

# PROJECT DATA SHEET

Date: 7/3/10  
Rev.: 9/24/12

TIP No.: <b>I-6007</b>	County: <b>Wake</b>
Federal-aid No.: <b>N/A</b>	WBS No.: <b>47961.1.1</b>
NCDOT Division: <b>5</b>	Scoping Meeting Date: <b>July 30, 2019</b>

## Project Description:

- Length: I-87/US 64/US 264, 0.80 miles; SR 2233 (Smithfield Road), 1.5 miles
- Termini (US Hwy / SR): I-87/US 64/US 264, 500 feet west of eastbound Exit 425 to 500 feet east of Exit 425 westbound; SR 2233 (Smithfield Road), north of Mailman Road to Poor Boy Farm Road
- MPO / RPO: CAMPO
- NEPA / 404 Merger Candidate?  Yes  No  Unknown
- General Description of Project:

I-87/US 64/US 264 at SR 2233 (Smithfield Road) in Knightdale, convert interchange to diverging diamond interchange

## Design Data (Existing Conditions):

- Functional Classification: Minor Arterial
- Strategic Highway Corridor: No
- CTP Designation (Facility Type): I-87/US 64/US 264, Interstate; SR 2233 (Smithfield Road), Thoroughfare
- Type of Access Control: I-87/US 64/US 264, Full; SR 2233 (Smithfield Road), None
- Typical Section: I-87/US 64/US 264, 6-lane divided facility; SR 2233 (Smithfield Road), 2-lane divided facility
- Right of Way: 100'
- Posted Speed: I-87/US 64/US 264, 70 mph; SR 2233 (Smithfield Road), 45 mph
- Structure Inventory (bridges, RCBC, Walls, etc):

Bridge # 911105 on I-87/US 64/US 264 West; Bridge # 911202 on I-87/US 64/US 264 East

- Other TIP Projects in the Area

I-5945, I-5982, R-2829, I-6005, U-6101, I-5944

- Railroad Involvement:

None

**Long Range Plan History:**

-The Wake County Transportation Plan indicates I-87/US 64/US 264 needs to be a minimum of six lanes in order to accommodate future traffic; an upgrade to the interchange was also recommended.

**Traffic Data (AADT):**

		I-87/US 64/US 264	SR 2233	
Current Year	2018	87,800	24,000	
Design Year	2045	170,100	40,200	
Source of Traffic Data:		Traffic Forecast		

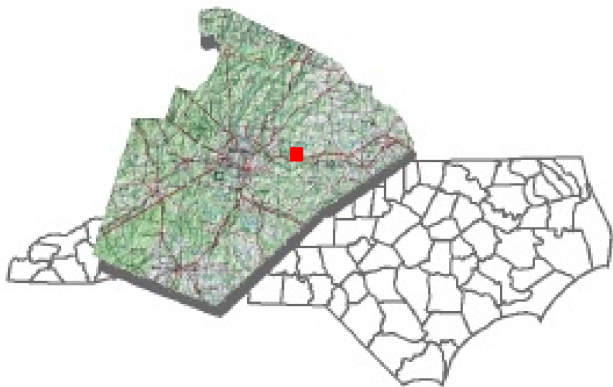
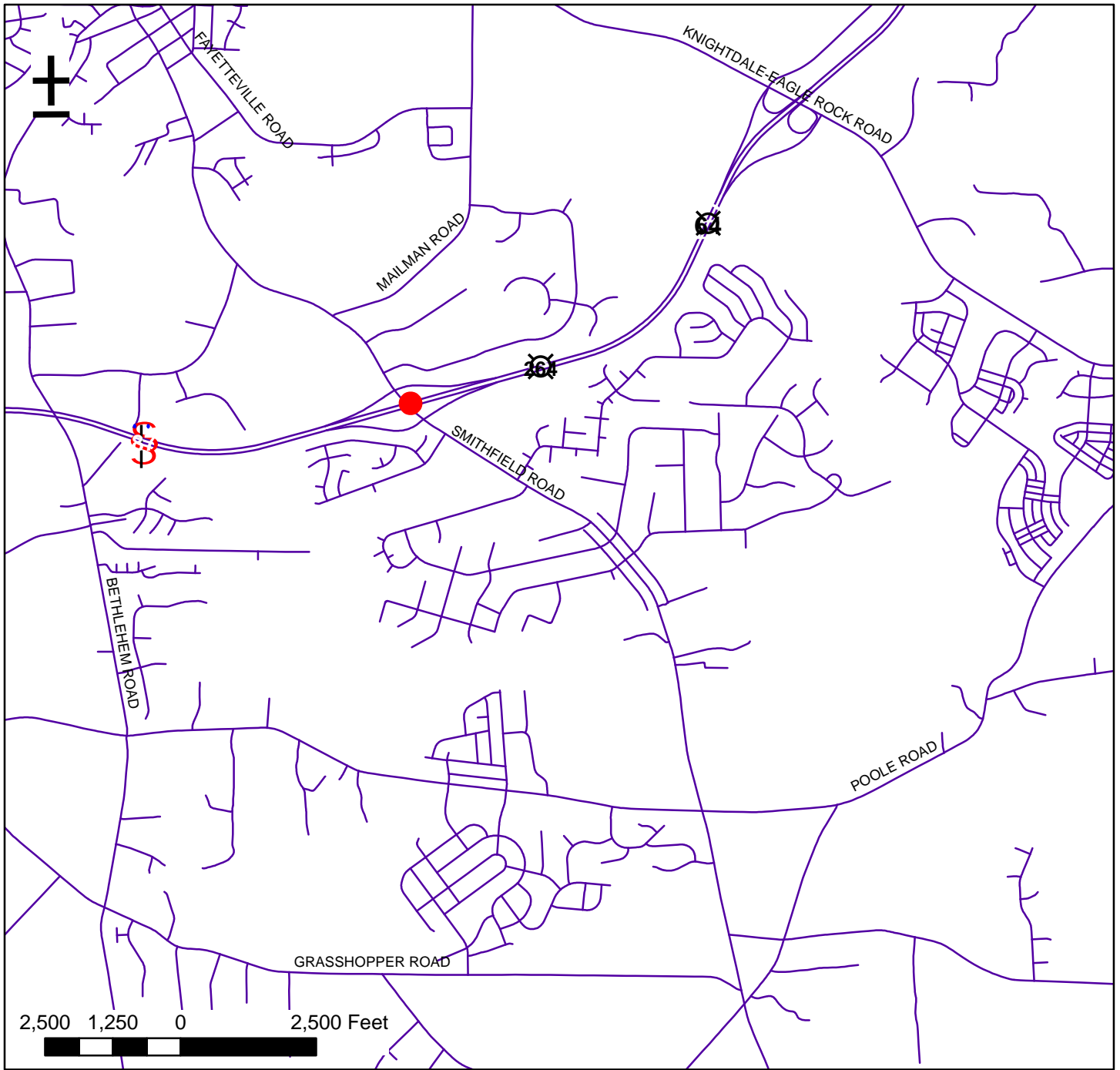
**Cost Estimates:**


	Construction	Right-of-Way	Total
TIP Estimate	5,200,000	\$1,700,000	6,900,000
Current Estimate (20XX)			

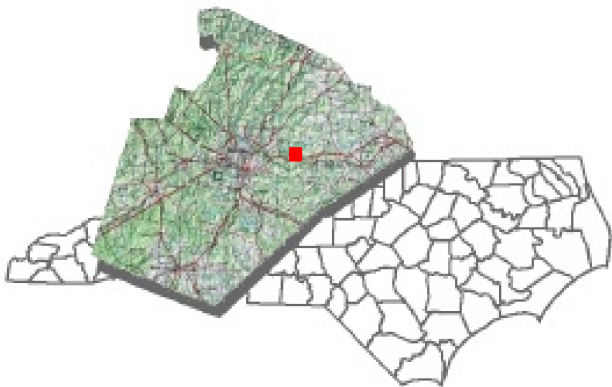
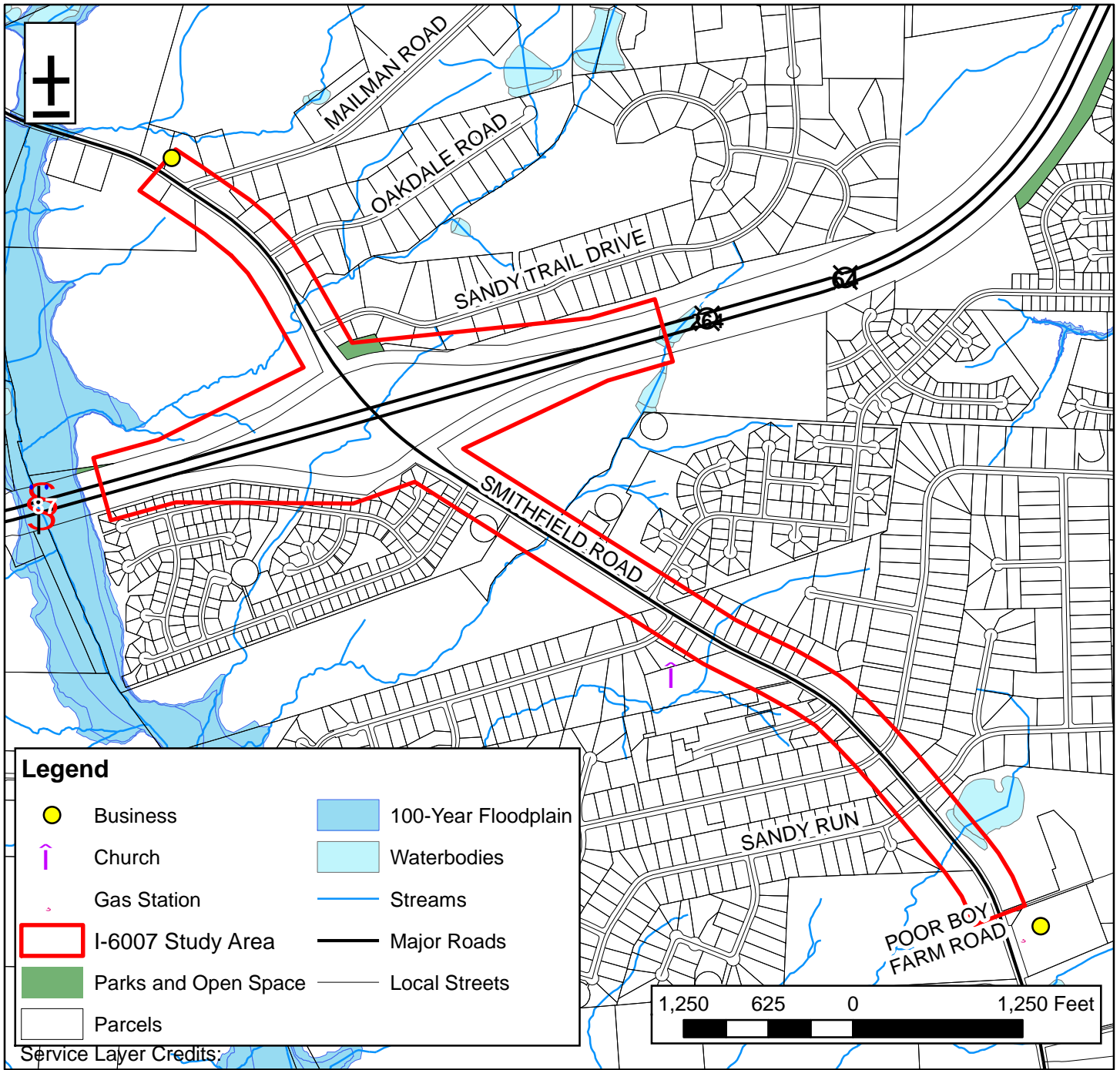
**Project Schedule:**


Environmental Document		
CE Type III	July 2020	
Right-of-Way	November 2025	
Let	November 2026	

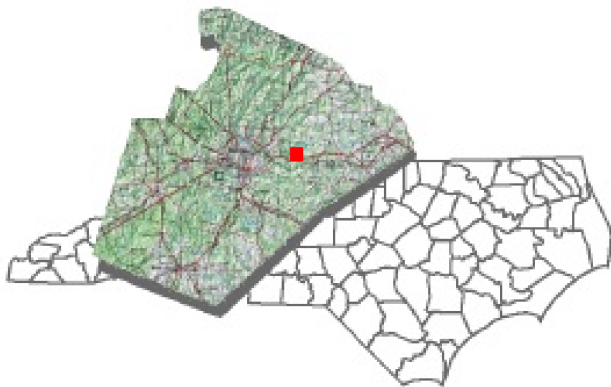
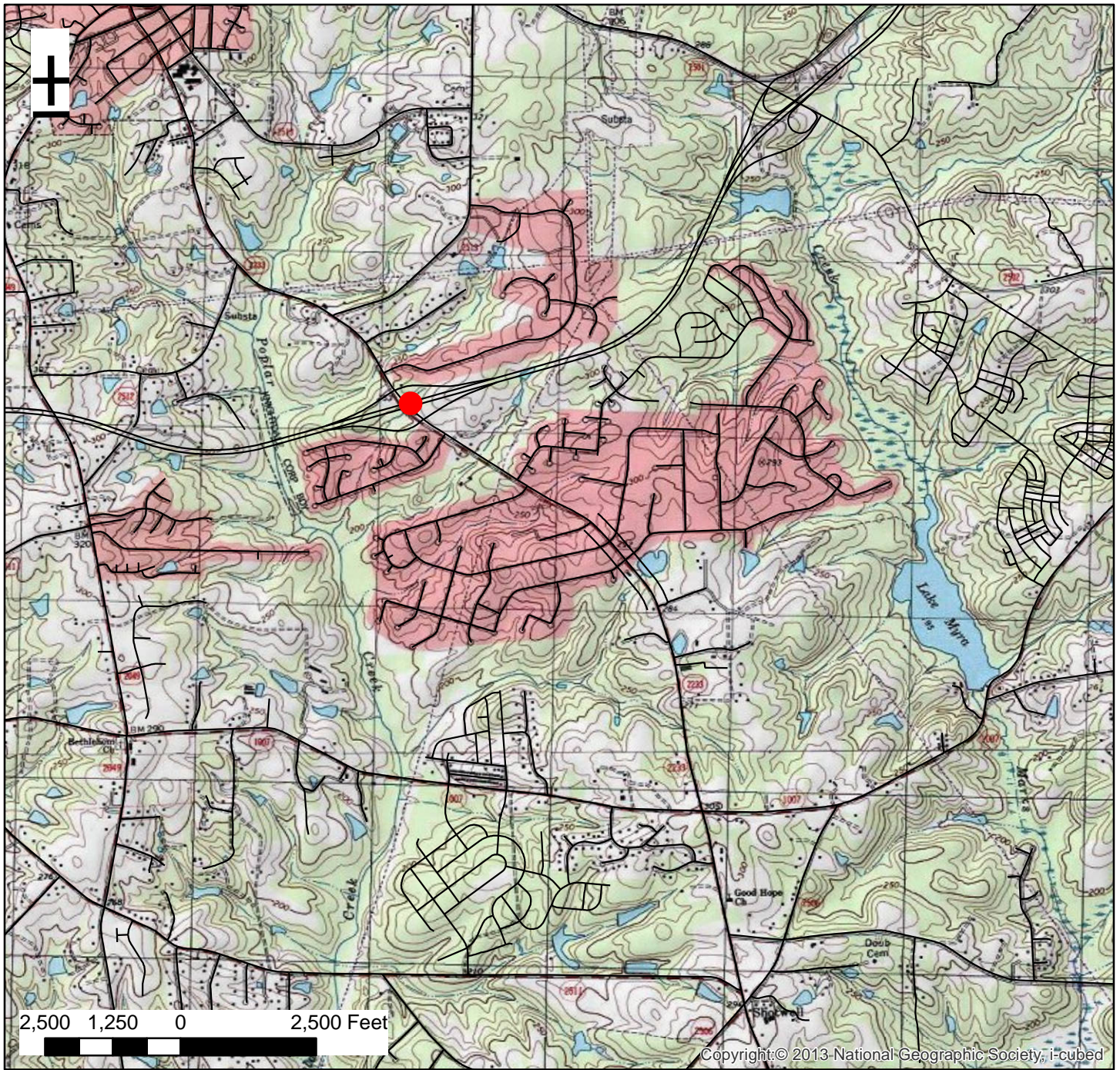
**Initial Scoping Comments:**



	<p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DELIVERY UNIT</p>
<p align="center"><b>WAKE COUNTY</b>          CONVERT INTERCHANGE TO DIVERGING DIAMOND          AT I-87/US 64/US 264 AND SR 2233 (SMITHFIELD ROAD)          I-6007</p>	
<p align="center">VICINITY MAP</p>	



	<p>NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PROJECT DELIVERY UNIT</p>
<p><b>WAKE COUNTY</b> CONVERT INTERCHANGE TO DIVERGING DIAMOND AT I-87/US 64/US 264 AND SR 2233 (SMITHFIELD ROAD) I-6007</p>	
<p>ENVIRONMENTAL FEATURES MAP</p>	



NORTH CAROLINA DEPARTMENT  
OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
PROJECT DELIVERY UNIT

## WAKE COUNTY

CONVERT INTERCHANGE TO DIVERGING DIAMOND  
AT I-87/US 64/US 264 AND SR 2233 (SMITHFIELD ROAD)  
I-6007

QUAD MAP

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# PROJECT SCOPING TECHNICAL REPORT

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## H171559\_I-6007

**I-87/US 64/US 264 and SR 2233 (Smithfield Road)  
Interchange Modifications**

**Prepared for North Carolina Department of Transportation,  
Feasibility Studies Unit**

**Prepared by Parsons**

**October 4, 2018**

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## **Introduction**

This report reviews the likely impacts and costs of constructing a diverging diamond interchange at US 64 Bypass (I-495 and I-87) and Smithfield Road in Wake County. See the conceptual design for more details. Figure 1 below shows the project limits and potential alignment.

**Figure 1: Project Limits for Express Feasibility Study**



## **General Description**

The existing diamond interchange is located just south of Knightdale, NC along US 64 bypass (I-495 and I-87) and Smithfield Road (SR 2233). The project is surrounded by residential neighborhoods and several farms.

## **Background**

Due to the growth in the area and increasing traffic on Smithfield Road and US 64 Bypass a diverging diamond interchange will increase the capacity of the interchange. The MPO has also included the widening of the US 64 bypass from I-440 to US 64 (6 to 8 lanes) and widening Smithfield Road from US 64 bypass to Major Slade Road as part of their 2045 Metropolitan Improvement Plan.

### **Purpose and Need**

Need: A. Compliance with NCDOT's STIP (I-6007) and Capital Area Metropolitan Planning Organization 2045 Metropolitan Transportation Plan (Approved February 19, 2018 – part of project A639).

Increase the capacity and level of service for the interchange.



**Disclaimer:** It should be noted that a Project Scoping Report is a preliminary document that is the initial step in the planning and design process for a candidate project and not the product of exhaustive environmental or design investigations. The purpose of this Project Scoping Report is to describe the proposed project, including cost, and identify potential issues/problems that may require consideration in the planning and design phases.

If a candidate project is identified for funding in the State Transportation Improvement Program (STIP), the Project Scoping Report is followed by a rigorous planning and design process that meets the appropriate requirements of the National Environmental Policy Act (NEPA) and/or State Environmental Policy Act (SEPA).

## **Adjacent Projects**

R-2829: Future NC 540 is approximately 2.25 miles to the west along US 64 bypass and is slated for construction to begin in 2027 (this schedule is expected to be accelerated).

I-6001 – US 64 Bypass - Pavement Rehabilitation from I-540 to the Nash County Line

Widening Smithfield Road from US 64 bypass to Major Slade Road is part of their 2045 of the Metropolitan Improvement Plan, but is not part of the current 2018 – 2027 NCDOT STIP.

## **Crash Analysis**

During the five-year period from 7/01/2013 to 6/30/2018, there were approximately 56 crashes near the intersection of Smithfield Road and US 64 Bypass southbound ramp. These crashes include 24 injury crashes and 32 property damage only crashes. The top two crash types are rear end (22 crashes) and left turn (21 crashes).

During the same five-year period, there were approximately 41 crashes near the intersection of Smithfield Road and the US 64 Bypass northbound ramps. These crashes include 16 injury crashes and 25 property damage only crashes. The top two crash types are rear end (22 crashes) and left turn (12 crashes).

## **Alternatives**

Only one alternative was analyzed for this study. This build alternative included replacing the existing diamond interchange with a Diverging Diamond Interchange (DDI).

## **Traffic Volumes**

2014 historical AADT traffic volumes were obtained from NCDOT Traffic Survey Group. The 2014 traffic was the projected to 2024. The traffic data is summarized in Table 1 on page 3.

**Table 1: 2014 Historical AADT and 2024 Projected Traffic Data**

<b>Location</b>	<b>2014 Volumes (vpd)</b>	<b>2024 Volumes (vpd)</b>
Smithfield Road north of US 64 Bypass	7,700	8,800
Smithfield Road south of US 64 Bypass	19,000	21,600
US 64 Bypass west of Smithfield Road	69,000	82,500
US 64 Bypass east of Smithfield Road	56,000	71,000

The traffic analysis concluded that the DDI would save drivers 1,079,000 hours over 10 years vs the existing diamond interchange.

## **Build Alternative Impacts and Cost Estimates**

### **Impacts**

It is estimated that the proposed interchange will affect 25 parcels and may cause one residential displacement.

*Because this Project Scoping Report is not the product of an exhaustive environmental or design effort, but rather an initial step to this process, the environmental impacts are based on a screening of readily available GIS data. It is assumed that a more detailed impacts analysis would be performed during the NEPA/SEPA phase.*

### **Cost Estimates**

Preliminary cost estimates were developed for the alternative based on conceptual level roadway designs.

The total cost for construction is estimated to be:

Right of Way -	\$ 1,700,000.00
Utility Relocation -	\$ 200,000.00
Construction -	\$ 5,200,000.00
Total -	\$ 7,100,000.00

## **Community Resources**

A detailed community resource study was not conducted for this Project Scoping Report. GIS level research and a preliminary site review were completed. No community features were uncovered using GIS.

**Figure 3: Community Resources**



### **Community Facilities**

No community facilities were identified in the vicinity of the project.

### **Emergency Management Services**

No Emergency Management Services were identified in the vicinity of the project.

### **Historic Resources**

No historical resources were identified in the vicinity of the project.

### **Archeological Resources**

No archeological resources were identified in the vicinity of the project.

## **Natural Environment**

A detailed environmental study was not conducted for this Project Scoping Report. GIS level research and a preliminary site review were completed.

## Wetlands

No wetlands were identified in the vicinity of the project.

## Water Quality Resources

Poplar Creek is located near the project area (not directly impacted), and is classified as C (*Aquatic Life, Secondary Recreation, Fresh Water*) & NSW (*Nutrient Sensitive Waters*).

## Jurisdictional Features

No jurisdictional features were identified in the vicinity of the project.

## Floodways and Floodplains

The proposed DDI does not have any direct impacts to floodways or floodplains. The Poplar Creek (Basin 13, Stream 1) is just west of the project passing underneath US 64 bypass.

## PROTECTED SPECIES

The protected species for Wake County are listed in Table 2 below, based on information from the US Fish and Wildlife Service.

**Table 2: Threatened and Endangered Species Listed for Wake County**

Common Name	Scientific name	Federal Status	Record Status
<b>Vertebrate:</b>			
<a href="#">Bald eagle</a>	<i>Haliaeetus leucocephalus</i>	BGPA	Current
<a href="#">Cape Fear shiner Range by Basin</a>	<i>Notropis mekistocholas</i>	E	Current
Carolina madtom	<i>Noturus furiosus</i>	ARS	Current
Neuse River waterdog	<i>Necturus lewisi</i>	ARS	Current
<a href="#">Red-cockaded woodpecker</a>	<i>Picoides borealis</i>	E	Current
Southern hognose snake	<i>Heterodon simus</i>	ARS	Obscure
<b>Invertebrate:</b>			
Atlantic pigtoe	<i>Fusconaia masoni</i>	ARS	Current
<a href="#">Dwarf wedgemussel</a>	<i>Alasmidonta heterodon</i>	E	Current
Green floater	<i>Lasmigona subviridis</i>	ARS	Current
<a href="#">Tar River spiny mussel</a>	<i>Parvaspina steinstansana</i>	E	Current
Yellow lance	<i>Elliptio lanceolata</i>	T	Current
<b>Vascular Plant:</b>			
Bog spicebush	<i>Lindera subcoriacea</i>	ARS	Current
<a href="#">Michaux's sumac</a>	<i>Rhus michauxii</i>	E	Current

BGPA =Bald and Golden Eagle Protection Act; E = Endangered; ARS = At Risk Species; T = Threatened

## **Existing NCDOT Mitigation Sites**

There are no NCDOT mitigation sites near the project corridor.

## **FEMA Hazard Mitigation Grant Program Properties**

There are no FEMA Hazard Mitigation Grant Program Properties in the project area.

## **Recommendations**

The Express Design Feasibility Study only analyzed one alternative that was provided by the NCDOT staff. Should the project become funded additional design and public involvement is recommended to determine the actual costs and impacts associated with this project.

## **References**

2045 CAMPO Metropolitan Transportation Plan

<http://www.campo-nc.us/transportation-plan/2045-metropolitan-transportation-plan>

NCDOT 2018-2027 STIP

<https://www.ncdot.gov/strategictransportationinvestments/2018-2027.html>

The North Carolina State Historic Preservation Office GIS Web Service

<http://gis.ncdcr.gov/hpweb/>

Flood Risk Information System - Wake County Flood Plain Map

<https://fris.nc.gov/fris/Home.aspx?ST=NC>

US Fish and Wildlife Service, Endangered Species Wake County

<https://www.fws.gov/raleigh/species/cntylist/wake.html>

US Fish and Wildlife Service, National Wetland Inventory

<https://www.fws.gov/wetlands/data/mapper.html>

North Carolina Natural Heritage Program

<http://ncnhde.natureserve.org/content/map>

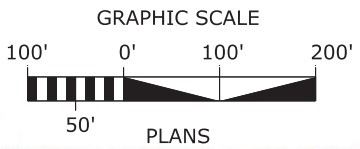
NCDOT Mitigation Site Map

<http://www.arcgis.com/home/item.html?id=d560dfeb1ea443b299ca7fc68b2506b4>

North Carolina Highway Safety Improvement Program

<https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>

7/22/99



**FEASIBILITY PLANS**  
DO NOT USE FOR CONSTRUCTION

**LEGEND**

- PROPOSED RIGHT OF WAY LINE
- EXIST R/W AND PROPERTY LINES
- CONSTRUCTION LIMITS (CUT)
- CONSTRUCTION LIMITS (FILL)
- CONSTRUCTION LIMITS (TRANSITION)
- EXISTING TRAFFIC SIGNAL

