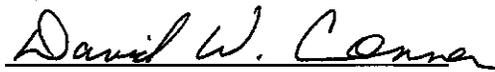


FEASIBILITY STUDY

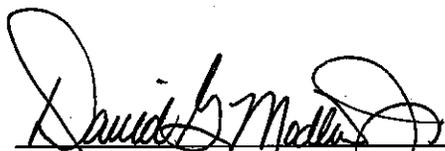
**NC 194
From NC 184 in Banner Elk
To SR 1112 in Valle Crucis
Avery and Watauga Counties**

R-2710

Prepared by
Program Development Branch
Division of Highways
N. C. Department of Transportation



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3/14/95

Date

R-2710

NC 194
From NC 184 in Banner Elk
To SR 1112 in Valle Crucis
Avery and Watauga Counties

I. General Description

This feasibility study is a study of improvements needed on NC 194 from NC 184 in Banner Elk (Avery County) to SR 1112 in Valle Crucis (Watauga County). The existing roadway from Banner Elk to the Watauga County line has been recently improved and is deemed adequate at this time. The remaining project length is approximately 5.5 miles (8.8 km). The project location is shown on the attached Figure 1.

Between the project terminals, the terrain is mountainous and the roadway generally follows contour lines around mountainsides. Both the horizontal and vertical alignments are judged poor which is substantiated by the numerous 6-9 percent grades and sharp curves. The existing highway offers little opportunity to safely pass a slower moving vehicle. Generally the roadway is characterized by a steep rock face on one side and steep fill slopes on the other.

The above conditions coupled with low current and projected average daily traffic volumes makes major widening and straightening of the roadway impractical. Therefore, this study is limited to "spot safety" type improvements, between the Avery County line and SR 1112, to include the following:

1. Roadway widening to 20 feet (6.1 m) where possible and especially in curves to eliminate the wallowing out and rutting of shoulders
2. Leveling and resurfacing the entire roadway
3. Installation of approximately 20,000 feet (6,096 m) of steel beam guardrail

The estimated cost for these improvements is \$1,800,000 and all work should be completed on existing right-of-way.

This study is the initial step in the planning and design process for this project and is not the product of exhaustive environmental or design investigations. The purpose of this study is to describe the proposed project including costs, and identify potential problems that may require consideration in the planning and design phases.

II. Existing Conditions

The purpose of this project is to improve the traffic safety of NC 194 between Banner Elk and Valle Crucis. This project was requested by Watauga County.

NC 194 is designated as a Rural Major Collector on the North Carolina Statewide Functional Classification System.

The existing roadway from Banner Elk to the Watauga County line has been recently improved and is deemed adequate at this time. From the Watauga County line eastward, the existing roadway has 17-foot (5.2-m) to 18-foot (5.5-m) BST pavement with 1-foot (0.3-m) soil shoulders. The pavement surface is in acceptable condition at this time; however, the shoulders are low and wallowed out creating ruts up to 1-foot (0.3-m) in depth. Deteriorating wooden "guardposts" are in place along the shoulders at steep fill slopes. Generally the roadway is characterized by a steep rock face on one side and steep fill slopes on the other.

The terrain is mountainous and the roadway generally follows contour lines around mountainsides. Both the horizontal and vertical alignments are judged poor which is substantiated by the numerous 6-9 percent grades and sharp curves. The existing highway offers little opportunity to safely pass a slower moving vehicle.

Land use along the highway is primarily pasture land, woodland and rural residences. There are two "Bed and Breakfast" inns located along the project route as well as "The Mission School" (historic property) located approximately 1.4 miles west of Valle Crucis.

There is one bridge located along the project route. Bridge #4, over Crab Orchard Creek, is located approximately 150 feet (45.7 m) east of SR 1152. It is a timber-floor structure 46-feet (14.0 m) in length and has a deck width of 20 feet (6.1 m). It has a sufficiency rating of 40 and is scheduled in the 1995-2001 TIP for replacement in FY 1995.

The current average annual daily traffic volume along this section of NC 194 has a high of approximately 1700 vehicles per day (vpd). Truck traffic composes 4 percent of the overall traffic volumes. The 2020 traffic volume along this section is estimated to be approximately 3700 vpd.

Based on estimated traffic volumes, NC 194 is currently operating at Level of Service (LOS) C which will deteriorate to a level D in the next few years. LOS D will prevail through the design year.

During the three-year period from April 1, 1991, to March 31, 1994, there were 13 accidents reported on NC 194 within the project limits. There were no deaths and 5 non-fatal injuries reported. These accidents resulted in an accident rate of 140.7 accidents per 100 million vehicle miles (Acc/100 MVM), compared to a statewide average of 205.4 Acc/100MVM for all rural NC routes.

III. Recommendations

It is recommended that improvements be made on NC 194, in Watauga County, from the Avery County Line to SR 1112. The project length is approximately 5.5 miles (8.8 km) and the project location is shown on the attached Figure 1.

Due to the mountainous terrain and the low current and projected average daily traffic volumes, recommended improvements are limited to "spot safety" type improvements, between the Avery County line and SR 1112, to include the following:

1. Roadway widening to 20 feet (6.1 m) where possible and especially in curves to eliminate the wallowing out and rutting of shoulders
2. Leveling and resurfacing the entire roadway
3. Installation of approximately 20,000 feet (6,096 m) of steel beam guardrail

The estimated cost for these improvements is \$1,800,000 and all work should be completed on existing right-of-way.

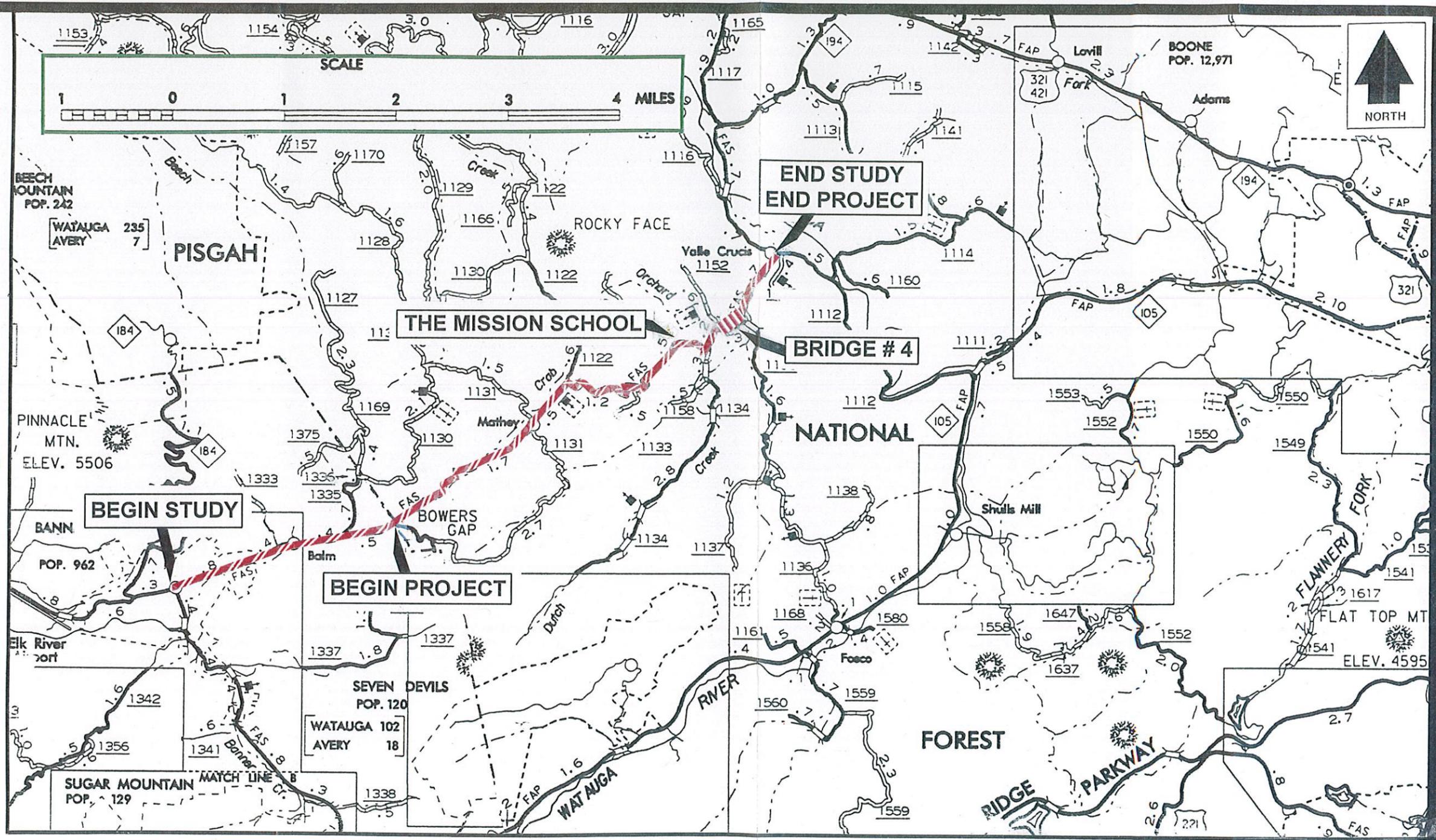
The estimated cost for these improvements is \$1,800,000.

IV. Other Comments

No special accommodation for bicycles is recommended on this project.

Care should be exercised to avoid any adverse effects in the area of the "Mission School" which is included on the National Register of Historic Places.

Consideration should be given to coordination of this project with the replacement of bridge #4 (B-2179) over Crab Orchard Creek.

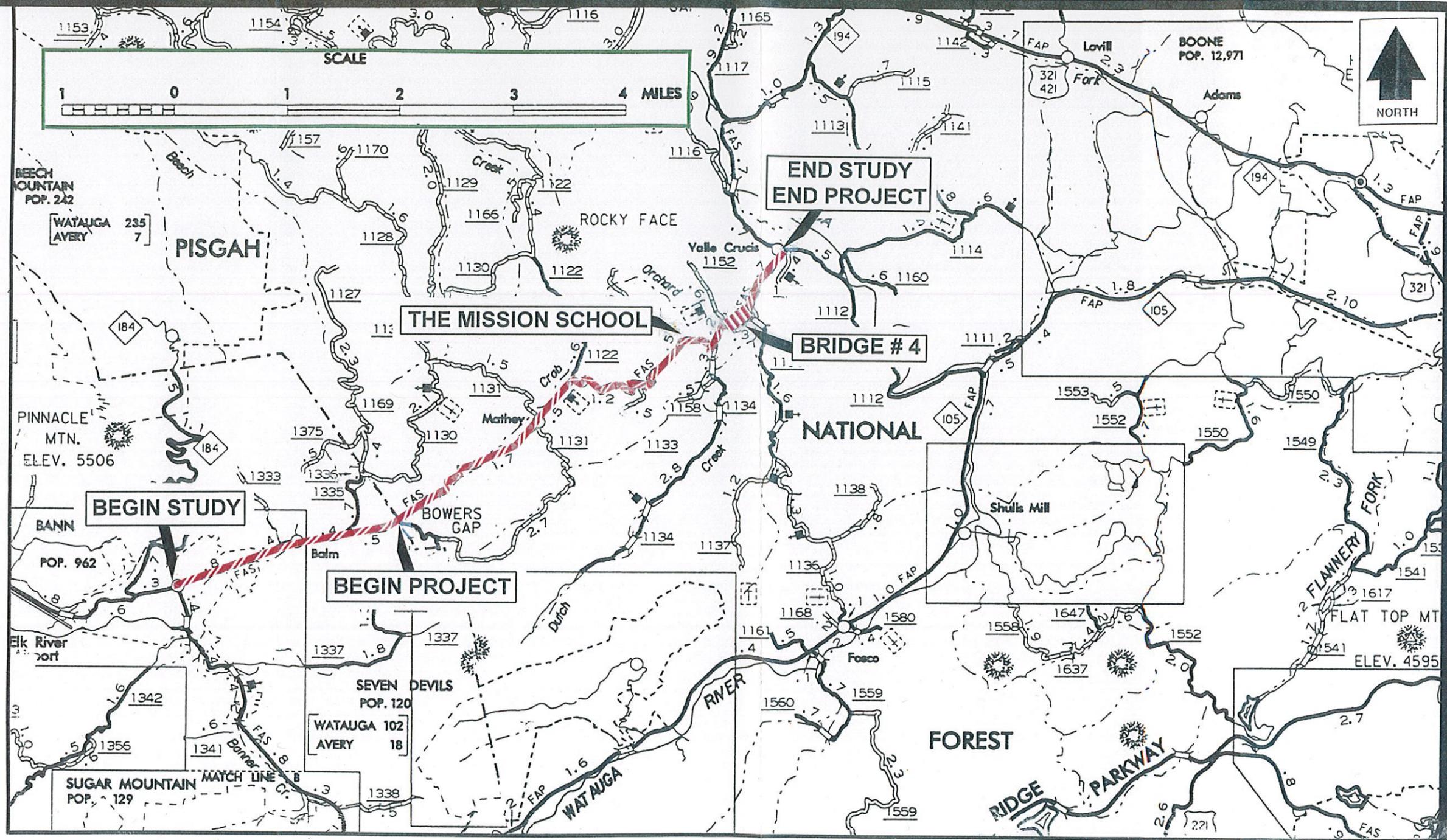


FEASIBILITY STUDIES UNIT

R-2710

UPGRADE NC 194
FROM BANNER ELK TO VALLE CRUCIS
AVERY AND WATAUGA COUNTIES

DIVISION 11 **FIGURE 1**

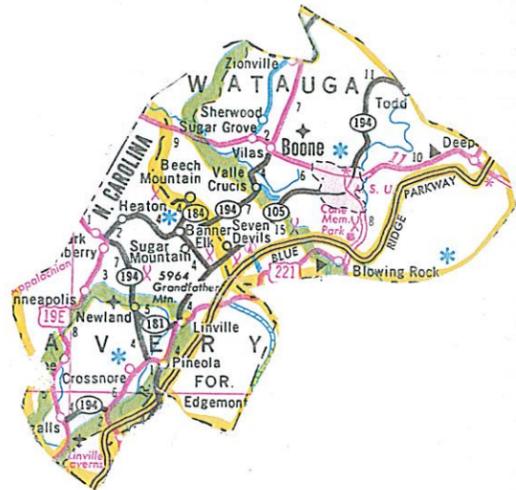
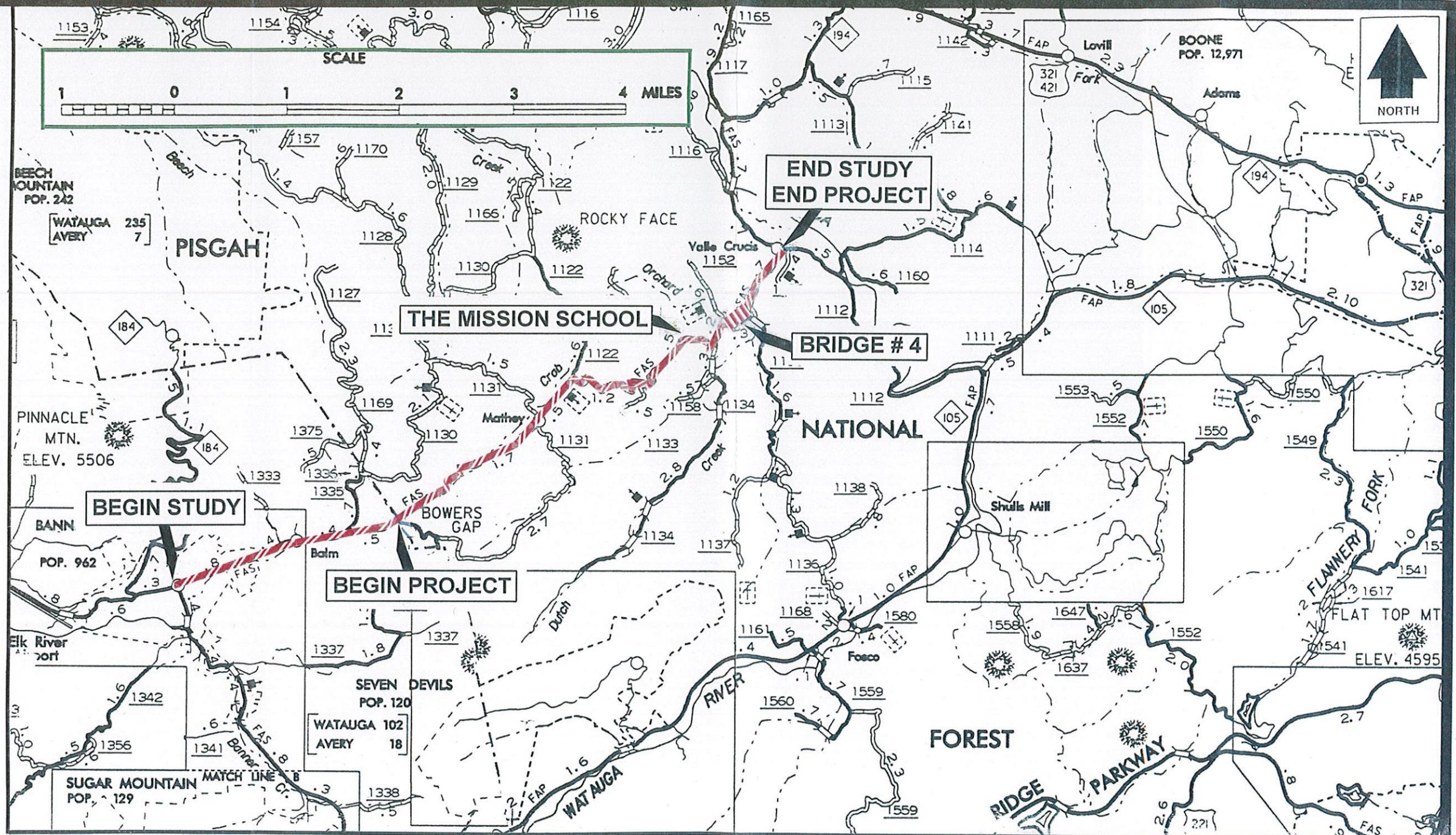


FEASIBILITY STUDIES UNIT

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UPGRADE NC 194
FROM BANNER ELK TO VALLE CRUCIS
AVERY AND WATAUGA COUNTIES

DIVISION 11 **FIGURE 1**

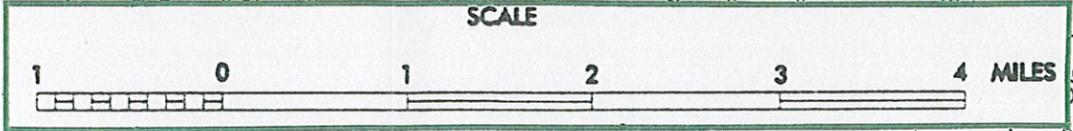
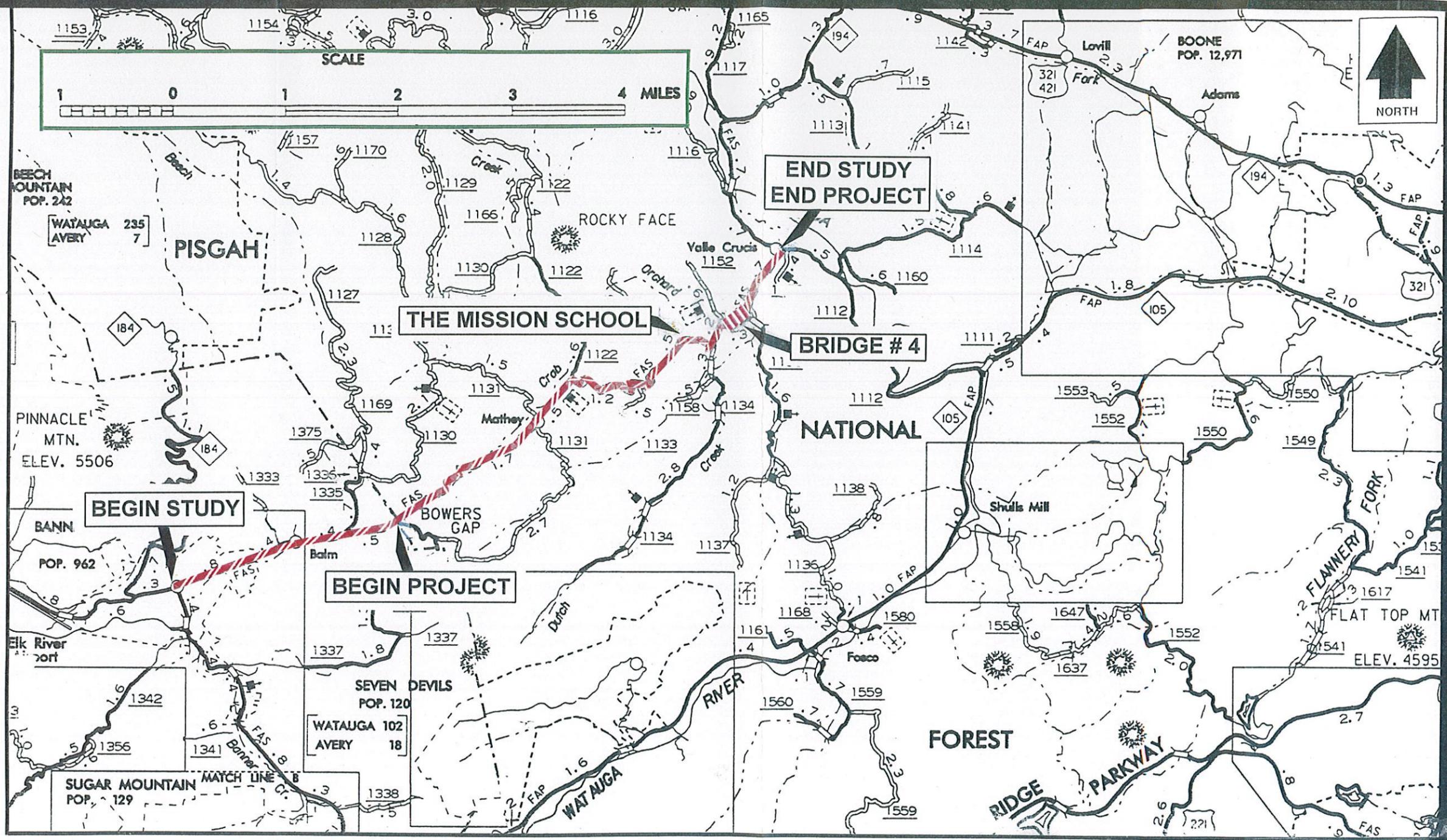


FEASIBILITY STUDIES UNIT

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UPGRADE NC 194
FROM BANNER ELK TO VALLE CRUCIS
AVERY AND WATAUGA COUNTIES

DIVISION 11 FIGURE 1



FEASIBILITY STUDIES UNIT

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UPGRADE NC 194
FROM BANNER ELK TO VALLE CRUCIS
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DIVISION 11 FIGURE 1