternatives were eliminated from further study.”

As noted above, Blue option 1 and Blue option 2 would also require the construction of a connecting roadway on new alignment from Pavilion Boulevard to Mallard Creek Church Road north of NC 49. This connecting roadway would also impact the parking area of University Meadows Elementary School, University Meadows Neighborhood Park, University Village Shopping Center, an unnamed tributary of Mallard Creek, a Duke Energy transmission line (multiple crossings), and operations of an active quarry (Martin Marietta Quarry).

Orange Option. The Orange option proposes a new location facility that extends from the intersection of NC 49 and John Kirk Drive southward to connect with existing BCCR south of Timber Ridge Road. This option would also require improvements to existing John Kirk Drive north of NC 49 to its intersection with Mallard Creek Church Road. This option would require a new bridge over NCCR/NS and Old Concord Road south of NC 49.

As noted above, the Orange option was revised after the Merger meeting. The existing conditions at the time the Orange option was originally developed for the 1989 ECR study did not include the development which is currently present, notably several residential neighborhoods. Therefore, at the request of the Merger Team, a route was developed to represent the Orange option to be more compatible with the current conditions and include a direct connection to BCCR. The Orange option was aligned between BCCR and John Kirk Drive to follow existing neighborhood street rights-of way in an effort to minimize impacts to existing residents and avoid the neighborhood stormwater retention pond. These neighborhood streets include Amherst Glen Drive and Conifer Circle. It was noted that the

high number of residential relocations would substantially add to the cost of this alternative. *(Note that the proposed BCCR realignment typical section would exceed the existing neighborhood street typicals).* The Orange option also includes a direct connection to BCCR. However, to access NC 49, residents along existing BCCR north of Back Creek would either have to drive through Hanberry Blvd (local collector), which is not designed for such traffic, or via a circuitous route down BCCR to the Red option, greatly reducing their mobility along the corridor.

These revisions are displayed in Figure 1.

This option would pose several operational issues and result in additional undesirable impacts. Most of the operational issues would be related to the required grade separation with NCR/NS. There is not enough space between the rail crossing and NC 49 to accommodate an at-grade intersection at NC 49. To construct an at-grade separation, the grade of BCCR would have to be raised by several feet. Old Concord Road and University Walk Circle would also have to be elevated on retained fill. Raising the surrounding roadways would likely impact access to several adjacent commercial and institutional properties.

John Kirk Drive currently traverses the eastern border of the University of North Carolina at Charlotte (UNCC). Improvements required along John Kirk Drive under the Orange option would likely not be compatible with UNCC's overall transportation plan. The University is currently designing upgrades to John Kirk Drive to enhance its internal traffic operations and provide a more bicycle and pedestrian friendly campus environment. This alignment option would not be compatible with their vision.

Yellow Option. The Yellow option would utilize the railroad grade separation constructed for project P-5208 and the ECR corridor protected by the City of Charlotte. This was the preferred option from the 1989 ECR study. There are no current operational issues associated with this option.

Red Option. The Red option would utilize the grade separation constructed for project P-5208, similar to the Yellow option. However, the Red option follows a more westerly route south of Hanberry Boulevard, thereby minimizing stream impacts, joining the Orange option north of the Wyndham Place subdivision and connecting with existing BCCR south of Timber Ridge Road. The Red option was identified as a potential alignment at the Merger meeting, and is included in this document at the Merger Team's request.

To access NC 49, residents along existing BCCR north of Back Creek would either have to drive through Hanberry Blvd (local collector), which is not designed for such traffic, or via a circuitous route down BCCR to the Red option, greatly reducing their mobility along the corridor.

Purple Option. The Purple option was also developed at the request of the Merger Team and would cross Back Creek before making a westerly turn to join the Yellow option. The Purple option would utilize more of the existing BCCR alignment than the Yellow Option,

thereby reducing stream impacts. The Purple option would utilize the grade separation constructed for project P-5208, similar to the Yellow and Red options.

This option would impact lands set aside by Mecklenburg County for a park and greenway hub (universitycitypartners.org/a-park-in-our-future-county-buys-33-4-acres-near-future-highway-and-uncc/). The option was further reviewed at the request of USACE and CDOT to determine if the design could avoid superelevated curves (i.e., banking), which are not compatible with multimodal accommodations. Based on a preliminary review, it appears that designs could avoid banking; however, this will be verified if the option is carried forward for detailed study.

The purple option would tie in to the existing BCCR north of Back Creek. Existing BCCR would be widened to the proposed southern terminus of the Yellow option to allow for improvements past existing subdivisions. It is assumed that the widening of existing BCCR would be to the west to avoid any potential impacts to the Back Creek stream mitigation site, located on the east side of the BCCR crossing of Back Creek.

2. Discussion of Impacts

Impacts for the five BCCR alignment options discussed above are summarized below in Table 1. Please note that these impacts were determined for a 200-foot corridor. Stream and wetland impacts for the Yellow and Purple options are based on field delineated streams and wetlands. Impacts for the Red, Orange, and Blue options were supplemented with National Hydraulic Dataset (NHD) and National Wetlands Inventory (NWI) data where these options extended beyond previously surveyed areas. If these options were carried forward, additional surveys would be required.

Options carried forward for detailed study will have revised impacts based on the proposed slopestakes, buffered as appropriate for the design phase. In addition, any alternative carried forward for detailed study will be studied for potential avoidance and minimization measures through the Merger Process.

Table 1. Preliminary Impacts Summary (200-foot buffer along proposed centerlines)

Option	Yellow	Blue 1¹	Blue 2²	Purple	Orange	Red
Stream Impacts (linear feet)	2,220	1,050		1,610	440	490
Wetland Impacts (acres)	1.0	1.0		1.0	0	1.0
100-year Floodplain Impacts (acres)	1.61	1.79		1.74	1.48	2.08
School Impacts	0	Univ. Meadows School, Back Creek Christian Academy	Back Creek Christian Academy	0	UNCC	0
Residential Relocations	6	42		4	110	127
Residences with Access Impacts	0	0		0	76	58
Business Relocations	0	1	2	0	3	0
Other Impacts	—	Operational issues at Pavilion/Mallard Creek Church Road	Approximately 1 mile of railroad grade work (I-485 RR bridge; temporary railroad detour); Lowering BCCR/ NC 49 intersection; Operational issues at Pavilion/Mallard Creek Church Road	Proposed County Park	—	—

¹BCCR with bridge over NC 49 and Railroad

²Railroad bridge over BCCR

Residential impacts are presented in Table 1 in two ways. “Residential relocations” refers to those residences directly impacted within the project corridor. “Residences with access impacts” refers to homes that would be cut off from the remainder of the subdivision, thus requiring new or modified access roads.

Because the Red option shows lower stream impacts than the yellow and purple options, USACE requested additional information about this option. The City of Charlotte submitted

a letter to the USACE stating that the Red option (and Orange option) is not consistent with multiple City policies, guidelines, and goals for protecting and preserving existing neighborhoods (May 7, 2018 letter is attached to this memorandum). In addition, NCDOT compiled a high-level right of way acquisition cost estimate for each option based on GIS data (see Table 2).

For the right of way cost estimates, NCDOT used parcel data to determine the approximate land acquisition value for properties along the Yellow, Purple, and Red options. The sum of the total value of each parcel and structure within each corridor is represented by the high numbers in the Table 2 estimates. The low estimates are based on how much of each parcel is within each corridor. If more than 25% of a parcel was within any given corridor, it was assumed the entire parcel would be acquired. Otherwise the value was calculated as a percentage of the total parcel value. Costs include land value and assessed building value from the Mecklenburg County GIS file (May 15, 2018 download). Fair market value for the parcels may be higher than the values shown in Table 2.

It is also noted that since the Merger Team meeting (November 2017), the draft hydraulics report (HNTB, January 2018) has been completed and included a recommendation for a bridge to avoid impacts to the 100-year floodplain at the new crossing of Back Creek. A bridge at that location would also allow for a proposed greenway to cross under the realigned BCCR, consistent with Mecklenburg County plans. For the Yellow option, this would require a bridge approximately 155 feet long. To avoid impacts to the 100-year floodplain and accommodate the proposed greenway for the Red option, a 450- to 550-foot bridge would be required, as the 100-year floodplain is substantially wider in that area. The substantially longer bridge span would contribute to higher construction costs associated with the Red option.

Opportunities for reducing stream and floodplain impacts for the options to be carried forward for detailed study will be explored in areas with stream and floodplain crossings.

Table 2. Revised Preliminary Impacts Summary (200-foot buffer along proposed centerlines) for Yellow, Purple, and Red Options

Option	Yellow	Purple	Red
Residential Relocations	6	4	127
Cost of ROW (homes and parcels within corridor)	\$2.8 to \$5.7 Million	\$6.0 to \$6.1 Million	\$18.0 to \$21.6 Million

3. Summary and CP 2 Recommendations

Both the Red and Orange options would reduce mobility for residents on BCCR just south of NC 49, as well as stakeholders who visit Back Creek Christian Academy or Back Creek Church.

For the reasons stated above, NCDOT does not feel that the Blue and Orange options are practicable from a design standpoint. The Blue options would have issues with crossing NCRR or NC 49. The Orange and Red options would have a substantial number of residential relocations, which would greatly increase the cost of this alternative. Although the Orange option would likely result in less stream impacts than the other options, based on this high level of analysis, NCDOT concludes and USACE agrees that this option is not practicable due to the high number of impacts to the human environment (including relocations and access impacts), as well as the much higher costs.

Based on the above analysis, NCDOT and USACE recommend that the No Build Option, the Yellow Build Option, and the Purple Build Option be carried forward for detailed study. The revised CP2 concurrence form is attached.

4. Southern Terminus of Back Creek Church Road Improvements

During discussions with NCDOT prior to the CP1/CP2 Merger Meeting, USACE asked if traffic queuing on the relocated BCCR would extend beyond the proposed southern limits of the project by the design year (2040). The March 2017 Traffic Analysis Technical Memorandum for U-5768 included an analysis of queue lengths for the various build alternatives. Based on that analysis, maximum queue lengths were developed (see Table 3). While the preliminary analysis showed queue lengths for some scenarios would extend past Hanberry Boulevard for northbound BCCR traffic in the design year, in no case did the maximum queue length extend to the project terminus at the intersection with existing BCCR. Thus, NCDOT and USACE conclude that the proposed study area as shown in Figure 1 is appropriate.

Table 3. Traffic Queue Data for U-5768 Southern Terminus

Alternative from March 2017 Analysis	TransModeler 95% Maximum Queue on Northbound BCCR (feet)	Does queue spill back past Hanberry Blvd?	Does queue spill back past the connection to existing Back Creek Church Rd (near Rosemallow Rd)?
<u>2040 Build Alt 1</u> (6-Lane Traditional Widening)	1,857	Yes	No
<u>2040 Build Alt 2</u> (6-Lane Superstreet)	3,720	Yes	No
<u>2040 Build Alt 3</u> (6-Lane Superstreet Hybrid – Partial Median U-Turn intersection at NC 49/Mallard Creek/Back Creek)	436	No	No

Source: HNTB North Carolina, PC, March 2017 Traffic Analysis Technical Memorandum for NCDOT STIP Project U-5768

5. CP 1 Recommendations

Purpose and Need. NCDOT presented the following purpose and need statements at the November 16, 2017 CP1 Merger Meeting:

The needs to be addressed by this project include:

- N.C. 49 is currently operating at or close to congested levels.
- From 2000 through March 2016, there were six highway vehicle/train crashes at the NCR/NS at-grade rail crossing on Back Creek Church Road just south of NC 49. Current typical train traffic as reported by Norfolk Southern is 38 trains per day, and train volumes are expected to double in the future, as this crossing is located within the proposed NCDOT Southeast High Speed Rail corridor.
- With the proposed closing of the S.R. 2827 (Back Creek Church Road) railroad crossing at NCR/NS, the existing network connectivity between the Rocky River area to the south and N.C. 49 would be lost.]
- Traffic volumes and lack of accommodations along N.C. 49 limit bicycle and pedestrian activity along regionally important multi-modal transportation routes. CDOT, UNCC, and University City Partners have cited the need to accommodate pedestrians and bicycles in any proposed improvement.

The purposes of the proposed project are to reduce traffic congestion, improve traffic flow, and enhance traffic operations on N.C. 49 with the goal of achieving an overall Level of Service (LOS) D for intersections along the project corridor in the design year (2040), improve safety and enhance train and vehicle operations, and maintain network connectivity. A secondary purpose is to safely accommodate multi-modal uses of the corridor.

Based on comments received at the Merger Meeting and comments received from the USACE after the meeting, the purpose statement has been revised to read:

The primary purposes of the proposed project are to reduce traffic congestion, improve traffic flow, and enhance traffic operations on N.C. 49. Another purpose is to improve safety and enhance train and vehicle operations. The screening criteria for this are:

- **Achieve an overall Level of Service (LOS) D for intersections along the project corridor in the design year (2040).**
- **Maintain connectivity within the existing road network.**
- **Safely accommodate multi-modal uses of the corridor.**

Study Area. The project study area associated with the yellow corridor has been revised to reflect NCWRC's request during the team meeting to examine a wider corridor to minimize stream and wetland impacts associated with the proposed BCCR crossing of Back Creek. If the Merger Team agrees with NCDOT's alternatives (CP2) recommendation, this revised study area (shown in Figure 1) will serve as the project study area. If the Merger Team instead concludes that other build alternatives should be carried forward for detailed study, the study area will be expanded to include sufficient area to encompass additional alternative(s).

ws/kg

Attachments: Figure 1

City of Charlotte letter (5-7-18)

Revised CP1 and CP2 forms



STATE OF NORTH CAROLINA
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May 7, 2018

Meeting Summary

STIP Project U-5768, NC 49 from John Kirk Drive to I-485; Widening of Existing Roadway and Relocation of Back Creek Church Road; Charlotte, Mecklenburg County

November 16, 2017 – 3:00 P.M to 5:00 P.M.

Meeting Purpose: To reach concurrence on Concurrence Point 1 – Purpose and Need and Study Area Defined and Concurrence Point 2 – Design Options for Detailed Study

Meeting Attendees

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NCDOT opened the meeting. USACE made opening remarks concerning recent correspondence with NCDOT that had resulted in new information being added to the Merger meeting materials. The new information primarily addressed other design options to maintain access from Back Creek Church Road (BCCR) to NC 49. USACE/NCDOT pre-meeting discussions also included the appropriate limits of construction along BCCR south of NC 49.

The following summarizes the discussions during and decisions reached at the meeting. Action items and post-meeting notes are denoted in **bold text**.

Concurrence Point 1 Discussion

- Existing Features:
 - o NCWRC asked for clarification regarding the path and status of the Back Creek Greenway. HNTB and CDOT responded that the greenway is a long-term Mecklenburg County goal that is currently unfunded. The greenway would roughly parallel Back Creek through the study area, reaching to near I-485 on its east extent. *Note that the Mecklenburg County Parks and Recreation Greenway Plan Update (2008) listed the Back Creek Greenway in their 10-Year Action Plan.*
 - o Several parties spoke to the dangerous condition at the existing BCCR at-grade railroad crossing near NC 49, including SHPO, NCDOT-Division 10, and NCDOT-Rail Division. NCDOT noted the dangerously short throat on BCCR between the track and the traffic signal at NC 49. NCDOT-Rail Division is not in favor of leaving the crossing open and has worked for more than 20 years to close this crossing. Norfolk Southern (NS) strongly supports closing the crossing.
- Purpose and Need
 - o NCDOT presented the following preliminary purpose and need statement:

The needs to be addressed by this project include:

- *N.C. 49 is currently operating at or close to congested levels.*
- *From February 2000 through March 2016, there were six highway vehicle/train crashes at the NCR/NS at-grade rail crossing on Back Creek Church Road just south of NC 49. Current typical train traffic as reported by Norfolk Southern is 38 trains per day, and train volumes are expected to double in the future, as this crossing is located within the proposed NCDOT Southeast High Speed Rail corridor.*
- *With the proposed closing of the S.R. 2827 (Back Creek Church Road) railroad crossing at NCR/NS, the existing network connectivity between the Rocky River area to the south and N.C. 49 would be lost.*
- *Traffic volumes and lack of accommodations along N.C. 49 limit bicycle and pedestrian activity along regionally important multi-modal transportation routes. CDOT, UNCC, and University City Partners have cited the need to accommodate pedestrians and bicycles in any proposed improvement.*

NCDOT presented the following preliminary purpose statement

The purposes of the proposed project are to reduce traffic congestion, improve traffic flow, and enhance traffic operations on N.C. 49 with the goal of achieving an overall Level of Service (LOS) D for intersections along the project corridor in the design year (2040), improve safety and enhance train and vehicle operations, and maintain network connectivity. A secondary purpose is to safely accommodate multi-modal uses of the corridor.

- USACE requested that the format of the proposed purpose statement be changed to include screening criteria in bullets.
- USACE requested that “network connectivity” be changed to specifically address BCCR connection to NC 49.
- NCDOT and HNTB revised the purpose statement during the meeting to read:

The primary purposes of the proposed project are to reduce traffic congestion, improve traffic flow, and enhance traffic operations on N.C. 49. Another purpose is to improve safety and enhance train and vehicle operations.

The screening criteria for this are:

- *Achieve an overall Level of Service (LOS) D for intersections along the project corridor in the design year (2040).*
- *Maintain connectivity from N.C. 49 to Back Creek Church Road.*
- *Safely accommodate multi-modal uses of the corridor.*

- The Merger Team acknowledged that the separation of train and vehicle traffic is an important component of the project.
 - The Merger Team reached verbal agreement on Purpose and Need.
 - **Update 11-17-17: USACE noted in a follow-up e-mail that the statement as revised during the meeting may be too specific and asked that it be changed to “maintain connectivity within the existing road network.” The CP1 concurrence form has been revised accordingly (see attached supplemental information).**
- Study Area
- NCWRC requested a slight expansion of the proposed study area to the west to allow for a potential reduction in stream impacts along Back Creek, as related to the proposed realignment of BCCR. **Post meeting note: The study area has been expanded, per this request (see attached, Figure 1).**

- Discussion of the study area was postponed until later in the meeting, after a discussion of alternatives to be carried forward (see additional discussion below).

Concurrence Point 2 Discussion

- It was noted the PowerPoint presentation included additional information, regarding other CP2 alternatives for the proposed realignment of BCCR, based on USACE/NCDOT discussions that had taken place before the meeting. That information was not provided in the Merger packet and therefore was new information for the team to consider. **Post meeting note: NCDOT sent the presentation to meeting invitees and attendees on 11-17-17.**
- NCDOT presented the following CP2 alternatives in the meeting (please refer to “Slide 31,” attached):
 - **No-Build Alternative**
 - **Build Alternative A:** *Best-fit widening along NC 49, relocation of S.R. 2827 (Back Creek Church Road) to NC 49 at S.R. 2833 (Mallard Creek Church Road), traffic flow and connectivity improvements to S.R. 2939 (Old Concord Road) and Thomas Combs Drive. A grade separation will be evaluated for N.C. 49 over S.R. 2833 (Mallard Creek Church Road)/Relocated Back Creek Church Road.*
 - **Additional Build Alternatives:** *NCDOT also presented two alternatives considered during feasibility studies for the proposed Eastern Circumferential Road (ECR). These alternatives included an improve existing alternative for BCCR (the “blue” option, and an alternative that provided an alternative connection to BCCR to the west (“orange” option).*
- USACE requested that additional written documentation be provided for the blue and orange options for to the proposed realignment of BCCR. It may be possible that these design options are screened out at CP 2; however, it was agreed that more supporting information is required to demonstrate whether these alternatives:
 - 1) meet the Purpose and Need
 - 2) are practicable
 - 3) are potentially the least environmentally damaging practicable alternative.
- NCWRC asked for clarification regarding the status of the ECR. CDOT replied that the project is active and is intended to serve as an alternate, or complementary, route to I-485, that they and NCDOT are currently pursuing segments of the project as funding becomes available, and that CDOT is currently constructing improvements to a section of BCCR south of John Russell Road (approximately 1 mile south of the proposed U-5768 study area).

- **Post meeting notes on the ECR and projects that will improve BCCR in the vicinity of the proposed project (see Figure 2, enclosed):**
 - o The following projects are included in the CRTPO 2045 Metropolitan Transportation Plan (MTP):
 1. CRTPO MTP ID No. 3074. Rosemallow Road to Rocky River Road; provide a median divided, 4-lane facility with bike lanes, part on new location, 1.8 miles; Horizon year 2035, not currently funded.
 2. The City of Charlotte will widen BCCR to 3 lanes from Rocky River Road to Scott Creek Church Road, currently funded for construction.
 3. NCDOT project W-5601BK will improve Rocky River Road from Hood Road to BCCR. The project will add turn lanes and install traffic signals at each intersection. The right of way acquisition process for this project is underway, and construction is scheduled to begin in late 2018 or early 2019.
 4. The CRTPO MTP includes six additional ECR segments from Rocky River Road to US 74 in Matthews (ID Nos. 3082, 3090, 3099, 3105, 3112, and 3122). None of these projects are currently funded.
- NCWRC requested that design options for relocated BCCR that reduce stream impacts be examined, specifically in the area of a couple tributaries to Back Creek.
 - o NCDOT responded that the proposed BCCR alignment (yellow option) as shown should be considered a “starting point” and that avoidance and minimization measures will be identified and implemented as design proceeds.
- USACE stated that they do not want to be “married” to an alignment and asked if, instead, the yellow option could be presented as a corridor?
 - o NCDOT responded that BCCR realignment could be presented as a corridor, with the understanding that avoidance and minimization measures will be pursued.
 - It was agreed all CP2 alternatives would be shown as corridors rather than alignments.
 - **Post-meeting note: each of the CP2 alternatives is shown as a 200-foot corridor in Figure 1, which is included in the attached supplemental information.**
- USACE requested that the orange option be revised to tie to existing BCCR, rather than tying into John Russell Road.
 - o CDOT requested that the orange option tie to existing BCCR north of the BCCR widening project that is currently under construction by CDOT (see

attached BCCR/ECR graphic). **Post-meeting note: The orange option has been adjusted to tie to existing BCCR south of Timber Ridge Road, to avoid impacts to the retention pond north of Back Creek, and to reduce impacts to residential neighborhoods (see Figure 1 in attached supplemental information).**

- During the meeting, a new possible option (“purple” option) was discussed. The purple option would utilize more of the existing BCCR alignment than the yellow option. This option utilizes extreme horizontal geometry north of Back Creek that would require superelevated curves (i.e., banking). The City of Charlotte has stated that this corridor needs to provide safe accommodations for pedestrians and cyclists and that their policy is to avoid superelevated curves for facilities with multiuse paths. If flatter curves are used to avoid superelevation, it is likely that this option would either (1) encroach onto Back Creek resulting in greater stream impacts than currently anticipated or (2) encroach onto residential properties to the north. This option would also bisect the County-owned parcel that is planned for development as a park
- During the meeting, the Merger Team asked if it would be possible to construct a grade separation tunnel BCCR under NC 49 and the NCRR crossing. This possibility was discussed in the P-5208 Environmental Assessment (EA). The EA examined and dismissed two alternatives to grade-separate BCCR over and under NCRR/NS due to topographical constraints, access requirements, and potential impacts to nearby residential and business properties.
- It was suggested that a “crossover” alternative for the realignment of BCCR be considered that would follow the yellow option north of Back Creek and the orange alternative south of Back Creek. **Post-meeting note: A new option (red option) has been developed for this concept (see Figure 1 in the attached supplemental information).**
- At the request of the Merger Team, it was agreed **NCDOT will prepare a memorandum, to be distributed with the meeting summary, containing the requested information (see attached supplemental documentation). The Merger Team will review the materials and determine if sufficient information has been provided to allow any of the BCCR realignment alternatives to be removed from further consideration before proceeding with detailed studies.**
- Once the Merger Team has the opportunity to evaluate the additional information and review the revised CP2 form, a decision will be made as to which CP2 alternatives will be carried forward.
- It was noted the alternatives to be removed from further consideration will be addressed (briefly) in the NCDOT SEPA document(s).
- The proposed typical sections for NC 49 and relocated BCCR were displayed, but were only briefly discussed. Both typical sections propose a four-lane divided typical section with bike and pedestrian accommodations.

Concurrence Point 1 Follow-Up Discussion (Study Area)

- Following the above CP 2 discussions, CP1 (study area) discussions resumed.
- Whether to expand the study area to include the orange option was briefly discussed.
 - o NCDOT stated a preference to not incorporate the orange option into the study area at this time and to defer a decision on the study area until concurrence has been reached on the alternatives to be carried forward for detailed study.
 - o The study area (CP1) will be reassessed for adequacy after CP2 concurrence is reached.
- Logical Termini.
 - o During the USACE/NCDOT discussions that took place before the Merger meeting, USACE requested that NCDOT provide information to show that improvements to existing BCCR are not needed south of the location where realigned BCCR will tie into existing BCCR in order to provide an appropriate level of service at the NC49/BCCR/Mallard Creek Church Road intersection.
 - o USACE briefly noted during the meeting that additional information will be needed to confirm that the limits of construction along BCCR south of NC 49 going southward towards Rocky River Road are appropriate. **(See attached supplemental information.)**

Post-Meeting Notes:

As requested during the meeting, and as noted above, additional information regarding the alternatives to be carried forward for detailed study (CP2) for the proposed relocation of BCCR has been prepared and is attached to this memo. In addition, the proposed purpose and need statement and study area (CP1) have been revised, and the revised CP1 concurrence form is included in the attached supplemental information. The proposed CP2 concurrence form (alternatives to be carried forward for detailed study) is also included in that information.

NCDOT and USACE are still reviewing supplemental information with regards to options to be carried forward for detailed study. Once this review has been completed, NCDOT will provide supplemental information and revised CP1/CP2 forms for Merger Team review. Please direct any comments or questions to Wilson Stroud, (919-707-6045, wstroud@ncdot.gov) or Ken Gilland (919-424-0486, kgilland@hntb.com).

kg/WS

Attachments: CP2 Alternatives (Slide #31 from 11/16/17 CP1/CP2 Merger Meeting)
 Figure 1 Revised Study Areas and Possible CP2 Alternatives
 Figure 2 Nearby BCCR/ECR Projects (NC 49 to Rocky River Road)
 Supplemental CP1 and CP2 information (includes revised concurrence forms) (to be sent by USACE).

1989 ECR Report

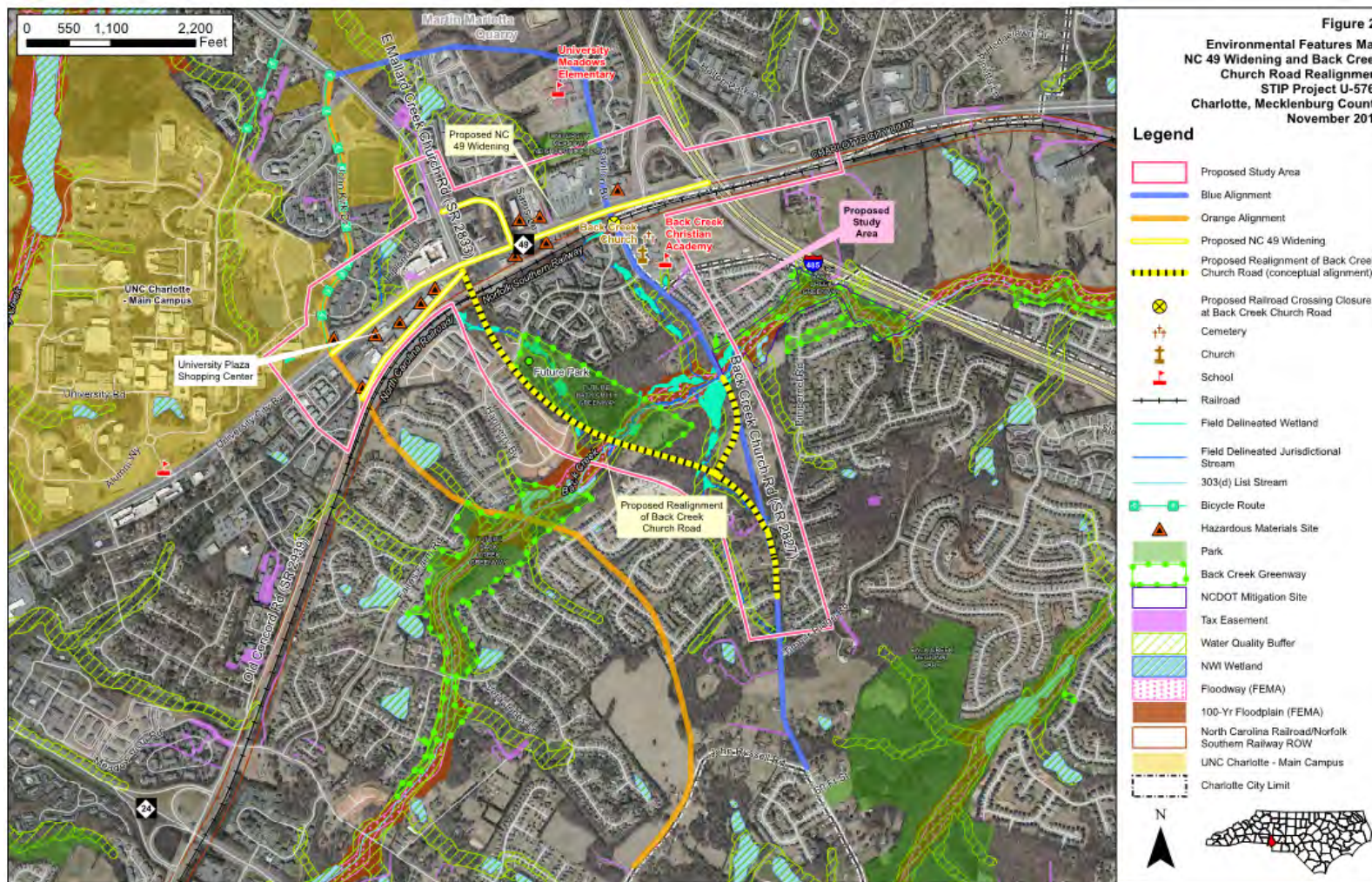
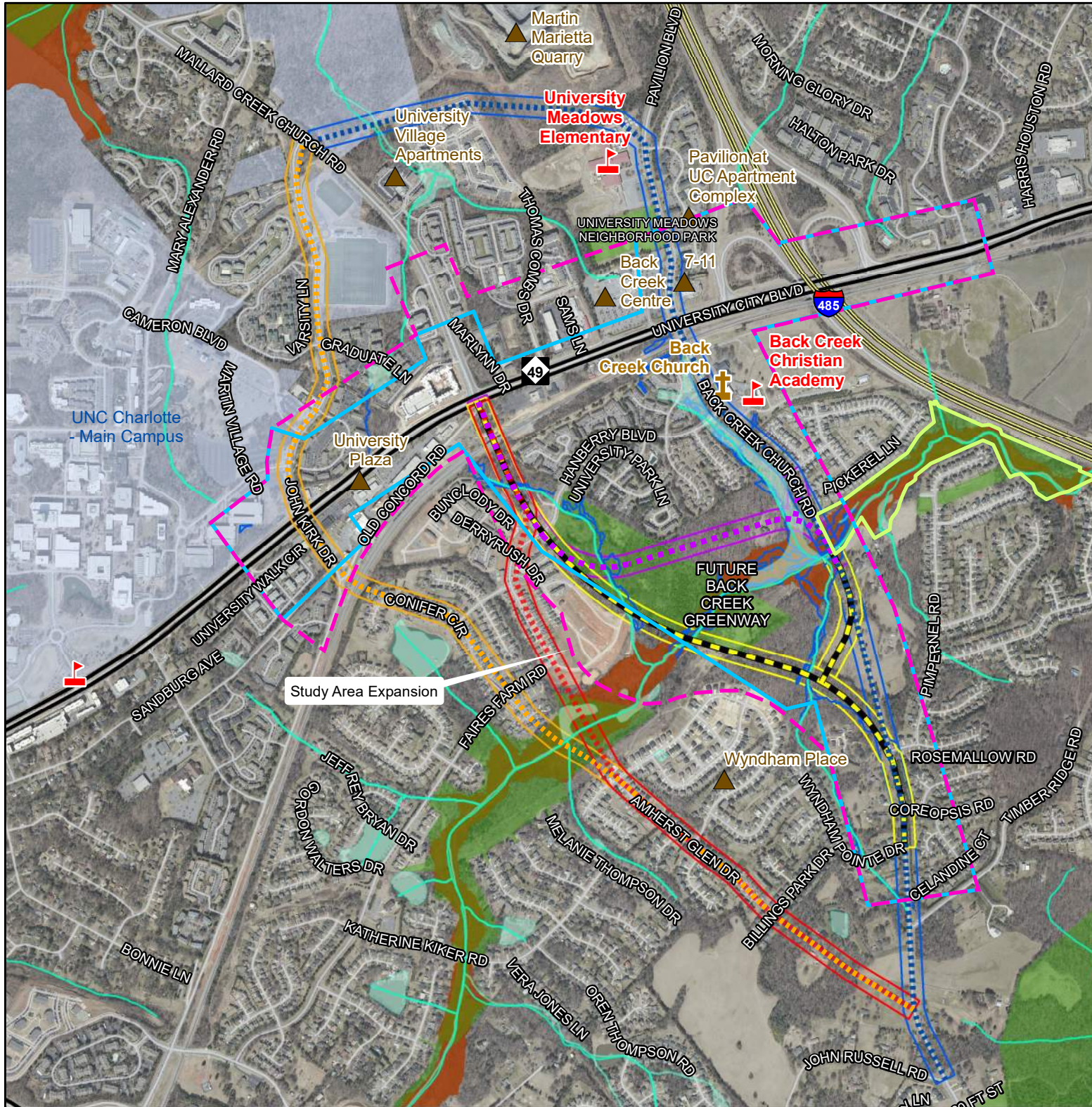


Figure X - Study Area Revision

May 2018



Legend

- U-5768 Study Area (Original Surveys)
- - - U-5768 Study Area (Proposed Expansion)
- Church
- School
- Other Referenced Place
- Proposed County Park
- UNC Charlotte
- NHD Streams
- NWI Wetlands
- WEX File Features
- 100-Yr Floodplain (FEMA)
- NCDOT Mitigation Site
- Interstate
- NC Route
- Road
- Purple Option (new)
- Purple Option 200' Buffer
- Orange Option (revised)
- Orange Option 200' Buffer
- Red Option (new)
- Red Option 200' Buffer
- Blue Option
- Blue Option 200' Buffer
- ECR Preferred Option
- ECR Preferred Option 200' Buffer

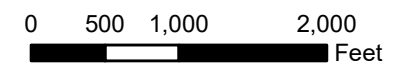


Figure 2

Back Creek Church Road

(future ECR)



Back Creek Church Road to dead-end at Railroad when Eastern Circumferential Road is connected to Back Creek Church Road

Northern Section | Eastern Circumferential Road
Funded Project
STIP Project U-5768 proposes a 4-lane divided facility.

Middle Section | Eastern Circumferential Road /
Back Creek Church Road
Unfunded Project
Included in CRTPO MTP as a horizon year 2035 project; proposes a 4-lane divided facility.

Southern Section | Eastern Circumferential Road
Unfunded Project
Included in CRTPO MTP as a horizon year 2035 project; proposes a 4-lane divided facility.



Southern Section | Back Creek Church Road
2017 | \$4.7 million total Under construction by
(Funded Project) CDOT; 3-lane facility

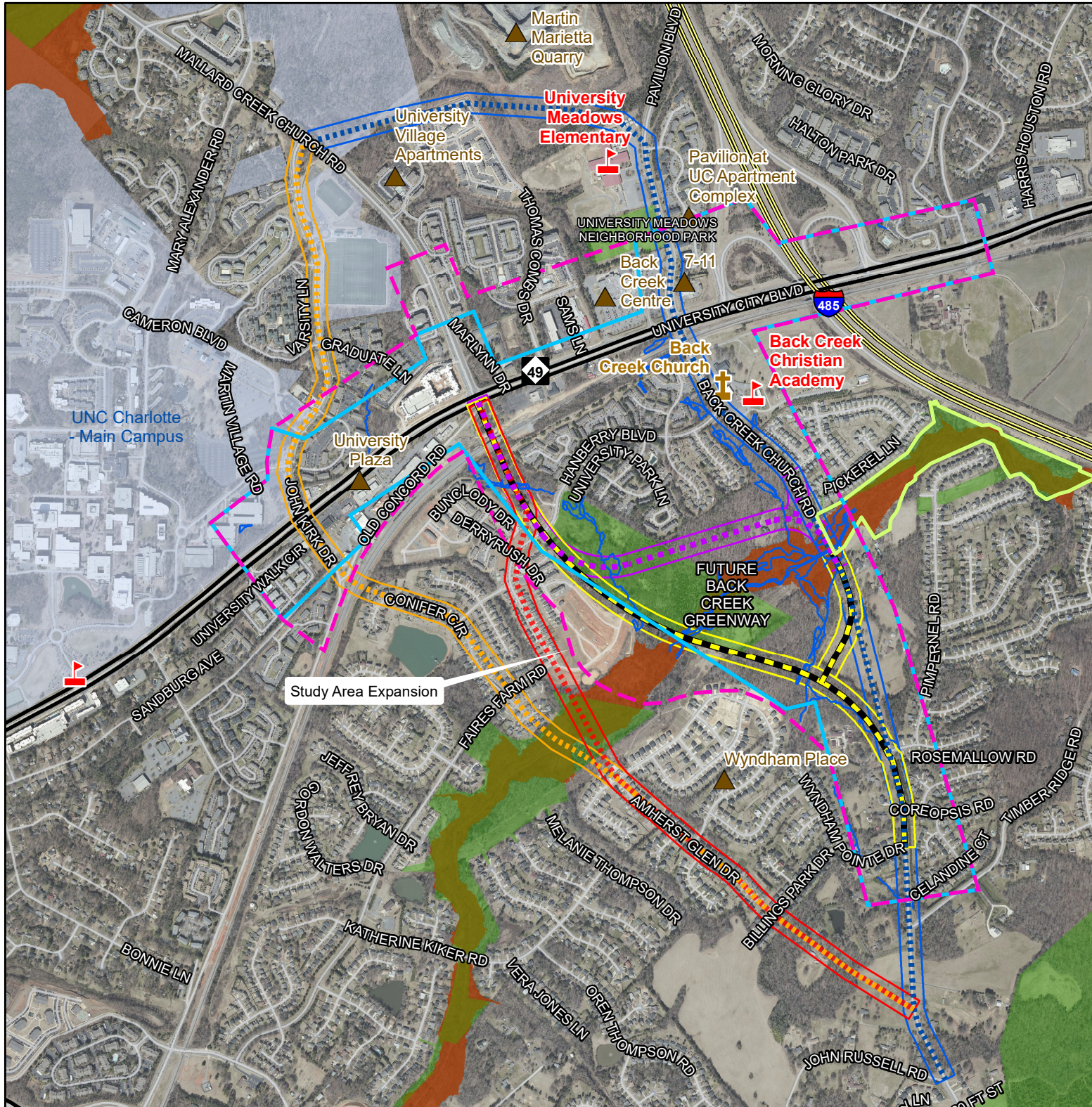
Back Creek Church Road and Rocky River Road
Intersection Improvement Project W-5601BK
Funded Project
Scheduled for construction in 2018/2019 by NCDOT

Adapted from materials by:



Figure 2 - Study Area Revision

May 2018



Legend

- U-5768 Study Area (Original Surveys)
- U-5768 Study Area (Proposed Expansion)
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- UNC Charlotte
- WEX File Features
- 100-Yr Floodplain (FEMA)
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- ECR Preferred Option 200' Buffer

