



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

JAMES B. HUNT JR.  
GOVERNOR

DIVISION OF HIGHWAYS  
P.O. BOX 25201, RALEIGH, N.C. 27611-5201

GARLAND B. GARRETT JR.  
SECRETARY

March 17, 1997

MEMORANDUM TO: Ms. Margaret Kluttz, Member, Board of Transportation  
Mr. D. B. Waters, Division Engineer, Division 9  
Mr. C. W. Leggett, P.E.  
Mr. W. H. Webb, P.E.  
Mr. J. M. Lynch, P.E. (6) Attention: Roberto Canales, P.E.  
Congestion Management Engineer  
Mr. J. B. Williamson  
Mr. H. F. Vick, P.E. (2)  
Mr. D. R. Morton, P.E.  
Mr. G. T. Shearin, P.E.  
Mr. M. R. Poole, P.E.  
Mr. A. L. Avant (2)  
Mr. J. D. Lane  
Mr. T. A. Peoples, P.E.  
Mr. L. K. Barger, P.E.

FROM:

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

SUBJECT:

Feasibility Study # R-3610, NC 801 from SR 1620 at Advance to US 158, Davie County.

Our staff has completed a feasibility study for the subject proposed project. This brief analysis suggests improvements that would be logical if the project were to be funded. A copy of our report is attached for your information.

DGM/joa

Attachment

cc: Dr. L. R. Goode, P.E.  
Mr. B. G. Jenkins, P.E.  
Mr. David W. Conner



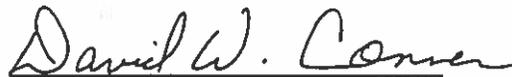
**FEASIBILITY STUDY**

**NC 801  
from SR 1620 at Advance  
to US 158  
Davie County**

**Division 9**

**R-3610**

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



David W. Conner  
Highway Planning Engineer

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

  
Date

## R-3610

NC 801  
From SR 1620 at Advance  
To US 158  
Davie County

Division 9

### I. General Description

This preliminary study describes recommended improvements to NC 801 in Davie County. It is recommended that NC 801 be widened from SR 1620 at Advance to US 158, a distance of approximately 4.6 miles (7.4 km). For a location map, please see Figure 1.

From SR 1620 to SR 1624, the recommended cross section is a 2-lane rural shoulder section with 12-foot (3.6-m) wide travel lanes, 2-foot (0.6-m) wide paved shoulders, and 6-foot (1.8-m) wide soil shoulders on a 60-foot (18.3-m) wide right-of-way. From SR 1620 to SR 1616, construction should be asymmetrical to the west to avoid a historic district, and from SR 1616 to SR 1624, construction should be symmetrical to the centerline of the existing roadway. For a map of this roadway segment (SR 1620 to SR 1624), please see Figure 2.

From SR 1624 to US 158, the recommended cross section is a 5-lane, 64-foot (19.5-m) wide (face-to-face), curb-and-gutter section with 10-foot (3.0-m) wide berms on a 100-foot (30.5-m) wide right-of-way. Construction of this segment of roadway should be symmetrical to the centerline of the existing roadway.

It is estimated that there will be 13 residences and 5 businesses relocated as a result of this project.

The total cost for right-of-way and construction is estimated to be \$16,000,000 as follows:

Right-of-Way	\$ 4,350,000
Construction	11,650,000
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Total Cost	\$16,000,000

This study is the initial step in the planning and design process for this project and is not to be considered the product of exhaustive environmental or design investigations. The purpose of the study is to describe the problem, recommend a treatment including costs, and identify potential problem areas that deserve consideration in the planning and design phases.

## II. Need For Project

The purpose of this project is to improve the traffic carrying capacity and accident experience of NC 801 between Advance and I-40. The project was requested by Davie County to relieve increasing congestion in this rapidly growing area of the county.

NC 801 is designated as a major collector on the North Carolina Statewide Functional Classification System.

From SR 1620, on the south side of Advance, to SR 1616, on the north side of Advance, the project route is moderately developed with a combination of residences, businesses, and churches. In this area, the roadway skirts the western limits of the Advance Historic District.

From SR 1616 to SR 1656, the properties adjacent to NC 801 are primarily agricultural with a few residences scattered throughout.

From SR 1656 to the north project terminal, the project route is moderately to heavily developed with individual residences, subdivisions, and golf courses. Each quadrant of the US 158 intersection is developed heavily with businesses.

Existing NC 801 is generally a 2-lane roadway with a 20-foot (6.1-m) wide pavement and 4-foot to 6-foot (1.2-m to 1.8-m) wide soil shoulders. The approaches to US 158 have been widened to 3 lanes to facilitate turning movements.

Immediately north of Advance, NC 801 crosses the Southern Railway. The railroad consists of one set of tracks and carries two trains per day at a speed of 35 miles per hour (56 kph). The crossing is protected by flashers but at the present, does not have gates. The exposure index is estimated to be 7,200 currently and 15,200 in the design year.

The segment of NC 801 north of US 158 is scheduled for improvement as part of project I-911.

There is one structure located along the project route. At approximately 0.7 miles (1.1 km) north of SR 1624, Bridge #27 crosses Carter's Creek. The structure is a 12-foot by 12-foot (3.6-m by 3.6-m) triple barrel reinforced concrete box culvert. The culvert was constructed in 1940 and has an efficiency rating of 72.5.

The 1996 Average Daily Traffic (ADT) is estimated to be approximately 3,600 vehicles per day (vpd) between Advance and SR 1624 and approximately 5,800 vpd between SR 1624 and US 158. The design year (2020) estimates are approximately 7,600 vpd and 12,100 vpd, respectively.

The current Level Of Service (LOS) is estimated to be Level C between Advance and SR 1624 and Level D between SR 1624 and US 158. Without improvements, it is estimated that the Level of Service will deteriorate to Level E prior to the design year. With the recommended improvements, the LOS is expected to improve to a Level C between Advance and SR 1624 and a Level A between SR 1624 and US 158.

During the period from March 1, 1993, through February 29, 1996, there were 55 accidents reported within the project terminals. This resulted in an accident rate of 205.3 accidents per 100 million vehicle miles (Acc/100MVM), compared to a statewide

average of 317 Acc/100 MVM for all urban NC routes during 1994. There were three fatalities reported during the period and 22 of the accidents resulted in non-fatal injuries. The most prevalent accident types were rear-end (25.5%), left-turn (21.8%), and angle (14.5%). The recommended improvements should reduce the potential for these types of accidents.

### III. Detailed Description

It is recommended that NC 801 be widened from SR 1620 at Advance to US 158, a distance of approximately 4.6 miles (7.4 km). For a location map, please see Figure 1.

From SR 1620 to SR 1624, the recommended cross section is a 2-lane rural shoulder section with 12-foot (3.6-m) wide travel lanes, 2-foot (0.6-m) wide paved shoulders, and 6-foot (1.8-m) wide soil shoulders on a 60-foot (18.3-m) wide right-of-way. From SR 1620 to SR 1616, construction should be asymmetrical to the west to avoid a historic district, and from SR 1616 to SR 1624, construction should be symmetrical to the centerline of the existing roadway. For a map of this roadway segment (SR 1620 to SR 1624), please see Figure 2.

From SR 1624 to US 158, the recommended cross section is a 5-lane, 64-foot (19.5-m) wide (face-to-face), curb-and-gutter section with 10-foot (3.0-m) wide berms on a 100-foot (30.5-m) wide right-of-way. Construction of this segment of roadway should be symmetrical to the centerline of the existing roadway.

SR 1650, south of Advance, should be realigned to intersect NC 801 at SR 1620 and SR 1653 should be realigned to intersect the relocated SR 1650 (see Figure 2).

The eastern leg of SR 1624 should be realigned to create a 90 degree intersection with NC 801 and cul-de-sacs should be constructed on both the western and eastern legs of SR 1624 at NC 801.

New flashers and gates should be constructed at Southern Railway.

The existing box culvert at Carter's Creek (Bridge #27) should be extended.

The existing traffic signal at US 158 should be upgraded and the NC 801 northbound approach should include a combination right-turn/through lane, a through lane, a left-turn lane, and two lanes exiting the intersection.

It is estimated that there will be 13 residences and 5 businesses relocated as a result of this project.

The total cost for right-of-way and construction is estimated to be \$16,000,000 as follows:

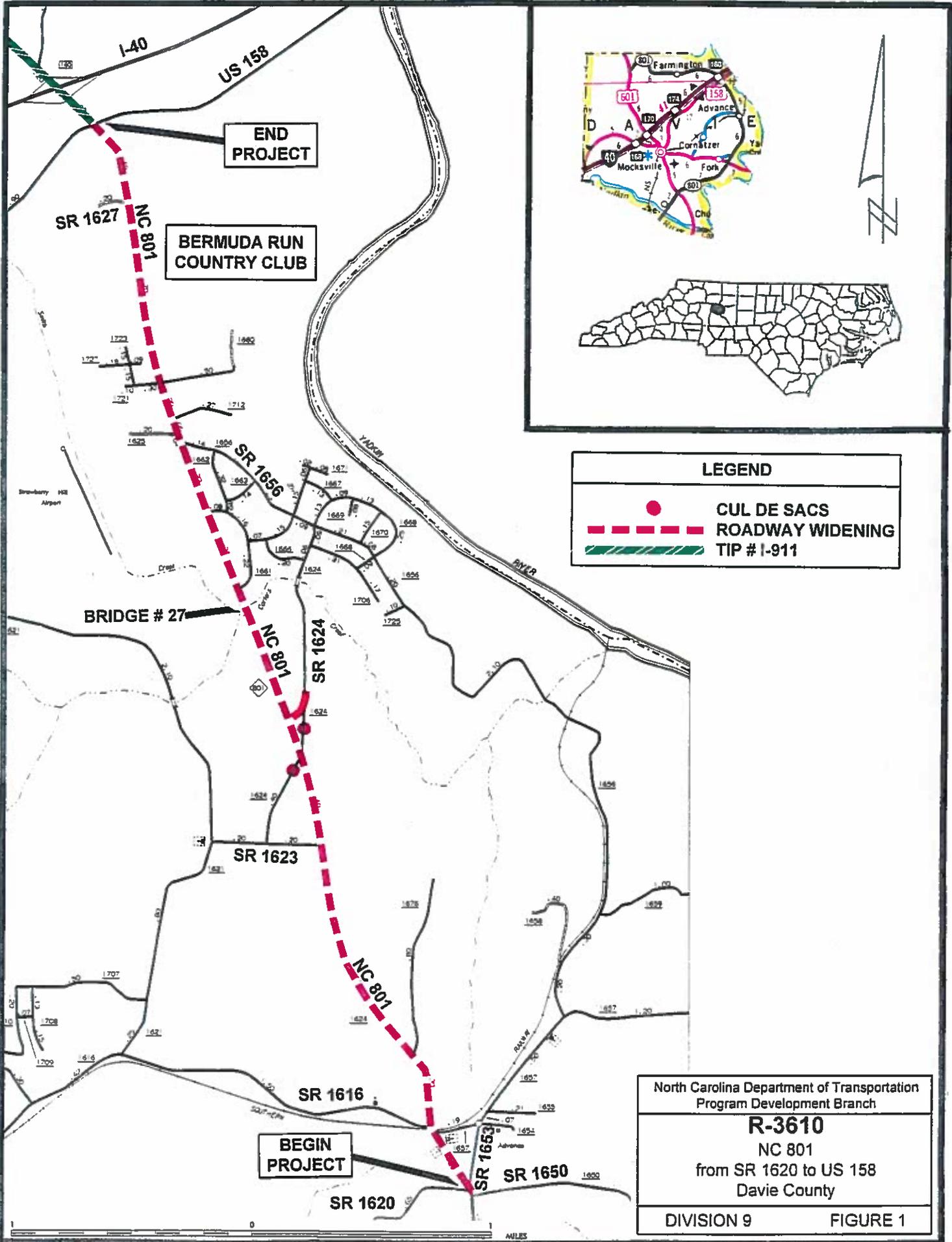
Right-of-Way	\$ 4,350,000
Construction	11,650,000
Total Cost	<u>\$16,000,000</u>

#### **IV. Other Comments**

An environmental screening was not conducted for this study; however, due to the construction potential in the area of Carter's Creek, Corps of Engineers permits and wetlands mitigation will be required. The costs for wetlands mitigation is not included as part of the above estimated project costs.

Considerable cost could be saved by asymmetrical widening in the area of Bermuda Run Country Club (SR 1656 to SR 1627). At the time of this report, the properties on the west side of the roadway are vacant; however, the area is rapidly developing.

No provisions for bicycles have been included in this report.



**END PROJECT**

**BERMUDA RUN COUNTRY CLUB**

SR 1627  
NC 801

SR 1656

**BRIDGE # 27**

NC 801

SR 1624

SR 1623

SR 1616

**BEGIN PROJECT**

SR 1620

SR 1663

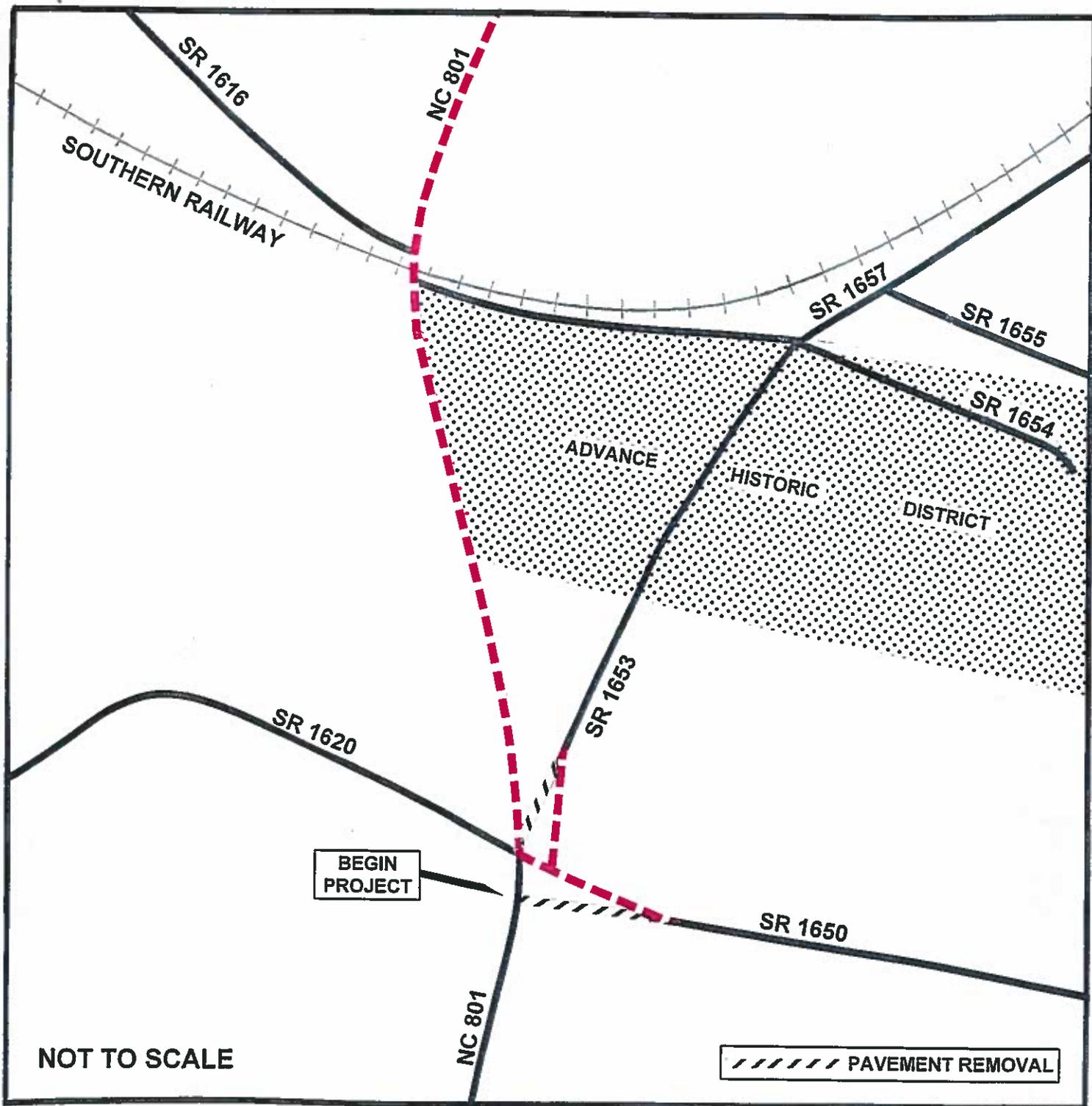
SR 1650

NC 801



LEGEND	
	CUL DE SACS
	ROADWAY WIDENING
	TIP # I-911

North Carolina Department of Transportation Program Development Branch	
<b>R-3610</b>	
NC 801 from SR 1620 to US 158 Davie County	
DIVISION 9	FIGURE 1



North Carolina Department of Transportation Program Development Branch	
<b>R-3610</b>	
NC 801 from SR 1620 to US 158 Davie County	
DIVISION 9	FIGURE 2