Feasibility Study

NC 73

From SR 1356 in Lincoln County
To SR 5544 in Mecklenburg County
Lincoln & Mecklenburg Counties

Divisions 12 & 10

R-2706

Prepared by
Program Development Branch
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I. GENERAL DESCRIPTION

This preliminary study describes the proposed widening of NC 73 from SR 1356 in Lincoln County to SR 5544 in Mecklenburg County. Approximately 11.8 miles (19.0 km) of the project are located in Lincoln County and approximately 3.9 miles (6.2 km) are located in Mecklenburg County, for a total project length of approximately 15.7 miles (25.2 km). The location is shown on Figure 1. The proposed cross-section, beginning at the western project terminus at SR 1356 and extending eastward for approximately 12.2 miles (19.6 km), is a 4-lane, median divided road with a 46-foot (14.0 m) wide median, 4-foot (1.2-m) wide outside paved shoulders and 2-foot (0.6-m) wide inside paved shoulders. The total required right-of-way width for this cross-section is 200 feet (61 m).

The proposed cross-section for the remaining 3.5 miles (5.6 km) is a 5-lane, curb-and-gutter section, 68 feet (20.7 m) wide from face-to-face of curbs with berms 10 feet (3.0 m) wide. The total required right-of-way width for this cross-section is 120 feet (36.6 m). These cross-sections will accommodate bicycle traffic on the "Piedmont Spur" route of the NC Bicycling Highways. Five bridges will require replacement and 3 culverts will require extending, as described below.

Widening NC 73, as proposed, will require consultation under Section 106, 36CPR Part 800, Protection of Historic Properties and Section 4(f) of the DOT Act of 1966. Please see Section IV, Other Comments.

This project will likely require 4 business and 77 residential relocations. The existing right-of-way width, west of SR 2128, appears to be variable, but generally 100 feet (30.5 m). The existing right-of-way width, east of SR 2128, appears to be variable but generally 60 feet (18.3 m). The total cost including construction and right-of-way is estimated to be $76,700,000.

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 needs, recommend a treatment including costs, and identify potential problem areas that require consideration in the planning and design phases.

II. NEED FOR PROJECT

The purpose of this project is to enhance current and future traffic flow alomg the NC 73 Corridor between Lincolnton, Lake Norman, and I-77 in Mecklenburg County. The proximity of the NC 73 Corridor to the Lincoln County Airport, and to 3 schools underscores the importance of this facility to the orderly growth of the area. This is an area of rapidly expanding residential and commercial development. This project was requested by the Lincoln County Board of Commissioners and the Lincolnton-Lincoln County Chamber of Commerce. The project corridor is a Minor Arterial on the NC Statewide Classification System and a Minor Thoroughfare on the Lincoln County Thoroughfare Plan.

NC 73, within the project limits, is basically a 2-lane rural cross-section with a pavement approximately 24 feet (7.3 m) wide, and has been widened at major intersections to provide left-turn lanes. NC 73 is on the NC Bicycling Highways "Piedmont Spur" route from SR 1356 in Lincoln County to SR 2128 in Mecklenburg County. The existing right-of-way width, west of the Catawba River, appears to be variable, but generally 100 feet (30.5 m). The existing right-of-way width, east of the Catawba River, appears to be variable but generally 60 feet (18.3 m).

Development along NC 73, east of the Catawba River, consists mainly of a mix of single-family, and multi-family residential subdivisions, including waterfront properties on Lake Norman. At the Catawba River there is a large electric power generating plant on the north side of NC 73.

West of the Catawba River, development is generally less dense and more rural in character. East Lincoln Middle School is located between SR 1362 and SR 1360, and the East Lincoln High School is located west of SR 1386.

Structure Number 3 carries NC 73 over Lick Run Creek and was built in 1968. This bridge is 151 feet (46 m) long, has a clear roadway width of 34 feet (10.4 m), and a sufficiency rating of 95.2.

Structure Number 24 carries NC 73 over Anderson Creek and was built in 1968. This bridge is 166 feet (50.6 m) long, has a clear roadway width of 34 feet (10.4 m), and a sufficiency rating of 96.7.

Structure Number 39 carries SR 1383 over NC 73 and was built in 1968. This bridge is 154 feet (47 m) long, has a clear roadway width of 30 feet (9.1 m), and a sufficiency rating of 78.8. With respect to NC 73, the total horizontal clearance is 61 feet (18.6 m).

Structure Number 43 carries NC 73 over the CSX Railroad and was built in 1968. This bridge is 129 feet (39.3 m) long, has a clear roadway width of 34 feet (10.4 m), and a sufficiency rating of 88.1.

Structure Number 50 carries NC 73 over the Catawba River and was built in 1961. This bridge is 883 feet (269.3 m) long, has a clear roadway width of 28 feet (8.5 m), and a sufficiency rating of 65.2.

Structure Number 12 is a reinforced concrete box culvert under NC 73 at Reed Creek. This culvert is approximately 93 feet (28.3 m) in length.

Structure Number 40 is a reinforced concrete box culvert under NC 73 at Killian Creek. This culvert is approximately 125 feet (38.1 m) in length.

Structure Number 41 is a reinforced concrete box culvert under NC 73 at Forney Creek. This culvert is approximately 185 feet (56.4 m) in length.

Traffic volume estimates for NC 73 within the project limits for the years 1996 and 2020 are 13,000 vehicles per day (vpd) and 25,600 vpd respectively. The Level of Service (LOS) without the proposed improvements is estimated to be LOS E in 1996 and LOS F in 2020. With the proposed improvements the LOS is estimated to be LOS B in 1996 and LOS C in 2020.

During the three year period beginning March 1, 1993, and ending February 29, 1996, there were 184 accidents reported on NC 73 within the project limits. This resulted in a total accident rate of 104 accidents per 100 million vehicle miles (ACC/100MVM). This compares with the statewide average of 348 ACC/100MVM for all rural secondary routes in North Carolina, for 1994.

III. RECOMMENDATIONS

It is recommended to widen NC 73 from SR 1356 in Lincoln County to SR 5544 in Mecklenburg County. Approximately 11.8 miles (19.0 km) of the project are located in Lincoln County and approximately 3.9 miles (6.2 km) are located in Mecklenburg County, for a total project length of approximately 15.7 miles (25.2 km). The location is shown on Figure 1. The proposed cross-section, beginning at the western project terminus at SR 1356 and extending eastward for approximately 12.2 miles (19.6 km), is a 4-lane, median divided road with a 46-foot (14.0-m) wide median, 4-foot (1.2-m) wide outside paved shoulders and 2-foot (0.6-m) wide inside paved shoulders. The total required right-of-way width for this cross-section is 200 feet (61 m). The proposed

cross-section for the remaining 3.5 miles (5.6 km) is a 5-lane, curb-and-gutter section, 68 feet (20.7 m) wide from face-to-face of curbs with berms 10 feet (3.0 m) wide. The total required right-of-way width for this cross-section is 120 feet (36.6 m). These cross-sections will accommodate bicycle traffic on the "Piedmont Spur" route of the NC Bicycling Highways. The bridges identified below will be replaced as follows:

Structure Number 3, which carries NC 73 over Lick Run Creek will be replaced with dual bridges, each approximately 151 feet (46 m) long, and 38 feet (11.6 m) wide.

Structure Number 24, which carries NC 73 over Anderson Creek, will be replaced with dual bridges, each approximately 166 feet (50.6 m) long, and 38 feet (11.6 m) wide.

Structure Number 39, which carries SR 1383 over NC 73 will be replaced with a bridge approximately 215 feet (65.9 m) long, and 32 feet (9.1 m) wide.

Structure Number 43, which carries NC 73 over the CSX Railroad will be replaced with dual bridges, each approximately 129 feet (39.3 m) long, and 38 feet (11.6 m) wide.

Structure Number 50 carries NC 73 over the Catawba River will be replaced with dual bridges, each approximately 883 feet (269.3 m) long, and 38 feet (11.6 m) wide.

The reinforced concrete box culverts identified below will be lengthened as follows:

Structure Number 12 is a reinforced concrete box culvert under NC 73 at Reed Creek. This culvert is approximately 93 feet (28.3 m) in length. This culvert will be lengthened by approximately 90 feet (27.4 m).

Structure Number 40 is a reinforced concrete box culvert under NC 73 at Killian Creek. This culvert is approximately 125 feet (38.1 m) in length. This culvert will be lengthened by approximately 90 feet (27.4 m).

Structure Number 41 is a reinforced concrete box culvert under NC 73 at Forney Creek. This culvert is approximately 185 feet (56.4 m) in length. This culvert will be lengthened by approximately 38 feet (11.6 m).

The existing traffic signals at the NC 16/NC 73 intersection and on NC 73 at the entrance to the Duke Power Nuclear Station will require revisions.

This project will likely require 4 business and 77 residential relocations. The total cost including construction and right-of-way is estimated to be $76,700,000

Right-of-Way	.....	$ 11,900,000
Construction	.....	64,800,000
Total Cost	.....	$ 76,700,000

IV. OTHER COMMENTS

The corridor studied in this report (except for the eastern most 0.25 mile), was studied in a Feasibility Study dated 11/22/91 which combined recommendations for TIP projects R-2705 and R-2706. The earlier study recommended improvements only for 6.2 miles (10.0 km) on NC 73 east of NC 16. During the course of the earlier study an environmental screening was conducted. This screening identified potential impacts to a significant historic property, and to 3 recreation areas, as described below.

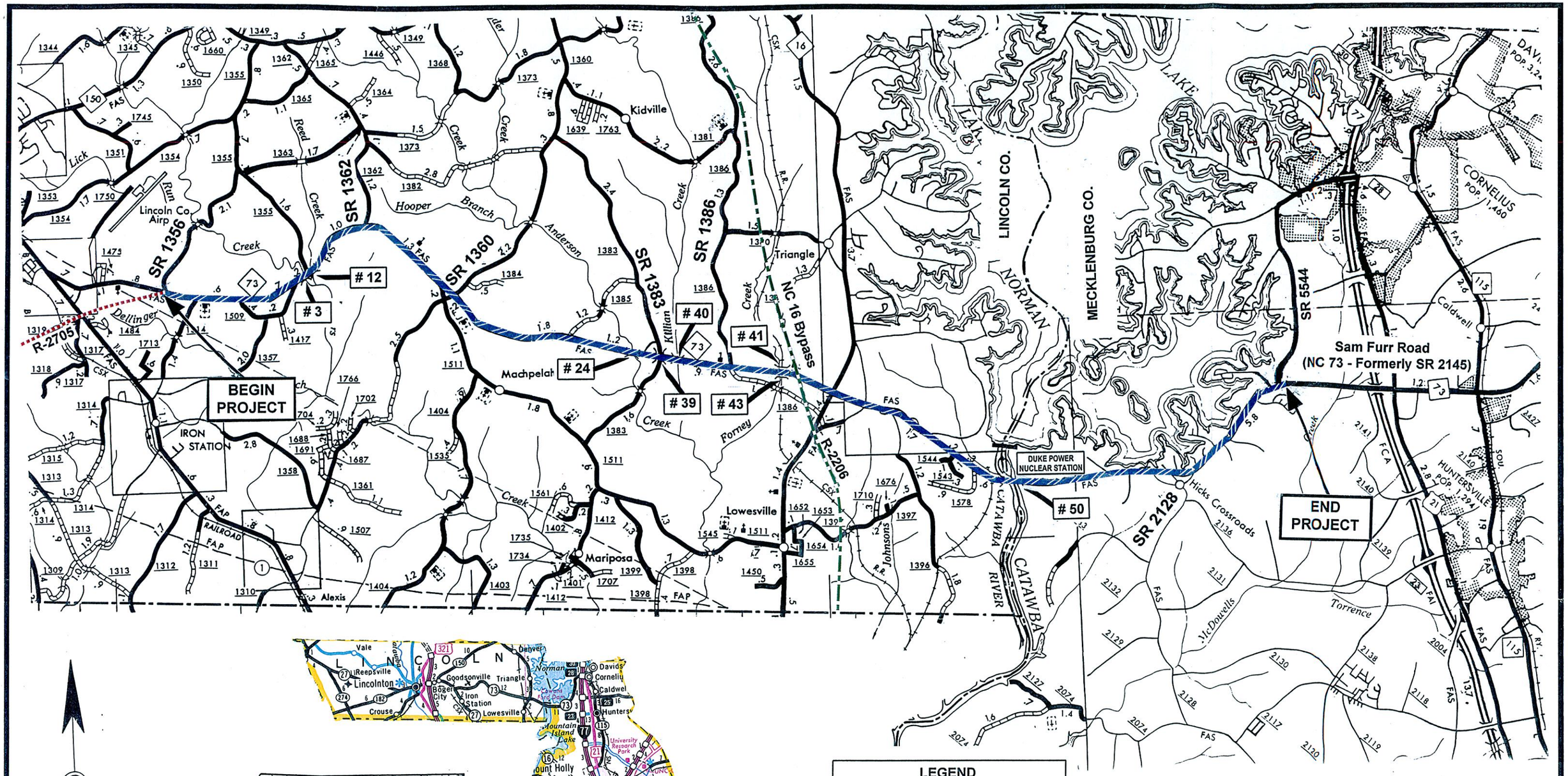
The Ingleside Plantation (circa 1817) is located near the intersection of NC 73 and SR 1383. This house is listed in the National Register and is one of the most significant and most outstanding mansions in the state. The proposed widening of NC 73 should be asymmetrically away from the plantation house to avoid taking property from the grounds and thereby triggering compliance with Section 106, 36CFR, Protection of Historic Properties.

Recreation facilities (athletic fields) available to both students and the public exist at East Lincoln Middle School and at East Lincoln High School. These facilities are located in front of the school buildings, along NC 73. East Lincoln Middle School is located between SR 1362 and SR 1360, and East Lincoln High School is located west of SR 1386. An additional recreation area is located on the southeast side of the Catawba River. This property is owned by the Wildlife Resources Commission and is designated a public recreational area. Potential impacts to these properties may require compliance with Section 4(f) of the DOT Act of 1966.

The cost estimates for both construction and right-of-way for this study were based on symmetrical widening with respect to existing NC 73, except as noted above. This was done in an effort to obtain a conservatively adequate project cost estimate. There will likely be opportunities in the design phase to effect cost reductions, and reduction of adverse environmental impacts, by selectively employing asymmetrical widening.

Four of the 5 bridges recommended for replacement, carry NC 73 over water courses or, in one case, a railroad. These bridges were built in 1968 and have sufficiency ratings ranging from 65.2 to 96.7. The bridges appear to be in good condition and can possibly be retrofited and utilized as part of the project improvements. Because of the uncertainty that they will fit the new grade and alignment, and for cost estimating purposes, the recommendation was made to replace them. The fifth bridge recommended to be replaced carries SR 1583 over NC 73 and currently has insufficient lateral clearance and length.

The NC 16 Bypass (R-2206), shown on Figure 1, is now in design. This project, as currently planned, will provide an interchange with NC 73, with NC 73 being carried over NC 16 with a bridge approximately 229.5 feet (70 m) long and 74.8 feet (22.8 m) wide.



FEASIBILITY STUDIES UNIT

FIGURE 1. PROJECT LOCATION

NC 73 WIDENING
FROM SR 1356 IN LINCOLN COUNTY TO
SR 5544 IN MECKLENBURG COUNTY

Lincoln and Mecklenburg Counties

R-2706 DIVISION 12 & 10 FIGURE 1