

STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

JAMES B. HUNT, JR.  
GOVERNOR

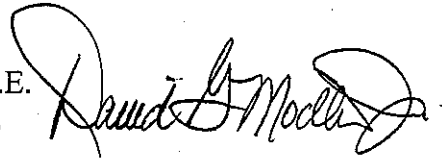
DIVISION OF HIGHWAYS  
P.O. BOX 25201, RALEIGH, N.C. 27611-5201

R. SAMUEL HUNT III  
SECRETARY

August 24, 1994

MEMORANDUM TO: Mr. Henson Barnes, Member, Board of Transportation  
Mr. D. R. Dupree, Division Engineer, Division 4  
Mr. C. W. Leggett, P.E.  
Mr. W. H. Webb, P.E.  
Mr. J. M. Lynch, P.E.  
Mr. J. B. Williamson  
Mr. H. F. Vick, P.E. (2)  
Mr. D. R. Morton, P.E.  
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. L. K. Barger, P.E.

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



SUBJECT: Feasibility Study # U-3125, US 117 from NC 55 in Mount Olive  
to NC 581 in Goldsboro, Wayne 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: Dr. L. R. Goode, P.E.  
Mr. B. G. Jenkins, P.E.  
Mr. M. B. Mustafa, P.E.



FEASIBILITY STUDY

US 117  
from NC 55 in Mount Olive to  
NC 581 in Goldsboro

Wayne County

U-3125

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

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Highway Planning Engineer

8/22/94

Date

David G. Modlin, Jr.

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

## FEASIBILITY STUDY

US 117  
from NC 55 in Mount Olive to  
NC 581 in Goldsboro

Wayne County

U-3125

### I. GENERAL DESCRIPTION

This is a feasibility study for upgrading US 117 to freeway standards, from NC 55 in Mount Olive to NC 581 in Goldsboro, a distance of approximately 12.8 miles (20.6 kilometers). The recommended improvements include partial relocation of US 117 and additional interchanges between NC 55 and NC 581 (See Figures 1 and 2). The recommended typical cross-section is a four-lane, 46-foot (14.0-meter) wide median divided freeway on a 250-foot (76.2-meter) wide right-of-way with full control of access. The estimated cost of the project is \$53,550,000 (\$14,250,000 for right-of-way and \$39,300,000 for construction).

This study is not a detailed planning/environmental investigation. A feasibility study presents recommended cross sections for improvements, general alignments of improvements, and estimated cost of construction and right-of-way. This study attempts to identify any potential environmental, permitting, or other observed issues which deserve consideration in the planning and construction stages.

### II. NEED FOR PROJECT

This project was requested by the City of Goldsboro to improve traffic capacity between Mount Olive and Goldsboro and to continue the US 117 corridor improvements between Wilson and I-40. US 117 is classified as an Other Principle Arterial on the Statewide Functional Classification System.

The existing US 117 is mainly a four-lane, median divided roadway. The median width varies from 4 to 46 feet (1.2 to 14.0 meters). Land use is predominantly agricultural between Mount Olive and Goldsboro. Within the urbanized areas of Mount Olive and Goldsboro, land use is mixed residential, industrial, and commercial.

The south terminal of the project is located at the interchange of US 117 and NC 55 in Mount Olive (See

Figure 2). South of this interchange, US 117 continues as a four-lane, median divided roadway with partial or full access control. Land use is institutional, commercial, and agricultural around the interchange.

The north terminal of the project is located at the proposed interchange of US 117 and NC 581, which is included in TIP Project R-1030. TIP Project R-1030 proposes to construct a four-lane, median-divided freeway on a new location west of the existing US 117, between Goldsboro and Wilson (See Figure 2). Land use is industrial and agricultural around the proposed interchange.

The Southern Railway crosses the existing US 117 Bypass at two locations. One crossing is located approximately 0.5 mile (0.8 kilometers) south of NC 581 and the other is located approximately 1.0 mile (1.6 kilometers) south of NC 581. The rail lines carry approximately four to six trains per day at average speeds of 10 to 30 miles per hour (16 to 48 kilometers per hour). The exposure index, a product of the design year traffic volume and the number of trains per day, is 301,000, which exceeds the index limit of 30,000 for an urban area, therefore a grade separation is recommended. Only one grade separation is recommended, since the mainline railroad splits into two lines east of the crossing on new location.

Waynesborough State Park is located on the east side of the existing US 117, south of the Southern Railway crossings (See Figure 1). The park's west boundary is the Neuse River. Waynesborough State Park will not be impacted by the recommended project corridor, which will be on the west side of the Neuse River in this area.

During the period from September 1, 1990, through August 31, 1993, a total of 250 accidents were reported along the studied section of US 117. This resulted in an accident rate of 100.8 accidents per 100 million vehicle miles (acc/100mvm), compared to a statewide average of 126.5 (acc/100mvm) for similar routes. Rear-end collisions accounted for 42% of the accidents. The recommended improvements should reduce the accident rate by eliminating turning traffic conflicts.

### US 117 TRAFFIC ANALYSIS TABLE

CONDITION	1998		2018	
	VOLUME	LOS	VOLUME	LOS
South of US 13				
- Existing US 117	10,400	A	21,200	A
- Existing US 117 with interchanges	10,400	A	21,200	A
North of US 13				
- Existing US 117 without freeway	39,000	C	73,200	F
- Existing US 117 with freeway	11,700	A	22,000	B
- US 117 freeway	27,300	B	51,200	C

NOTES: Estimated volumes are given in vehicles per day  
LOS = Level of service

### III. RECOMMENDATIONS

It is recommended that 12.8 miles (20.6 kilometers) of US 117 be upgraded to freeway standards (See figure 2). The following improvements are recommended.

1. A diamond interchange is recommended at the existing intersection of SR 1135 and US 117 (See Figure 2). US 117 Alternate would have to be relocated eastward, from approximately 0.7 mile (1.1 kilometers) south of SR 1135 to approximately 0.3 mile (0.5 kilometer) north of SR 1135, in order to provide adequate sight distance and roadway alignment at the ramp terminal. SR 1135 would be shifted to the north to improve alignment with US 117 and US 117 Alternate. It is estimated that this improvement would cost \$4,000,000 (\$300,000 for right-of-way and \$3,700,000 for construction).
2. A diamond interchange is recommended at the existing intersection of SR 1120 and US 117 (See Figure 2). It is estimated that this improvement would cost \$2,850,000 (\$50,000 for right-of-way and \$2,800,000 for construction).
3. It is recommended that a four-lane freeway on new location be constructed, from approximately 1.4 miles (2.2 kilometers) south of US 117/US 117 Alternate intersection northward to NC 581 (See Figure 2). The recommended typical cross-section for US 117 is a four-lane, 46-foot (14.0-meter) wide median divided freeway

with 10-foot (3.0-meter) wide paved right shoulders and a 4-foot (1.2-meter) wide full depth paved median shoulder. The interchange at NC 581 and US 117 will be constructed as part of TIP Project R-1030. A flyover ramp would be constructed at the junction of US 117 and US 117 new location. Additional grade separations are recommended at the intersections of the US 117 freeway with SR 1219 and SR 1212. Bridges would be constructed over the Neuse River crossings and the Southern Railway crossing.

US 13 would be realigned from approximately 0.1 mile (0.2 kilometer) east of SR 1219 to the existing US 117, a distance of approximately 1.0 mile (1.6 kilometers). The recommended typical cross-section for US 13 is a two-lane, 24-foot (7.3-meter) roadway with 8-foot (2.4-meter) usable shoulders including, 2-foot (0.6-meter) paved shoulders on a 100-foot (30.5-meter) wide right-of-way. A diamond interchange is recommended at the intersection of the realigned US 13 and US 117 freeway. A grade separation would be constructed to carry the existing US 13 over the US 117 freeway.

It is estimated that the improvements to US 117 on new location and US 13 on new location would cost \$46,700,000 (\$13,900,000 for right-of-way and \$32,800,000 for construction).

Service roads were not recommended for US 117, between NC 55 and US 117 Alternate, since the existing section is full control of access. The addition of interchanges at SR 1135 and SR 1120 will upgrade this section of US 117 to freeway standards.

The recommended improvements to US 117 would increase traffic capacity and reduce travel time between Mount Olive and Goldsboro, while continuing the US 117 corridor between Wilson and I-40.

The total project cost is estimated at:

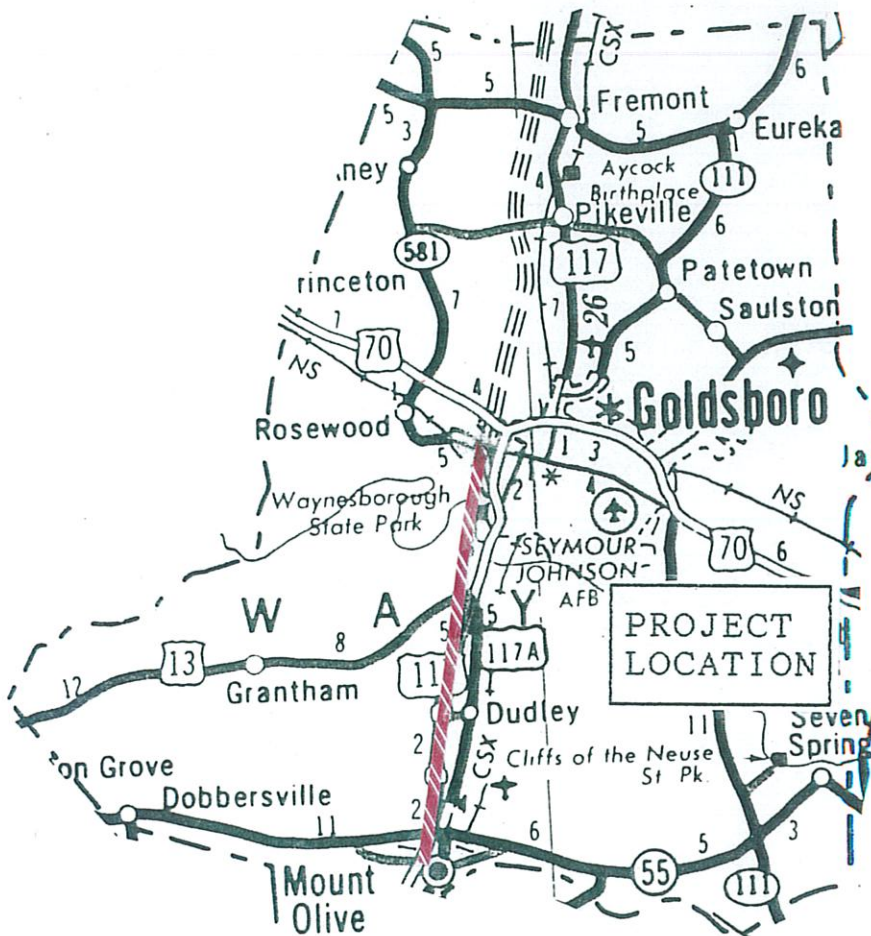
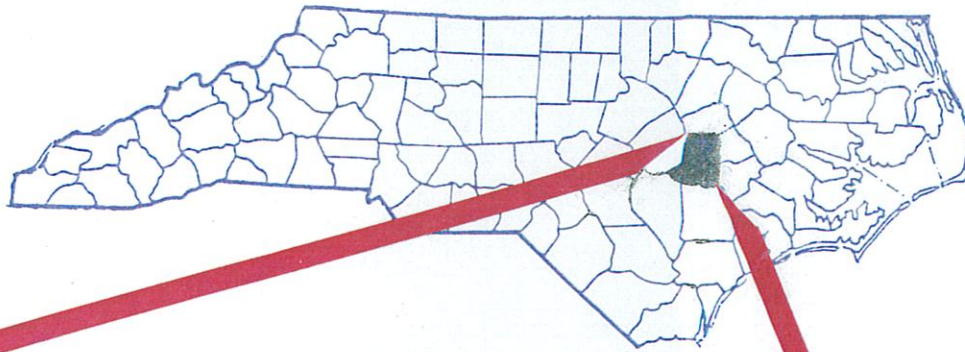
Right-of-way	\$14,250,000
Construction	\$39,300,000
<hr/>	
Total	\$53,550,000

In the event of phasing/staging this project, it is recommended that the construction of the four-lane freeway on new location be given priority, due to the higher traffic demands.

#### IV. OTHER COMMENTS AND CONCERNS

This project would require the relocation of a total of 71 residences and 1 church.

This project may involve the placement of fill in wetlands, and may require a Corps of Engineers, Section 404 Permit. A 401 Water Quality Certification may be required, since the project will cross the Neuse River and its tributaries. No historical or architecturally significant sites are known to be in the limits of the proposed project. Waynesborough State Park will not be impacted by the recommended project corridor.



FEASIBILITY STUDY UNIT

U-3125

US 117

FROM NC 55 IN GOLDSBORO  
TO NC 581 IN MOUNT OLIVE

WAYNE COUNTY

DIV. 4

FIGURE 1



