

# **Merger Team Meeting Package Concurrence Points 3 and 4A**

**July 2017**

**STIP Project I-5111**

**Wake & Johnston Counties**

**I-40 Widening**

**From I-440 (Exit 301, I-40/Raleigh Beltline split) to NC 42 (Exit 312)**

**North Carolina Department of Transportation**





**NCDOT STIP Project No. I-5111  
I-40 Widening  
From I-440 (Exit 301, I-40/Raleigh Beltline split) to NC 42 (Exit 312)  
Wake & Johnston Counties**

**Proposed Meeting Agenda**

1. Introductions and Sign-In
2. Purpose of Meeting
3. Project Overview and Past Concurrence Meetings
4. Evaluation of Alternatives
  - a. LEDPA Discussion
  - b. Review of Concurrence Point 3 Signature Form
5. Avoidance and Minimization Measures
  - a. Review of Concurrence Point 4A Signature Form
6. Review of Upcoming Project Schedule



## 1.0 PROJECT OVERVIEW

The North Carolina Department of Transportation (NCDOT) proposes to widen I-40 from I-440 (Raleigh Beltline) near Exit 301 where I-40 and I-440 diverge, to near Exit 312 at the interchange of I-40 and NC Highway 42. The proposed project, I-5111, is included in the 2016-2025 North Carolina Transportation Improvement Program (TIP) for planning and design. Funding for construction is currently posted in the TIP as beginning in Fiscal Year 2018. The existing I-40 corridor contains three lanes in each direction between I-440 and US 70 Business, and two lanes in each direction between US 70 Business and NC 42.

## 2.0 MERGER HISTORY

### 2.1. Study Area

The Study Area was originally drawn as a 500-foot wide corridor with no ramp modifications taken into account. As the design and traffic analysis progressed, the Study Area was modified slightly per the December 2015 Merger Team Update meeting and an Informational Packet via email in October 2016 (**Attachment A**), particularly around the I-440 interchange and US 70 Business interchange. The I-440 interchange was expanded to accommodate the ramp tie-ins at the project's northern terminus. The US 70 Business interchange was expanded to include a new "leftover" from eastbound US 70 to westbound I-40, in order to eliminate the loop in the southeast quadrant and subsequent problematic weave section onto I-40 westbound. Please see **Attachment B** for the current Study Area map.

### 2.2. Purpose and Need

A Concurrence Point 1 and 2 Meeting was held February 17, 2011, to introduce the Team to the project. The Purpose was originally stated to be:

*The Project Purpose is to improve the Level of Service on I-40 within the limits of the project study area, providing a Level of Service (LOS) "D" or better, on all sections of I-40 from Exit 301 (Beltline in Raleigh) to Exit 312 (NC 42) in Johnston County, through the year 2035 (Design year).*

Per the December 2015 Merger Team Update meeting and an Informational Packet via email in October 2016, the Purpose was revised slightly to be:

*The purpose of the proposed project is to better accommodate forecasted levels of congestion on I-40 from Exit 301 (Beltline in Raleigh) to Exit 312 (NC 42) through the year 2040 (Design year), in accordance with the MPO's (CAMPO) long term goals to impart a positive impact on mobility for the public using this transportation corridor.*

The Need for the project includes:

*Current traffic conditions on I-40 throughout the proposed project limits are often very crowded and subject to frequent delays, due to regional commuting patterns, particularly during morning and evening rush hours. With Raleigh and Research Triangle Park serving as employment centers for the region, many people commute into the Raleigh area and live in outlying towns and surrounding counties. This section of I-40 serves suburban communities in Wake and Johnston Counties and also connects to the I-95 corridor. In addition, this leg of I-40 ultimately serves as a primary route to the North Carolina beaches and during the summer months tends to experience heavy traffic volumes around the weekends.*

*Information provided by NCDOT's Traffic Forecasting Unit and Congestion Management Unit shows recent data (year 2015 No-Build) for traffic conditions throughout the limits of the proposed project generally operating at LOS "D" and "E". The 2040 No-Build scenario would deteriorate into a LOS "F" condition.*



*Public comments from the Citizens Information Workshop support this information, conveying for many attendees the frustration with the congestion and delays experienced on a daily basis when traveling along this segment of I-40. Travelers on I-40 in the project area regularly experience congestion, which is projected to worsen through 2040. Traffic volumes along I-40 in the project area are projected to increase by 50 to 61 percent between 2015 and 2040. Existing and estimated average travel speeds are well below the posted speed limit during peak hours.*

*Improving 2040 Build travel conditions on I-40 throughout this portion of the freeway, with a goal of achieving LOS “E” or better, will help achieve CAMPO’s desired long-term goals, including alleviating one of their identified bottlenecks on I-40 (bottleneck #9 in CAMPO’s 2013 Status of the System Report). This will have a direct and positive impact on mobility experienced by the public using this corridor and allow for more efficient long range travel and daily commuting between Raleigh and NC 42 with fewer delays.*

### 2.3. Alternatives

The general scope of this project involves widening to accommodate additional travel lanes in each direction. Two alternatives are under consideration by the Department (in addition to the No Build) as described in the October 2016 Update Memo distributed to the Merger Team.

#### 2.3.1. Build Alternative 1

Widening to accommodate the addition of 2 general purpose lanes in each direction throughout the project limits.

#### 2.3.2. Build Alternative 2

Widening to accommodate the addition of 2 general purpose lanes in each direction, but with only 1 general purpose lane in each direction from south of US 70 Clayton Bypass to NC 42.

Included in **Attachment C** are two figures (Alternative 1 and Alternative 2) that display what the existing laneage is along I-40, and what additional lanes are being proposed.

### 2.4. Other Coordination

An informal 2A Hydraulic Field Visit was held in 2011 to review the Swift Creek bridge area. Two bridges carry I-40 over Swift Creek, between US 70 Clayton Bypass and NC 42 in the southern portion of the project. During this November 2, 2011 field meeting to discuss the bridging scenarios, an area on the southwest (upstream) side of the eastbound lanes was designated as the “Swift Creek Minimization Area”. The intent of this designation is to minimize the widening to that side of the interstate and push the widening to the east where prudent.

Additionally, significant coordination has been ongoing with the US Fish and Wildlife Service to document potential impacts in the Swift Creek area as it pertains to dwarf wedgemussel. A Biological Assessment (BA) is being prepared to document the project’s effects.



### 3.0 COMPARISON OF ALTERNATIVES

#### 3.1. Environmental Impacts

Based on the current design plans for the two Build Alternatives, there is no significant difference in impacts to:

- Federally-listed species (dwarf wedgemussel effects are the same other than the Swift Creek bridge width)
- 100-year floodplain
- Relocations (none)
- Right-of-way acquisition
- Schools
- Churches
- Cemeteries
- Historic properties
- 4(f) resources
- Noise receptors
- HazMat sites

Wetland and stream impacts were analyzed based on the current cut/fill lines and anticipated retaining walls around the Swift Creek wetlands. An additional comparison was analyzed with a proposed 25-foot “buffer” to help determine the proximity of jurisdictional features that are close to the cut/fill lines.

	<b>Alt 1</b>	<b>Alt 1 +25'</b>	<b>Alt 2</b>	<b>Alt 2 + 25'</b>
Wetlands (acres)	0.52	1.26	0.32	1.03
Streams (feet)	3184	7037	2982	6835

#### 3.2. Traffic Differences

As referenced in the Need discussion, this section of I-40 serves suburban communities in Wake and Johnston Counties and also connects to the I-95 corridor. In addition, this leg of I-40 ultimately serves as a primary route to the North Carolina beaches and during the summer months tends to experience heavy traffic volumes around the weekends.

The weekday peak volumes for this portion of I-40 are the AM westbound and the PM eastbound traffic. For these peak volumes, Alternative 1 is anticipated to operate at Level of Service C between Clayton Bypass and NC 42 in the design year (2040), while Alternative 2 is projected to operate at Level of Service E. This approximately two-mile stretch of I-40 can be a “pinchpoint” between the NC 42 interchange (TIP I-4739, proposed interchange improvements) and the Clayton Bypass (and future Complete 540) interchange.



#### **4.0 AVOIDANCE AND MINIMIZATION EFFORTS**

Minimization efforts are ongoing as the design is refined. Efforts to date include:

- The project was designed to fit within the existing corridor wherever possible.
- Each overpass was closely reviewed to determine whether replacement was necessary. Very little new right-of-way is needed in order to construct the project.
- Typical sections were minimized in order to reduce the fill to the outside shoulder.
- Changes to ramps are focused on safety & traffic flow, with only spot improvements proposed.
- The I-440 ramp reconfiguration utilizes the previously-disturbed highway corridor with no significant community or natural impacts anticipated.
- Section 7 consultation measures at Swift Creek
  - Bridge span is much longer than existing to provide a larger hydraulic opening and to minimize the effects on Swift Creek and its floodplain
  - Bridge bents will not be located in Swift Creek
  - Hazardous spill basin BMP's are being analyzed at the Swift Creek bridge where feasible
  - Impacts from the 3 overlapping projects (I-5111, I-4739 and Complete 540) are being constructed as part of I-5111 to minimize the temporal disturbance impacts
- There has been a significant amount of coordination between the Complete 540, I-4739 and I-5111 project teams to ensure the three projects would be constructible.
- I-5111 provides the widening/replacement of the Swift Creek bridge to address the ultimate buildout for all three projects.
- I-5111 provides full-depth paved shoulder for the bus-on-shoulder system (BOSS) transit service.
- Design of hydraulic crossings takes into account the urbanization of the area and provides larger hydraulic openings.
- Design Standards in Sensitive Watersheds will be used within the Swift Creek portion of the project.

#### **5.0 ADDITIONAL INFORMATION**

Coordination is continuing on several fronts regarding the Swift Creek bridge. Three separate TIP projects (I-5111, I-4739, Complete 540) converge in the southern-most two miles of I-5111 near Swift Creek. NCDOT is anticipating constructing the Swift Creek bridge crossing to accommodate the necessary lanes for all of these projects. Doing so would minimize the magnitude and duration of the construction impacts to the traveling public and the resources in the vicinity of Swift Creek. The bridge width is currently configured for a maximum of 5 striped lanes in each direction with an accommodation for one additional lane in each direction for any future widening. Section 7 consultation with USFWS is ongoing for R-2828 and the Biological Assessment for I-5111 underway as well. NCDOT is coordinating the environmental studies and design for all three projects to the greatest degree possible.

#### **6.0 CURRENT PROJECT SCHEDULE / NEXT STEPS**

Based on previous information provided, here is the updated I-5111 schedule and next steps:

- USFWS Section 7 - ongoing coordination amongst all 3 projects (see Sections 4 and 5 above)
- Noise Study – Completed
- Air Quality Study – Draft completed
- Public Meeting – Late Summer 2017
- Categorical Exclusion – Fall 2017



**ATTACHMENTS**

- |                     |   |
|---------------------|---|
| <b>ATTACHMENT A</b> | <b>October 2016 Merger Team Update Memo</b>           |
| <b>ATTACHMENT B</b> | <b>Proposed Updated Study Area Limits</b>             |
| <b>ATTACHMENT C</b> | <b>I-5111 Alternative 1 and Alternative 2 Figures</b> |

# ATTACHMENT A



# **Merger Team Update for Concurrence Points 1 and 2**

**October 2016**

**STIP Project I-5111**

**Wake & Johnston Counties**

**I-40 Widening**

**From I-440 (Exit 301, I-40/Raleigh Beltline split) to NC 42 (Exit 312)**

**North Carolina Department of Transportation**



**STIP Project I-5111  
Wake & Johnston Counties  
I-40 Widening  
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**1.0 INTRODUCTION**

The North Carolina Department of Transportation (NCDOT) proposes to widen I-40 from I-440 (Raleigh Beltline) near Exit 301 where I-40 and I-440 diverge, to near Exit 312 at the interchange of I-40 and NC Highway 42. The proposed project, I-5111, is included in the 2016-2025 North Carolina Transportation Improvement Program (TIP) for planning and design. Funding for construction is currently posted in the TIP as beginning in Fiscal Year 2018.

As a takeaway from the December 16, 2015 Merger Update meeting, the Project Team is providing a revised Purpose and Need Statement and Study Area. Additional clarification of alternatives was also requested, particularly the number of lanes added under each Alternative. The handout and final minutes from the December meeting are included in **Appendix A**.

**2.0 PURPOSE REVISIONS**

As noted during the December 16, 2015 Merger Update meeting, the purpose and need statement needs to be revised because of the updated design year from 2035 to 2040. In addition, the LOS D threshold is not expected to be met based on the updated traffic forecast received in June 2015.

*Original Purpose*

The Project Purpose is to improve the Level of Service on I-40 within the limits of the project study area, providing a Level of Service (LOS) “D” or better, on all sections of I-40 from Exit 301 (Beltline in Raleigh) to Exit 312 (NC 42) in Johnston County, through the year 2035 (Design year).

*New Purpose*

The purpose of the proposed project is to better accommodate forecasted levels of congestion on I-40 from Exit 301 (Beltline in Raleigh) to Exit 312 (NC 42) through the year 2040 (Design year), in accordance with the MPO’s (CAMPO) long term goals to impart a positive impact on mobility for the public using this transportation corridor.

*Need for Project*

Current traffic conditions on I-40 throughout the proposed project limits are often very crowded and subject to frequent delays, due to regional commuting patterns, particularly during morning and evening rush hours. With Raleigh and Research Triangle Park serving as employment centers for the region, many people commute into the Raleigh area and live in outlying towns and surrounding counties. This section of I-40 serves suburban communities in Wake and Johnston Counties and also connects to the I-95 corridor. In addition, this leg of I-40 ultimately serves as a primary route to the North Carolina beaches and during the summer months tends to experience heavy traffic volumes around the weekends.

Information provided by NCDOT’s Traffic Forecasting Unit and Congestion Management Unit shows recent data (year 2015 No-Build) for traffic conditions throughout the limits of the proposed project generally operating at LOS “D” and “E”. The 2040 No-Build scenario would deteriorate into a LOS “F” condition. Public comments

from the Citizens Information Workshop support this information, conveying for many attendees the frustration with the congestion and delays experienced on a daily basis when traveling along this segment of I-40. Travelers on I-40 in the project area regularly experience congestion, which is projected to worsen through 2040. Traffic volumes along I-40 in the project area are projected to increase by 50 to 61 percent between 2015 and 2040. Existing and estimated average travel speeds are well below the posted speed limit during peak hours.

Improving 2040 Build travel conditions on I-40 throughout this portion of the freeway, with a goal of achieving LOS “E” or better, will help achieve CAMPO’s desired long-term goals, including alleviating one of their identified bottlenecks on I-40 (bottleneck #9 in CAMPO’s 2013 Status of the System Report). This will have a direct and positive impact on mobility experienced by the public using this corridor and allow for more efficient long range travel and daily commuting between Raleigh and NC 42 with fewer delays.

### **3.0 STUDY AREA**

Due to the modifications to the design along portions of I-40, the Study Area needs to be widened slightly, particularly around the I-440 interchange and US 70 Business interchange. The I-440 interchange was expanded to accommodate the new flyover ramps. The US 70 Business interchange may include a new “leftover” from eastbound US 70 to westbound I-40, in order to eliminate the loop in the southeast quadrant and subsequent problematic weave section onto I-40 westbound. See **Appendix B** for a revised Study Area map.

### **4.0 TWO BUILD ALTERNATIVES ARE BEING CARRIED FORWARD FOR DETAILED STUDY**

NCDOT TIP Project I-5111 involves widening and capacity improvements to existing I-40 from the I-440 interchange in Wake County to south of NC 42 in Johnston County. Generally along existing I-40 there are currently three lanes in each direction between I-440 and US 70 Business, and two lanes in each direction between US 70 Business and NC 42. The general scope of this project involves widening to accommodate two additional travel lanes in each direction. As part of the preliminary design, two alternatives are under consideration by the Department, in addition to the No Build.

#### **4.1. Build Alternative 1**

Widening to accommodate the addition of 2 general purpose lanes in each direction throughout the project limits.

#### **4.2. Build Alternative 2**

Widening to accommodate the addition of 2 general purpose lanes in each direction, but with only 1 general purpose lane in each direction from south of US 70 Clayton Bypass to NC 42.

Included in **Appendix C** are two figures (Alternative 1 and Alternative 2) that display what the existing laneage is along I-40, and what additional lanes are being proposed.

## **5.0 ADDITIONAL INFORMATION**

At both the February 2011 Concurrence Point 1/2 Meeting and the December 16, 2015 Update Meeting, the Merger Team agreed there was no need to conduct a Concurrence Point 2A meeting. The next planned meeting is the Concurrence Point 3 (LEDPA) Meeting.

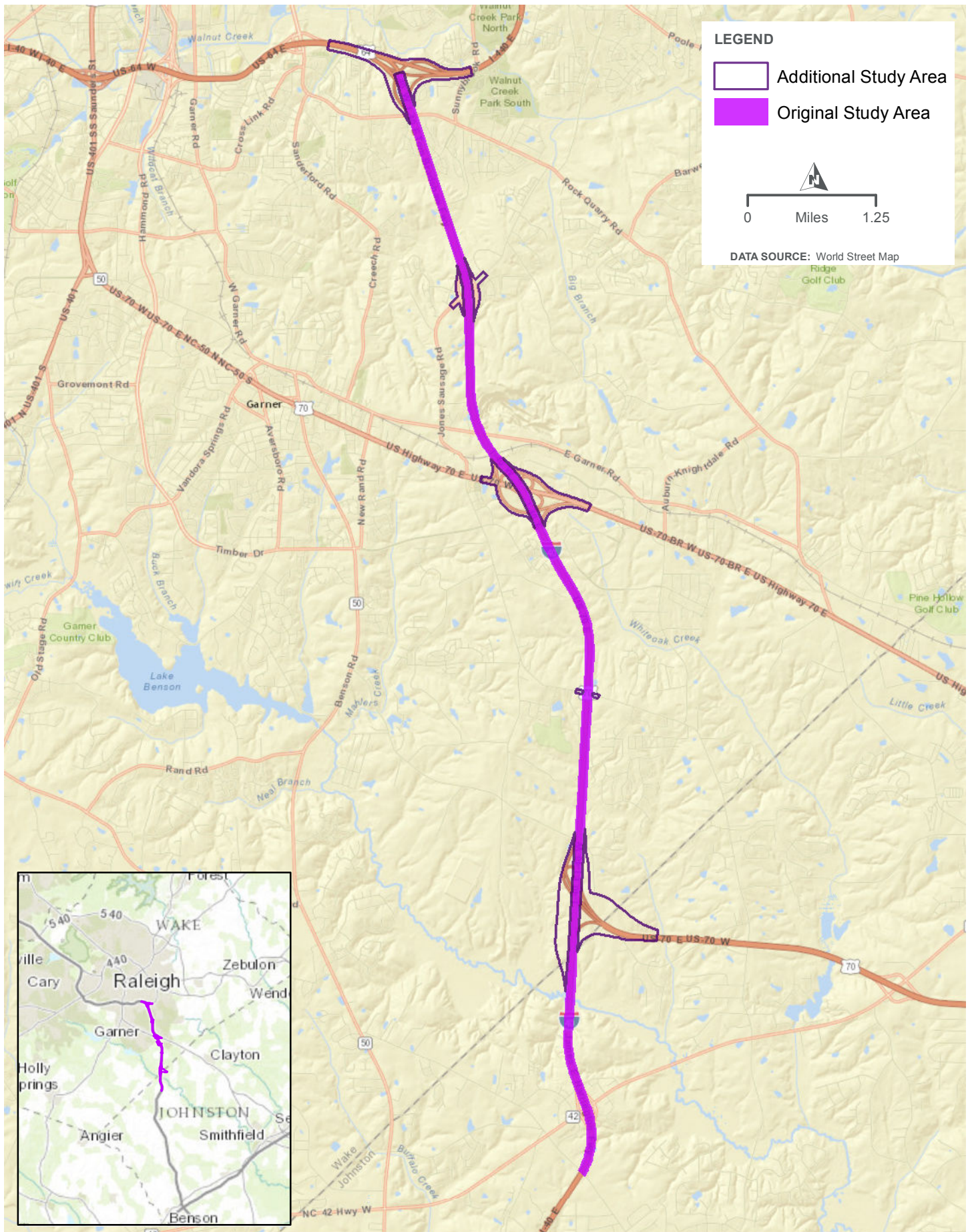
Coordination is continuing on several fronts regarding the Swift Creek bridge. Three separate TIP projects (I-5111, I-4739, R-2828) converge in the southern-most two miles of I-5111 near Swift Creek. NCDOT is anticipating constructing the Swift Creek bridge crossing to accommodate the necessary lanes for all of these projects. Doing so would minimize the magnitude and duration of the construction impacts to the traveling public and the resources in the vicinity of Swift Creek. The exact number of lanes (bridge width) and bridge length are currently under study and will be determined in the near future. Section 7 consultation with USFWS is ongoing for R-2828 and the Biological Assessment for I-5111 will be underway in late 2016/early 2017. NCDOT is coordinating the environmental studies and design for all three projects to the greatest degree possible.

## **6.0 CURRENT PROJECT SCHEDULE / NEXT STEPS**

Based on previous information provided, here is the updated I-5111 schedule and next steps:

- USFWS Section 7 - ongoing coordination amongst all 3 projects (see Section 5.0 above)
- Noise Study – Anticipated Fall 2016 completion
- Air Quality Study – Anticipated Fall 2016 completion
- Indirect & Cumulative Effects – Updated Fall 2015
- Draft Environmental Assessment – December 2016
- Final EA – Spring 2017
- FONSI – December 2017

# **ATTACHMENT B**



**LEGEND**

- Additional Study Area
- Original Study Area

0      Miles      1.25

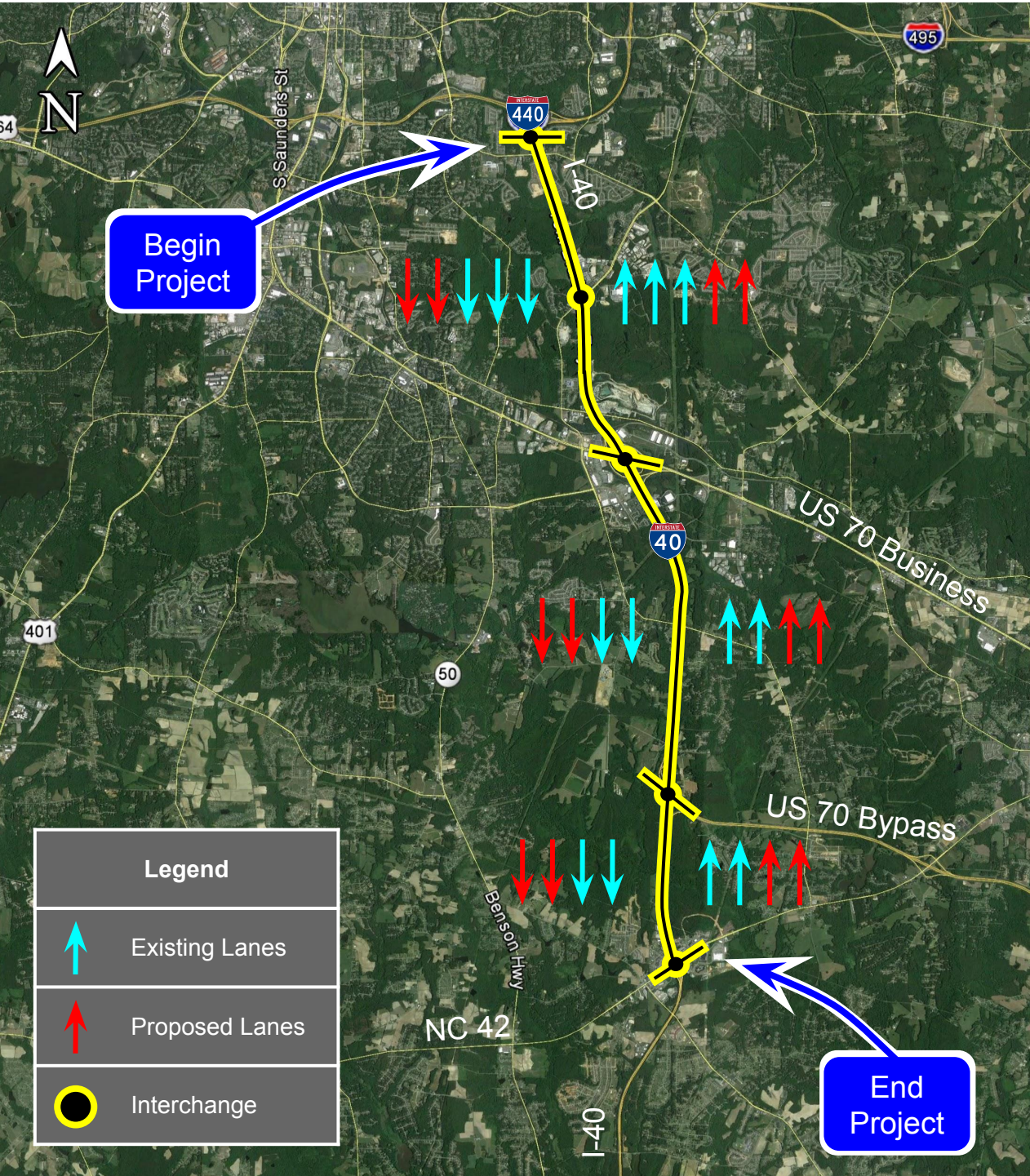
**DATA SOURCE:** World Street Map

**ADDITIONAL STUDY AREA**  
**NCDOT STIP I-5111**  
**ATTACHMENT B**



# ATTACHMENT C

# I-5111: Alternative 1



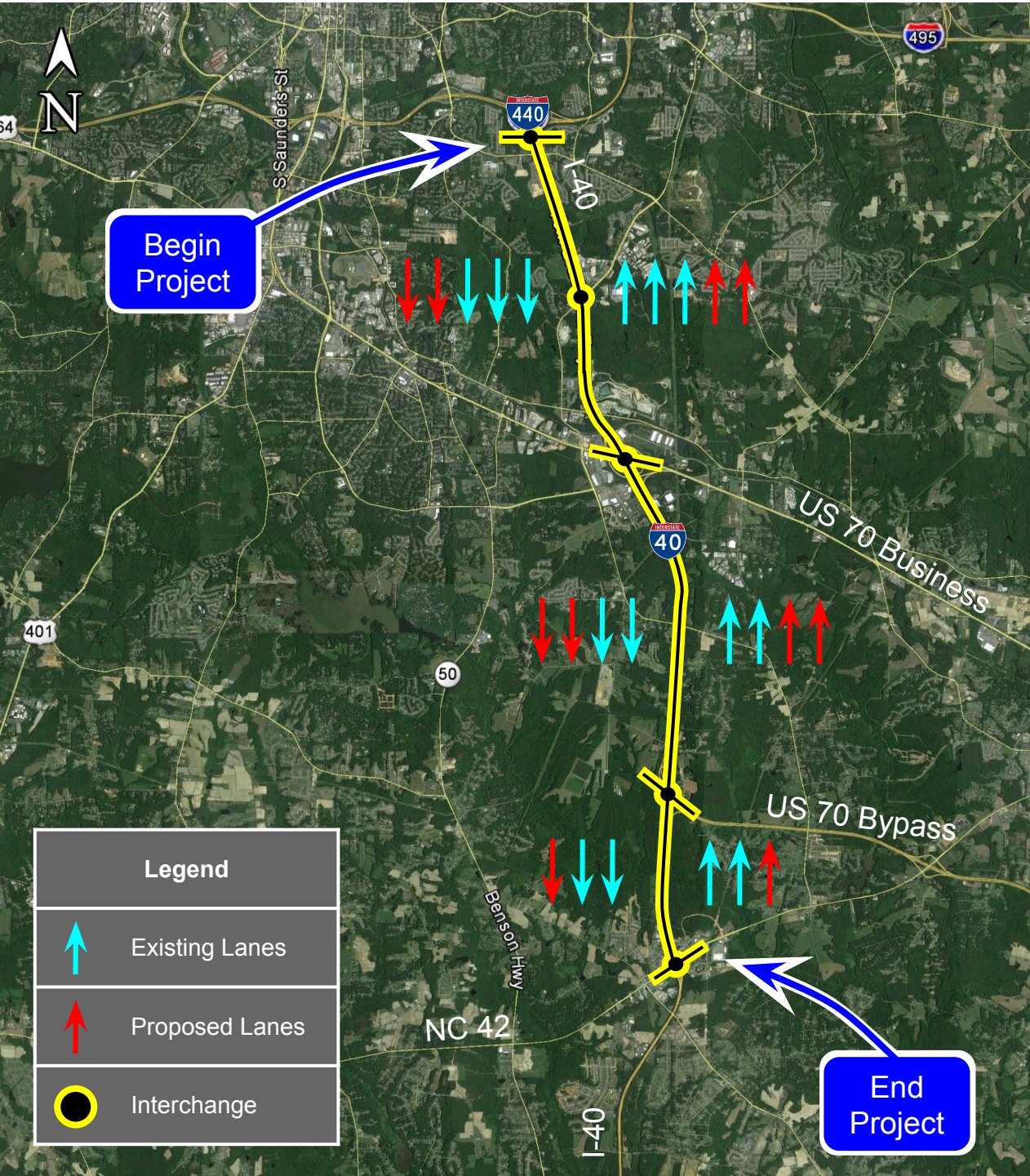
Begin Project

End Project

Legend	
	Existing Lanes
	Proposed Lanes
	Interchange



# I-5111: Alternative 2



Begin Project

End Project

Legend	
	Existing Lanes
	Proposed Lanes
	Interchange