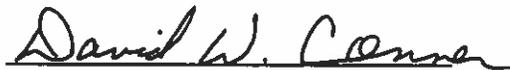


FEASIBILITY STUDY

**US 401
From US 401 Business North of Laurinburg
To US 401 Business North of Raeford
Scotland and Hoke Counties**

R-3333

Prepared by
Program Development Branch
Division of Highways
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R-3333

US 401

**From US 401 Business North of Laurinburg
To US 401 Business North of Raeford
Scotland and Hoke Counties**

I. General Description

This feasibility study describes recommended roadway improvements to US 401 in Scotland and Hoke Counties. It is proposed to widen US 401 from US 401 Business north of Laurinburg to US 401 Business north of Raeford. The project length is 20.7 miles (33.3 km). Please see Figure 1 for the project location.

There are two cross sections recommended throughout the project length. For the major portion of the project the proposed cross section is a 4-lane, divided, shoulder section with 12-foot (3.6-m) wide travel lanes, a 46-foot (14.0 - m) wide median, 2-foot (0.6-m) wide inside paved shoulders, and 8-foot (2.4-m) wide outside shoulders which include 2 feet (0.6 m) paved. A 250-foot (76.2-m) wide right-of-way is recommended for this cross section which is proposed for the following locations:

- a. From R-613, at SR 1323, to SR 1405 in Scotland County
- b. From approximately 0.4 miles (0.6 km) north of SR 1403 in Scotland County to approximately 0.5 miles (0.8 km) south of SR 1145 in Hoke County
- c. From SR 1405 in Hoke County to R-214 north of Raeford

The second cross section is a 5-lane, 64-foot (19.5-m) wide (face-to-face) curb-and-gutter cross section with 8-foot (2.4-m) wide berms. This cross section is proposed at the following locations:

- a. From SR 1405 in Scotland County to approximately 0.4 miles (0.6 km) north of SR 1403 in Scotland County. Right-of-way required for this segment will be 80 feet (24.4 m).
- b. From approximately 0.5 miles (0.8 km) south of SR 1145 to SR 1405 in Hoke County. Right-of-way required for this segment will be 100 feet (30.5m).

This project will likely require the relocation of 85 residences and 26 businesses.

The estimated cost for these improvements, including right-of-way and construction is \$53,900,000 as follows:

Right-of-Way	.....	\$10,300,000
Construction	.....	43,600,000
Total Cost	.....	\$53,900,000

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 identify potential problems that may require consideration in the planning and design phases.

II. Need for Project

The purpose of this project is to improve the traffic carrying capacity and the safety of US 401. This project is endorsed by the City of Laurinburg, Scotland County, and the Laurinburg/Scotland County Area Chamber of Commerce.

US 401 is designated as a Rural Principal Arterial on the North Carolina Statewide Functional Classification System.

The project route is generally rural in nature with scattered farms and undeveloped woodlands. However, the sections through Wagram and from US 401 Business south of Raeford to US 401 Business north of Raeford are commercially developed.

Except through the corporate limits of Wagram and in the area around US 401 Business south of Raeford, the roadway is 2-lane with 24-foot (7.3-m) wide pavement and 10-foot (3.0-m) wide soil shoulders. Through the Town of Wagram, the roadway is 54-foot (16.5-m) wide (face-to-face) curb-and-gutter with sidewalks along each side. In the area of US 401 Business south of Raeford, the roadway is a 3-lane shoulder section with 36-foot (11.0-m) wide pavement and 10-foot (3.0-m) soil shoulders. Existing right-of-way varies between 75 feet (22.9 m) and 150 feet (45.7 m).

There are six structures located along the length of the project as follows:

Scotland County

1. Culvert # 33, at Jordans Creek, is located approximately 0.4 miles (0.6 km) north of the junction with SR 1429. It is a concrete, steel, and timber structure which measures 45 feet (13.73 m) along its centerline. It was constructed in 1948 and has a sufficiency rating of 47.5 .
2. Culvert # 38, at Juniper Creek, is located approximately 0.9 miles (1.4 km) south of the junction with SR 1424. It is a concrete, steel, and timber structure which measures 76 feet (23.23 m) along its centerline. It was constructed in 1947 and has a sufficiency rating of 48.3.
3. Culvert # 41, at Big Shoe Heel Creek, is located approximately 0.4 miles (0.6 km) south of the junction with SR 1407. It is a triple 11-foot by 8-foot reinforced concrete box culvert which measures 47 feet (14.3 m) along its centerline. It was constructed in 1948 and has a sufficiency has a sufficiency rating of 97.2.
4. Bridge # 47 spans the Lumber River and is located at the Hoke County line. It is 240 feet (73.2 m) long and has a clear deck width of 26 feet (7.9 m). It was constructed in 1948 and has a sufficiency rating of 24.2.

Hoke County

1. Bridge # 3 spans NC 211, SR 1313, and Rockfish Railroad in Raeford. It is 235 feet (71.7 m) long and has a clear deck width of 28.1 feet (8.5 m). It was constructed in 1954 and has a sufficiency rating of 72.9.
2. Bridge # 5 spans Rockfish Creek and is located approximately 0.3 miles (0.5 km) south of the junction of SR 1302. It is 135 feet (51.2 m) long and has a clear deck width of 28.1 feet (8.5 m). It was constructed in 1959 and has a sufficiency rating of 56.7.

There is one railroad crossing along the project length. US 401 crosses the Laurinburg and Southern Railroad in Wagram. This crossing is not protected by signals, gates, or flashers. This railroad has a volume of 2 trains per week.

At the south project terminal, US 401 is being widened as part of R-613 (Laurinburg Bypass). The Laurinburg bypass extends from SR 1323 north of Laurinburg to south of Laurinburg. The Laurinburg Bypass will be a 4-lane, median divided facility. Similarly, at the north project terminal, US 401 is being widened to a 4-lane, median divided facility as part of R-214. R-214 extends from US 401 Business north of Raeford to Cumberland County.

The 1994 Average Daily Traffic (ADT) on US 401, within the project terminals, varies from approximately 4,700 vehicles per day (vpd) to approximately 11,100 vpd. For the design year (2020), the estimated traffic volumes on US 401 will range from approximately 10,900 vpd to approximately 24,100 vpd. Truck traffic is estimated to make up 6% of daily traffic.

Based on estimated traffic volumes, US 401 is currently operating at Level of Service (LOS) C in the rural areas and a LOS D in the urban areas. If no improvements are made, it is estimated that the LOS will deteriorate to D and E respectively by the year 2002. Widening this section to a multi-lane facility will improve the LOS to A and B which will prevail through the design year (2020).

During the three-year period from April 1, 1991, to March 31, 1994, there were 293 accidents reported on US 401 within the project limits. There were 7 deaths and 158 non-fatal injuries reported. These accidents resulted in an accident rate of 93.3 accidents per 100 million vehicle miles (Acc/100 MVM), compared to a statewide average of 151.3 Acc/100MVM for all rural US routes. The most prevalent accident types were rear-end (25%), angle (20%), and left-turn (18%). The recommended cross sections will offer the potential for reduction of these types of accidents.

III. Recommendations

It is proposed to widen US 401 from US 401 Business north of Laurinburg to US 401 Business north of Raeford. The project length is 20.7 miles (33.3 km). Please see Figure 1 for the project location.

There are two cross sections recommended throughout the project length. For the major portion of the project the proposed cross section is a 4-lane, divided, shoulder section with 12-foot (3.6-m) wide travel lanes, a 46-foot (14.0 -m) wide median, 2-foot (0.6-m) wide inside paved shoulders, and 8-foot (2.4-m) wide outside shoulders which include 2 feet (0.6 m) paved. A 250-foot (76.2-m) wide right-of-way is recommended for this cross section which is proposed for the following locations:

- a. From R-613, at SR 1323, to SR 1405 in Scotland County
- b. From approximately 0.4 miles (0.6 km) north of SR 1403 in Scotland County to approximately 0.5 miles (0.8 km) south of SR 1145 in Hoke County
- c. From SR 1405 in Hoke County to R-214 north of Raeford

The second cross section is a 5-lane, 64-foot (19.5-m) wide (face-to-face) curb-and-gutter cross section with 8-foot (2.4-m) wide berms. This cross section is proposed at the following locations:

- a. From SR 1405 in Scotland County to approximately 0.4 miles (0.6 km) north of SR 1403 in Scotland County. Right-of-way required for this segment will be 80 feet (24.4 m).
- b. From approximately 0.5 miles (0.8 km) south of SR 1145 to SR 1405 in Hoke County. Right-of-way required for this segment will be 100 feet (30.5m).

It is also recommended that the culverts at Jordans Creek and Juniper Creek and the bridges at the Lumber River and at Rockfish Creek be replaced with new dual bridges having a clear deck width of 38 feet (11.6 m). Bridge #3 over NC 211, SR 1313, and Rockfish Railroad should be widened to a clear deck width of 64 feet (19.5 m).

Signal and gates should be installed at the Laurinburg and Southern Railroad crossing in Wagram.

This project will likely require the relocation of 85 residences and 26 businesses.

The estimated cost for these improvements, including right-of-way and construction is \$53,900,000 as follows:

Right-of-Way	.....	\$10,300,000
Construction	.....	43,600,000
Total Cost	.....	\$53,900,000

VI. Other Comments

In addition to the recommended alternative, three additional alternatives were evaluated as follows:

Alternate A

Alternate A (Wagram Bypass) includes the following:

1. Construction of a 4-lane median divided highway on new location from approximately 0.9 miles (1.4 km) north of SR 1424 in Scotland County to approximately 0.1 miles (0.2 km) south of SR 1101 in Hoke County
2. Widening, as previously recommended in this report, for the existing segments of US 401 from SR 1323 to approximately 0.9 miles (1.4 km) north of SR 1424 in Scotland County and from approximately 0.1 miles (0.2 km) south of SR 1101 in Hoke County to US 401 Business north of Raeford.

This alternate would likely require the relocation of 78 residences and 22 businesses and is estimated to cost \$60,500,000 as follows:

Right-of-Way	.....	\$ 9,000,000
Construction	.....	51,500,000
Total Cost	.....	\$60,500,000

Alternate B

Alternate B (Silver City Bypass) includes the following:

1. Construction of a 4-lane median divided highway on new location from approximately 0.5 miles (0.8 km) south of SR 1145 to approximately 0.6 miles (1.0 km) south of SR 1300, all in Hoke County
2. Widening, as previously recommended in this report, for the existing segments of US 401 from SR 1323 in Scotland County to approximately 0.5 miles (0.8 km) south of SR 1145 in Hoke County and from approximately 0.6 miles (1.0 km) south of SR 1300 in Hoke County to US 401 Business north of Raeford.

This alternate would likely require the relocation of 100 residences and 26 businesses and is estimated to cost \$57,500,000 as follows:

Right-of-Way	.....	\$11,900,000
Construction	.....	45,600,000
Total Cost	.....	\$57,500,000

Alternate C

Alternate C is a combination of Alternates A and B above.

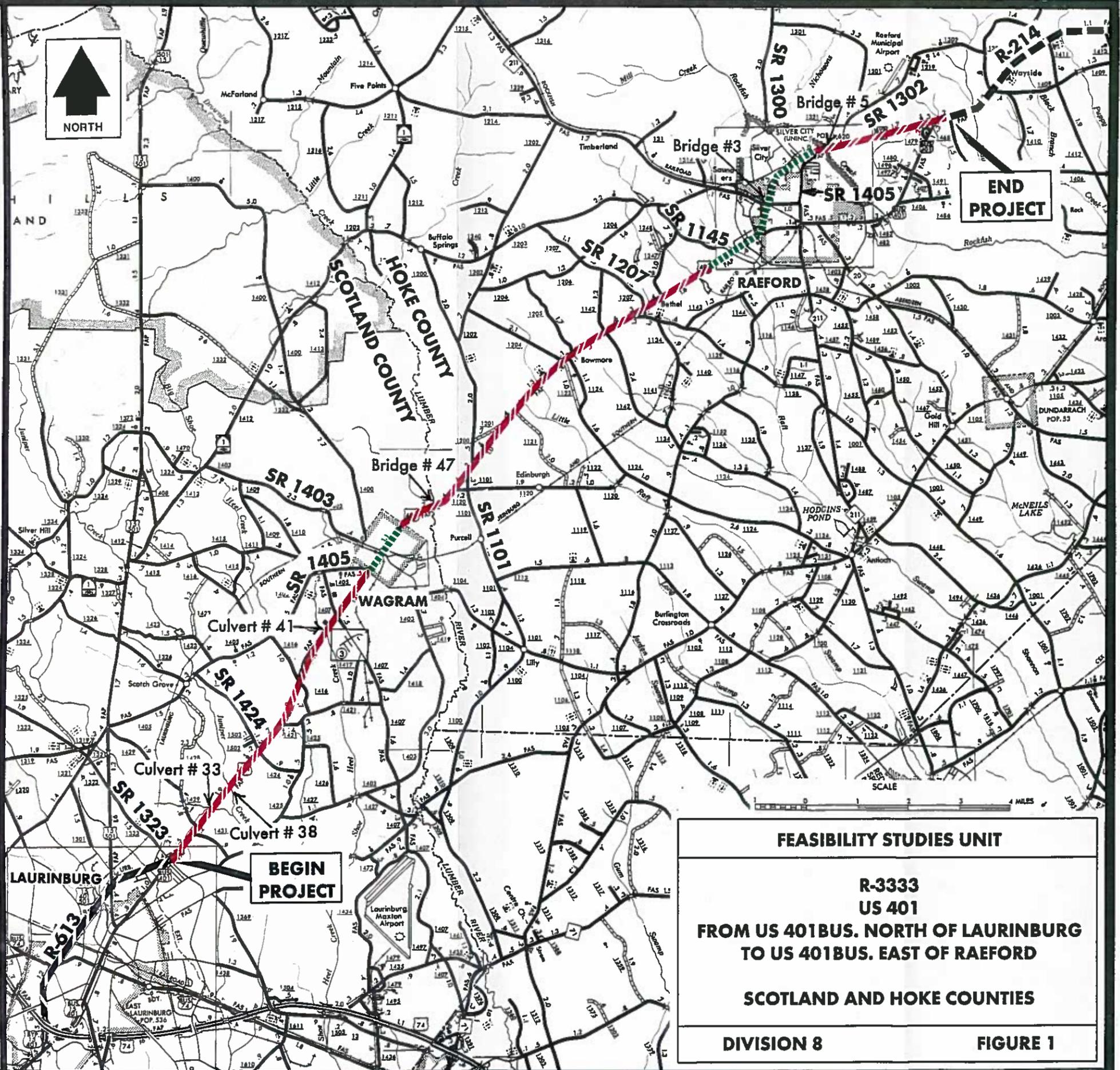
This alternate would likely require the relocation of 93 residences and 22 businesses and is estimated to cost \$64,200,000 as follows:

Right-of-Way	.....	\$10,700,000
Construction	.....	53,500,000
Total Cost	.....	\$64,200,000

There is an existing cemetery, with 100-150 graves located on the north side of SR 1207 in Hoke County. Care should be taken to widen the roadway away from and to avoid this cemetery.

An environmental screening was not conducted for this study; however, information is available which indicates that the project corridor may contain some endangered plant and animal species.

No special accommodations for bicycles is recommended on this project.



LEGEND

- 4-LANE DIVIDED SECTION
- 5-LANE CURB & GUTTER SECTION
- R-214
- R-613

FEASIBILITY STUDIES UNIT

R-3333
US 401
FROM US 401 BUS. NORTH OF LAURINBURG
TO US 401 BUS. EAST OF RAEFORD
SCOTLAND AND HOKE COUNTIES

DIVISION 8 **FIGURE 1**

END PROJECT

BEGIN PROJECT