

FEASIBILITY STUDY

**US 220
From Emery to Ellerbe
Montgomery-Richmond Counties
R-2231**

**Prepared by
Planning and Research Branch
Division of Highways
N. C. Department of Transportation**

June, 1987

US 220, Montgomery-Richmond Counties Feasibility Study

I. LOCATION AND TYPE OF FACILITY

The section of US 220 covered in this study begins at the south end of the Star-Candor-Biscoe Freeway and terminates at the existing four lane highway just south of the town of Ellerbe. This section of US 220 is 15.3 miles in length and it lies within Montgomery and Richmond Counties (See Figure 1). This section of US 220 is the last remaining unprogramed improvement of US 220 is the last remaining unprogramed improvement in the NCDOT's long range goal of upgrading US 220 from Greensboro to Rockingham.

This report covers the investigation of the feasibility of improvement. The project is not currently funded.

The existing pavement outside of the corporate limits of Norman and Ellerbe varies from 22 to 24 feet wide with 6-8 foot shoulders. Within the urban areas of Norman and Ellerbe the cross-section consists of a basic two lane highway with varying widths of curb and gutter.

US 220 is classified as a Principal Arterial in the North Carolina Functional Classification System and is also designated as Federal Aid Primary Route 45-1.

II. SUMMARY OF NEEDED IMPROVEMENTS

The concept of the proposed project, as outlined in the 1987-1995 Transportation Improvement Program (TIP), calls for widening the existing facility to a four lane highway from Emery to Ellerbe. The Planning and Research Branch, in consultation with the Division office and Roadway Design, concluded that widening this facility through Norman and Ellerbe would result in an unacceptable level of disruption on the local communities due to the number of displaced families and businesses, when compared to the option of constructing US 220 on new location. Additionally, widening the existing US 220 facility would not be constant with the precedent which has set in past improvements along this important arterial.

The Planning and Research Branch also investigated the use of an old abandoned railroad bed for the possible location of US 220.

The approximate location of the abandoned railroad is shown on Figure 4. The abandonment took place approximately 30 years ago. As shown on Figure 4, the railroad followed generally along US 220 from the northern terminal to the community of Plainview and then generally followed SR 1453 to Ellerbe where it ended.

A field trip with Division personnel and an interview was held on August 7, 1987 with Dr. Rankin, a local resident and renowned historian in this area. After thoroughly discussing the situation, the general

consensus was that the railroad bed offered no advantages for the proposed relocation. There would be no advantage in either right of way or construction.

Upon examining all of the possible methods of improving the subject section of US 220, the Planning and Research Branch recommends relocating the existing highway with a four lane divided facility with full control of access as the most practical alternative. Board Members Pugh and Garrison and Division Engineer Whitesell agreed with the new location, access control concept.

The proposed relocation would bypass Norman and Ellerbe where traffic flow is restricted due to heavy roadside development and reduced speed zones.

The improvements are warranted to provide additional capacity for increasing volumes of traffic, particularly the high percentage of truck traffic on this route.

III. EXISTING CONDITIONS

A. General

The subject section of US 220 is located in Montgomery and Richmond Counties. The section covered in this study begins at the Star-Candor-Biscoe Bypass and terminates at the existing four lane highway south of Ellerbe City Limits.

US 220 is basically a two-lane facility throughout the studied area. The studied section in the rural area has a 55 mph posted speed limit and 25-35 mph in the urban areas. The pavement condition is judged generally fair. The concrete pavement has been resurfaced and shows lines of failure and structure cracks. There are four 4-degree and one 10-degree curves located along this section. Grades range up to 7%. Approximately 45% of the segment has unrestricted passing sight distance of 1500 feet or more. Rolling terrain exists along the subject section of US 220. The alignment is judged to be fair except in the area of Ellerbe which is judged to be poor.

B. Traffic Volumes and Capacity Analysis

Current (1987) average daily traffic (ADT) volumes range from a low of 4,200 vpd to a high of 8,400 vpd. Approximately 15-percent of these vehicles are truck tractor semitrailers (TTST) and 6-percent dual-tired trucks (DTT). The future ADT along this section is estimated to range from a low of 8,400 to a high of 16,800 vehicles per day in the year 2007 (See Figure 2).

An analysis of the subject section of US 220 indicate that the facility is currently operating in the Level-of-Service D range during daily peak travel periods. Based on traffic projections, the subject section of US 220 will be operating in the Level-of-Service E range by the end of the 20 year planning period.

C. Characteristics of Development

The density of development along the subject section of US 220 is moderate and rural-residential in nature. The density within Ellerbe and Norman is heavy with businesses and homes located in close proximity to the existing facility.

D. Accident Study

An accident study of the subject location was conducted by the Traffic Engineering Branch of the North Carolina Department of Transportation from January 1, 1984 to January 31, 1987. Summarized accident statistics are as follows:

	US 220 From Emery C.L. to Ellerbe C.L.	Statewide Average for Similar Primary Routes (1986)
Total Accidents	74	N/A
Fatal Accidents	1	N/A
Non-Fatal Injury Accidents	44	N/A
Total Accident Rate	119	191.9
Fatal Accident Rate	1.6	4.0
Non-Fatal Injury Accident Rate	72.0	91.7

Although the Total Accident, Fatal Accident, and Non-Fatal Injury Accident Rate are lower than the Statewide Averages for similar routes, a further review of the accident data shows that vehicles running off the road constitutes the highest percentage of the total amount of accidents occurring on this segment of US 220. The recommended improvements to US 220 should help to alleviate this problem; and also provide improved safety benefits to the increasing traffic volumes.

E. Structures

There are no major structures located along this section of US 220.

F. Terminals

Both terminals adjoin four lane divided cross sections. The northern terminal consists of a four lane divided freeway which bypasses the towns of Biscoe, Star, and Candor. The freeway has right of way for a future diamond type interchange and also right of way stubbed out for future relocation for several thousand feet south of the terminal.

IV. STUDIED IMPROVEMENTS

Any major improvements to US 220 should be compatible with a freeway on new location (see Figure 1). Relocation is recommended to provide compatibility with the existing terminal facilities and to avoid unnecessary disruption to existing development.

The following is recommended for the new location of US 220:

1. Length:	15.3 miles
2. Cross Section	24' pavement, 12' useable shoulders (2' paved), 46' grass median
3. Right of way	Approximately 300'-350' wide with full control of access
Construction	\$36,700,000
Right of way	4,441,500
Total	\$41,141,500

5. Intersection Treatment

Interchanges are proposed at: US 220, SR 1153, NC 73, SR 1309.

Grade Separation structures with no access are proposed at: SR 1524, SR 1533, SR 1321, SR 1317

6. Stage Construction

Should stage construction be required due to limited highway funding, it is recommended that priority be given to a bypass of Ellerbe.

The estimated cost for a 3.60 mile bypass is \$9,000,000 for construction and \$2,174,500 for right of way.

V. POSSIBLE ENVIRONMENTAL IMPACTS

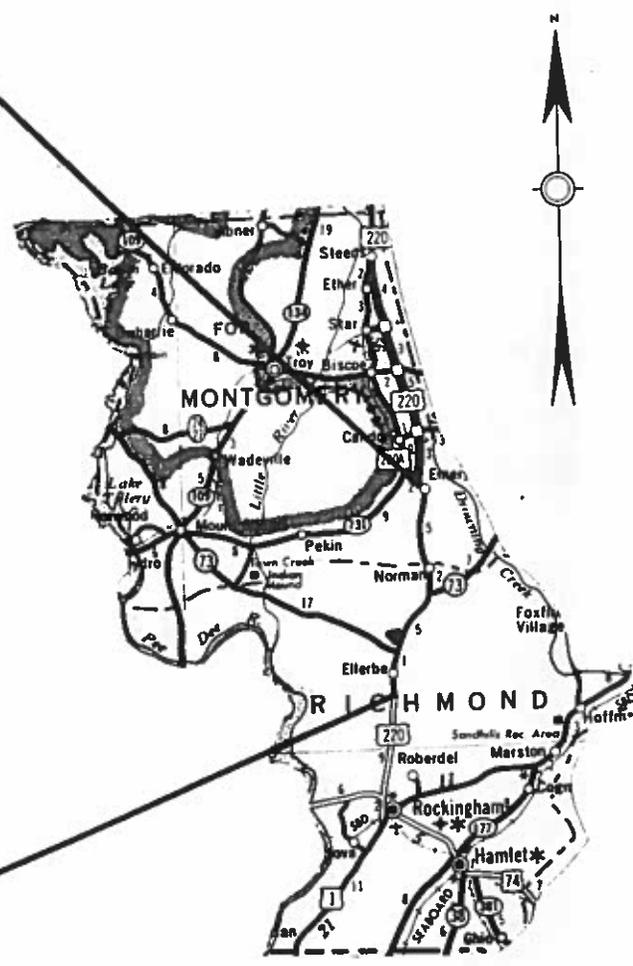
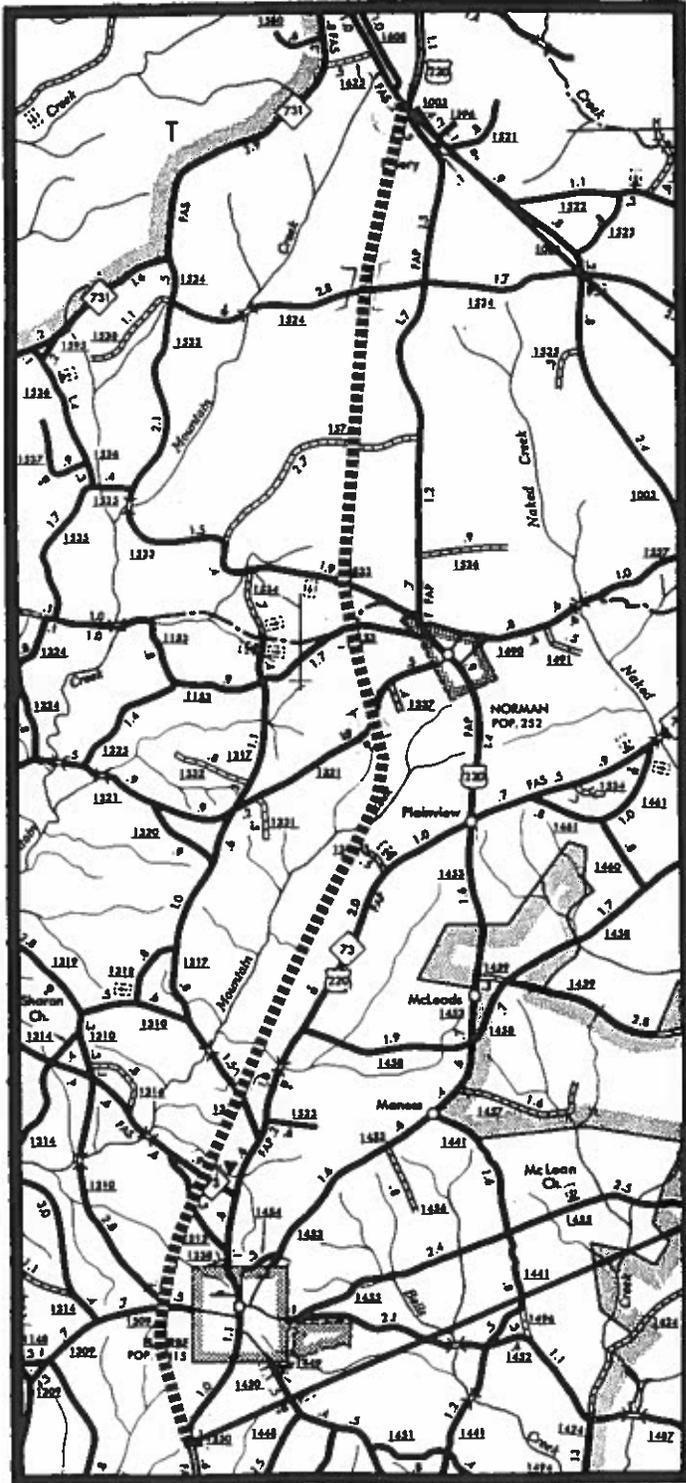
The potential environmental concern on the subject project would be the impact upon wetlands and the potential impact on a historic property located near the intersection of US 220 and NC 73. Any other possible environmental impacts of constructing the proposed improvements are not considered of major consequence.

VI. BASIS FOR FINDINGS

The recommendations contained in this document were based on the following:

1. Field Investigation with Roadway Design
2. Correspondence with the Division Engineer
3. Aerial Photography dated 4-27-87 and 5-3-87
4. Discussions with Board Members and local citizen.

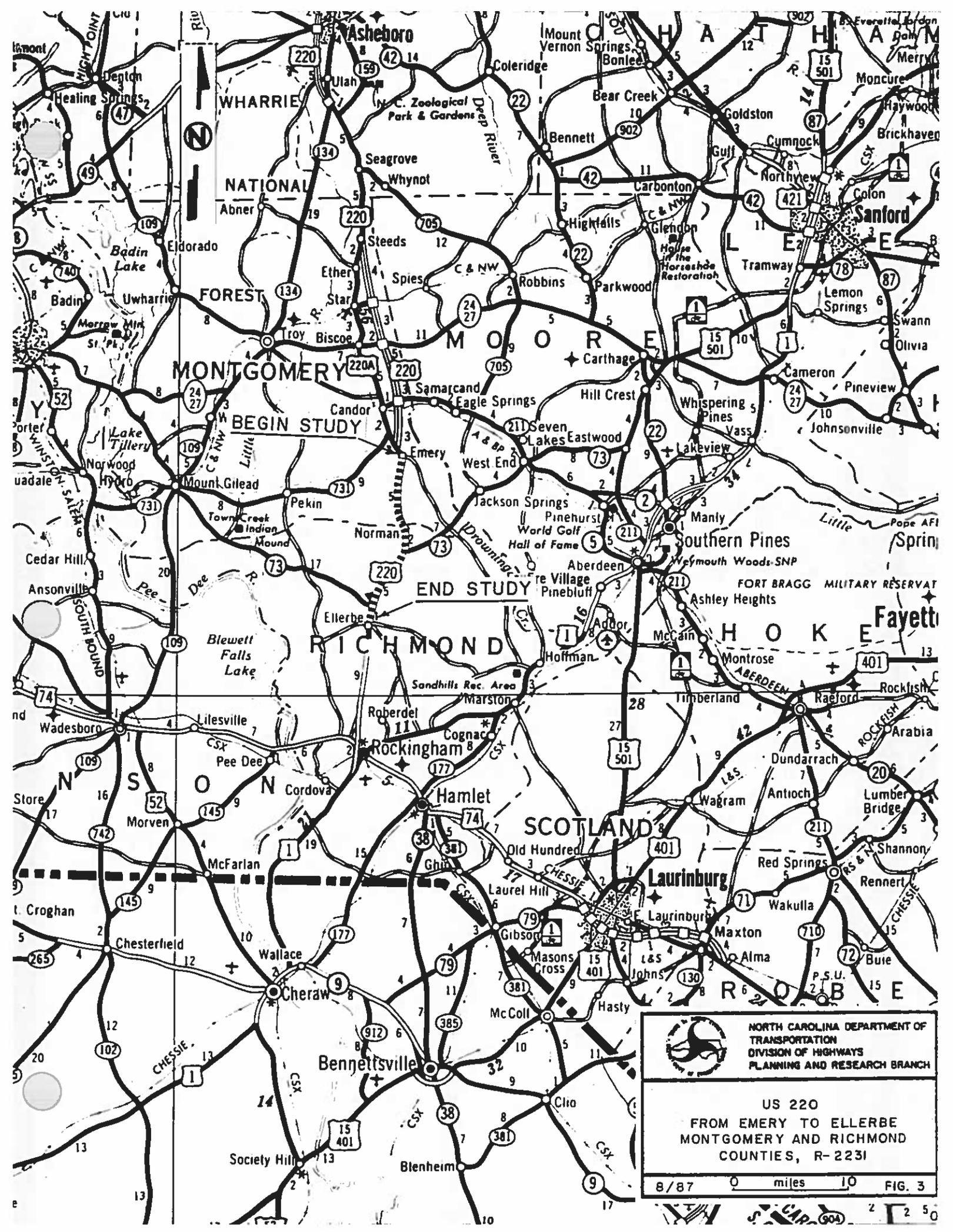
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**NORTH CAROLINA DEPARTMENT OF
TRANSPORTATION
DIVISION OF HIGHWAYS
PLANNING AND RESEARCH BRANCH**

GEOGRAPHIC LOCATION
R-2231
MONTGOMERY COUNTY
RICHMOND COUNTY

FIGURE I



MONTGOMERY

RICHMOND

SCOTLAND

Fayette

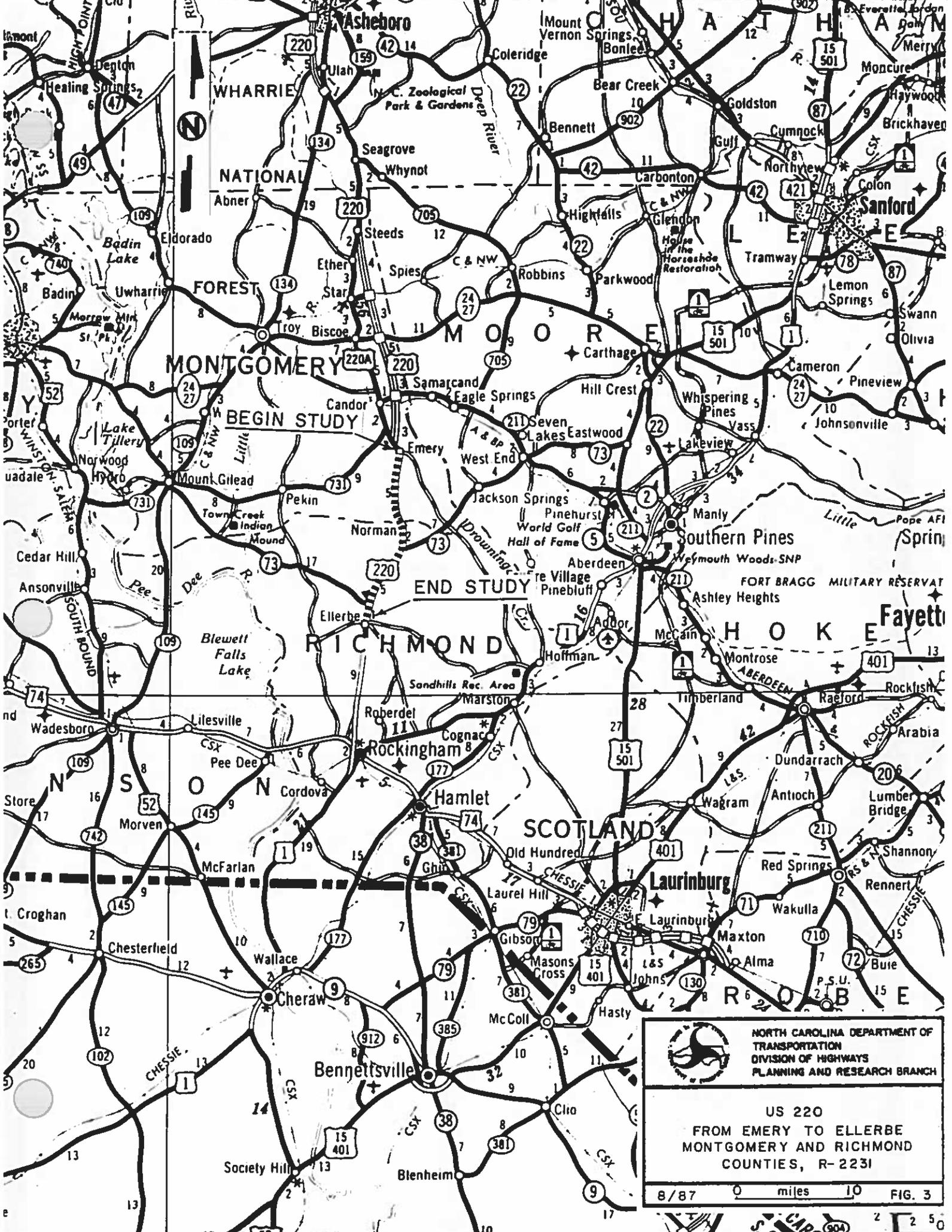
WHARRIE

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FOREST

END STUDY

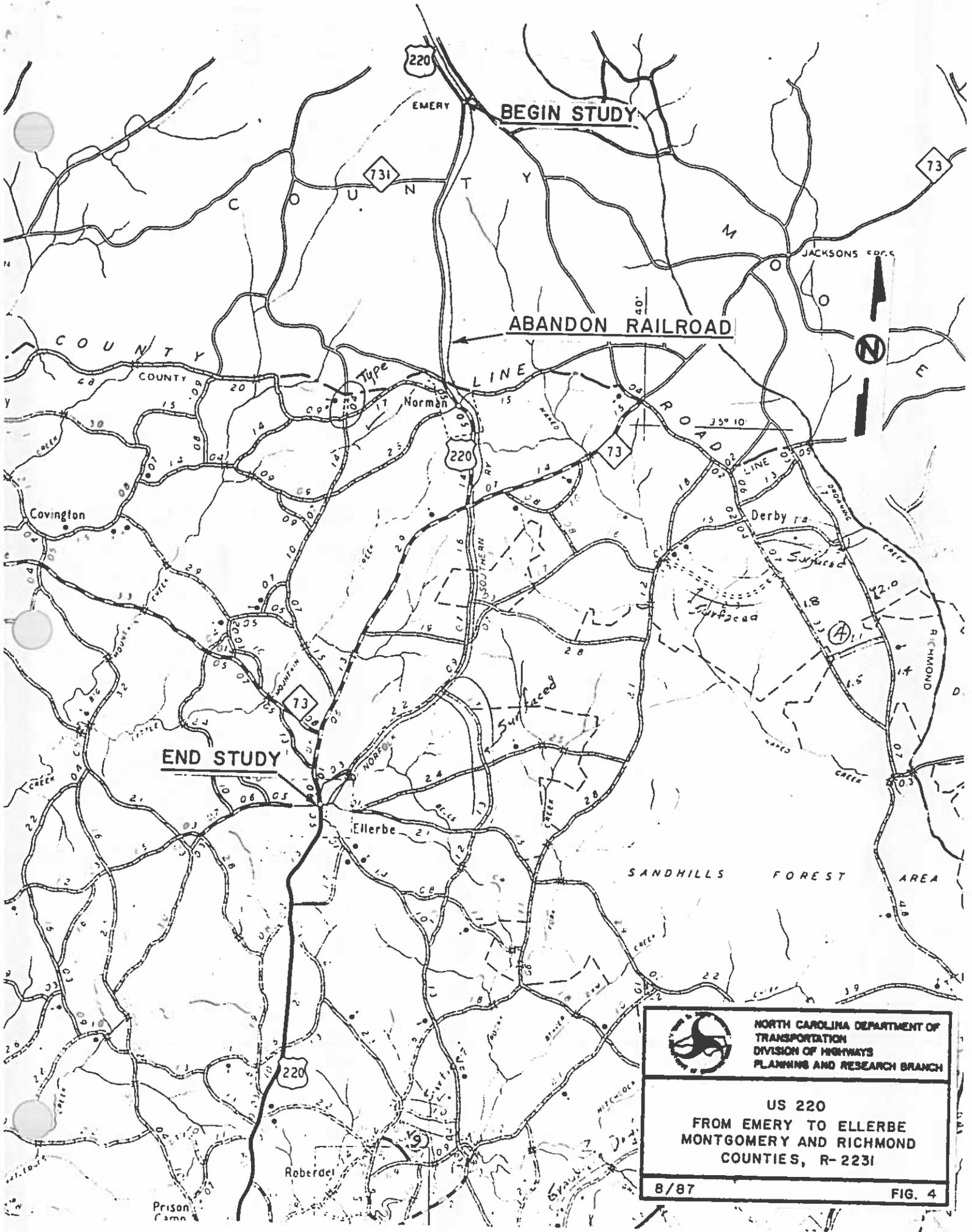
H O K E




NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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 PLANNING AND RESEARCH BRANCH

US 220
FROM EMERY TO ELLERBE
MONTGOMERY AND RICHMOND
COUNTIES, R-2231

8/87 0 miles 10 FIG. 3



	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PLANNING AND RESEARCH BRANCH
	US 220 FROM EMERY TO ELLERBE MONTGOMERY AND RICHMOND COUNTIES, R-2231

8/87

FIG. 4