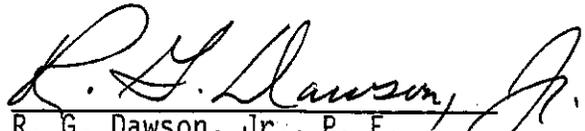


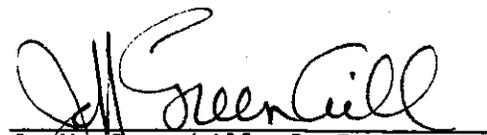
FEASIBILITY STUDY

US 221
From NC 16 to Alleghany County Line
Ashe County
R-2310

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


R. G. Dawson, Jr., P. E.
Head of Feasibility & Special Studies Unit

10-13-88
Date


J. M. Greenhill, P. E.
Manager, Planning and Research

US 221
From NC 16 to Alleghany County Line
Ashe County
R-2310

I. DESCRIPTION

This report covers a preliminary study of the proposed upgrading of the subject 9.8-mile portion of US 221 in Ashe County. Location of the project is shown on Figure 1. This project is included in the 1988-1996 Transportation Improvement Program for feasibility and/or right of way protection. No funding has been appropriated for the project.

II. PURPOSE OF PROJECT

Existing Route Characteristics

US 221 is designated as a major collector in the Functional Classification Plan for Ashe County.

The studied section of road generally has an 18-foot pavement with 5-foot shoulders. The existing pavement is in poor condition with very uncomfortable riding quality. For the most part, it is located on extremely poor alignment, with numerous curves ranging up to 40 degrees (20 mph safe speed) and grades up to 7 percent. The existing alignment, which was constructed in the 1920's, was apparently dictated by the mountainous terrain in the area. Safe passing distance along US 221 is practically non-existent. Since no recorded right of way agreements are available, the existing right of way is estimated to be 30 feet, the width maintained by NCDOT. Adjacent land use is primarily woodland with some agricultural and residential. Development is light and scattered but increases as US 221 approaches NC 16. Three bridges are in place along the subject facility. They are described as follows:

| <u>Bridge No.</u> | <u>Location</u> | <u>Year Built</u> | <u>Sufficiency Rating</u> | <u>Length</u> | <u>Width</u> |
|-------------------|-------------------|-------------------|---------------------------|---------------|--------------|
| 29 | Dog Creek | 1922 | 71.7 | 32' | 20' |
| 33 | Nathan's Creek | 1922 | 38.2 | 27' | 20' |
| 39 | S. Fork New River | 1922 | 46.1 | 462' | 20' |

All bridges are of concrete construction. Bridge No's. 33 and 39 are scheduled for replacement in FY 1995 (B-1936 & B-1037).

Traffic Volumes, Capacity, and Accident Record

Current traffic volumes range from approximately 300 vehicles per day (vpd) at the Alleghany County Line to 1700 vpd at NC 16. Estimated traffic volumes for year 2008 are 600 to 3000 vpd, including 1 percent TTST and 2 percent dual tired trucks.

Present capacity of the existing two-lane facility range from approximately 1000 vpd along sections of worst alignment conditions to 3000 vpd along less critical alignment sections. Comparing these capacities to traffic volumes, no major capacity problems are anticipated for the planning period.

A total of 28 accidents were reported along this section of US 221 during a four-year period of 1984-1987. This record yielded an accident rate of 3.3 accidents per million vehicle miles, compared to the 1987 statewide average of 1.74 acc/mvm for two-lane US routes. Most of the accidents involved ran-off-road types. There were no fatalities.

Need for Project

Purpose of the project is to upgrade the existing road to a wider and safer two-lane facility. The present roadway has poor alignment, narrow roadway, and undesirable riding surface. Elimination of these deficiencies would enhance traffic operation and safety and provide better access through the area. The project would provide continuity of improvements that are planned, under construction, or completed on US 221 east of the Ashe/Alleghany County Line to NC 93 (R-831).

III. RECOMMENDATIONS AND COSTS

Widening, resurfacing, and realignment of several sections of US 221 to an adequate two-lane facility are justified and immediately warranted. Recommended cross section of the improvement is 20-foot pavement with minimum 4-foot (6-foot desirable) shoulders. Recommended minimum design speed for the alignment changes is 30 mph. These are the same design criteria applied to the adjoining project on US 221 (R-831) between the Ashe/Alleghany County Line and NC 93. Based on preliminary design studies, approximately 3.3 miles of realignment are anticipated. (The suggested alignment changes are shown on an aerial mosaic on file in the office of the Roadway Design Unit.) Except for the recommended replacement of Bridge No. 29, no other major improvements are foreseen.

The total estimated cost of the recommended improvements is \$8,450,000, including \$6,700,000 for roadway and bridge construction and \$1,750,000 for right of way. The right of way cost is based on acquiring additional right of way to make a total width of 60 feet plus construction easements. (The project cost excludes the cost of planned replacements of Bridge No's. 33 and 39.) The cost estimates were prepared by the Roadway Design Unit and Right of Way Branch.

IV. OTHER COMMENTS

No other alternatives were considered for this project. No major relocation is cost effective due to high cost of construction through heavy mountainous terrain and low volumes of traffic that would benefit from it.

The project should have no significant adverse impact on the environment. Noticeable negative impacts would be limited to loss of some farmland and woodland, possible siltation of streams, displacement of approximately 3 residences and 1 business, and increased noise levels for remaining development.

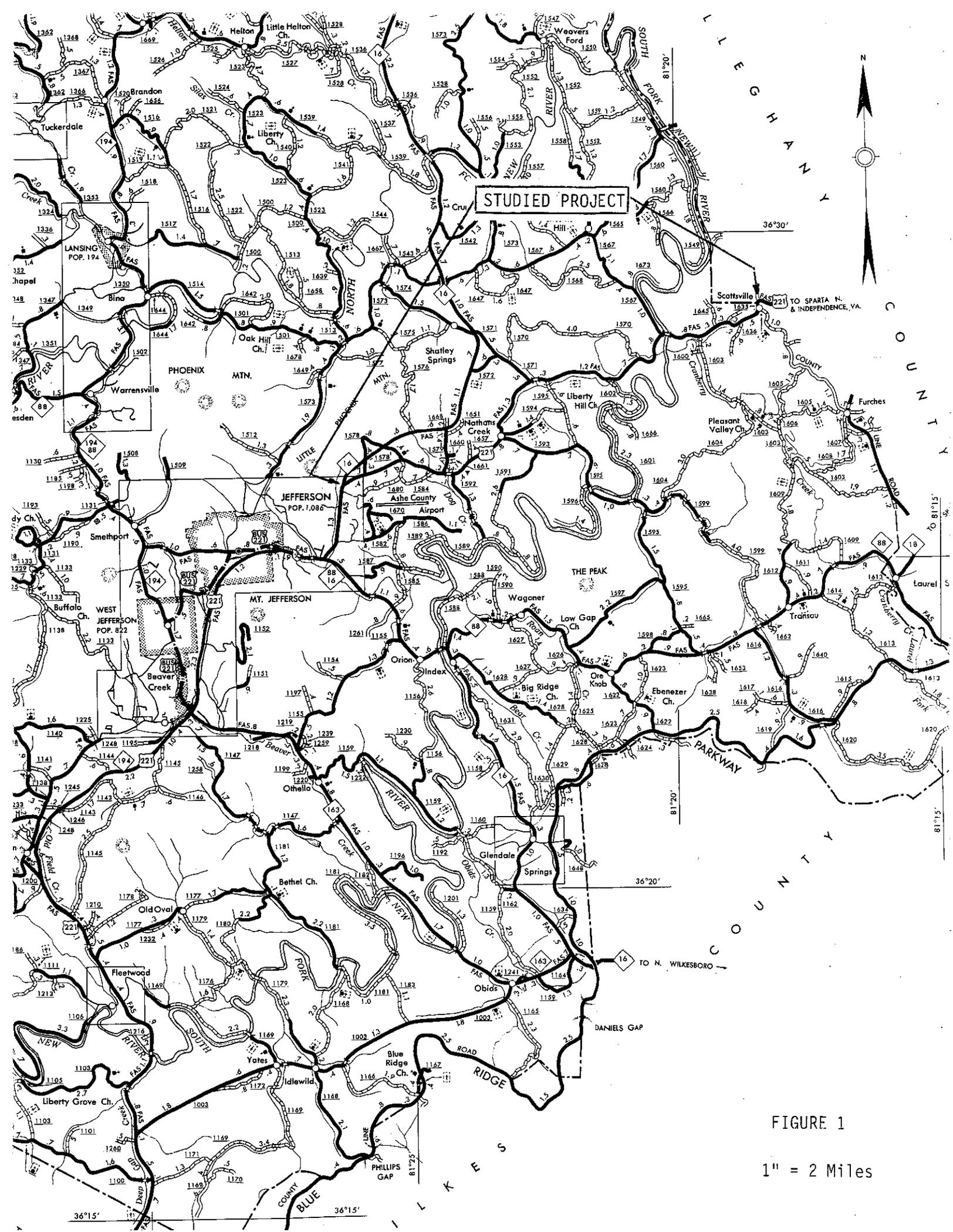


FIGURE 1
1" = 2 Miles