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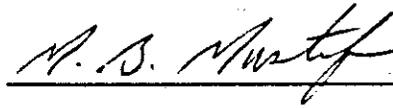
FEASIBILITY STUDY

Wilmington
US 117 from 3rd Street to SR 1002
and
SR 1002 from US 117 to I-40 Interchange
New Hanover County
U-2724

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



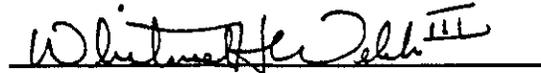
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I. GENERAL DESCRIPTION

This is a feasibility study for the widening of US 117 from 3rd Street to SR 1002, and the widening of SR 1002 from US 117 to the I-40 Interchange, a distance of 9.6 miles (See Figure 1). The recommended typical section is a 5-lane, 64-foot curb and gutter section with 8-foot berms, on 120-feet of right-of-way. Estimated cost of the project is \$31,520,000 (\$16,280,000 for right-of-way and \$15,240,000 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 Division 3. Improvements are needed to relieve traffic congestion and to enhance efficiency of truck traffic to and from downtown Wilmington shipyards.

US 117 is classified as an Other Urban Principal Arterial within the Wilmington city limits and as a Rural Major Collector outside city limits in the Statewide Functional Classification System. It is also a Federal Aid Urban Route (FAU-5858).

Existing US 117 consists of a 2-lane, 24 to 40-foot pavement with 8-foot shoulders on 60-feet of right-of-way with no control of access. The subject section is located on the north side of Wilmington, and serves as a rural collector and a major north-south truck route. Land use is predominantly residential, with the exception of a large General Electric jet engine factory, and some industrial development neighboring the Wilmington Airport. New Hanover County land use plans call for expanding industrial development in the airport area.

SR 1002 consists of a 2-lane, 28-foot pavement with shoulder widths ranging from 3 to 12-feet on 60-feet of right-of-way. SR

1002 is a short connector from US 117 to I-40, and provides east-west movement to the rural Castle Hayne area.

This project will be affected by Project U-92, the Smith Creek Parkway (See Figure 2). The Smith Creek Parkway proposes a four-lane divided facility on new location from the Cape Fear River Bridge to US 74, a distance of 4.6 miles. Section U-92B of Smith Creek Parkway also proposes a four-lane divided facility from downtown Wilmington to US 117 north of Smith Creek (scheduled for letting in 1998). If Section U-92B is constructed, then the need for Section 1 of this project may be reduced, since the "Downtown Spur" of Smith Creek Parkway should serve the majority of traffic from Section 1. Therefore if Section U-92B of Smith Creek Parkway is built, this project's cost may be reduced by approximately \$8,210,000 (\$2,810,000 for right-of-way and \$5,400,000 for construction).

A portion of this project, from 3rd Street to SR 1399 is a part of the "Blockade Runners" bicycle route. Therefore the N.C. Bicycle Program has requested that provisions be made to accommodate bicycle traffic.

Estimated 1990 Average Daily Traffic (ADT) on US 117 is 15,500 vehicles per day (vpd). By the design year of 2011, anticipated traffic is estimated at 26,700 vpd. With the existing facility, traffic currently experiences a level of service (LOS) D, and is expected to experience a LOS F before the design year. With the recommended improvement, current traffic on US 117 will experience a LOS C, and is projected to experience a LOS E in the year 2011.

Estimated 1990 Average Daily Traffic (ADT) on SR 1002 is 6,000 vehicles per day (vpd). By the design year of 2011, anticipated traffic is estimated at 10,400 vpd. With the existing facility, traffic currently experiences a level of service (LOS) C, and is expected to experience a LOS D in the design year. With the recommended improvement, current traffic on SR 1002 will experience a LOS B, and that level of service is expected to be maintained to the year 2011.

During the period from December 1, 1987 through November 31, 1990, a total of 293 accidents were reported along the studied portion of US 117. This resulted in an accident rate of 228 accidents per 100 million vehicle miles, compared to a statewide average of 294. Most prevalent accident types were rear-end slow or stop (32%) and angle collisions (14%). For the studied section of SR 1002, a total of 11 accidents were reported,

*Paul
Comparing
traffic*

1990 = 15,500
2011 = 26,700
1995 = 18,200
2015 = 28,800 vpd
11% trucks. 60/40

resulting in an accident rate of 368 accidents per 100 million vehicle miles, compared to a statewide average of 329 for similar State Routes. This accident rate is 12% above norm. Most prevalent accident types were rear-end slow or stop (36%) and angle collisions (18%). The recommended five-lane cross-section will reduce accidents of these types.

III. RECOMMENDATIONS

It is recommended that US 117 be widened to a five-lane, 68-foot curb and gutter section from 3rd Street to SR 1399, and a 64-foot curb and gutter section from SR 1399 to SR 1002, for a total distance of 8.6 miles (See Figure 2). It is also recommended that SR 1002 be widened to a five-lane, 64-foot curb and gutter section from US 117 to the I-40 interchange, a distance of one mile. All cross-sections are to have eight-foot berms. The typical 64-foot section is to contain a center 12-foot left-turn lane and four 12-foot travel lanes (two in each direction). The typical 68-foot section is to contain a middle 12-foot left-turn lane, two 12-foot inside lanes, and two 14-foot outer lanes to accommodate bicycle traffic. Widening should occur symmetrically and asymmetrically as determined desirable to minimize adverse impacts. The existing alignment of US 117 should be retained and utilized to the extent possible. The new roadway is to be constructed on 120-feet of right-of-way with no control of access. This width is necessary for drainage in low-lying areas. If it is determined that 120 feet is excessive based on further design, then the width should be reduced where feasible.

The widening of US 117 from 3rd Street to SR 1002 should be the first priority for construction. This section demonstrates the highest traffic demand. SR 1002 can be widened as a second priority when traffic volumes show need for an improvement.

Three signal revisions along US 117 will be required. An intersection improvement is also recommended at the intersection of US 117 and NC 132. This intersection may require improved channelization, signalization, and provision of turn lanes.

Five structures are affected by this project. Bridge #20 carries US 117 over the Seaboard Coast Line Railroad, is 71 feet long, has a clear roadway width (CRW) of 39 feet, and has a sufficiency rating of 32. It requires replacement with an approximately 75 foot long by 68-foot CRW structure. Bridge #26 carries US 117 over a railroad line, is 229 feet long, has a CRW of 28-feet, and has a sufficiency rating of 38. This bridge needs replacing with an approximately 235 foot structure with a CRW of 68-feet. Bridge #29 which carries US 117 over Smith Creek, is a swing-bridge to allow navigation of Smith Creek.

This structure is a pivoting truss-system which is 248 feet long, with a CRW of 28-feet, and has a sufficiency rating of 31. This bridge should be replaced with a new structure approximately 250 feet long, with a CRW of 68-feet, and a minimum 30 foot vertical clearance above the high-tide mark of Smith Creek. Bridges 44 and 45 carry I-40 over SR 1002. They are 181 feet long with an under-structure horizontal clearance of 75 feet, a minimum vertical clearance of 17 feet, and sufficiency ratings of 99. Adequate horizontal and vertical clearances exist to construct a 64-foot curb and gutter section; however bridge-pier protection will be required. Estimated bridge dimensions may be changed at the planning stage, depending upon hydrographic studies. None of these bridges are currently scheduled for replacement.

Total project cost is estimated at:

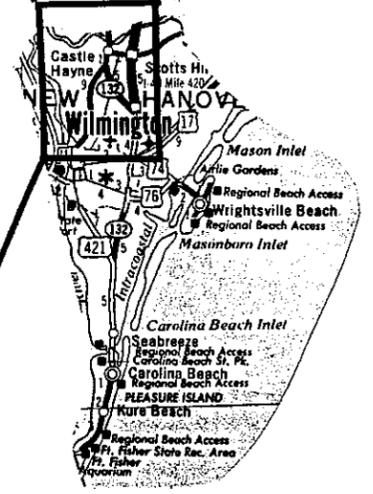
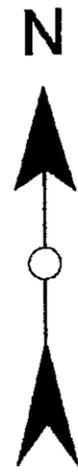
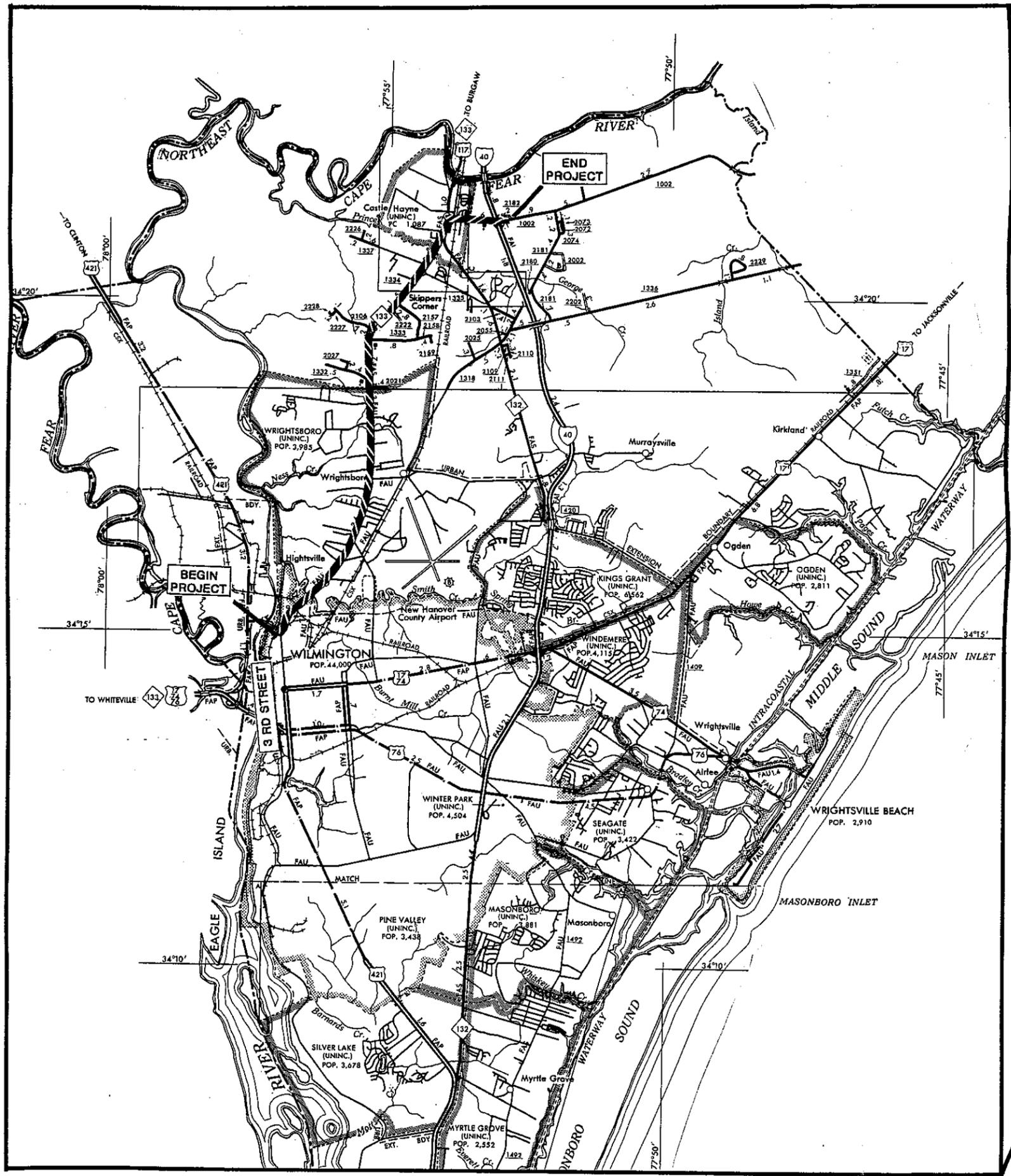
	Widen US 117	Widen SR 1002
Right-of-Way	\$ 14,050,000	\$2,230,000
Construction	\$ 14,190,000	\$1,050,000
Total Project Cost	\$ 31,520,000	

Medium utility conflicts are expected.

IV. OTHER COMMENTS AND CONCERNS

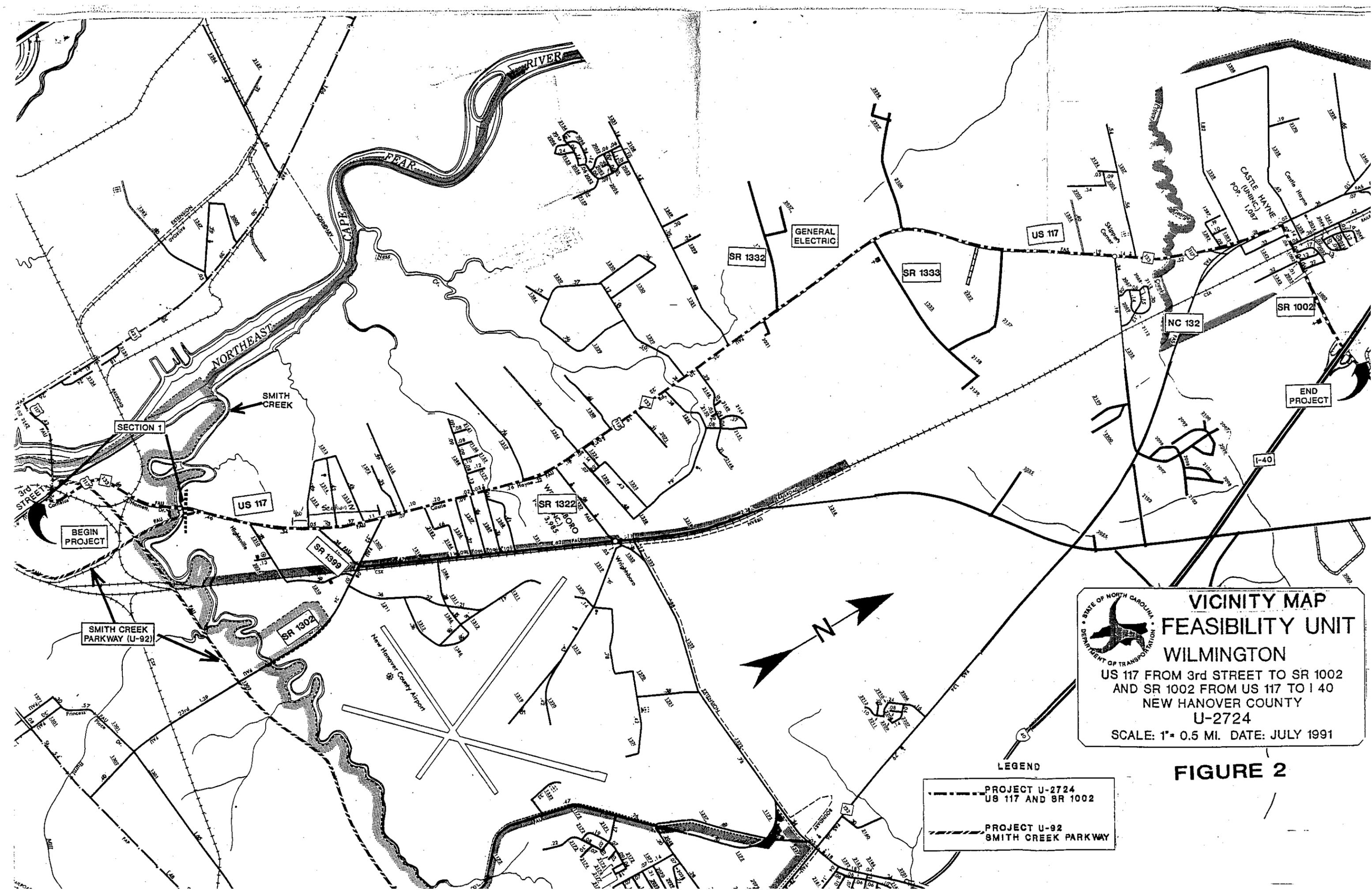
An environmental screening was conducted for this study. Widening may require placing fill in wetlands on both sides of US 117, particularly in the Smith Creek area. Habitat in the project area is suitable to the Red-cockaded Woodpecker and Cooley's Meadowrue, known to occur in New Hanover County. Because this project crosses Smith Creek and due to the wetland involvement, a Corps of Engineers Individual Permit may be required. A CAMA Permit or Consistency Determination will also be required. A Coast Guard Permit for the new Smith Creek Bridge may be required. No historical sites are known to be impacted; however some impact to archaeological sites is probable in the Smith Creek area. No public parks are affected.

This project may cause approximately 60 residential and 17 business relocations.




LOCATION MAP
FEASIBILITY UNIT
WILMINGTON
 US 17 FROM 3rd STREET TO SR 1002
 AND SR 1002 FROM US 17 TO I 40
 NEW HANOVER COUNTY
 U-2724
 SCALE: 1" = 2 MILES DATE: JULY 1991

FIGURE 1




VICINITY MAP
FEASIBILITY UNIT
WILMINGTON
 US 117 FROM 3rd STREET TO SR 1002
 AND SR 1002 FROM US 117 TO I 40
 NEW HANOVER COUNTY
 U-2724
 SCALE: 1" = 0.5 MI. DATE: JULY 1991

FIGURE 2

LEGEND
 - - - - - PROJECT U-2724
 US 117 AND SR 1002
 - - - - - PROJECT U-92
 SMITH CREEK PARKWAY