

**FEASIBILITY STUDY**

**Interstate 74  
from the proposed Rockingham-Hamlet Bypass  
(R-512) to US 74 Bypass  
Richmond and Scotland Counties**

**Division 8**

**I-3801**



Prepared by the  
Program Development Branch  
Division of Highways  
N. C. Department of Transportation

A handwritten signature in blue ink, appearing to read "Eric J. Lamb".

Eric J. Lamb, P.E.  
Feasibility Studies Engineer

A handwritten signature in black ink, appearing to read "David G. Modlin, Jr.". The signature is written over a horizontal line.

David G. Modlin, Jr., Ph.D., P.E.  
Head of Feasibility Studies

2/26/98  
Date

Interstate 74  
from the proposed Rockingham-Hamlet Bypass  
(R-512) to the US 74 Laurinburg Bypass  
Richmond and Scotland Counties  
I-3801

**I. General Description**

This feasibility study describes upgrading US 74 to interstate standards as a part of the Interstate 74 corridor from the proposed Rockingham-Hamlet Bypass (R-512) in Richmond County to the US 74 Bypass in Scotland County, a distance of 9.0 miles (14.5 km). The project location is shown on Figure 1. Two alternates were considered for this project.

*Alternate 1 - Widen Existing US 74*

This alternate recommends upgrading the existing US 74 corridor to interstate standards, as shown in Figure 2. The recommended cross-section is a four-lane divided facility with 12-foot (3.7-m) travel lanes, 4-foot (1.2-m) paved inside shoulders, and 10-foot (3.0-m) paved outside shoulders on 285 feet (86.9 m) of right-of-way with full access control. Double-faced guardrail is to be installed where the median width is less than 46 feet (14.0 m). It is anticipated that there will be 117 residences, 31 businesses, and two churches relocated due to this alternate. The total cost of this alternate, including construction and right-of-way, is estimated to be \$54,100,000.

*Alternate 2 - Combination of widening and new location*

This alternate recommends a combination of upgrading existing US 74 and constructing a portion of the project on new location as shown in Figure 3. The recommended cross-section is a four-lane divided facility with 12-foot (3.7-m) travel lanes, 4-foot (1.2-m) paved inside shoulders, and 10-foot (3.0-m) paved outside shoulders. On new location, the roadway will have a median width of 60 feet (18.3 m). On existing location, double-faced guardrail is to be installed as in Alternate 1. The right-of-way will be 285 feet (86.9 m) wide on the existing alignment and 300 feet (91.5 m) wide on new location, with full access control throughout the project limits. It is anticipated that there will be 72 residences, 14 businesses, and two churches relocated due to this alternate. The total cost of this alternate, including construction and right-of-way, is estimated to be \$65,800,000.

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. Need for Project

The purpose of this project is to accommodate the construction of the proposed Interstate 74 corridor, which will traverse Illinois, Indiana, Kentucky, West Virginia, Virginia, North Carolina and South Carolina. This portion of the interstate within North Carolina will help improve the transportation link between Charlotte and Wilmington.

US 74 is designated as a major thoroughfare in the Rockingham-Hamlet Thoroughfare Plan and as a principal arterial in the North Carolina Statewide Functional Classification System.

US 74 is currently a four-lane roadway with 12-foot (3.7-m) wide travel lanes, with paved shoulders varying between 0 and 4 feet (0-1.2 m) wide and a grass median varying between 30 and 60 feet (9.1-18.3 m) wide. The existing right-of-way throughout the project ranges between 160 and 200 feet (48.8-61.0 m) wide. West of the project limits, TIP Project R-512 F is currently in the process of constructing the Rockingham-Hamlet Bypass as a four-lane divided facility with full control of access. It is currently under construction and is scheduled for completion in July 2000. East of the project limits, US 74 bypasses Laurinburg as a four-lane controlled access facility with a 40-foot (12.2-m) grass median on 200 feet (61.0 m) of right-of-way.

Development along the project consists primarily of single family residences interspersed with small businesses at major crossroads. There are also a substantial number of residences that have access to existing US 74 via many of the crossroads along the project.

West of the CSX Railway grade separation, there is very little development. There is a large church located adjacent to the intersection with SR 1155 (Guinns Mill Rd.), and there is an outdoor furniture supply store at the intersection with SR 1347 (McEchin Rd.). In the area of the Old Hundred community, from the CSX Railway to east of SR 1153 (Butler Rd.), there is a large amount of residential development along both sides of the roadway, as well as a service station at the intersection with SR 1145 (Corbitt Rd.).

The Town of Laurel Hill is located between SR 1319 / SR 1152 (Old Wire Rd.) and Gum Swamp Creek along both sides of US 74. There is a central business district located on the north side of US 74, and there are several businesses and commercial sites along the roadway throughout this area. Gum Swamp is a large swamp located along the south side of the roadway in the vicinity of the bridges over Gum Swamp Creek. Near the eastern project terminus, there are several businesses, including an AT&T transmission tower adjacent to the right-of-way.

The following table identifies the existing structures within the project limits:

Table 1. Bridge Data

Bridge Number	Crossing	Structure Type	Structure Length	Structure Width	Year Built	Sufficiency Rating
9	CSX Railway	Reinforced concrete deck	235'	36.5'	1968	93.5
16	CSX Railway	Reinforced concrete deck	232'	41.1'	1995	97.5
22	Gum Swamp Creek	Reinforced concrete deck	149'	42.6'	1969	96.4
23	Gum Swamp Creek	Reinforced concrete deck	90'	28'	1938	51.8
C29	Gum Swamp	Triple-barrel RCBC	144'	n/a	1970	68.7

US 74 currently crosses a CSX railway with a grade separation. This railway carries thirteen trains per day at an average speed of 49 mph (79 km/h).

There is an existing traffic signal at the intersection with SR 1001 (Morgan St.) and SR 1148 (St. John's Church Rd.)

The 1997 Average Daily Traffic (ADT) along US 74 varies from 13,000 to 18,500 vehicles per day (vpd). For the design year 2025, the estimated traffic volumes on US 74 will range between 26,000 and 37,000 vpd. Truck traffic is estimated to make up twenty percent of daily traffic.

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

During the three-year period from March 1994 to February 1997, there were 160 accidents reported on US 74 within the project limits. There were 195 injuries reported as a result of these accidents, including two fatalities. The accident rate along US 74 within the project limits is 91.82 accidents per 100 million vehicle miles (acc/100mvm). This compares with the 1996 statewide rate of 146.84 acc/100mvm for four-lane divided US routes with no control of access.

### III. Description of Alternates

It is proposed to upgrade US 74 to interstate standards as a part of the Interstate 74 corridor from the proposed Rockingham-Hamlet Bypass (R-512 F) in Richmond County to the US 74 Bypass in Scotland County, a distance of 9.0 miles (14.5 km). The project location is shown on Figure 1. Two alternates were considered for this project.

#### Alternate 1 - Widen Existing US 74

This alternate recommends upgrading the existing US 74 corridor to interstate standards, as shown in Figure 2. The recommended cross-section is a four-lane divided facility with 12-foot (3.7-m) travel lanes, 4-foot (1.2-m) paved inside shoulders, and 10-foot (3.0-m) outside shoulders on 285 feet (86.9 m) of right-of-way with full access control. Double-faced guardrail is to be installed where the median width is less than 46 feet (14.0 m).

From the western project terminus to SR 1155 (Guinns Mill Rd.), the existing westbound lanes of US 74 are the oldest lanes of traffic and have poor vertical alignment. It is recommended to correct the vertical profile of the westbound lanes of traffic by regrading and resurfacing these lanes to current design standards.

The construction of a diamond interchange is recommended at the intersection with SR 1155 (Guinns Mill Rd.) (see Figure 2). There are several houses and a large church that currently have access to US 74 from an unpaved road on the north side of this intersection.

Bridge No. 16 over the CSX Railway was replaced in 1995 and currently meets interstate standards. Bridge No. 9 will require replacement with a new structure approximately 240 feet (73.2 m) long with a clear roadway width of 40 feet (12.2 m).

A grade separation is recommended at the intersection with SR 1152 / SR 1319 (Old Wire Rd.) in order to help maintain the continuity of the Laurel Hills community, which is located along both sides of US 74. It is also recommended to construct an interchange at the intersection with SR 1305 (Ida Mill Rd.) and SR 1125 (Spring Mill Rd.). In order to minimize right-of-way conflicts with SR 1355 (Ida Chapel Rd.) and its residents, it is recommended to construct this interchange as a compressed diamond. Realignment of SR 1355 away from this interchange is recommended. It is also recommended to construct a two-lane frontage road from SR 1152 to SR 1125 in order to maintain access to the businesses and the residences in this area.

Bridges No. 22 and No. 23 over Gum Swamp Creek will require replacement in order to meet interstate criteria. These structures are to be replaced with new structures approximately 160 feet (48.8 m) long with clear

roadway widths of 40 feet (12.2 m). Culvert No. 29 will also require extension in order to accommodate the proposed interstate improvements.

A new grade separation is recommended at the intersection with SR 1321 (Elmore Rd.) in order to maintain access to several businesses in this area. There is also a large telecommunications tower maintained by AT&T adjacent to this intersection. The construction of a two-lane frontage road along the north side of US 74 west of this intersection is also recommended in order to maintain access to the businesses in this area (see Figure 2).

This alternate will have severe right-of-way impacts to the communities adjacent to US 74 and to the residents who currently have direct access to the highway. This option will have a substantially negative impact to the residents of Old Hundred community, which is located east of the existing CSX Railway grade separation. The inclusion of an interchange and frontage roads should help reduce the impact to the Laurel Hills community, but these improvements will be a major disruption to the residents and to the local businesses.

It is anticipated that 117 residences, 31 businesses, and two churches will be relocated due to the project under Alternate 1. The total cost of Alternate 1 is as follows:

Construction.....	\$ 31,800,000
Right-of-way.....	\$ 22,300,000
<hr/>	
Total Cost .....	\$ 54,100,000

Alternate 2 - Combination of widening and new location

This alternate recommends a combination of upgrading existing US 74 and constructing a portion of the project on new location as shown in Figure 3. The recommended cross-section is a four-lane divided facility with 12-foot (3.7-m) travel lanes, 4-foot (1.2-m) paved inside shoulders, and 10-foot (3.0-m) outside shoulders. On new location, the roadway will have a median width of 60 feet (18.3 m). On existing location, double-faced guardrail is to be installed as in Alternate 1. The right-of-way will be 285 feet (86.9 m) wide on the existing alignment and 300 feet (91.5 m) wide on new location, with full access control throughout the project limits.

As in Alternate 1, the correction of the vertical profile of the westbound lanes between the western project terminus and SR 1155 (Guinns Mill Rd.) is recommended under this alternate. The construction of a diamond interchange at SR 1155 is also recommended under this alternate (see Figure 3).

Alternate 2 utilizes new location in order to minimize the impacts to the communities of Laurel Hills and Old Hundred. As shown in Figure 3, the new

location starts in the vicinity of SR 1347 (McEchin Rd.), north of the CSX Railway grade separation. A semidirectional Y-interchange is recommended at the intersection of existing US 74 and the proposed new location.

A diamond interchange is recommended where this project crosses SR 1363 (Fred Carter Rd.). A grade separation is recommended where the new alignment crosses the CSX Railway and existing US 74 east of SR 1363. This will require a dual structures over the railway that would be approximately 150 feet (45.7 m) long, and dual structures over US 74 that would be approximately 300 feet (91.5 m) long. Each bridge would have a clear roadway width of 40 feet (12.2 m). South of US 74, a new grade separation is recommended at SR 1152 (Old Wire Rd.), and a diamond interchange is recommended at SR 1125 (Spring Mill Rd.).

This proposed new alignment would rejoin the existing alignment in the vicinity of Bridges No. 22 and No. 23 over Gum Swamp Creek. Under Alternate 2, it is recommended to remove the existing pavement from SR 1125 to the bridges at Gum Swamp Creek and to allow the proposed interchange at SR 1125 to handle the traffic flow from the new alignment to the existing US 74 through Laurel Hills. This option will have a less substantial right-of-way impact than the construction of a semidirectional Y-interchange at this location.

Replacement of the bridges over Gum Swamp Creek and the construction of a grade separation at SR 1321 (Elmore Rd.) are recommended as described in Alternate 1.

It is anticipated that 72 residences, 14 businesses, and two churches will be relocated due to the project under Alternate 2. The total cost of Alternate 2 is as follows:

Construction.....	\$ 47,400,000
Right-of-way.....	\$ 18,400,000
<hr/>	
Total Cost .....	\$ 65,800,000

#### IV. Discussion of Alternatives

Either alternate for upgrading this corridor to interstate standards will involve substantial disruption to the communities in this area, which have relied heavily upon direct access to US 74 throughout their existence. Alternate 1, the least expensive option, is the easier to construct of the two alternates. But it involves the relocations of a great number of residences and businesses, which will require substantial efforts on the behalf of the Department. While Alternate 2 is more favorable from a right-of-way impact standpoint, the construction costs are almost sixteen million dollars more than Alternate 1.

## V. Additional Comments

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

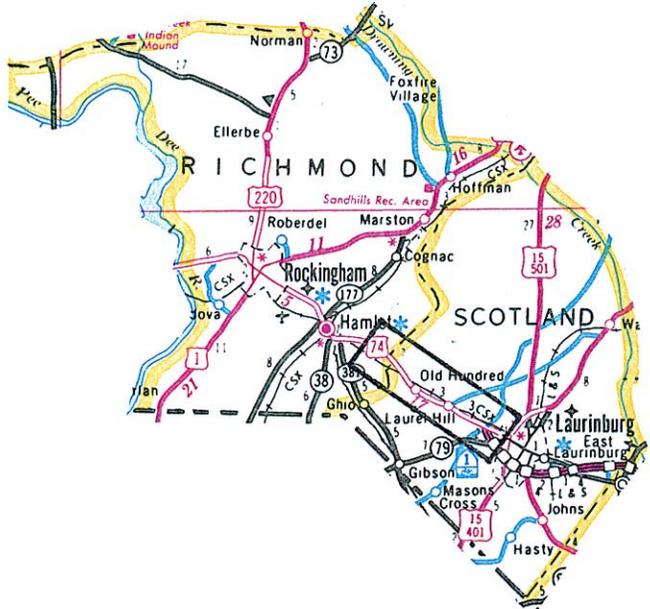
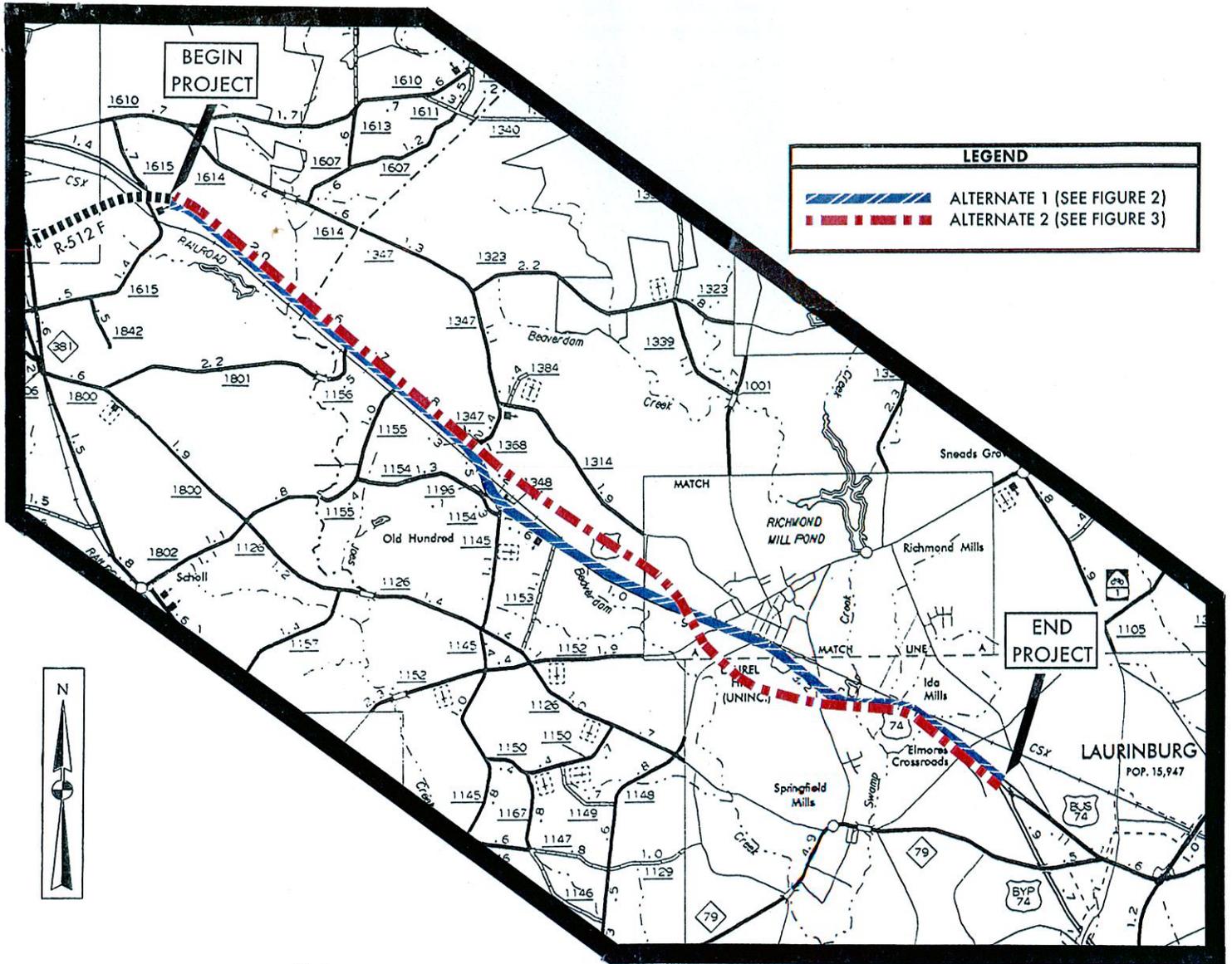
Impacts to wetlands adjacent to the right-of-way are expected and a Corps of Engineers Section 404 Permit is anticipated.

Based on maps at the Department of Environment, Health & Natural Resources - Natural Heritage Section, several candidates for protection as threatened/endangered species were identified within and adjacent to the project corridor. The following plants and animals were identified:

Salvia azurea (Azure Sage)  
Etheostoma mariae (Pinewoods Darter)  
Stylisma pickeringii (Pickering's Dawnflower)

The sections of Beaver Dam Creek and Gum Swamp Creek within the project corridor are Class B waterways. The section of Joe's Creek within the project corridor is a Class C waterway and is classified as swamp water. These waterways are part of the Lumber River Basin.

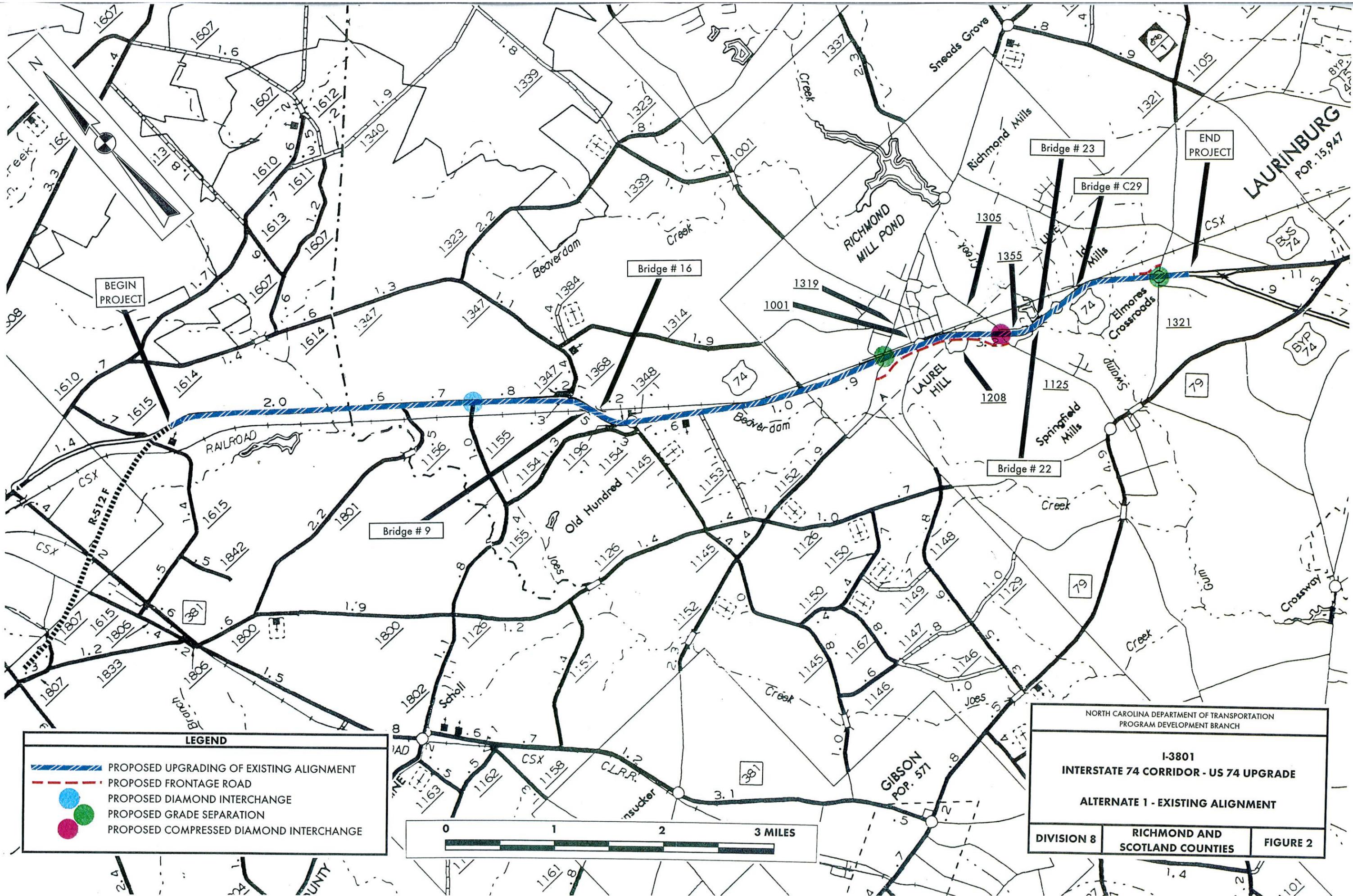
No special accommodation for bicycles is recommended on this project.



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
PROGRAM DEVELOPMENT BRANCH

**I-3801  
INTERSTATE 74 CORRIDOR - US 74 UPGRADE  
FROM THE ROCKINGHAM-HAMLET BYPASS (R-512)  
TO THE US 74 LAURINBURG BYPASS**

<b>DIVISION 8</b>	<b>RICHMOND AND SCOTLAND COUNTIES</b>	<b>FIGURE 1</b>
-------------------	---	-----------------



BEGIN PROJECT

END PROJECT

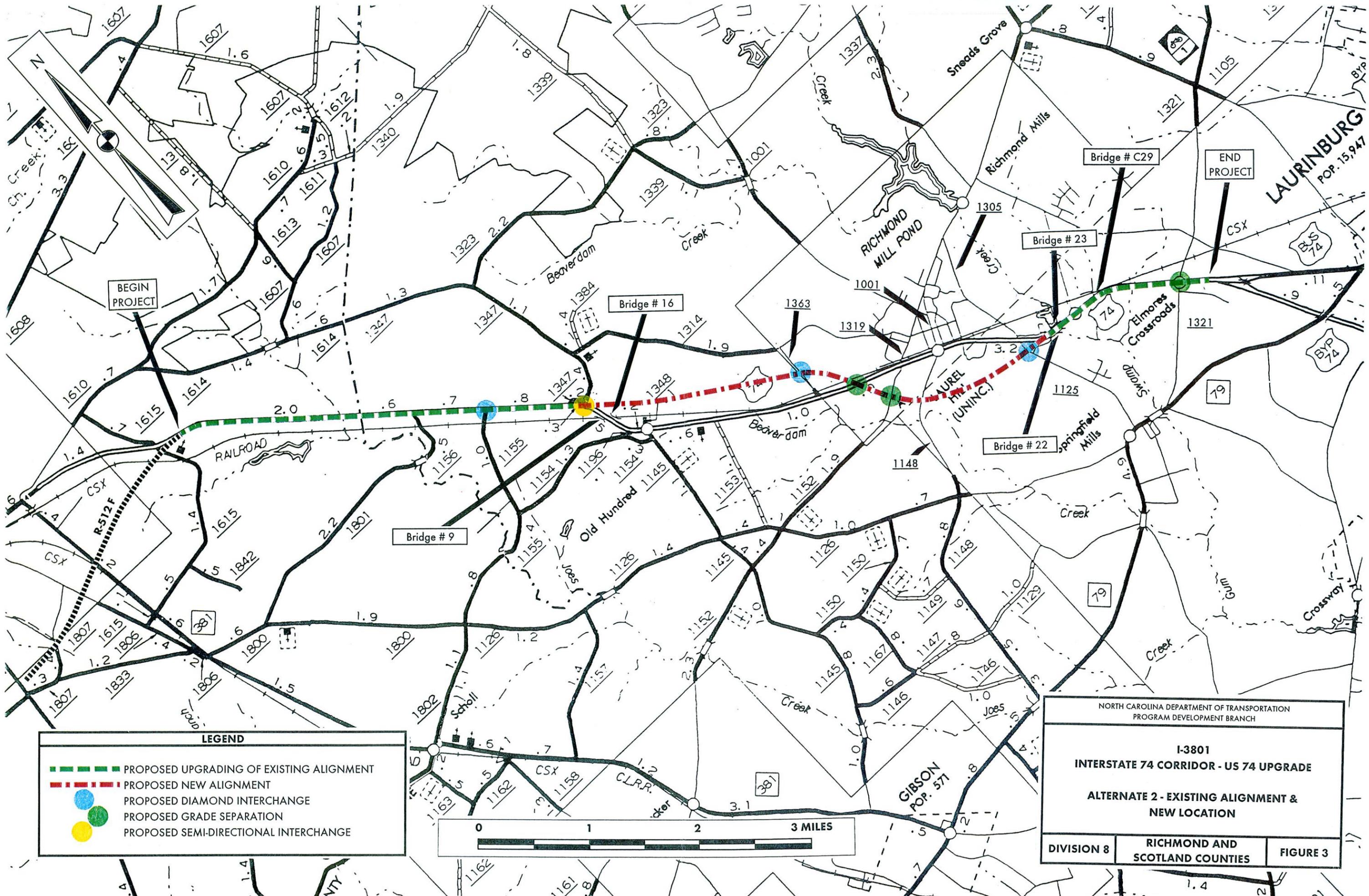
LAURINBURG  
POP. 15,947

**LEGEND**

-  PROPOSED UPGRADING OF EXISTING ALIGNMENT
-  PROPOSED FRONTAGE ROAD
-  PROPOSED DIAMOND INTERCHANGE
-  PROPOSED GRADE SEPARATION
-  PROPOSED COMPRESSED DIAMOND INTERCHANGE



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION PROGRAM DEVELOPMENT BRANCH		
<b>I-381</b>		
<b>INTERSTATE 74 CORRIDOR - US 74 UPGRADE</b>		
<b>ALTERNATE 1 - EXISTING ALIGNMENT</b>		
<b>DIVISION 8</b>	<b>RICHMOND AND SCOTLAND COUNTIES</b>	<b>FIGURE 2</b>



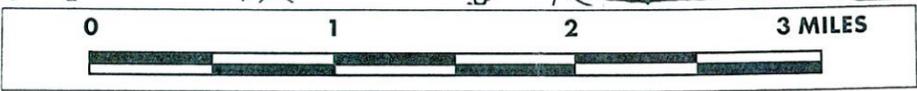
**LAURINBURG**  
POP. 15,947

BEGIN PROJECT

END PROJECT

**LEGEND**

- - - PROPOSED UPGRADING OF EXISTING ALIGNMENT
- - - PROPOSED NEW ALIGNMENT
- PROPOSED DIAMOND INTERCHANGE
- PROPOSED GRADE SEPARATION
- PROPOSED SEMI-DIRECTIONAL INTERCHANGE



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION PROGRAM DEVELOPMENT BRANCH		
<b>I-3801</b>		
<b>INTERSTATE 74 CORRIDOR - US 74 UPGRADE</b>		
<b>ALTERNATE 2 - EXISTING ALIGNMENT &amp; NEW LOCATION</b>		
DIVISION 8	RICHMOND AND SCOTLAND COUNTIES	FIGURE 3