

FEASIBILITY STUDY

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US 1
ABERDEEN BYPASS
Moore County
R-2203

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

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US 1
ABERDEEN BYPASS
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Feasibility Study

The subject project is included in the 1987-1995 Transportation Improvement Program for feasibility study and/or right-of-way protection. This report provides a brief initial analysis of possible improvements. The project is not currently funded.

It should be noted that during the course of conducting this study, the Planning and Research Branch did not identify an immediate need for the project or justification for the magnitude of expenditures that would be required for the bypass, especially when compared with other statewide transportation needs.

In general, sufficient time was not available to conduct an accurate and detailed investigation of viable alternatives for the project. The amount of preliminary engineering that would be required to adequately define the scope of the proposed improvements, and the impact of these improvements on the surrounding environment, far exceeded the time and resources that were available for completing the feasibility study. It is emphasized that the cost estimates presented in this report are general estimates and should be used for information purposes only.

Furthermore, the subject project is not included in the current Aberdeen Thoroughfare Plan. In light of these factors, it is suggested that the project be delayed until such time as the Thoroughfare Plan can be updated, the public given an opportunity to comment on the project, and a proper evaluation of alternatives can be conducted.

I. LOCATION AND TYPE OF FACILITY

The proposed action is the construction of a US 1 Bypass of the City of Aberdeen, North Carolina. This study involves a 14.3 mile section of US 1 beginning near the Richmond County line and terminating at SR 2026 near Skyline. (See Figure 1a and 1b). The existing cross section is variable but provides for a basic four lane facility. A five lane curb and gutter section exists from the Southern Pines Bypass to US 15-501. A four-lane, curb and gutter section exists within the town of Pinebluff. The remainder of the studied section consists of a four-lane, divided highway with a 30' grassed median.

US 1 is classified as a Principal Arterial in the North Carolina Classification System and is also designated as Federal Aid Primary Route 43-1.

II. EXISTING CONDITIONS

A. General

US 1 is a basic four-lane facility throughout the studied area. The studied section has 45-55 mph posted speed limits. The pavement condition is generally good. The alignment, both vertical and horizontal, is also good.

The terrain ranges from generally rolling to flat.

B. Traffic Volumes and Capacity Analysis

Current (1987) average daily traffic (ADT) volumes range from a low of 4500 to a high of 21,400 (See Figure 2).

For capacity analysis purposes, the proposed facility was divided into the following three segments.

- Segment 1: From the beginning of the project to near the Aberdeen City Limits.
- Segment 2: From the Aberdeen City Limits to the Northern City Limits of Southern Pines.
- Segment 3: From the Northern City Limits of Southern Pines to the end of the project.

The table shown gives a summary of the findings of the capacity analysis performed for these three segments of US 1.

TABLE 1

	YEAR	AVERAGE PEAK HOUR VOLUME	CROSS- SECTION	COMPUTED LEVEL OF SERVICE
SEGMENT 1	1987	470	4-Lane	A
SEGMENT 2	1987	1487	4-Lane	C
SEGMENT 3	1987	987	4-Lane	B

Traffic projections were not provided for this study. Based on anticipated traffic growth it is anticipated that the level of service will be in the D-E range for a 20 year planning study.

C. Accident Study

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

	US 1 From Richmond Co. Line to Skyline	Statewide Average for Similar US Routes (1986)
Total Accidents	415.00	N/A
Fatal Accidents	2.00	N/A
Non-Fatal Injury Accidents	166.00	N/A
Total Accident Rate	97.44	80.3
Fatal Accident Rate	.47	80.3
Non-Fatal Injury Accident Rate	38.98	75.1

The accident analysis shows that the studied segment currently has a total accident rate which is slightly above the statewide average for similar rural US highways.

D. Characteristics of Development

The type of development within Aberdeen is heavy commercial development.

Heavy commercial development has occurred within the urban area of Aberdeen and this has resulted in traffic congestion and low operating speeds.

The type of development along the remainder of the section of US 1 is generally rural-residential in nature, except through the town of Pinebluff where some commercial development exists.

III. Alternative Types of Highway Improvements

The Planning and Research Branch along with the Division Engineer investigated several alternatives for improving the studied section. The studied alternatives are listed below:

Alternative 1

This alternative route provides a bypass of Aberdeen and Pinebluff and a major portion of Southern Pines (See Figure 1a), a distance of 9.0 miles. Alternative 1 adds a new 3.0 mile NC 5-NC 211 connection from northwest of the proposed bypass to the existing US 1-15-501 facility, near Aberdeen. The bypass and connector would provide a controlled access facility routing around the presently congested area on US 1-15-501 from NC 5 to the point where US 15-501 diverges from US 1 on the northern end of Aberdeen.

Alternative 2

This route is similar to Alternative 1, except a western bypass of Pinebluff is proposed as well as a more western crossing of NC 5. This alternative has an approximate length of 12.5 miles (See Figure 1b). This alternative would also require an improved NC 5 - NC 211 controlled access connection from the proposed bypass to existing US 1-15-501 at the southern end of Aberdeen, a distance of 3.0 miles.

Alternative 3

This alternative is a slightly shorter version of Alternative 1, with a proposed controlled access tie-in with existing US 1 north of Pinebluff, a distance of 9.1 miles (See Figure 1a). This alternative has the disadvantage of routing US 1 traffic through the congested area of Pinebluff and associated reduced level of traffic service.

This alternative will also need a NC 5-211 connector from north of the bypass routing to the US 1-15-501 area south of Aberdeen, a distance of 3.0 miles.

Alternative 4

This corridor for US 1 is basically a rural bypass routing for US 1, a distance of 15.2 miles (See Figure 1b). This corridor will serve the through traffic but would not serve the local traffic desires as well as the other alternatives. The northern section of this bypass would pass through several large horse farms east of Southern Pines and would also extend onto the Fort Bragg Reservation.

Alternative	Length	Construction ¹	R/W ²	Total
1	12.0	25,000,000	18,000,000	43,000,000
2	15.1	31,000,000	19,000,000	50,000,000
3	12.1	25,000,000	17,000,000	42,000,000
4	15.2	31,000,000	21,000,000	52,000,000

¹Construction cost estimates were based on general unit costs. Adequate aerial photography and topography were not available for preparing estimates.

²Sufficient time and information were not available for the Right of Way Branch to prepare right of way estimates. Therefore, the right of way estimates are based on the "best judgement" of the Planning and Research Branch.

Conclusions

The alternatives were developed based upon very limited information. The project area is experiencing rapid growth and development. Available aerial photography is outdated. The alternatives studied were based upon suggestions by Division Office and the alternatives were reviewed and adjusted in the field by Roadway Design and Planning and Research Staff. It should be noted that the current mutually adopted October 14, 1977 Thoroughfare Plan for this area does not include a US 1 Bypass.

Alternative 1 has a major advantage for stage construction. A first stage would permit a bypass for the portion of US 1 currently experiencing congestion and would also be compatible for extension in the future. However, the corridor is heavily built up and is closing rapidly due to increasing development trends.

It is the recommendation of the Planning and Research Branch that additional studies be performed. A proper feasibility study will need up to date aerial photography. It is also recommended that the mutually adopted Thoroughfare Plan for this area be updated to obtain local support and concurrence prior to selection of any suggested corridor location for the Bypass.

IV. POSSIBLE ENVIRONMENTAL IMPACTS

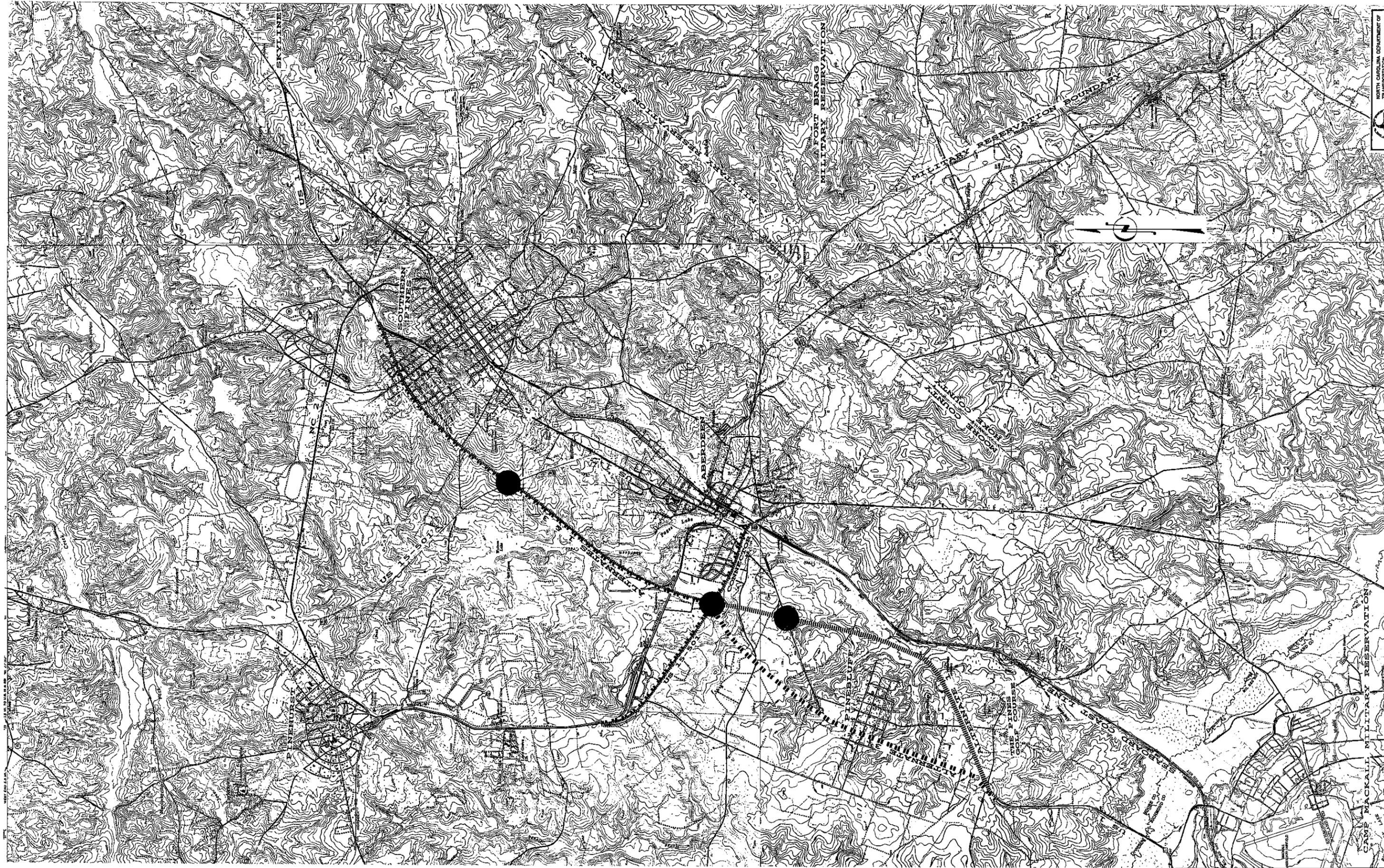
The potential environmental concern on the subject project would be the impact upon wetlands, historical structures, and possible endangered species. Any other possible environmental impacts of constructing the proposed improvements are not considered of major consequence.

V. BASIS FOR FINDINGS

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

1. Field Investigation by Roadway Design Planning and Research Branch.
2. Correspondence with the Division Engineer.

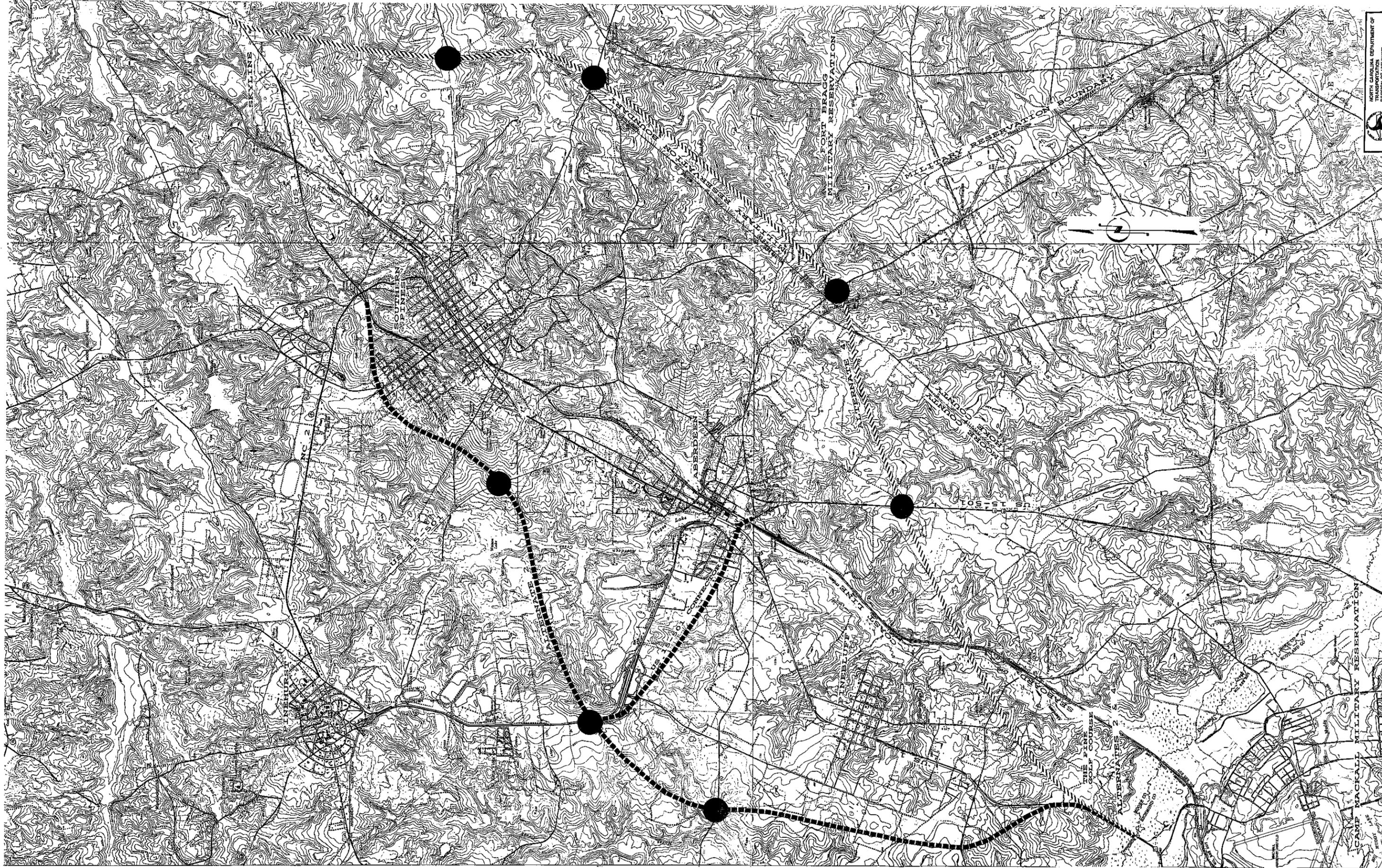
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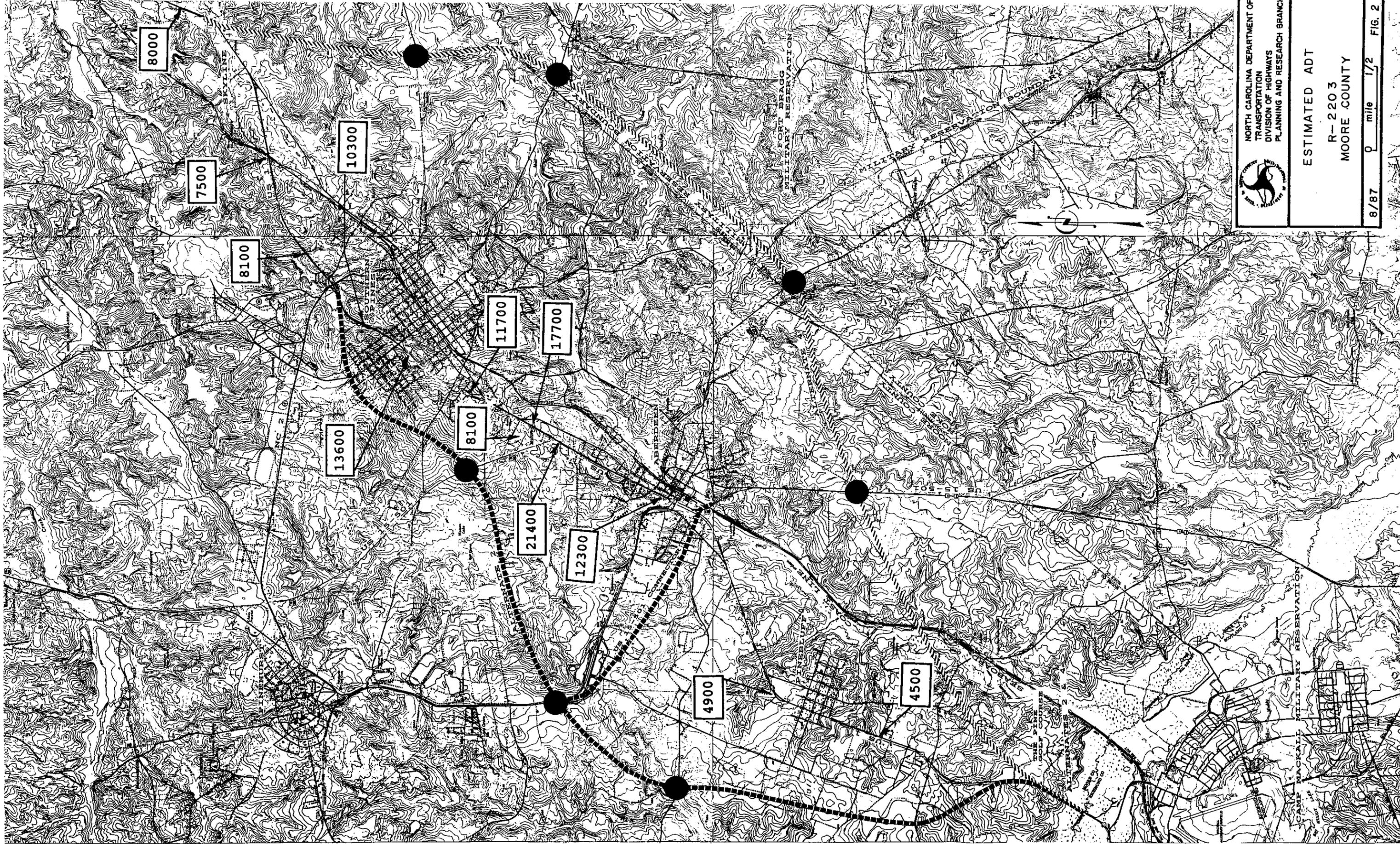


FORT BRAGG
MILITARY RESERVATION

MILITARY RESERVATION BOUNDARY







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

ESTIMATED ADT

R-2203
MOORE COUNTY

8/87 0 mile 1/2 FIG. 2