

FEASIBILITY STUDY

NC 51

from South Carolina State Line
to SR 3645

Mecklenburg County

U-3447

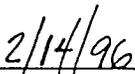
Prepared by
Program Development Branch
Division of Highways
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I. GENERAL DESCRIPTION

This is a feasibility study for the widening of NC 51, from the South Carolina State Line to SR 3645, in Mecklenburg County (See Figure 1). The project is approximately 1.0 mile (1.6 km) in length. The recommended typical section is a five-lane, 64-foot (19.5-m) face-to-face, curb and gutter section with 8-foot (2.4-m) berms on a 100-foot (30.5-m) wide right-of-way with no access control. The estimated project cost is \$2,400,000 (\$200,000 for right-of-way and \$2,200,000 for construction).

II. NEED FOR PROJECT

The purpose of this project is to reduce congestion and improve safety on NC 51. NC 51 serves circumferential traffic around the periphery of the Charlotte urban area and carries traffic from I-77 to I-485. NC 51 is classified as a minor arterial on the Statewide Functional Classification System, and a minor thoroughfare on the Charlotte-Mecklenburg Thoroughfare Plan.

The existing NC 51 is a two-lane, 24-foot (7.3-m) wide roadway with 2 to 4-foot (0.6 to 1.2-m) wide shoulders. The west terminal is located at the South Carolina State Line. South Carolina plans to widen NC 51 to a multi-lane section from I-77 to the state line. The east terminal is located at the intersection with SR 3645. East of this terminal, NC 51 is a four-lane, 40-foot (12.2-m) face-to-face, curb and gutter section with sidewalks on both sides.

Structure Number 10 carries NC 51 over a tributary of Sugar Creek. It is located approximately 0.2 mile (0.3 km) west of SR 3645. This triple 7' X 10' reinforced concrete box culvert has a sufficiency rating of 86.4.

Preliminary environmental screening has identified the possible presence of an endangered animal in the study corridor. The Carolina heelsplitter, *Lasmigona Decorata*, which can be found in small streams and rivers with soft muddy or sandy substrate beds, may be present in Sugar Creek or its tributaries.

Estimated 1996 average daily traffic (ADT) on this section of NC 51 is 22,100 vehicles per day (vpd). In the design year 2015, the traffic volume is expected to be 30,400. NC 51 would operate at a level of service (LOS) E in 1996 and a LOS F in 2015. With the recommended roadway widening, the traffic volumes along NC 51 would operate at a LOS B, in 1996, and a LOS C, in 2015.

During the period from April, 1992, through March, 1995, there were 70 accidents reported along the studied section of NC 51. This resulted in an accident rate of 264.2 accidents per 100 million vehicle miles (acc/100mvm) compared to a statewide average of 268.8 acc/100mvm for this type of facility. Rear-end collisions accounted for a majority of the accidents. No fatalities were reported. The recommended improvements are expected to reduce the accident rate.

III. RECOMMENDATIONS

It is recommended that NC 51 be widened, from the State Line to SR 3645. The recommended typical section is a five-lane, 64-foot (19.5-m) face-to-face, curb and gutter section with 8-foot (2.4-m) berms on a 100-foot (30.5-m) wide right-of-way with no access control.

The recommended improvements are expected to decrease traffic congestion and improve safety.

Moderate utility conflicts are expected.

The following table is an estimate of the project costs:

Right-of-Way	\$ 200,000
Construction	\$ 2,200,000
<u>Total</u>	<u>\$ 2,400,000</u>

IV. OTHER COMMENTS AND CONCERNS

It is estimated that this project would not require the relocation of any residences or businesses.

This study is not a detailed planning/environmental investigation. A feasibility study presents studied cross-sections for improvements, general corridors of improvements, and estimated costs of construction and right-of-way. This study attempts to identify any potential environmental, permitting, or other

observed issues that deserve consideration in the planning and construction stages.

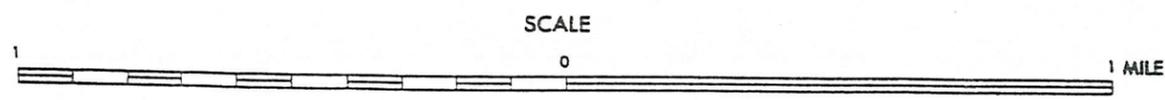
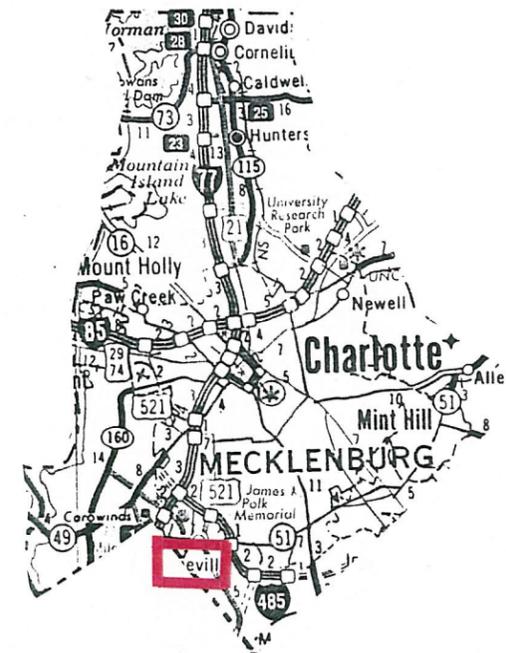
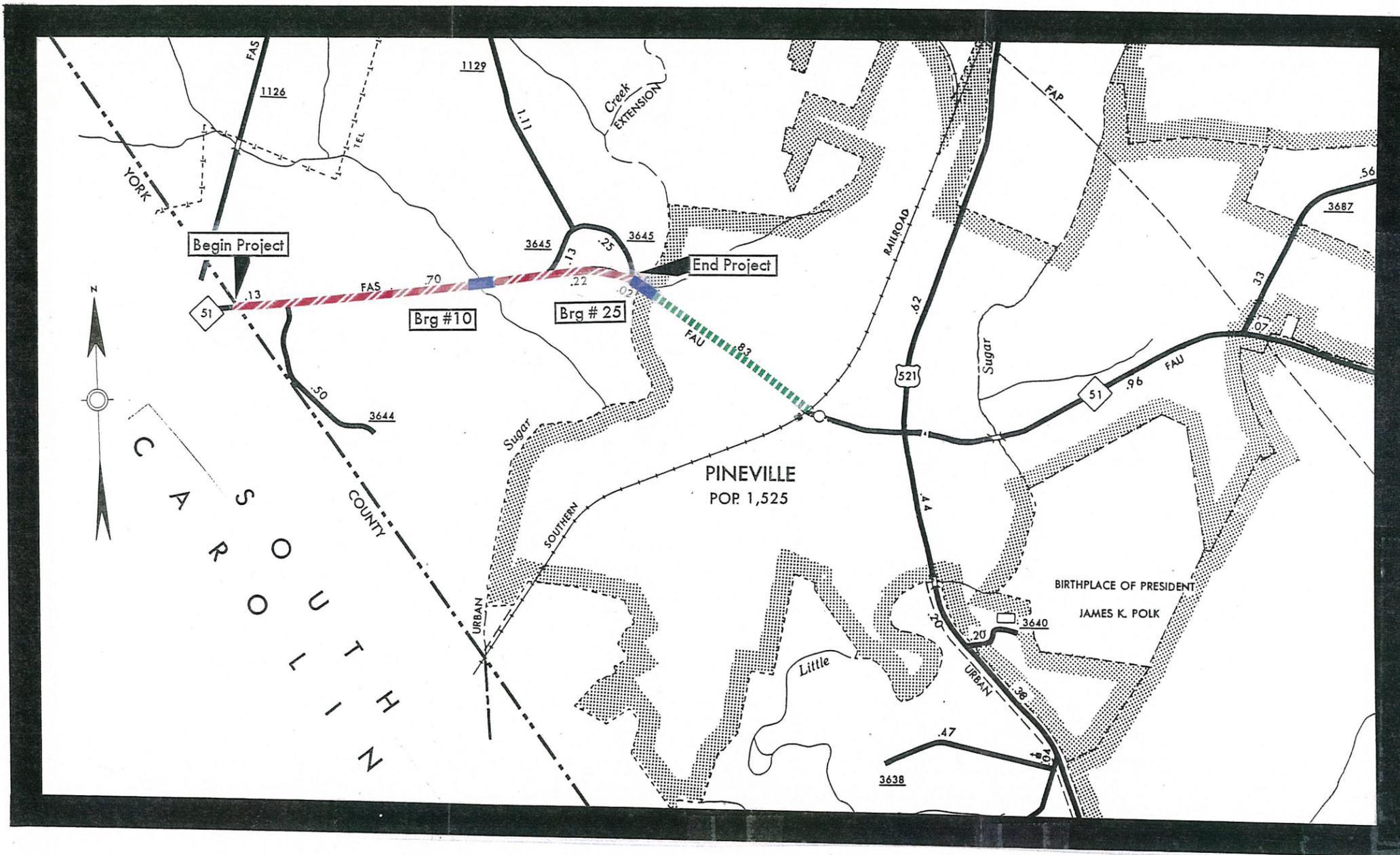
Based on National Wetland Inventory mapping some wetlands have been identified in the project corridor. A US Army Corps of Engineers Section 404 Permit may be required. A Section 7 Consultation may be needed due to the possible presence of the Carolina heelsplitter.

V. OTHER ALTERNATES STUDIED

As shown on Figure 1 (Part 2), we also studied extending the five-lane typical section to the Southern Railroad crossing in Pineville, an additional 0.7 mile (1.1 km). The additional lane would facilitate turning movements into the residences paralleling the road on both sides. The estimated cost of Part 2 was \$2,700,000 (\$600,000 for right-of-way and \$2,100,000 for construction). It was estimated that there would be four residential relocations in this part of the project.

Between SR 3645 and the railroad crossing, NC 51 is mainly a four-lane, 40-foot (12.2-m) face-to-face, curb and gutter section with sidewalks on both sides. Land use is residential. Bridge Number 25 is located 50 feet (15.2 m) east of SR 3645. It carries NC 51 over Sugar Creek. The sufficiency rating of this bridge is 82.0. The bridge deck is approximately 48.5 feet (14.8 m) wide and 166 feet (50.6 m) in length.

The Southern Railway crosses NC 51 in downtown Pineville. This rail line carries 14 trains per day at an average speed of 50 miles per hour (80.6 kmh). The exposure index, a product of the number of trains per day and the design year traffic volume, is 495,600 at this location. Although, this index is well above the threshold of 15,000, a grade separation at this location would result in the destruction of the downtown business district and several residences.



LEGEND	
	Part 1 (Recommended Project)
	Part 2



Program Development Branch Feasibility Studies Unit	
U-3447 NC 51 from South Carolina State Line to SR 3645 Mecklenburg County	
DIVISION 10	FIGURE 1