

FEASIBILITY STUDY

NC 16  
From the Ashe County Line  
to Millers Creek  
Wilkes County  
R-2207

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

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### General Description

This project is included in the 1987-1995 NCDOT Transportation Improvement Program for a feasibility study and/or right of way protection. The following report summarizes the findings of a preliminary study to determine appropriate improvements to the 13.1-mile segment of NC 16 from the Ashe County line to SR 1304 near Millers Creek. The entire project is located in Wilkes County (see attached figure).

### Existing Facility

NC 16 is classified as a rural major collector in the North Carolina Functional Classification System. The existing facility was originally constructed as an 18- to 20-foot gravel road in 1935-1937 and was subsequently paved. Since that time no improvements other than resurfacing have been made. The claimed right of way width along the project is approximately 60 feet. The existing two-lane facility consists of a 20-foot pavement with 1- to 3-foot shoulders within the northern half of the project. To the south NC 16 consists of an 18-foot pavement with 4-foot shoulders. A left-turn lane is provided at the SR 1304 intersection near the Millers Creek community.

The project area is primarily rural in character with scattered residential and commercial development. The terrain is mountainous within the northern half of the project and rolling within the southern half. The posted speed limit along the majority of the project is 55 mph. However, advisory speed limits of 35 mph are posted at three locations along the project to warn motorists of sharp curves. Climbing lanes are provided for northbound vehicles at three locations along the project. The NC 16/SR 1304 intersection is signalized; all other intersections are stop sign controlled. All intersections are at-grade.

The studied segment of NC 16 is a narrow, winding highway, especially within the northern mountainous portion of the project. The existing horizontal alignment consists of twenty-nine curves in excess of 8 degrees. The existing vertical alignment consists of twelve grades in excess of 6 percent. Only approximately 22 percent of the project has unrestricted passing sight distance greater than 1500 feet.

Accident rates (per 100 million vehicle miles) along the project between January 1984 and February 1987 are summarized below:

	<u>NC 16 From Ashe County to Millers Creek</u>	<u>Statewide Average for Similar Routes (1986)</u>
Total	178.4	197.7
Fatal accidents	2.5	3.5
Non-fatal accidents	82.2	94.5
Night accidents	51.9	62.9
Wet accidents	30.4	42.7

These figures indicate the accident rates along the project are slightly lower than the Statewide rate for similar rural "NC" routes. Forty-two percent of these accidents involved vehicles running off the road. Twenty-three percent involved rear-end collisions. Fourteen of the 141 total accidents reported occurred at the SR 1304 intersection.

Present traffic volumes (1987) range from 2100 vehicles per day (vpd) at the north project terminal to 7300 vpd at the south terminal. Truck traffic comprises approximately four percent of these volumes. Traffic volumes at these locations for the year 2007 are estimated at 3700 vpd and 13,300 vpd, respectively. A capacity analysis of the project indicates the existing facility currently operates at level-of-service D during peak traffic periods at the north project terminal, at level-of-service C at the project midpoint and at level-of-service E at the south terminal. Based upon the above traffic projections, it is estimated the existing highway will operate at levels-of-service E, D and E, respectively, at these three locations in twenty years.

#### Project terminals

North of the project in Ashe County NC 16 is a two-lane, 20-foot facility with 1- to 3-foot shoulders. South of the project from SR 1304 to US 421 NC 16 was reconstructed on new location in 1966 and consists of a 24-foot pavement with 10-foot shoulders (4 feet paved).

#### Recommended Improvements

It is recommended NC 16 be widened to a 24-foot pavement with 8-foot useable shoulders (2 feet paved). It may be necessary to reduce this cross section in order to minimize costs where the amount of earthwork is prohibitive within the mountainous northern portion of the project. Each of the existing climbing lanes (three locations) should be lengthened by approximately 1000 feet to improve operating conditions. It is recommended two truck escape ramps be constructed within the northern segment of the project due to the steep grades found there. Further studies are needed to determine the most appropriate locations for these ramps; however, likely locations are just below the two lower climbing lanes. Horizontal alignment improvements are warranted at several locations along the project. The cost estimates shown below include costs for

realigning approximately 1 mile of NC 16 within the northern segment of the project. Guardrail installation at various locations along the project is also recommended. It is anticipated approximately 20 feet of additional right of way will be required along each side of NC 16 to accommodate the recommended improvements. Additional right of way will also be required where improvements to the horizontal alignment are performed. Construction easements will likely be needed due to the rugged terrain of the area.

### Project Costs

Construction	\$ 8,900,000
Right of way	<u>3,100,000</u>
Total Project Cost	\$12,000,000

### Bridge Improvements

Two bridges are situated along the project. Both carry NC 16 over Middle Fork Reddies River. The bridges are described below:

<u>Bridge No.</u>	<u>Length (ft.)</u>	<u>Clear Roadway Width (ft.)</u>	<u>Estimated Remaining Life (yrs.)</u>	<u>Sufficiency Rating</u>
57	101	20	10	53.6
51	118	20	6	45.9

It is recommended both bridges be replaced with structures having greater clear roadway widths. The cost of replacing both bridges (approximately \$550,000) is included in the above cost figures. As a comparison, the cost of widening and upgrading both bridges is estimated at \$250,000.

### Anticipated Environmental Impacts

No major environmental impacts are anticipated. Additional right of way will be required to accommodate the proposed widening and any re-alignment of the existing highway. It is possible that wetlands may be present at the streams crossed by the existing road. However, wetland takings resulting from the project will be minor, since in general only minor widening will be performed. It is anticipated 25 to 30 residents and businesses will be relocated. Noise levels along the project will likely increase due to the recommended improvements.

### Basis of Study

Field investigation and correspondence with the office of the Division Engineer served as the bases for the improvements recommended in this report. The Right of Way Branch and the Design Services Unit provided the cost estimates.

JWS/sdt



