

Do Not Remove

FEASIBILITY STUDY

NC 107  
From North of Cashiers  
to  
South of East Laporte  
Jackson County  
R-2224

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

September, 1987

NC 107  
From North of Cashiers  
to  
South of East Laporte  
Jackson County  
R-2224

The subject project is included in the 1987-1995 Transportation Improvement Program for a feasibility study and/or right-of-way protection. This report provides a brief initial analysis of possible improvements. The project is not currently funded.

I. GENERAL DESCRIPTION

The proposed project consists of improving the existing 2-lane NC 107 from the intersection of US 64 just north of Cashiers to the intersection of NC 281 south of East Laporte (at Tuckasegee), a distance of approximately 14.6 miles. The most desirable improvement would be to widen the existing roadway and add climbing lanes on the steeper sections. However, any widening of the existing roadway is difficult as the highway is in close proximity to the Tuckasegee River on the west side and has very narrow shoulders and steep cut banks on the east side for much of the project length. The attached Figure 1 shows the location of the project.

PURPOSE OF PROJECT

This section of NC 107 is classified as a rural minor arterial on the North Carolina Functional Classification System and is also classified as a Federal Aid Primary route. It functions as a connecting route and tourist route between the towns of Cashiers, Cullowhee, and Sylva in Jackson County. The current (1986) traffic volumes range from 2000 vehicles per day (vpd) near NC 281 to 3700 vpd just north of the intersection of US 64 at Cashiers. These volumes are expected to increase to a range of 3700 vpd to 6700 vpd in 2007. An analysis of the subject section indicates that it is currently operating at Level of Service "D". Based on traffic projections it will be operating at Level of Service "E" at the end of the 20 year planning period.

Existing pavement width is 18' throughout the project length. Horizontal and vertical alignments are generally very bad except in the sections near each end of the project. The balance of the proposed project is in mountainous terrain and has very steep grades and many sharp curves. It is also in close proximity on the west side to either the Tuckasegee River or the Thorpe Reservoir for a large portion of the project length. Existing right-of-way width is 60'.

The speed limit along the project is 55 mph. All intersections are at-grade and will remain at-grade. Development along the project is primarily rural residential and agricultural uses with some commercial development.

A strip accident analysis of the studied section of NC 107 was provided by the Traffic Engineering Branch. This study covered the period from January 1, 1984 through March 31, 1987. The following table gives a comparison between the accident rates for NC 107 and the statewide accident rates for NC primary highways:

	<u>NC 107</u>	Statewide Average NC Routes (1986)
Total Accidents (Accidents per million vehicle miles)	6.44	1.98
Fatal Accidents (Accidents per 100 million vehicle miles)	0.00	3.4
Non-Fatal Injury Rate (Accidents per 100 mvm)	26.55	93.7
Night Accident Rate (Accidents per 100 mvm)	19.77	62.3
Wet Accident Rate (Accidents per 100 mvm)	12.43	42.9

A total of 114 accidents occurred on this section of NC 107 during the stated time period. There were no fatal accidents. The total accident rate is considerably higher than the statewide average. No particular accident patterns stand out other than the fact that the highest percentage of accidents were running off the road to the right. The higher total accident rate and the running off the road type of accidents can probably be attributed to the narrow pavement, narrow shoulders, and poor horizontal alignment. There was one location with 3 accidents, one with 4 accidents and the intersection with US 64 at the south terminus of the project which had 15 accidents.

### III. PROPOSED IMPROVEMENTS

The improvements recommended for this project are the construction of four sections of climbing lanes as follows:

Section 1 - Beginning at a point 2.2 miles north of Cashiers construct 4,000' of climbing lane. This will require an additional 150' of right-of-way on the west side of the existing highway.

Section 2 - Beginning at a point 7.2 miles north of Cashiers construct 2,000' of climbing lane. An additional 100' right-of-way will be needed on the west side of the existing highway.

Section 3 - Beginning at a point 9 miles north of Cashiers construct 2000' of climbing lane. An additional 75' of right-of-way will be needed on the west side of the existing highway.

Section 4 - Beginning at a point 10.5 miles north of Cashiers construct 2000' of climbing lane. An additional 75' of right-of-way will be needed on the west side of the existing highway.

The climbing lanes are to be 12' wide with 4' shoulders. Total pavement width in the vicinity of the climbing lanes will be 30'. Other improvements which are recommended are the replacement of approximately 3200' of guardrail plus upgrading of the guardrail end treatment to BCT-1 standards. No further improvements are recommended at this time.

The estimated costs of the project are:

Construction -	\$1,500,000
Right-of-way -	452,000
Total	<u>\$1,952,000</u>

#### IV. POSSIBLE ENVIRONMENTAL IMPACTS

Any environmental impacts are expected to be minor due to the limited scope of the proposed improvements.

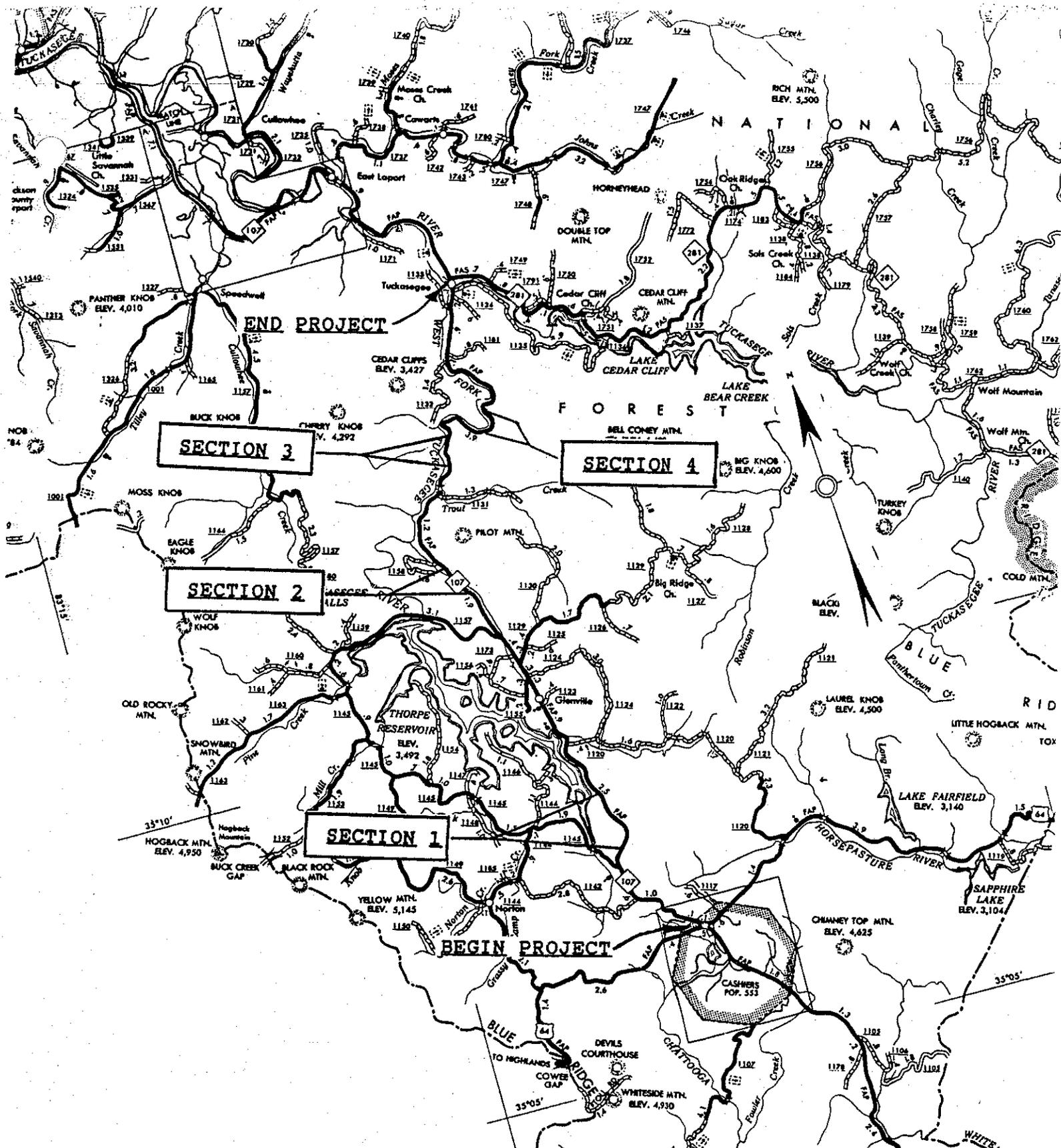
#### VI. SCOPE OF STUDY

Construction cost estimates were based on costs of comparable projects and were furnished by the Roadway Design Unit. Right-of-way estimates were furnished by the Right-of-Way Branch following a field review.

The proposed improvements were based on input from field investigation, coordination with the Roadway Design Unit, input from the Division Engineer, and experience with planning for similar projects.

ASC/sdt

Attachment



HIGHLANDS  
POP. 653  
MACON CO. 653  
JACKSON CO. 0



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

NC 107  
From North of Cashiers  
to  
South of East Laporte  
Jackson County  
R-2224

9/87 Fig. 1