

FEASIBILITY STUDY

NC 14, Rockingham County
From SR 2670 to Eden
Southern Corporate Limits

F S-880005

Prepared by
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I. DESCRIPTION

This report covers a preliminary study of the proposed widening of the subject road to a multi-lane facility for a distance of approximately 8 miles. Location of the project is shown on Figure 1. No improvements are currently funded.

II. EXISTING CONDITIONS

The entire studied section of NC 14 from just north of Reidsville to Eden is designated as a rural principal arterial in the Statewide Functional Classification System and is part of the Federal-Aid System being designated FAP-47-1.

The studied section of NC 14 has a 28-foot pavement with 10-foot grass shoulders. It is constructed on good alignment through rolling terrain. Based on old right of way agreements, a right of way width of 150 feet symmetrical about the centerline of the road is claimed.

With the exception of SR 2039, all crossroads intersect NC 14 at grade. SR 2039 is grade separated from NC 14 but is connected by diamond type ramps.

Two bridges and two reinforced box culverts are located along the subject road.

<u>No.</u> <u>Bridge</u>	<u>Location</u>	<u>Date</u> <u>Built</u>	<u>Length</u>	<u>Width</u>	<u>Suff.</u> <u>Rating</u>
114	SR 2039 Interchange	57	148	24	70.3
132	Dan River	57	518	28	11.8

Culvert C 57 over Wolf Island Creek was constructed in 1959 to a 38-foot length and has a 95.9 sufficiency rating. Culvert C 77 over Town Creek was built in 1957 to a 30-foot length and has a 93.9 sufficiency rating.

The majority of development along the studied section of NC 14 is scattered residential. However, from SR 1990 to SR 2037 (approximately 2 miles) there is moderate residential development mixed with light commercial development.

The studied section of NC 14 extends from the existing two lane shoulder section at SR 2670 to the existing four lane curb and gutter section at the Southern Corporate Limits of Eden.

III. TRAFFIC VOLUMES

The current traffic volume along NC 14 is approximately 12,000 vehicles per day. The year 2008 average daily traffic is expected to be 20,800 vehicles per day. These volumes include 11% trucks.

A comparison of existing road capacity with current traffic volumes indicates the existing roadway is operating at or near capacity. Improvements will be required to accommodate future traffic volumes at a desirable level of service.

Approximately 152 accidents occurred on the subject portion of NC 14 during a three year period from January 1985 through February 1988. This record yielded an accident rate of 168 accidents per 100 million vehicle miles, which is less than the 1987 statewide average of 235 acc/100 mvm for two-lane routes. No particular accident patterns stand out.

IV. RECOMMENDATION

The purpose of this project is to provide additional lanes that would eliminate the present and future capacity deficiency and improve the level of service.

Recommended improvements extend from the Southern Corporate Limits of Eden to SR 2670 north of Reidsville (8 miles) and are as follows:

Widen the subject project to a 5-lane shoulder section. The proposed five lane width is necessary to adequately and more safely accommodate present and future traffic volumes and separate congestive left turning traffic from through traffic.

All bridges and the SR 2039 underpass are anticipated to be widened or replaced to provide a five-lane section. All culverts can be extended to accommodate the five lane section.

The total estimated cost of the improvements outlined above is \$14,000,000. Construction is expected to be contained within the existing claimed right of way; therefore, no right of way estimate was made for the five-lane section.

V. ALTERNATIVES

The purpose of the project is to improve an existing, established transportation facility. Therefore, no alternative corridor locations were considered. Existing NC 14 has adequate horizontal and vertical alignment and can be improved without significant adverse consequences. Any new location alternative would be more costly and would have greater adverse consequences since the existing right of way would not be utilized.

Two alternative cross sections were considered for improvement to existing NC 14 and are described as follows:

Four-Lane Divided:

NC 14 would be improved to a four-lane divided facility. Two lanes of travel would be provided in each direction, with a 46-foot grass median serving as a buffer between opposing traffic movements. Left turns would be accommodated by providing median openings. Provisions of a grass median would force turning movements to occur only at designated points and would result in U-turns at median openings.

The existing right of way would be expanded to 225 feet to contain construction. All additional right of way would be obtained from the east side of existing NC 14. Approximately 25 residences and 7 businesses would be displaced. Provision of dual structures would be necessary at each of the four stream crossings. Dual structures consist of a new structure (for proposed lanes) plus the existing structure.

Five-Lane, Undivided (Recommended):

NC 14 would be widened to a 60-foot pavement with 10-foot useable shoulders. Widening would be symmetrical.

Two lanes of travel in each direction would be provided with a center turn lane. Estimated future traffic volumes warrant four through travel lanes plus a fifth (center) lane to accommodate turning movements. Left turns would be possible at virtually all points. U-turn movements would not be necessary. Removing turning vehicles from through travel lanes is important if the facility is to provide a desirable level of service. Without the center lane for continuous left turns, the through travel lanes would be blocked at times and would result in a facility having less capacity and a lower degree of safety.

Provision of shoulders (in lieu of curb and gutter) is desirable, since the area is rural in nature, and the curb and gutter is not needed to control driveway entrances.

The existing right of way would be adequate to contain a five lane shoulder section. Existing structures could be widened or replaced to provide a five lane section.

VI. ESTIMATED COST

The estimated cost of the studied alternatives is as follows:

	<u>Four Lane Divided</u>	<u>Five Lane Undivided</u>
Construction	\$10,500,000	\$14,000,000
Right of Way	6,000,000	-
TOTAL	<u>\$16,500,000</u>	<u>\$14,000,000</u>

VII. DISCUSSION OF ALTERNATIVES

A four-lane divided facility would provide a more desirable level of traffic service than a five-lane undivided facility. However, the recommended five-lane undivided facility would cost approximately \$2,500,000 less and would avoid the displacement of 25 homes and 7 businesses.

The above conclusion is based on preliminary studies. Additional design studies are desirable to evaluate the two alternates. The type of highway improvements needed will be affected by the magnitude and location of future development.

This project should not have any significant impact on the environment as all improvements will be contained within the existing right of way.

Local government should be encouraged to ensure that any new development planned along this section of road is adequately set back from the road to allow for future widening.

