

FS# 18-94-004

SECTION I - Draft Report
- Post Study
Correspondence

Note to File:

From: WJW 9-19-94

This Project was initially pursued
as R-2924.

FS# 18-94-004 is the 27 Million \$ Version
R-2924 is the 1/2 Million \$ Version

Work on FS# 18-94-004 was halted
after completion of the Draft F.S.

WJW

FEASIBILITY STUDY

DRAFT COPY

New Connector Road
From US 15-501 to I-40
Chatham and Durham Counties
FS-18-94-004

Prepared by
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New Connector Road
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I. GENERAL DESCRIPTION

This preliminary study describes a proposed multi-lane connector road between US 15-501 in Chatham County and I-40 in Durham County. Two alternative routes were studied. Please see Figure 1 for the location of the two alternative routes.

Alternative 1 begins in Chatham County at the intersection of US 15-501 and SR 1717 (Jack Bennett Road), then follows generally the alignment of SR 1717, SR 1108, SR 1726, SR 1109, and SR 1110 to the northern project terminal at I-40 in Durham County. The total length of Alternative 1 is approximately 10.8 miles. This route is partially located in the upper reaches of Jordan Lake which is managed by the Corp of Engineers and traverses lands which are owned by the Corp including flood storage areas, Federal game lands, and the Greentree Waterfowl Refuges. It is estimated that Alternative 1 will require the relocation of approximately 71 residences and 1 business. The total cost for Alternative 1 is estimated to be \$ 33,000,000.

In an effort to minimize involvement with the environmentally sensitive lands described above, Alternative 2 was investigated and is described below.

Alternative 2 follows the general alignment of several secondary roads and includes a 1.6 mile segment on new location. Alternative 2 begins in Chatham County at the intersection of US 15-501 and SR 1721 (Lystra Road), then follows generally the alignment of SR 1721 for approximately 2.5 miles, then on new location for approximately 1.6 miles to SR 1108, then following SR 1108, SR 1726, SR 1109, and SR 1110 to the northern project terminal at I-40 in Durham County. The total length of Alternative 2 is approximately 8.7 miles. This route is also partially located in the upper reaches of Lake Jordan; however, this alternative avoids this sensitive area to a much greater extent than does Alternative 1. Alternative 2 will require the relocation of approximately 40 residences. The total cost for Alternative 2 is estimated to be \$ 27,000,000.

Alternative 2 is recommended because the estimated cost and environmental impact are less than that for Alternative 1.

The proposed roadway cross section, from the southern project terminal to the Durham corporate limits, is a four-lane, divided, rural section with a 46 foot wide median, two 12 foot wide lanes in each direction on a 250 foot wide right of way. From the Durham corporate limits to the northern project terminal, a distance of approximately 0.8 miles, a 72 foot wide, 5-lane curb and gutter

section (two travel lanes in each direction with center turn lane and 8 foot wide berms) on a 100 foot wide right of way is proposed.

It is proposed that the improvements be implemented in two chronological stages. Stage I includes the construction of a two-lane facility and acquisition of right of way 250 feet wide to accommodate the ultimate four-lane divided section. Also, in Stage I, it is proposed to construct the 72 foot wide face to face curb and gutter section on 100 feet of right of way at the northern end of the project. The cost for Stage I is estimated to be \$ 14,600,000.

Stage II includes the remaining construction to realize a four-lane, median divided, facility between the southern project terminal and the Durham corporate limits. The cost for Stage II is estimated to be \$ 12,400,000.

This study is the initial step in the evaluation of alternatives and is not to be considered the product of exhaustive environmental or design investigations. The purpose of the study is to examine alternatives and identify potential problems that may require consideration if one of the alternatives are selected for planning and design.

II. NEED FOR PROJECT

The purpose of this project is to reduce the traffic volume and congestion on US 15-501 between Chatham County and Chapel Hill and to provide a more direct route between Chatham County and the Research Triangle Park and I-40 in Durham County.

The Chapel Hill - Carrboro Thoroughfare Plan shows a proposed connector road, on an alignment similar to these alternatives as a proposed minor thoroughfare.

Development along both alternative routes is generally low density, rural, residential and farming. Both alternatives pass through large wildlife refuge areas. The roads in this area are typical rural secondary roads with pavement widths varying from 18 to 22 feet, and grass shoulders approximately 8 feet wide.

Bridge #64, on SR 1726 is 433 foot long, has a clear deck width of 30 feet, spans a fork of Morgans Creek, and has a sufficiency rating of 87.6 out of a possible 100 points. Bridge #110 on SR 1110 spans Little Creek, is 170 feet long, has a clear deck width of 37 feet, and has a sufficiency rating of 91.7 points.

The estimated 1993 Average Daily Traffic (ADT) on US 15-501 between the proposed connector and the Chapel Hill 15-501 Bypass is estimated to be 15,800 vehicles per day (vpd). The design year (2013) ADT is estimated to be 29,000 vpd if one of the alternates

being studied is constructed and 36,000 vpd if one of the alternates is not constructed.

The Level Of Service (LOS) on US 15-501 south of the Orange County line is estimated to currently be level E. Assuming immediate construction of the proposed connector, the LOS would improve to level D. With or without construction of the connector it is estimated that in the year 2013 the LOS on US 15-501 will be level F.

The estimated 1993 Average Daily Traffic (ADT) on the routes that comprise this project range from 1400 vehicles per day (vpd) to 3500 vpd. In the design year (2013), the estimated ADT ranges from 15,000 vpd to 23,000 vpd. Based on these estimated traffic volumes the current level of service (LOS), on the routes comprising this project is level C and in the design year will be level F without the proposed improvements. With the proposed improvements level B will be expected in the design year.

During the period from March 1, 1990 through February 28, 1993 there were 153 accidents reported on US 15-501 from 0.25 miles south of SR 1717 in Chatham County to SR 1994 (Farrington Road) in Orange County. This resulted in an accident rate of 150.5 accidents per 100 million vehicle miles (Acc/100MVM), compared to a statewide average of 144.3 Acc/100 MVM for all rural US routes during 1992. There was one fatality reported during the period and 69 of the accidents resulted in injuries. The most prevalent accident type was rear-end (35.3%).

On the routes that comprise this project, and during the period from January 1, 1990 through December 31, 1992 there were 77 reported accidents. There was one fatal accident and 26 accidents resulted in non-fatal injuries. This resulted in an accident rate of 238 accidents per 100 million vehicle miles (Acc/100MVM), compared to a statewide average of 324 Acc/100 MVM for all rural secondary routes during 1992. The most prevalent accident type was ran-off-road (47%), animal (18%), left-turn (10%), and angle (10%).

III. RECOMMENDATIONS

It is recommended to construct a multi-lane connector road between US 15-501 in Chatham County and I-40 in Durham County on the alignment shown as Alternative 2 on Figure 1. This route generally follows the alignment of several secondary roads and includes a 1.6 mile segment on new location. The total project length is approximately 8.7 miles.

It is recommended that the improvements be implemented in two chronological stages. Stage I includes the widening and resurfacing of existing secondary roads (7.1 miles), and construction of a 1.6 mile segment on new location to provide a 2-lane, 2-way facility between the southern project terminal and

the Durham corporate limits, and a 5-lane curb and gutter section from the Durham corporate limits to I-40. The Stage 1 proposed roadway cross section, from the southern project terminal to the Durham corporate limits, is a 2-lane, 2-way rural section with 12 foot wide lanes and 4 foot paved shoulders on a 250 foot wide right of way. From the Durham corporate limits to the northern project terminal a 72 foot wide, 5-lane curb and gutter section (two travel lanes in each direction with center turn lane and 8 foot wide berms) on a 100 foot wide right of way is proposed. Wide (14 feet) outside travel lanes are proposed to accommodate bicycles. Also, Bridge #64 and Bridge #110 are to be rehabilitated and widened. It is recommended that all required right of way be acquired in Stage I and that it be acquired asymmetrically with respect to the existing roadway in order to accommodate the future median and travel lanes.

Stage II includes the remaining construction to realize a four-lane, median divided, facility between the southern project terminal and the Durham corporate limits. The cost for Stage II is estimated to be \$ 12,400,000.

These improvements will require the relocation of approximately 40 residences. The total estimated cost including construction and right of way for Alternative 2 is \$ 27,000,000 as follows:

STAGE I

Construction Cost.....	\$ 7,400,000
Right of Way Cost.....	7,200,000
Total Stage I Cost.....	\$ 14,600,000

STAGE II

Construction.....	\$ 12,400,000
Alt. 2 Total Project Cost.....	\$ 27,000,000

V. OTHER COMMENTS

No historic properties were identified in the course of this study; however, a detailed environmental screening was not conducted.

The number of residential relocations, for each alternative, represents a worse case scenario and may be reduced by selective, asymmetrical, right of way acquisition. The relocation impact for one alternative, relative to the other alternative, will likely remain essentially similar to that for the worse case comparisons.

Under Project R-942, US 15-501 is programed to be widened to a multi-lane facility from Pittsboro to Chapel Hill. Although construction of this project would likely reduce traffic volumes on US 15-501 by approximately 25 percent between the connector and Chapel Hill, this project will not serve as an alternative to the widening of US 15-501. After accounting for the predicted reduction of traffic due to this proposed connector, existing and projected traffic volumes on US 15-501 still justify the proposed multi-lane improvement under Project R-942.

The total cost for right of way and construction for Alternative 1, by stages, is estimated to be \$33,000,000 as follows:

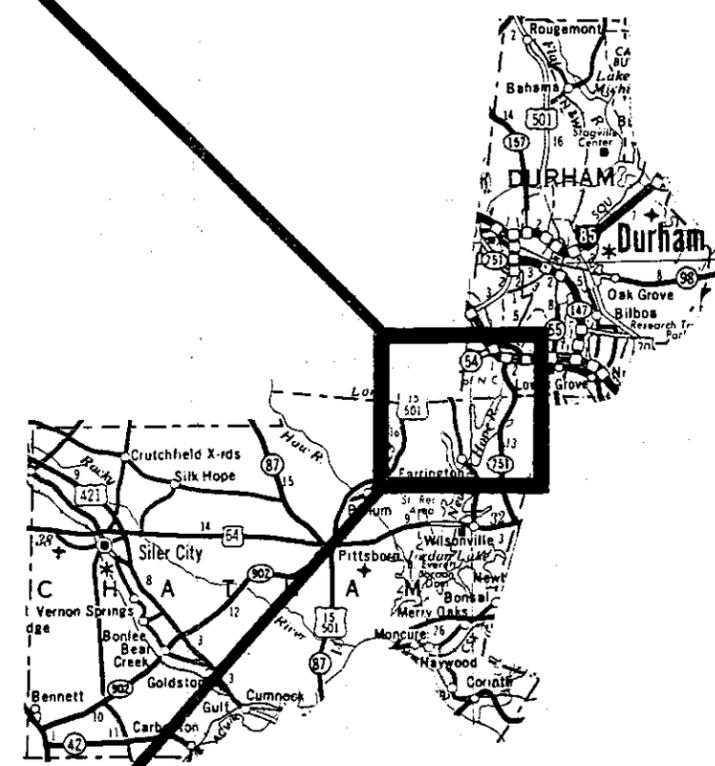
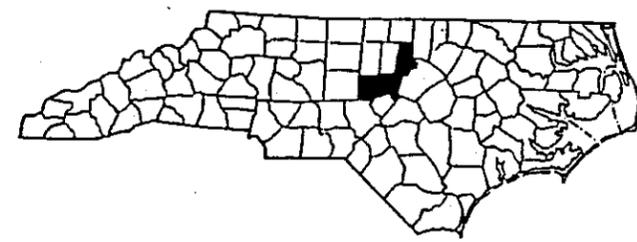
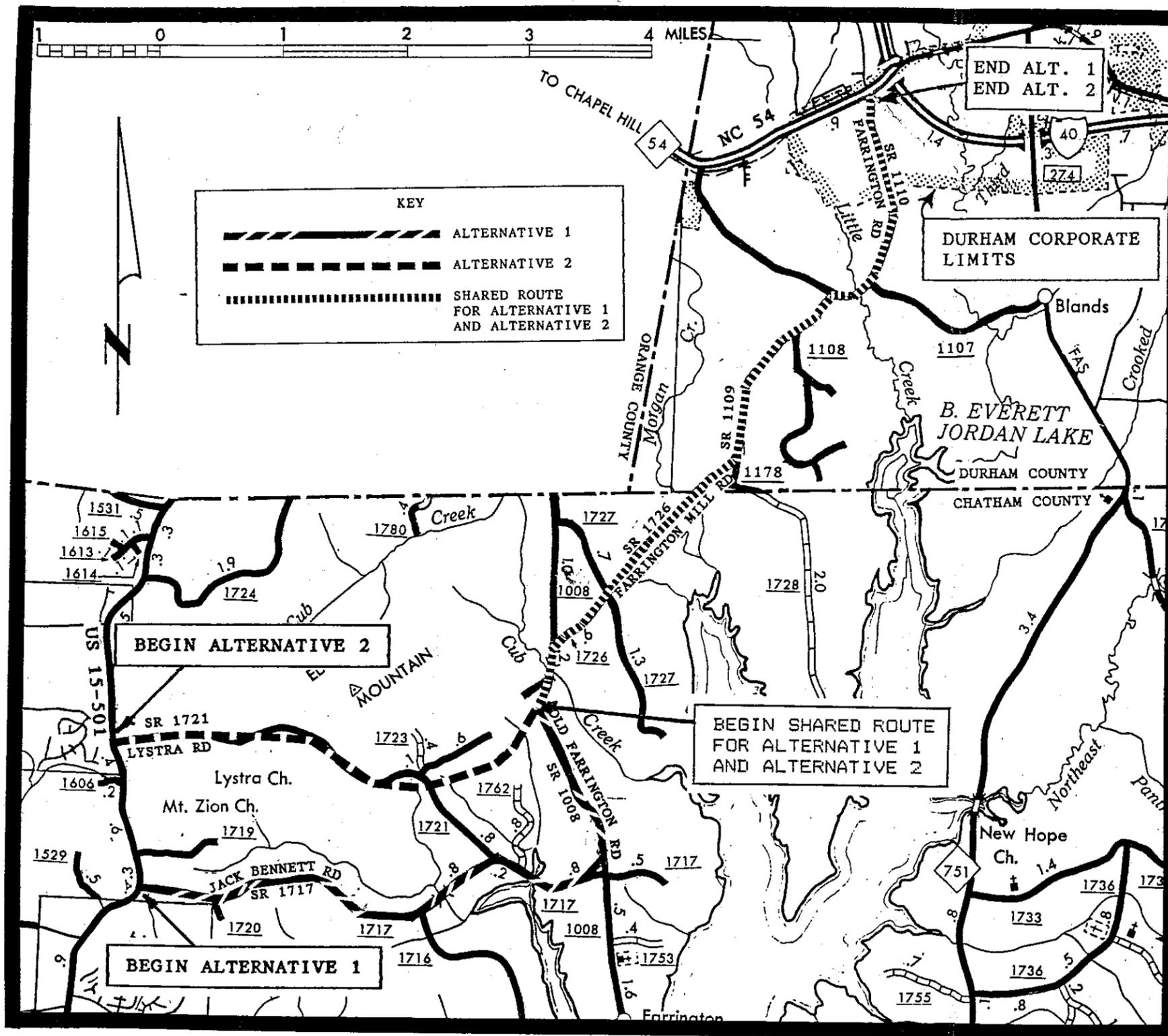
STAGE I

Construction Cost.....	\$ 8,000,000
Right of Way Cost.....	9,500,000
Total Stage I Cost.....	\$ 17,500,000

STAGE II

Construction Cost.....	\$ 15,500,000
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Alt. 1 Total Project Cost.....	\$ 33,000,000
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FEASIBILITY STUDIES UNIT

NEW ROUTE, CHATHAM CONNECTOR
FROM US 15-501 IN CHATHAM COUNTY
TO I-40 IN DURHAM COUNTY

CHATHAM AND DURHAM COUNTIES

FS 18-94-004 DIV. 5 & 8 FIGURE 1