

# FEASIBILITY STUDY

**US 74-76  
From Whiteville to Leland  
Columbus and Brunswick Counties**

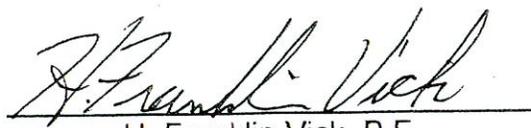
**Divisions 3 & 6**

**FS-9903A**



Prepared by the  
Program Development Branch  
Division of Highways  
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US 74-76  
From Whiteville to Leland  
Columbus and Brunswick Counties  
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**I. General Description**

This feasibility study describes upgrading US 74-76 to interstate standards from SR 1585 (Union Valley Rd.) west of Whiteville to SR 1426 (Mt. Misery Rd.) / SR 1438 (Lanvale Rd.) near Leland, a distance of 40.2 miles (See Figure 1). The following improvements are recommended on this project, in order to convert US 74 to freeway operations:

- ◆ The recommended cross section is a four-lane divided freeway with 12-foot wide paved outside shoulder and 4-foot wide paved inside shoulders.
- ◆ On the existing alignment, the median width is sufficient if additional guardrail is added along the project. When the project is on new location, we recommend a 70-foot wide median be utilized.
- ◆ The recommended right of way width for the project is 300 feet.
- ◆ A 6.8 mile bypass of New Berlin township is recommended in order to reduce the right of way impacts in the area.
- ◆ Approximately 19 miles of frontage roads are proposed to provide access to existing development adjacent to the roadway.
- ◆ Preliminary interchange locations:
  - SR 1001 (Hallsboro Rd.)
  - SR 1740 (Old Lake Rd.)
  - NC 211 (Green Swamp Road)
  - NC 214 (Beach Avenue)
  - NC 11 / SR 1843 (Livingston Chapel Road)
  - SR 1824 (Water Tank Road)
  - US 74-76 / NC 87 east of New Berlin
  - NC 87 (Maco Rd.) / SR 1419 (Northwest Rd.)

It is anticipated that there will be 73 residences and 7 businesses relocated due to this project. The total cost of the project, including construction and right-of-way, is estimated to be \$193,440,000.

This study is the initial step in the planning and design process for this project and is not the product of exhaustive environmental or design investigations. The purpose of this study is to describe the proposed project including costs, and to identify potential problems that may require consideration in the planning and design phases.

## II. Background

The purpose of this project is to provide interstate access from Charlotte to Wilmington. US 74-76 is designated as a freeway in the Brunswick County Thoroughfare Plan and as a principal arterial in the North Carolina Statewide Functional Classification System.

TIP Project R-3436 will construct Interstate 74 through Columbus County, which will intersect this project somewhere west of Whiteville. As of this writing, the exact location of the intersection of Interstate 74 and US 74-76 had not been determined. The Union Valley Road interchange west of Whiteville was selected as the western project terminus for estimating purposes. R-3436 is an unfunded project in the 2002-2008 Transportation Improvement Program (TIP).

TIP Project R-2633A will construct the US 17 Wilmington Bypass in Brunswick County, which will intersect this project somewhere between Malmo and Leland. As of this writing, the exact location of the intersection of the US 17 Bypass and US 74-76 had not been determined. The Mt. Misery Road interchange near Leland was selected as the eastern project terminus for this study for estimating purposes. R-2633A is currently scheduled for right-of-way acquisition in October 2007 and post year for construction.

TIP Project R-2561A will widen NC 87 to a multilane facility. It is currently an unfunded project in the 2002-2008 TIP. TIP Project R-61 will construct an interchange at NC 211 and is an unfunded project in the 2002-2008 TIP.

The 2001 Average Daily Traffic (ADT) along US 74-76 within the project limits varies from 10,000 to 19,800 vehicles per day (vpd). For the design year 2025, the estimated traffic volumes on US 74-76 will range between 20,800 and 38,300 vpd. The truck traffic is estimated to be between seventeen and twenty-eight percent of the average daily traffic. These projections assume the construction of I-74 and the US 17 Wilmington Bypass.

Currently, US 74-76 is operating at Level of Service (LOS) B. If no improvements are made, it is projected that the roadway will operate at LOS D in the design year 2025. If US 74-76 is upgraded to a controlled-access interstate facility, it will operate at LOS A in the current year and at LOS C in the design year 2025.

During the three-year period from April 1995 to March 1998, there were 281 accidents reported on US 74-76 within the project limits. Two hundred seventy (270) injuries were reported as a result of these accidents, including seven fatalities. The accident rate along US 74-76 within the project limits is 70.39 accidents per 100 million vehicle miles (acc/100mvm). This compares with the 1997 statewide rate of 93.52 acc/100mvm for four-lane divided US routes with partial access control.

### III. Description of Project Segments

Due to the length of the project and the variety of existing cross-sections, this project has been divided into the following five segments:

#### Segment 1 - SR 1585 (Union Valley Rd.) to east of SR 1740 (Old Lake Rd.)

This segment extends between SR 1585 (Union Valley Rd.) and 1.6 miles east of SR 1740 (Old Lake Rd.), a distance of 16.3 miles. Throughout this segment, US 74-76 is currently a four-lane divided roadway with 12-foot lanes, 4-foot paved outside shoulders, 2-foot paved inside shoulders, and a median that varies from 68 feet to 200 feet wide. Portions of the roadway in this segment are bifurcated with a wide, tree-lined median. This segment provides access to the town of Whiteville and the communities of Hallsboro and Lake Waccamaw. East Columbus High School is located on the north side of US 74-76 at the intersection with Old Lake Road.

The right-of-way within this segment is fully controlled, with the exception of existing at-grade crossings at Hallsboro Road, SR 1735 (Chauneytown Rd.), and Old Lake Road. The right-of-way in this segment varies between 320 feet and 340 feet wide.

See Appendix A for the bridge data within this segment.

#### Segment 2 - east of SR 1740 to NC 214 (Beach Ave.)

This segment is from 1.6 miles east of SR 1740 (Old Lake Rd.) to NC 214 (Beach Ave.), a distance of 6.6 miles. Throughout this segment, US 74-76 is currently a four-lane divided roadway with 12-foot lanes, 2-foot paved outside shoulders and a 46-foot wide median on 320 feet of right-of-way.

Access along this segment is fully controlled, with the exception of existing at-grade crossings at NC 211 (Green Swamp Rd.), SR 1800 (Blacksmith Rd.), and NC 214. This segment provides access to the community of Bolton.

See Appendix A for the bridge data within this segment.

#### Segment 3 - NC 214 to east of SR 1836 (Byrdville-Freeman Rd.)

This segment is from NC 214 (Beach Ave.) to 0.5 miles east of SR 1836 (Byrdville-Freeman Rd.), a distance of 3.0 miles. Throughout this segment, US 74-76 is currently a four-lane divided roadway with 12-foot lanes and a 66-foot wide median on 170 feet of right-of-way with no control of access. Development within this segment is composed of single-family homes with driveways along US 74-76.

There are no structures located within this segment.

Segment 4 - east of SR 1836 to east of the Columbus/Brunswick county line

This segment is from 0.5 miles east of SR 1836 (Byrdville-Freeman Rd.) to 0.9 miles east of the Columbus/Brunswick county line, a distance of 6.9 miles. Throughout this segment, US 74-76 is currently a four-lane divided roadway with 12-foot lanes. However, the right of way and the median width varies greatly within this segment. In the communities of Freeman and New Berlin, US 74-76 is a curb and gutter facility with a 16-foot wide raised median. The median throughout the remainder of this segment varies from 40 feet wide to 66 feet wide. The existing right-of-way within this segment varies from 90 feet to 170 feet wide. There is a substantial amount of residential and commercial development on both sides of the roadway throughout this segment.

See Appendix A for the bridge data within this segment.

Segment 5 - east of the county line to the SR 1426 (Mt. Misery Rd.) interchange

This segment is from 0.9 miles east of the Columbus/Brunswick county line to the interchange at SR 1426 (Mt. Misery Rd.) / SR 1438 (Lanvale Rd.), a distance of 7.5 miles. Currently, this segment of US 74-76 is a four-lane divided roadway, with a median that varies between 60 feet and 66 feet wide. The existing right-of-way within this segment varies between 175 feet and 220 feet wide.

Several residential subdivisions currently have access to US 74-76 within this segment. CSX Railway maintains an active railroad spur along the south side of a portion of this segment. The Leland Industrial Park is a concentration of industrial and commercial development located adjacent to the Mt. Misery Road interchange on the north side of US 74-76. The Northwest Township District Park is a recreational facility located opposite the Leland Industrial Park. This segment provides access to the communities of Sandy Creek, Maco, Northwest, Malmo, and Leland.

See Appendix A for the bridge data within this segment.

#### **IV. Recommendations**

It is recommended to upgrade US 74-76 to interstate standards from SR 1585 (Union Valley Rd.) west of Whiteville to SR 1426 (Mt. Misery Rd.) / SR 1438 (Lanvale Rd.) near Leland, a distance of 40.2 miles (See Figure 1). The recommended cross-section for all segments of this project is 12-foot travel lanes, with 12-foot paved outside shoulders and 4-foot paved inside shoulders. Median cable guardrail is to be added where the median is 70 feet wide or less, and rumble strips are to be added on all shoulders throughout the project.

Existing structures along the project will require widening to interstate standards, which requires 12-foot wide travel lanes, a 12-foot wide outside

shoulder, and a 6-foot wide inside shoulder. All recommended modifications to existing structures within the project limits are addressed in Appendix A.

The following additional recommendations are proposed for each segment of this project:

Segment 1

This segment extends between SR 1585 (Union Valley Rd.) and 1.6 miles east of SR 1740 (Old Lake Rd.), a distance of 16.3 miles (See Figure 2). This segment is currently a controlled-access four-lane freeway and requires shoulder and median improvements to meet interstate standards. Median guardrail will be required for approximately 8.5 miles of this segment.

It is also recommended to construct interchanges at SR 1001 (Hallsboro Road) and at SR 1740 (Old Lake Rd.). In conjunction with the Old Lake Road interchange, there is a double-barrel 8-foot by 8-foot reinforced concrete box culvert parallel to US 74-76 that will need to be extended. A grade separation at SR 1735 (Chauneytown Rd.) is also recommended under this project.

It is anticipated that no residences or businesses will be relocated due to the segment. The total cost of this segment is as follows:

Construction.....	\$ 39,200,000
Right-of-way.....	\$ 3,250,000
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Segment Cost.....	\$ 42,450,000

Segment 2

This segment is from 1.6 miles east of SR 1740 (Old Lake Rd.) to NC 214 (Beach Ave.), a distance of 6.6 miles (See Figure 3). This segment is currently a partially controlled-access four-lane highway and requires shoulder improvements to meet interstate standards. The existing 88-foot median will not require the installation of any cable guardrail within this segment. Interchanges at NC 211 and at NC 214 (Beach Avenue) are recommended under this project. This project also includes a grade separation at SR 1800 (Blacksmith Road).

It is anticipated that 8 residences and 0 businesses will be relocated due to the segment. The total cost of this segment is as follows:

Construction.....	\$ 20,600,000
Right-of-way.....	\$ 3,130,000
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Segment Cost.....	\$ 23,730,000

Segment 3

This segment is from NC 214 (Beach Ave.) to 0.5 miles east of SR 1836 (Byrdville-Freeman Rd.), a distance of 3.0 miles (See Figure 4). This segment is

currently a four-lane highway with no control of access and requires shoulder and median improvements to meet interstate standards. Median guardrail will be required for the entirety of this segment.

We recommended that cul-de-sacs be installed at SR 1840 (Robinson Rd.) and at SR 1836 (Byrdville-Freeman Rd.). In addition, a frontage road just north of US 74 should be installed from the proposed NC 214 interchange to the existing US 74 at the end of this segment. In order to minimize the right of way impacts in this area, we used the existing westbound lanes for the frontage road, and constructed two additional lanes on the south side of US 74-76.

It is anticipated that 7 residences and 1 business will be relocated due to the segment. The total cost of this segment is as follows:

Construction.....	\$ 14,500,000
Right-of-way.....	\$ 5,530,000
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Segment Cost.....	\$ 20,030,000

#### Segment 4

This segment is from 0.5 miles east of SR 1836 (Byrdville-Freeman Rd.) to 0.9 miles east of the Columbus/Brunswick county line, a distance of 6.9 miles (See Figure 5). Due to the extensive right-of-way conflicts and the poor existing cross-section, we recommend a bypass of this segment be constructed on new location. The recommended cross-section is a four-lane roadway with 12-foot lanes, 12-foot paved outside shoulders, and 4-foot paved inside shoulders with a 70-foot median on 300 feet of right-of-way. Median guardrail will be required for this segment.

This segment also includes interchanges at NC 11/ SR 1843 (Livingston Chapel Road), SR 1824 (Water Tank Road) and US 74 east of New Berlin. This segment also includes a grade separation of SR 1849 (Delco-Prosper Road). Two new structures will also be required to cross the Livingston Creek and its surrounding wetlands.

The possibility of widening the roadway along the existing alignment was considered. However, it was determined through discussions with the Roadway Design Unit that a bypass was a more favorable option due to the amount of existing roadside development, the narrow right-of-way, and the inadequate cross-section along the existing alignment. This new alignment will also avoid affecting four natural heritage elements located immediately adjacent to the existing alignment.

It is anticipated that 8 residences and 0 businesses will be relocated due to the segment. The total cost of this segment is as follows:

Construction.....	\$ 48,600,000
Right-of-way.....	\$ 9,130,000
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Segment Cost.....	\$ 57,730,000

Segment 5

This segment is from 0.9 miles east of the Columbus / Brunswick county line to the interchange at SR 1426 (Mt. Misery Rd.) / SR 1438 (Lanvale Rd.), a distance of 7.5 miles (See Figure 6). This segment is currently a four-lane highway with no control of access and requires shoulder and median improvements to meet interstate standards. Median guardrail will be required for the entirety of this segment.

The construction of an interchange at NC 87 (Maco Road) and SR 1419 (Northwest Road) is recommended in this section. Several frontage roads are proposed for this segment of the project. These frontage roads are to be 24 feet wide on at least 60 feet of right-of-way.

The frontage road on the south side of US-74-76 is from the proposed US 74-76 interchange at the end of Segment 4 to SR 1472 (Fletcher Rd.), a distance of 7.8 miles. This roadway would abut the CSX Railway right-of-way from Sandy Ridge Drive to SR 1726. From SR 1726 to Fletcher Road, we recommend that this frontage road utilize the existing eastbound travel lanes in order to minimize the anticipated right of way impacts to the area. This frontage road will maintain access to the community of Sandy Ridge, the industries located on the south side of US 74-76, and the Northwest Township District Park.

US 74-76 should be widened to the north in order to provide new westbound lanes and the appropriate median width and a northern frontage road from 0.75 miles west of SR 1425 (Sawmill Road) to SR 1438 (Lanvale Road), a distance of 6.4 miles. The majority of this northern frontage road parallels US 74-76 and uses the existing SR 1723 (Trade Street) alignment in the industrial park. This section of the project also includes the three lane widening of SR 1472 (Fletcher Road) between the proposed frontage roads.

It is anticipated that 50 residences and 6 businesses will be relocated due to the segment. The total cost of this segment is as follows:

Construction.....	\$ 32,250,000
Right-of-way.....	\$ 17,250,000
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Segment Cost.....	\$ 49,500,000

Total Project

It is anticipated that a total of 73 residences and 7 businesses will be relocated due to this project. The total cost of this project is as follows:

Construction.....	\$155,150,000
Right-of-way.....	\$ 38,290,000
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Total Project Cost .....	\$193,440,000

**V. Additional Comments**

A transportation benefit analysis was conducted for this project. It is estimated that the total transportation benefits between the current year and the design year (2025) for a four-lane divided facility are \$442,673,000, which is an average of \$17,025,900 per year. The total benefits include accident cost savings, time cost savings, and operating cost savings.

An environmental screening was not conducted for this study. However, no impacts to historic properties are anticipated.

Impacts to wetlands are expected and a Corps of Engineers Section 404 Permit is anticipated.

Based on maps at the Department of Environment, Health & Natural Resources - Natural Heritage Section, the following candidates for protection as a threatened or endangered species were identified adjacent to the project corridor:

- Friar Swamp Dedicated State Nature Preserve
- *Amorpha georgiana* var *confusa* (Savanna Indigo-bush)
- *Carex crus-corvi* (Crowfoot Sedge)
- *Cheilolejeunea rigidula* (a liverwort)
- *Crotalus adamanteus* (Eastern Diamondback Rattlesnake)
- Cypress--Gum Swamp, blackwater subtype
- *Dionaea muscipula* (Venus Flytrap)
- *Epidendrum conopseum* (Green Fly Orchid)
- *Helenium brevifolium* (Littleleaf Sneezeweed)
- *Helenium pinnatifidum* (Dissected Sneezeweed)
- *Lopholejeunea muelleriana* (a liverwort)
- *Polygala hookeri* (Hooker's Milkwort)
- *Solidago verna* (Spring-flowering Goldenrod)
- *Xyris brevifolia* (Shortleaf Yellow-eyed-grass)
- *Xyris flabelliformis* (Savanna Yellow-eyed-grass)

This following streams and rivers are located within the project corridor and are classified as Class C swamp waters:

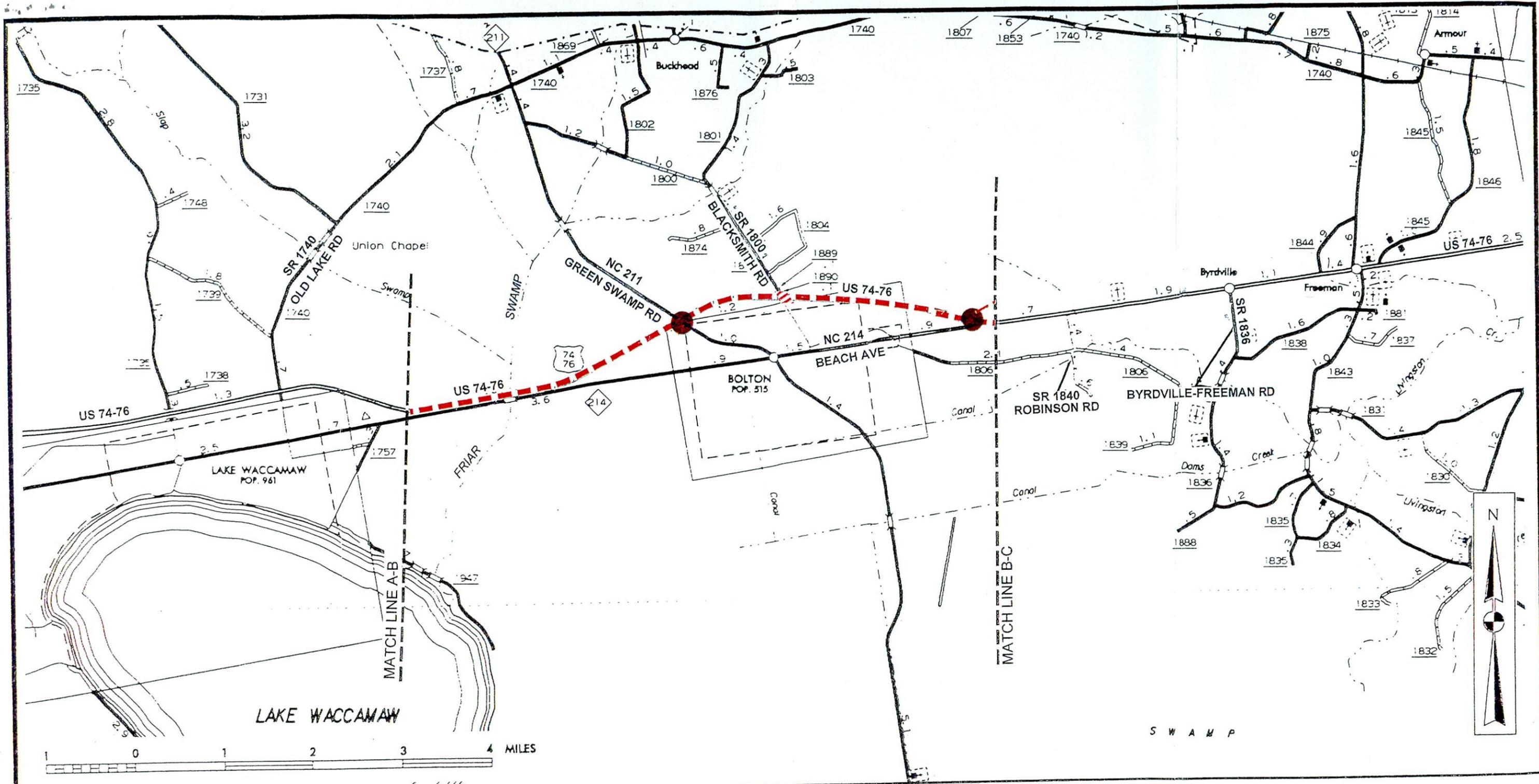
<u>River</u>	<u>River Basin</u>
Pine Log Swamp	Lumber River
White Marsh Creek	Lumber River
Bogue Swamp	Lumber River
Friar Swamp	Lumber River
Livingston Creek	Cape Fear River
Hood Creek	Cape Fear River
Big Branch	Cape Fear River

No special accommodation for bicycles is recommended on this project.

APPENDIX A - FS-9903A Existing Structure Inventory

Structure Number	Feature Intersected	Structure Description	Structure Length	Horizontal Clearance	Year Constructed	Sufficiency Rating	Proposed Treatment
<b>COLUMBUS COUNTY (23)</b>							
Segment 1							
C 394	Pinelog Swamp	Triple 10x6' reinforced concrete box culvert	217'	N/A	1972	83	No impacts anticipated
50	SR 1552 (Smyrna Rd.)	Reinforced concrete deck on I-beams and plate girders	353	36'	1972	89.1	Y-line structure - no impacts anticipated
51	US 701 Byp. (Powell Blvd.)	Reinforced concrete deck on I-beams and plate girders	188'	40'	1972	83.7	Widen structure by 2' on outside
52	US 701 Byp. (Powell Blvd.)	Reinforced concrete deck on I-beams and plate girders	188'	48'	1972	67.6	Widen structure by 2' on outside
17	US 701 Bus. (Pickney St.)	Reinforced concrete deck on continuous I-beams	252'	40'	1974	85.8	Y-line structure - no impacts anticipated
53	White Marsh Swamp	Reinforced concrete deck on continuous I-beams	200'	40'	1974	93.1	Widen structure by 2' on outside
54	White Marsh Swamp	Reinforced concrete deck on continuous I-beams	200'	40'	1974	81.5	Widen structure by 2' on outside
381	SR 1700 (Red Hill Rd.)	Reinforced concrete deck on I-beams and plate girders	193'	40'	1983	97.7	Widen structure by 2' on outside
382	SR 1700 (Red Hill Rd.)	Reinforced concrete deck on I-beams and plate girders	188'	40'	1983	98.0	Widen structure by 2' on outside
C380	Bogue Swamp	Quadruple 9'x6' reinforced concrete box culvert	170'	N/A	1983	75.8	No impacts anticipated
Segment 2							
383	Friar Swamp	Prestressed, precast concrete (PPC) cored slab on PPC piles	107'	36'	1988	95.5	Widen structure by 6' on outside
384	Friar Swamp	PPC cored slab on PPC piles	107'	36'	1988	95.9	Widen structure by 6' on outside
385	Friar Swamp	PPC cored slab on PPC piles	212'	36'	1988	95.6	Widen structure by 6' on outside
386	Friar Swamp	PPC cored slab on PPC piles	212'	36'	1988	95.6	Widen structure by 6' on outside
387	Friar Swamp	PPC cored slab on PPC piles	142'	36'	1988	95.9	Widen structure by 6' on outside
388	Friar Swamp	PPC cored slab on PPC piles	142'	36'	1988	95.9	Widen structure by 6' on outside
Segment 4							
83	Livingston Mill Creek	Reinforced concrete deck girders	120'	34'	1922	57.2	Bypass - No impacts anticipated
86	Livingston Mill Creek	Reinforced concrete deck on continuous I-beams	164'	40'	1969	96.3	Bypass - No impacts anticipated
<b>BRUNSWICK COUNTY (09)</b>							
Segment 5							
4	Hood Creek	Reinforced concrete deck on continuous I-beams	113'	40'	1968	92.7	Widen structure by 2' on outside
5	Hood Creek	Reinforced concrete deck girders	84'	36'	1922	79.7	Replace with a new structure 115' long and 42' wide
18	SR 1426 (Mt. Misery Rd.)	Reinforced concrete deck on steel plate girders	242'	55'	1973	95.0	Y-line structure - add 5' sidewalks on each side



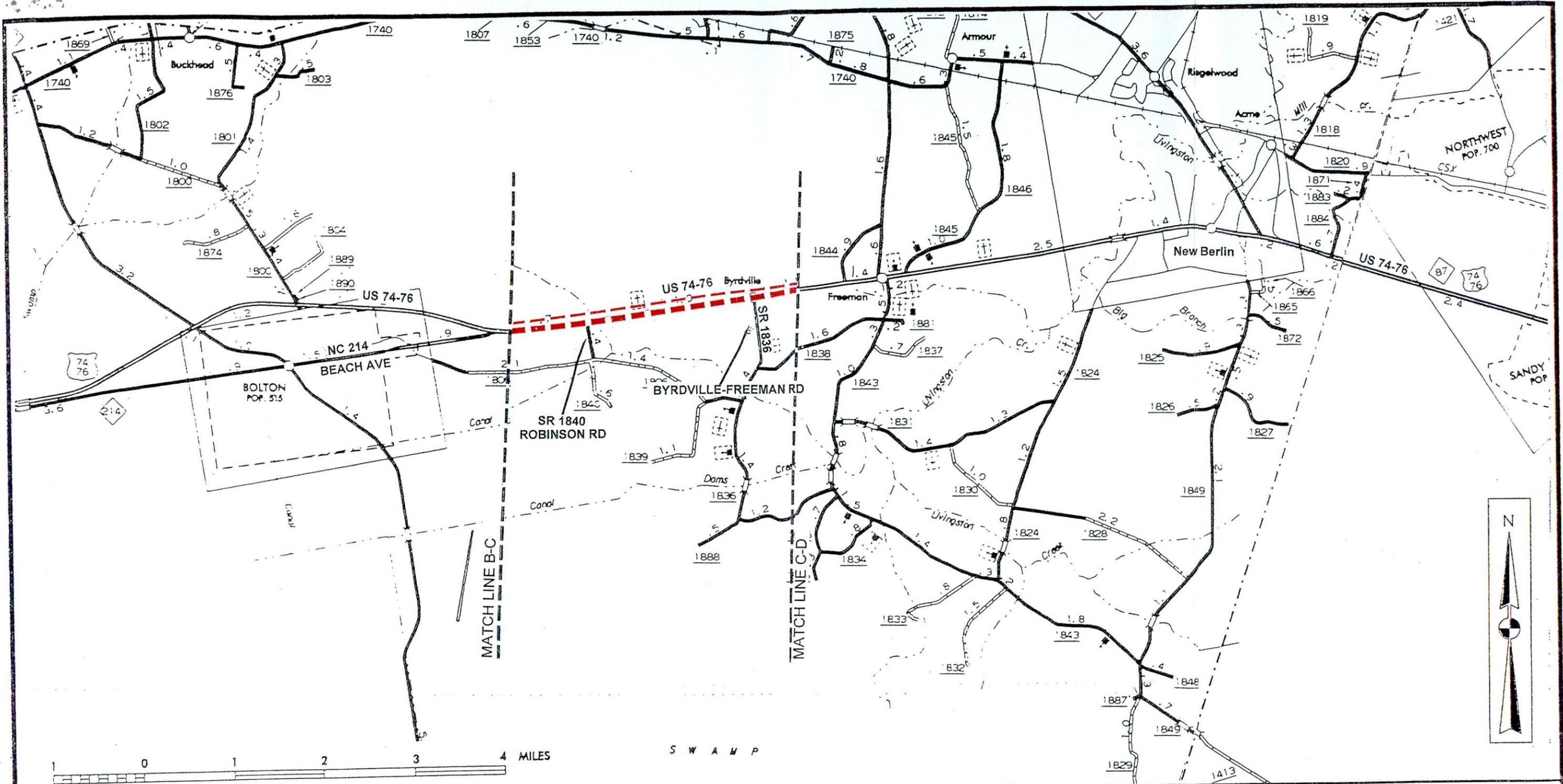


LEGEND	
	PROPOSED INTERSTATE UPGRADES
	FRONTAGE ROAD
	DIAMOND INTERCHANGE
	DIRECTIONAL INTERCHANGE
	STRUCTURE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
PROGRAM DEVELOPMENT BRANCH

**FS-9903A**  
**SEGMENT 2**  
US 74-76  
From Whiteville to Leland  
Columbus and Brunswick Counties

DIVISIONS 3 & 6 FIGURE 3

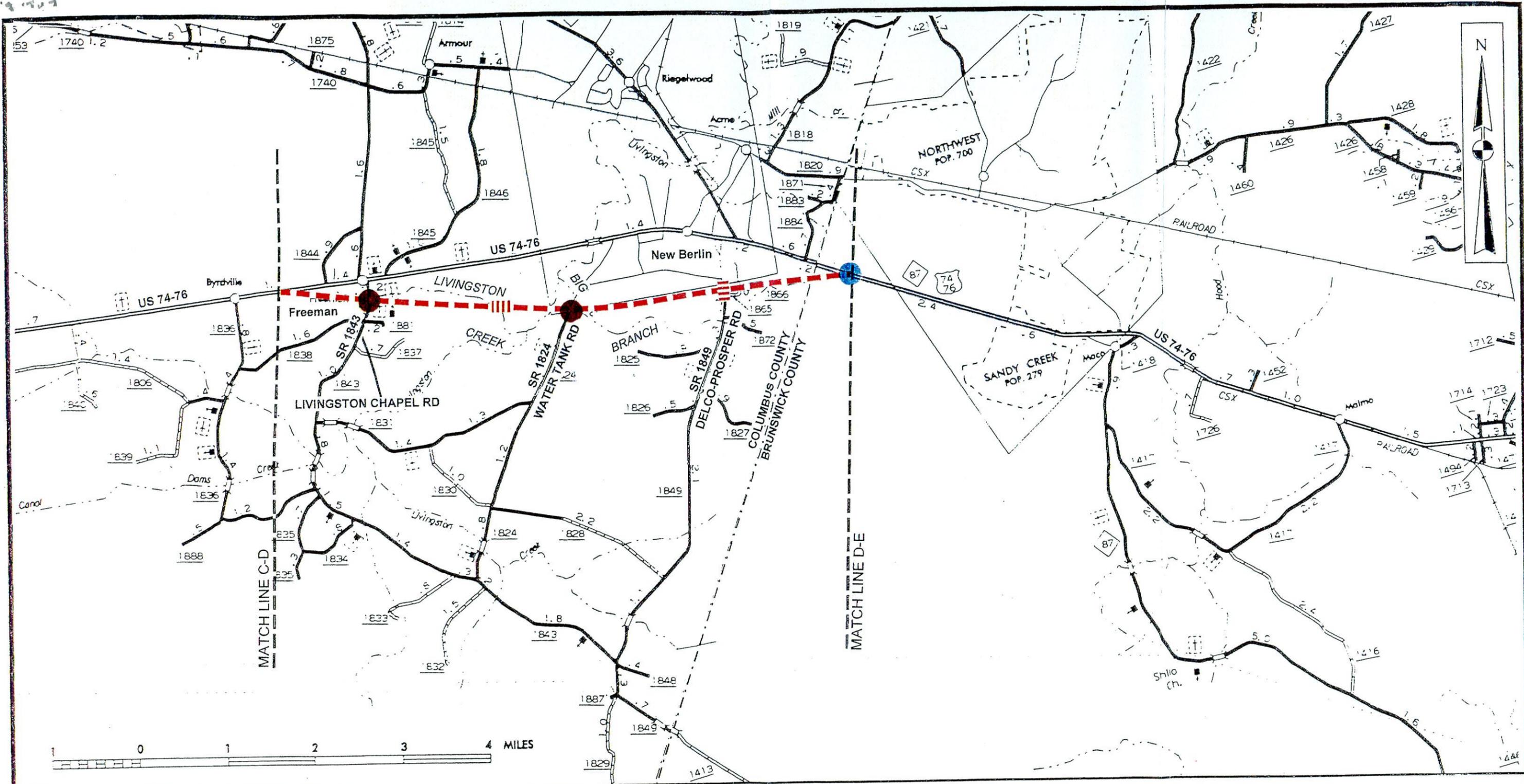


LEGEND	
	PROPOSED INTERSTATE UPGRADES
	FRONTAGE ROAD
	DIAMOND INTERCHANGE
	DIRECTIONAL INTERCHANGE
	STRUCTURE

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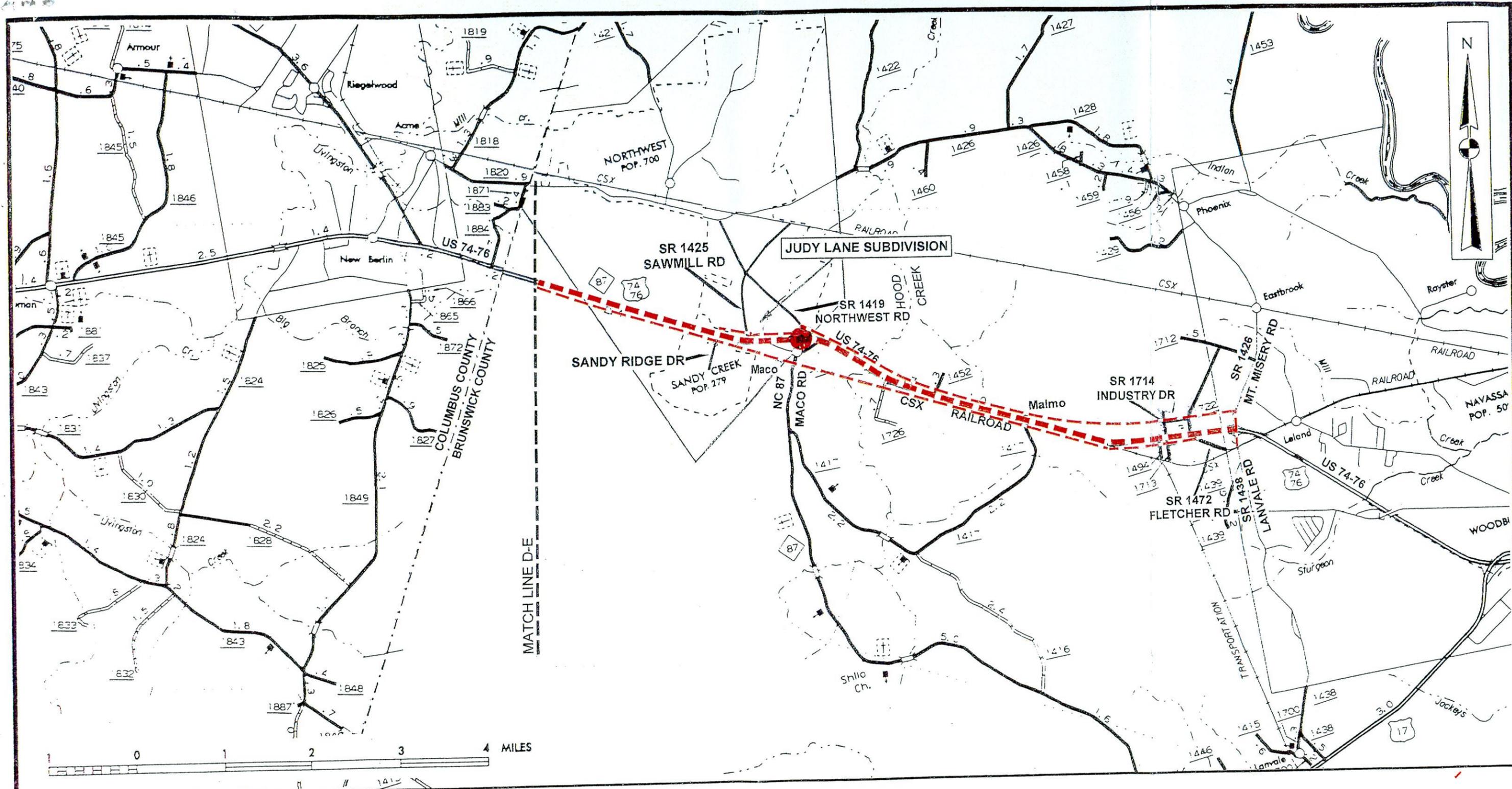
**FS-9903A**  
**SEGMENT 3**  
US 74-76  
From Whiteville to Leland  
Columbus and Brunswick Counties

DIVISIONS 3 & 6 FIGURE 4



LEGEND	
	PROPOSED INTERSTATE UPGRADES
	FRONTAGE ROAD
	DIAMOND INTERCHANGE
	DIRECTIONAL INTERCHANGE
	STRUCTURE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
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**FS-9903A**  
**SEGMENT 4**  
 US 74-76  
 From Whiteville to Leland  
 Columbus and Brunswick Counties  
  
 DIVISIONS 3 & 6 FIGURE 5



LEGEND	
	PROPOSED INTERSTATE UPGRADES
	FRONTAGE ROAD
	DIAMOND INTERCHANGE
	DIRECTIONAL INTERCHANGE
	STRUCTURE

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**FS-9903A**  
**SEGMENT 5**  
US 74-76  
From Whiteville to Leland  
Columbus and Brunswick Counties

DIVISIONS 3 & 6 FIGURE 6

