FEASIBILITY STUDY

NC 106
From Georgia State Line
To US 64 In Highlands
Macon County
R-2567

Prepared by
Planning and Research Branch
Division of Highways
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I. GENERAL DESCRIPTION

This report covers the improvement of NC 106 to more modern roadway standards from the Georgia State Line to US 64 in Highlands (See Figure 1). The proposed project is 9.5 miles long. This project is included in the 1990-1996 Transportation Improvement Program for feasibility study and/or right-of-way protection.

II. PURPOSE OF PROJECT

Existing Route Characteristics

NC 106 is one of two primary access routes (the other being US 64) into the resort town of Highlands, and is heavily used by seasonal visitors in the summer months. It is classified as a Rural Major Collector in the North Carolina Functional Classification System and is a Federal Aid Primary route.

For purposes of this study and also for possible construction staging, the project is divided into two sections (See Figure 2). Section A extends from the Georgia State Line to SR 1621 near Scaly Mountain, a distance of 5.3 miles. Section B is 4.2 miles long, extending from SR 1621 to US 64 in Highlands.

The existing cross section on Section A consists of an 18-foot paved roadway, with 1-foot paved and 3 to 4-foot variable unpaved shoulders. The horizontal alignment is poor with numerous adverse curves over 20 degrees, including 3 over 40 degrees, and 1 over 50 degrees. This limits safe travel speeds to below 30 mph. The vertical alignment is also poor, with several sections over an 8 percent grade, including 2 stretches over 9 percent.

The existing cross section on Section B is the same as for Section A above. The horizontal alignment for the most part is poor, with 4 curves over 20 degrees, 4 over 30 degrees, and 1 over 40 degrees. Inside the corporate limits of Highlands, the horizontal alignment is relatively good for mountainous terrain with the majority of curves ranging from 10 to 20 degrees, and one curve of 28 degrees. The vertical alignment in Highlands is good with a predominant grade of 4 percent, with a short section ranging up to 5.5 percent. The vertical alignment deteriorates outside the corporate limits, with grades of up to 10.5 percent.

The right-of-way throughout the project length is an unrecorded 60 feet claimed by maintenance.

There is one bridge on the project. It is located on Middle Creek approximately 1 mile north of SR 1628. This bridge was constructed in 1938 and has a clear deck width of 18.8 feet, and has a sufficiency rating of 61.9. It is recommended this structure be replaced rather than widened in this project due to age and type of construction.

All intersections on the project are at grade and controlled by stop signs except for US 64/NC 106 which is signalized. The speed limit along the route is predominantly 55 mph, except for a 1-mile section of 45 mph at Scaly Mountain (between SR 1625 and SR 1622) and 35 mph from US 64 to approximately 1/2 mile outside the Highlands Corporate Limits.

At the northern project terminal, NC 106 creates a tee intersection with US 64, which has a narrow, two-lane cross section. At the southern project terminal, NC 106 becomes the Georgia route 246, which has been previously upgraded to an improved two-lane section with adequate shoulders.

Traffic Volumes, Capacity and Accident Record

The current traffic volume on NC 106 ranges from a high of 4900 vehicles per day (vpd) at US 64, to 2900 vpd at Dog Mountain, to a low of 2600 vpd at the state line. These volumes are projected to increase to 8700 and 5000 vpd, respectively, by the year 2010. Existing capacity of this facility at a desirable level of service C is approximately 1400 vpd.

During the last three years, a total of 47 accidents were reported for the studied project. This resulted in an accident rate of 97.1 accidents per hundred million vehicle miles (ACC/100MVM), compared to a statewide average of 214.2 ACC/100MVM for similar routes. There were no fatalities, and the predominant accident types were running off the road to the right (47%) and left (19%). Provision of a wider pavement and shoulders and improvement in curvature should reduce the potential for this type of accident.

Need for Project

The widening and minor realignment of the NC 106 pavement, along with the provision of wider shoulders and climbing lanes, will enhance the safety and driving comfort on the route. The existing paved roadway has many blind curves, and the shoulders are too narrow for disabled vehicles to pull onto in an emergency.

III. RECOMMENDATIONS AND COSTS

It is recommended NC 106 be widened to an improved two-lane roadway with climbing lanes and adequate shoulders. The recommended cross section is a 22-foot paved roadway with 2-foot paved shoulders and minimum total 5-foot usable shoulders. There are several areas where realignments are recommended to improve the curvature of the roadway. These realignments, along with the recommended climbing lanes, are approximately shown on Figures 2. The recommended cross sections where climbing lanes are proposed is a 33-foot paved roadway with shoulders as indicated above.

The recommendations for realignments and climbing lanes are based on preliminary information and 1938 construction plans available. When more detailed information becomes available, more refined recommendations can be made.

The total estimated cost of this project is as follows:

Construction	$ 8,300,000
Right-of-Way	$ 6,800,000
Total	$15,100,000

The construction cost includes engineering and contingencies and the right-of-way cost includes relocation, acquisition, and utility costs. Cost estimates were provided by the Preliminary Cost Estimate Engineer and the Right-of-Way Branch.

IV. STAGING

Because of the project length and the costs involved with widening a highway in mountainous terrain, the project is divided into two sections previously mentioned for possible construction staging. A breakdown of each section follows:

HIGHWAY SECTION	LENGTH (Miles)	RELOCATION Res	RELOCATION Bus	COST Construction	COST Right-of-Way	COST Total
A	5.3	9	1	$4,200,000	$3,200,000	$7,400,000
B	4.2	9	2	$4,100,000	$3,600,000	$7,700,000

If a decision is made to stage construct, it is recommended Section A be built initially. This section has the highest traffic volumes combined with the worst horizontal alignment along the route. It would be preferable to improve both sections as soon as possible; however, the staging recommendation would permit upgrading in case of funding constraints.

V. ALTERNATIVES

Since the project involves the improvement of an existing roadway through an area where the location is restricted by terrain, no alternative alignments were deemed feasible.

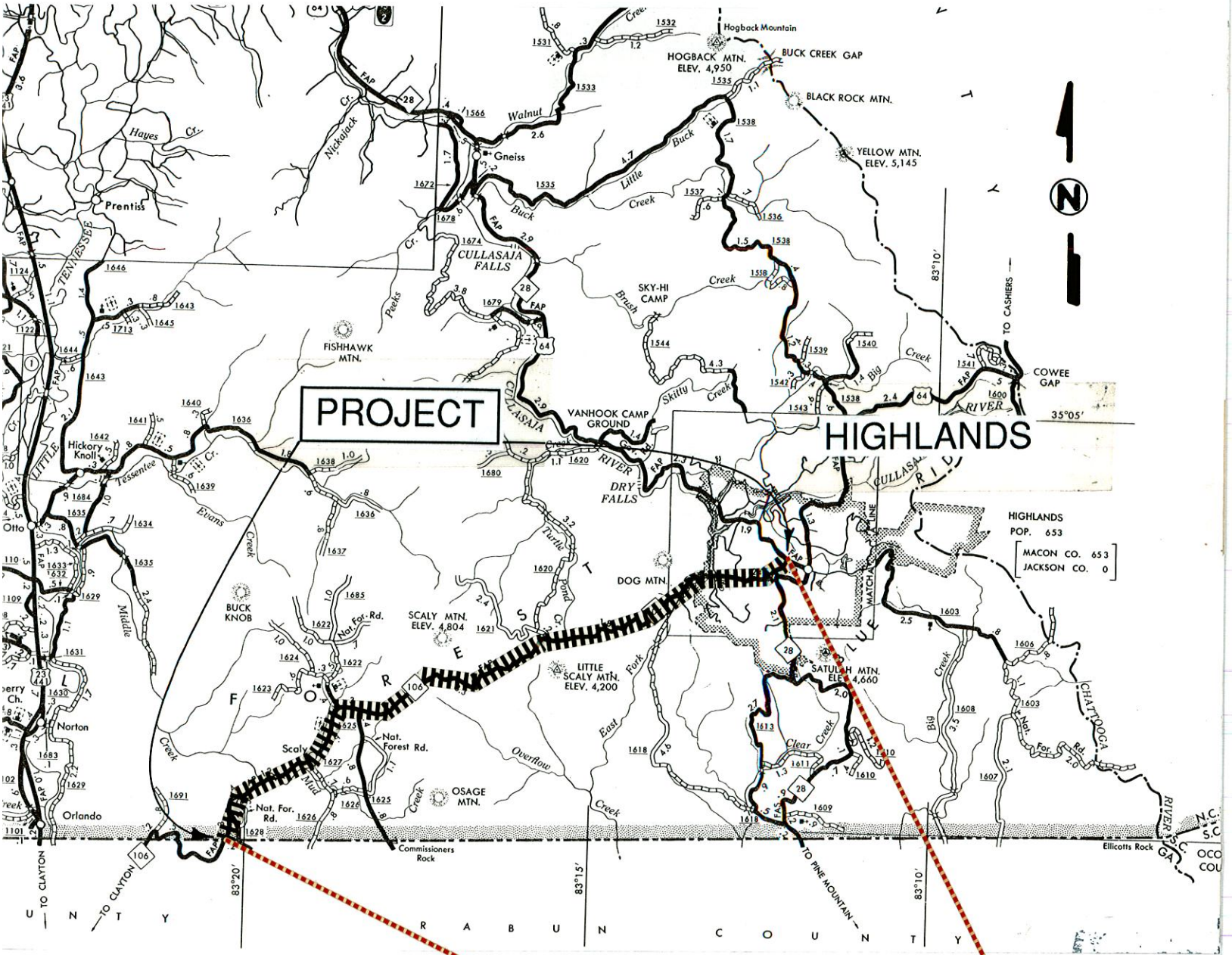
VI. ENVIRONMENTAL EFFECTS

The preliminary project investigation revealed that the recommended upgrades would require the relocation of 18 residences and 3 businesses. During the design phase of the project, an effort should be made to reduce the number of relocatees by using less realignment or widening exclusively to one side to avoid residential relocations on both sides.

Other possible negative impacts of the project include: (1) a small loss of woodlands: (2) loss of wetlands areas at stream crossings; (3) potential detrimental effects on streams during the construction phase; (4) increased noise for the remaining residences.

If the project is to be implemented in the future, all alternatives and their associated impacts will need to be evaluated in a planning/environmental document prior to that time, and a final decision made as to the most appropriate improvement.

MLH/plr



	NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS PLANNING AND RESEARCH BRANCH
	NC 106 FROM GEORGIA STATE LINE TO US 64 IN HIGHLANDS, MACON COUNTY R-2567
	0 mi. 2 FIG. 1

REALIGNMENT

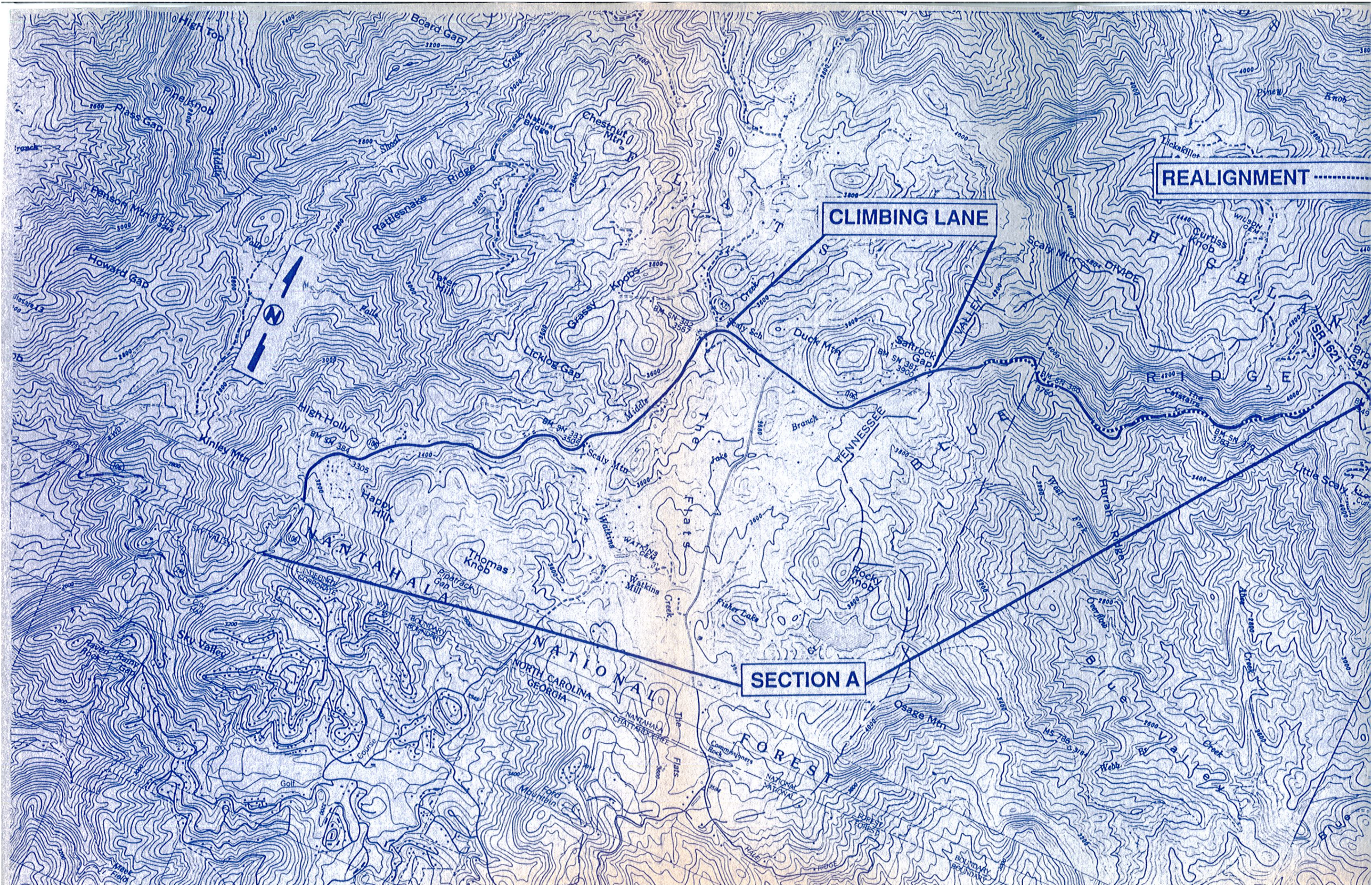
CLIMBING LANE

SECTION B

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PLANNING AND RESEARCH BRANCH

NC 106
FROM GEORGIA STATE LINE TO US 64
IN HIGHLANDS, MACON COUNTY
R-2567

0 ft. 2000 FIG. 2



REALIGNMENT
CLIMBING LANE
SECTION A
High Top
Board Gap
Pine Knob
Plass Gap
Fenson Mtn
Howard Gap
Rattlesnake Ridge
Chestnut Mtn
Natural Bridge
Tater Hill
Grassy Knobs
Licklog Gap
High Holly
Kinley Mtn
Happy Hill
Thomas Knob
Pipetrack Gap
Sky Valley
Raven Rock
Rainy Gap
Scaly Mtn
Duck Mtn
Saltrock Gap
Scaly Mtn
Curtiss Knob
Lickskillet
Pinew Knob
Hurrah Ridge
Little Scaly
Rocky Knob
Osage Mtn
Watkins Mill
Watkins Cem
Fisher Lake
Ford Mountain
Commissioners Rock
Blue Valley
Blue Creek
Webb Br
Overflow
Flats
Middle Creek
Watkins Creek
Jake Branch
Scaly Sch
Wilson Cem
Lake Creek
Golf Course
Ridge
Tennessee Valley Divide
Nantahala National Forest
North Carolina
Georgia
Nantahala Chattahoochee
Indefinite Corporate Boundary
Boundary Boundary
Forest Forest
Hale Ridge
SR 1621