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FEASIBILITY STUDY

NC 73, From Concord to Albemarle
Cabarrus and Stanly Counties
R-2410

Prepared by
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I. DESCRIPTION

This report covers a preliminary study of the proposed upgrading of the subject road to an improved two-lane facility. As shown on Figure 1, this study extends from the Concord corporate limits eastward to the Albemarle corporate limits, a distance of approximately 19.2 miles. The project is included in the current Transportation Improvement Program for feasibility study and/or right of way protection but is not funded.

II. PURPOSE OF PROJECT

Existing Route Characteristics

NC 73 is designated as a major collector in the Cabarrus and Stanly County Functional Classification Plans. In addition to connecting Concord with Albemarle, the subject road provides radial access to each town from the outlying areas of east Cabarrus County and west Stanly County and is a traffic feeder of NC 49 with arterial importance.

The study section of road was constructed in the 1920's. It basically has a 24-foot pavement with general shoulder widths of 5 feet. Through the Mount Pleasant area, the roadway widens to variable 30 to 36-foot curbed widths with some parallel parking allowed.

Horizontal alignment is relatively fair and for the most part allows 55 MPH safe speeds. However, there are numerous curves ranging from 3 to 6 degrees, with some curves exceeding 6 degrees (55 MPH safe speed) to a maximum of 9 degrees (45 MPH safe speed). Vertical alignment is generally undulating and has grades ranging up to 6 percent. Because of the vertical curves, safe design speeds (stopping sight distance) at various locations are limited to about 35 MPH. With combinations of rolling grades, curves, and crossroads, safe passing distance of 1500 feet or more is practically non-existent.

Seven concrete bridges are located along this section of NC 73. They are listed as follows with pertinent information:

Bridge No.	Location	Length (feet)	Width (feet)	Age Years	Rating (New Bridge=100)
Cabarrus County					
104	Cold Water Creek	127	28	65	57
117	Little Cold Water Cr.	77	28	65	76
121	Adams Creek	42	28	69	74
127	NC 49 Interchange	139	26	38	53
132	Dutch Buffalo Cr.	190	28	69	54
Stanly County					
21	Bear Creek	79	26	43	73
33	Long Creek	151	26	77	59

Roadside development is primarily light to medium density residential with scattered businesses and churches and one school. Development is denser through the Mount Pleasant area where speed limits on NC 73 are reduced to 35 and 20 MPH. Elsewhere along the project, the speed limit is 55 MPH.

Traffic Volumes, Capacity, and Accident Record

Current traffic volumes range from 4000 vehicles per day at the Cabarrus-Stanly County Line to 7500 vpd in Mount Pleasant. Traffic volumes at the Albemarle and Concord corporate limits are 5000 and 8000 vpd, respectively. These volumes include approximately 3 to 5 percent heavy trucks. By year 2010, it is estimated that traffic volumes between the project limits will range from 8000 to 14,000 vpd.

The existing facility has a capacity of approximately 5000 vpd in rural areas and 10,000 vpd in urban areas at desirable level of service C. Thus, in comparing capacities with the existing traffic volumes, traffic flow on NC 73 does not appear to be problematical for the most part. However, if traffic increases as predicted for year 2010, traffic operation would be reduced to level of service D, which is the minimum level of service that could be tolerated by road users.

Accident data for the past four years revealed a total of 303 accidents on the studied portion of NC 73. That record yields an accident rate of 1.9 accidents/million vehicle miles, which is less than the statewide average rate of 2.2 acc/mvm in 1988 for two-lane NC routes in rural areas. Major patterns of accidents were run off road and rear end collision types.

Need for Project

Although the existing road is not expected to have critical capacity problems now or in the near future, it does have undesirable alignments that severely limit passing opportunities and lower safety and driving comfort. Improvement to the horizontal and vertical configurations of the existing road combined with a bypass of Mount Pleasant is a justifiable need to facilitate traffic flow between Concord and Albemarle and points beyond.

III. RECOMMENDATIONS AND COSTS

Based on a preliminary design study conducted by the Roadway Design staff, alignment changes are recommended along approximately 14 miles or 75 percent of the total 19-mile project length. These changes involve adjustment to vertical curves and realignment of horizontal curves to improve stopping and passing sight distances. They were derived from a careful review of old roadway plans and field observations and are shown on an aerial mosaic and a copy of old roadway plans on file in the Roadway Design Unit. On sections where no alignment changes are needed, resurfacing and shoulder widening, including provision of paved shoulders, should suffice. The project improvements also provide for a 4-mile bypass of Mount Pleasant to facilitate the flow of a large portion of existing traffic. The bypass, coupled with an interchange at NC 49, would

enable through traffic to avoid travel flow restrictions in the town such as low speeds, signals, and roadside interference. Recommended location for the bypass is shown on Figure 1.

All existing bridges would be retained. However, the bridges may require rehabilitation and retrofitting. Costs for those possible improvements are included in the project cost.

No improvements other than possible resurfacing are needed on NC 73 beyond the project limits where the speed limits decrease to 45 and 35 MPH. The alignment within the urban areas of Concord and Albemarle are considered adequate for low speed operation. However, the roadways would need additional lanes in the near future to provide adequate capacity for the higher traffic volumes.

Recommended cross section for the two-lane improvement is 24-foot pavement with minimum 8-foot shoulders, including two-foot paved shoulders. Additional right of way will be required to accommodate the improvements. For cost estimate purposes, an 80-foot right of way plus easements was used for improvements that generally follow the existing location and 150-foot right of way with partial control of access for the proposed Mount Pleasant bypass.

Estimated costs of the recommended improvements are divided into sections for possible staging as follows:

Concord Corporate Limits to Mount Pleasant Bypass (5.3 miles)

Roadway	$ 5,100,000
Right of Way	6,200,000
Subtotal	$11,300,000

Mount Pleasant Bypass (4.1 miles)

Roadway (includes interchange at NC 49)	$ 8,200,000
Right of Way	3,500,000
Subtotal	$11,700,000

Mount Pleasant Bypass to Albemarle Corporate Limits (9.8 miles)

Construction	$ 8,500,000
Right of Way	5,900,000
Subtotal	$14,400,000

Total Cost for Entire Project = $37,400,000

IV. OTHER MATTERS

No other alternative improvements were found to be more feasible or appropriate. Consideration was given to possible relocation of the entire studied facility. However, this alternative would be more costly and only serve about half as much traffic as currently uses the existing road.

Major negative environmental impacts of the recommended improvements would be: (1) loss of land required for the right of way; (2) disruption to traffic flow during construction, (3) displacement of approximately 59 residences and 3 businesses; and (4) possible use of historic property at one location (Salem Methodist Church and Cemetery).

If the project is to be implemented at a future date, all feasible alternatives and their impacts will have to be evaluated in a detailed planning/environmental document, and a final decision made as to the most appropriate improvement.

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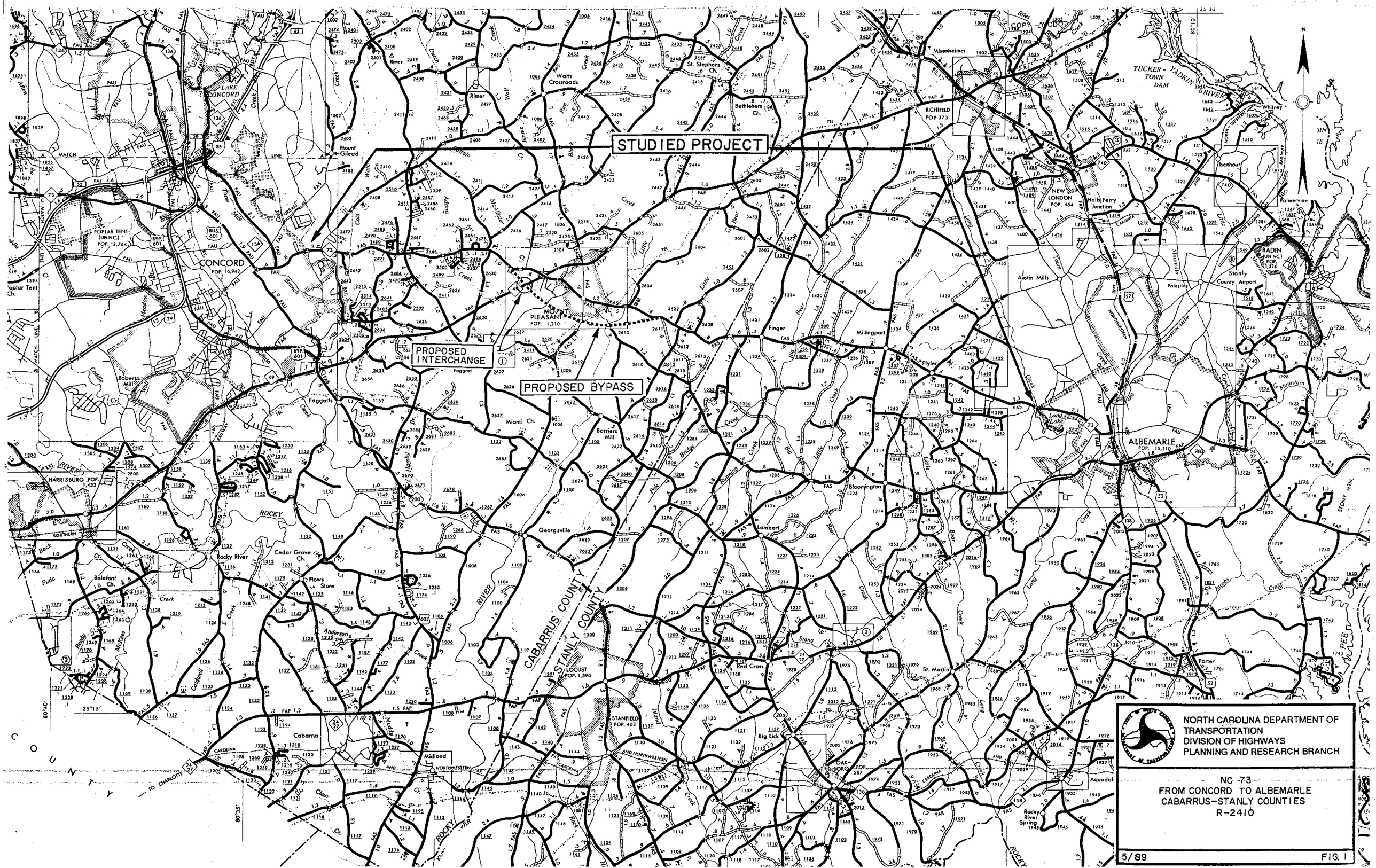

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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FIG. 1