STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JAMES B. HUNT JR.
GOVERNOR

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E. NORRIS TOLSON
SECRETARY

May 25, 1999

MEMORANDUM TO: Mr. Samuel L. Erby, Jr., Member, Board of Transportation
Mr. W. E. Hoke, Division Engineer, Division 11
Mr. David D. King
Mr. W. H. Webb, P.E.
Mr. J. M. Lynch, P.E. (6)
Mr. J. B. Williamson
Mr. Bill Gilmore, P.E.
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Mr. G. T. Shearin, P.E.
Mr. M. R. Poole, P.E.
Mr. A. L. Avant (2)
Mr. J. D. Lane
Mr. T. A. Peoples, P.E.
Mr. David Smith, P.E.

FROM: David G. Modlin, Ph.D., P.E. David
Head of Feasibility Studies

SUBJECT: Feasibility Study # FS-9911F, NC 90 from SR 1356 (Johns River Road) at Colletsville to SR 1352 (Valway Road), Caldwell County.

Our staff has completed a feasibility study for the subject proposed project. This brief analysis suggests improvements that would be logical if the project were to be funded. A copy of our report is attached for your information.

DGM/joa

Attachment

cc: Mr. David W. Conner, Sr., P.E.

FEASIBILITY STUDY

NC 90
from SR 1356 (Johns River Road) at Colletsville
to SR 1352 (Valway Road)
Caldwell County

Division 11

FS-9911F

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

David W. Conner, Sr., P.E.
Highway Planning Engineer

David G. Modlin, Jr., Ph.D., P.E.
Head of Feasibility Studies

5/10/99
Date

FS-9911F

NC 90
from SR 1356 (Johns River Road) at Colletsville
to SR 1352 (Valway Road)
Caldwell County

Division 11

I. General Description

This preliminary study describes studied improvements to NC 90 in Caldwell County. It is recommended that NC 90 be widened from SR 1356 (Johns River Road) at Colletsville, to SR 1352 (Valway Road), a distance of approximately 8.7 miles (14.0 km). The roadway should be widened to current 2-lane roadway standards consisting of 12-foot (3.6-m) wide travel lanes, 2-foot (0.6-m) wide paved shoulders, and 6-foot (1.8-m) wide soil shoulders. For a location map, please see Figure 1.

The proposed widening should be accomplished on a 100-foot (30.5-m) wide right-of-way. It is estimated that 46 residences and 3 businesses will require relocation as a result of this project.

The total cost for right-of-way and construction is estimated to be $22,900,000 as follows:

Right-of-Way	$10,700,000
Construction	12,200,000
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Total Cost	$22,900,000

This study is the initial step in the planning and design process for this project and is not to be considered the product of exhaustive environmental or design investigations. The purpose of the study is to describe the problem, recommend a treatment including costs, and identify potential problem areas that deserve consideration in the planning and design phases.

II. Need For Project

The purpose of this project is to improve the traffic carrying capacity and accident experience of NC 90 between Colletsville and Lenoir.

The studied segment of NC 90 is designated as a major rural collector on the North Carolina Statewide Functional Classification and is not currently included in a designated thoroughfare planning area.

Within the project termini, existing NC 90 is generally a 2-lane roadway with a 16-foot to 18-foot (4.9-m to 5.5-m) wide pavement and narrow soil shoulders. The roadway includes very little area to pass safely and is typified by mountainous terrain and numerous curves. There are some areas of the roadway where the edge of pavement extends almost to existing rock faces.

Development along the roadway can generally be summed up as being moderate residential in close proximity to the roadway. Through the Colletsville community some businesses, churches, and a school are adjacent to the roadway.

From SR 1356 to SR 1533, a large portion of NC 90 generally runs parallel to and in close proximity to Mulberry Creek and Spainhour Creek which are located on the south sideof the roadway. Any major widening would need to be accomplished asymmetrically to the north side of the roadway.

At the east project terminal, NC 90 intersects SR 1352 (Valway Road) and a "T" intersection is formed by NC 90 making a right-angle turn at the intersection. The intersection is stop-sign controlled and eastbound traffic on NC 90 must stop prior to proceeding in a southerly direction on NC 90 or in a northerly direction on SR 1352.

There are two structures located along the project route which are described as follows:

1. Bridge #30 is located approximately 0.5 miles (0.8 km) east of SR 1354 and carries NC 90 over Mulberry Creek. The bridge has a clear deck width of 26 feet (7.9 m) and a length of 153 feet (46.6 m). It was constructed in 1983 and has a sufficiency rating of 86.3 points (out of a possible 100.0 points).
2. Structure #18 is a corrugated metal culvert located at Franklin Branch immediately southeast of SR 1356. The culvert is 35 feet (10.7-m) long and consists of 3 lines of 9-foot (2.7-m) diameter corrugated metal pipe. It was constructed in 1983 and has a sufficiency rating of 97.3.

The estimated 1998 Average Daily Traffic (ADT), on NC 90, within the project termini, ranges from a low of approximately 1,600 vehicles per day (vpd) at the western terminal to a high of approximately 2,500 vpd at the eastern terminal. The design year (2025) estimates are approximately 3,400 vpd and 6,300 vpd, respectively. Current and future truck volumes are estimated to total about 8% of the traffic volumes.

The current Level of Service (LOS) on NC 90, within the project termini, is estimated to be Level D. With the recommended improvements, it is anticipated that the LOS near the western terminal will improve to Level C and Level C will reach Level D prior to the design year. Although the Level of Service will not significantly improve as a result of the proposed project, the safety and ability of the roadway to move vehicles will be greatly improved.

During the period from April 1, 1995, through March 31, 1998, there were 48 accidents reported within the project termini. This resulted in an accident rate of 309.1 accidents per 100 million vehicle miles (Acc/100MVM), compared to a statewide average of 246.5 Acc/100 MVM for all highways in North Carolina during the period from 1995 through 1997. There was one fatality reported during the period and 26 of the accidents resulted in non-fatal injuries. The most prevalent accident type was ran-off-road accidents (61%) and 48% of the accidents involved hitting a ditch bank. Widened travel lanes and shoulders should provide for a reduction in these types of accidents.

III. Detailed Description

It is recommended that NC 90 be widened from SR 1356 (Johns River Road) at Colletsville, to SR 1352 (Valway Road), a distance of approximately 8.7 miles (14.0 km). For a location map, please see Figure 1. The project should include:

1. Widening the roadway to current 2-lane roadway standards consisting of 12-foot (3.6-m) wide travel lanes, 2-foot (0.6-m) wide paved shoulders, and 6-foot (1.8-m) wide soil shoulders.

2. Realigning the east project terminal to create a free flow movement on NC 90.

3. Where practical, realigning segments of the existing roadway which presently have high degrees of horizontal curvature.

4. Replacing Bridge # 30 over Mulberry Creek. The new bridge should have a clear deck width of 30 feet (9.1 m) and should have 5-foot (1.5-m) wide sidewalks on each side.

5. Constructing left turn lanes at SR 1337, SR 1310, SR 1354, SR 1340, SR 1397, SR 1353, and SR 1350.

6. Installing approximately 21,000 lineal feet (6,400 lineal meters) of steel beam guard rail.

The proposed widening should be accomplished on a 100-foot (30.5-m) wide right-of-way. It is estimated that 46 residences and 3 businesses will require relocation as a result of this project.

The total cost for right-of-way and construction is estimated to be $22,900,000 as follows:

Right-of-Way	$10,700,000
Construction	12,200,000
Total Cost	$22,900,000

IV. Other Comments

An environmental screening was not conducted for this study; however, due to the construction potential in the areas of Franklin Branch, Mulberry Creek, and Spainhour Creek, Corps of Engineers permits and wetlands mitigation will be required. The costs for wetlands mitigation is not included as part of the above estimated project costs.

No provisions for bicycles have been included in this report.

A transportation benefit analysis was not completed for this project because the proposed improvements are beyond the capabilities of the benefits analysis package developed by the Statewide Planning Branch. The proposed project does not significantly increase capacity of the roadway but does include a major benefit of safety to the motoring public by providing wider travel lanes, improved sight distance, flatter curves, and shoulders wide enough to handle breakdown conditions.

Current roadway standards for 2-lane roadways includes 12-foot (3.6-m) wide travel lanes. A request was made for consideration of 10-foot (3.0-m) wide lanes for this project and although not standard, the narrow lanes were considered. In this respect, costs were developed for improving NC 90 with a project scope of 1) widening the roadway to10-foot (3.0-m) wide travel lanes with 2-foot (0.6-m) wide paved shoulders, and 6-foot (1.8-m) wide soil shoulders, 2) improving curves, 3) resurfacing, 4) adding guardrail, and 5) purchasing an 80-foot (24.4-m) wide right-of-way. The estimated cost for this scope of work is $18,900,000 as follows:

Right-of-Way	$ 8,400,000
Construction	10,500,000
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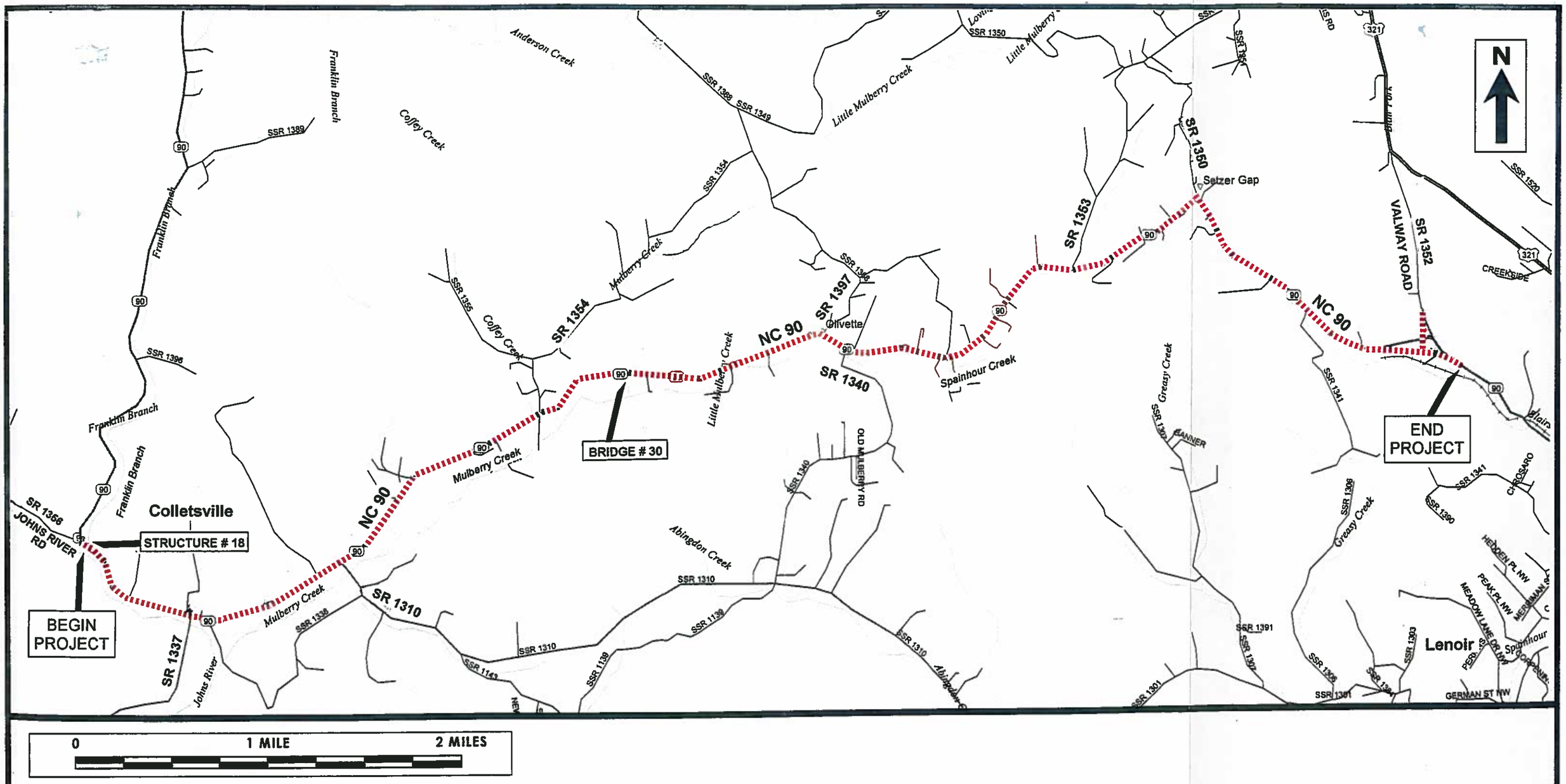
Total Cost	$18,900,000



North Carolina Department of Transportation
Programming and TIP Branch

FS-9911F

NC 90
from SR 1356 (Johns River Road) at Colletsville
to SR 1352 (Valway Road)

Caldwell County

DIVISION 11 FIGURE 1