



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS

JAMES B. HUNT JR.  
GOVERNOR

E. NORRIS TOLSON  
SECRETARY

March 16, 1998

MEMORANDUM TO: Mrs. Margaret Kluttz, Member, Board of Transportation  
Mr. Peter A. Pappas, Member, Board of Transportation  
Mr. D. B. Waters, Division Engineer, Division 9  
Mr. B. G. Payne, P.E., Division Engineer, Division 10  
Mr. David D. King  
Mr. W. H. Webb, P.E.  
Mr. J. M. Lynch, P.E. (6) Attention: Roberto Canales, P.E.  
Congestion Management Engineer  
Mr. J. B. Williamson  
Mr. H. F. Vick, P.E. (2)  
Mr. R. L. Hill, 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. David Smith, P.E.

FROM:

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

A handwritten signature in black ink, appearing to read "David G. Modlin".

SUBJECT:

Feasibility Study I-3802, Interstate 85 from NC 73 in Cabarrus  
County to US 29-601 in Rowan 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. L. A. Sanderson, P.E.  
Mr. D. R. Morton, P.E.  
Mr. Eric J. Lamb, P.E.

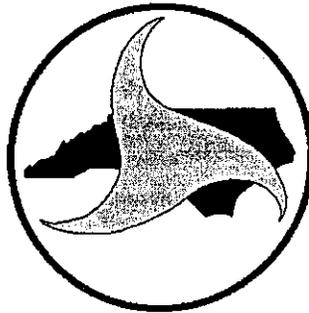


**FEASIBILITY STUDY**

**Interstate 85  
from NC 73 in Cabarrus County  
to US 29-601 in Rowan County**

**Divisions 9 & 10**

**I-3802**



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

A handwritten signature in black ink, appearing to read "Eric J. Lamb".

Eric J. Lamb, P.E.  
Feasibility Studies Engineer

A handwritten signature in black ink, appearing to read "David G. Modlin, Jr.".

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

2/26/98  
Date

Interstate 85  
from NC 73 in Cabarrus County  
to US 29-601 in Rowan County  
I-3802

### I. General Description

This feasibility study describes widening Interstate 85 from NC 73 in Cabarrus County to US 29-601 in Rowan County, a distance of 13.6 miles (21.9 km). The project location is shown on Figure 1. The recommended cross-section is an eight-lane divided facility with 12-foot (3.7-m) travel lanes, 10-foot (3.0-m) paved inside shoulders and 12-foot (3.7-m) paved outside shoulders with full control of access. All improvements are to be contained within the existing right-of-way, which is 292 feet (89.0 m) wide throughout the project limits. It is also recommended to convert the existing clover leaf interchange at US 29-601 in Kannapolis into a single-point diamond interchange. No residential or business relocations are anticipated due to this project. The total cost of the project, including construction and right-of-way, is estimated to be \$ 94,700,000.

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 proposed project including costs, and to identify potential problems that may require consideration in the planning and design phases.

### II. Need for Project

The purpose of this project is to alleviate congestion within the I-85 corridor. This project is supported by the City of Salisbury, the Rowan County Board of Commissioners, and the Cabarrus-South Rowan Urban Area MPO.

I-85 is designated as a freeway in the Concord-Kannapolis and Charlotte Urban Area Thoroughfare Plans and as an interstate in the North Carolina Statewide Functional Classification System.

Throughout most of the project limits, I-85 is currently a four-lane divided facility with 12-foot (3.7-m) travel lanes, 4-foot (1.2-m) paved inside shoulders, 10-foot (3.0-m) paved outside shoulders, and a grassy median 68 feet (20.7 m) wide. In the vicinity of the US 29-601 interchange in Kannapolis between US 29 A and NC 136, there are collector-distributor roads along both sides of the roadway, as well as a raised median with double-faced guardrail.

There is a moderate amount of development adjacent to the project corridor in Cabarrus County. There is a concentration of outlet retail properties along both sides of US 29-601 in Kannapolis. There is a Rest Area located north of NC 136. Plans are also currently being considered for a large shopping center adjacent to the interchange at SR 2126 (Earnhardt Rd.). There are very few accesses to I-85 within the Rowan County portion of the project, and very little development exists in this area. The interchanges at SR 2180 (Lane St.) and at US 152 provide access to I-85 for the residents of Kannapolis and China Grove.

See Appendix A for a schedule of bridges within the project limits that will require modifications to support the proposed widening. Most existing overhead structures within the project corridor will adequately support widening I-85 to eight lanes, and no modifications to these structures are included in this project.

TIP Project U-2833 will widen SR 2126 (Earnhardt Rd.) to a multilane section in the vicinity of I-85. This project is scheduled for right-of-way acquisition in July 1998 and for construction in February 2000. TIP Project I-2511 BA, which will widen I-85 to an eight-lane section north of this project, is currently under construction.

The 1996 Average Daily Traffic (ADT) along I-85 varies from 49,800 to 59,400 vehicles per day (vpd) throughout the project corridor. For the design year 2020, the estimated traffic volumes on I-85 will range between 78,400 and 98,600 vpd. Truck traffic is estimated to make up twenty-seven percent of daily traffic.

Currently I-85 is operating at Level of Service (LOS) D. If no improvements are made, it is projected that the roadway will operate at LOS F in the design year 2020. If I-85 is widened to a six-lane section, the facility will operate at LOS C in the current year and at LOS D in the design year 2020. If I-85 is widened to an eight-lane section, the facility will operate at LOS B in the current year and at LOS C in the design year 2020.

During the three-year period from March 1994 to February 1997, there were 345 accidents reported on I-85 within the project limits. There were 229 injuries reported as a result of these accidents, including no fatalities. The accident rate along I-85 within the project limits is 42.90 accidents per 100 million vehicle miles (acc/100mvm). This compares with the 1996 statewide rate of 96.12 acc/100mvm for interstate highways.

### **III. Recommendations**

It is recommended to widen Interstate 85 from NC 73 in Cabarrus County to the US 29-601 Connector in Rowan County, a distance of 13.6 miles (21.9 km). The project location is shown on Figure 1. The recommended cross-

section is an eight-lane divided facility with 12-foot (3.7-m) travel lanes, 10-foot (3.0-m) paved inside shoulders and 12-foot (3.7-m) paved outside shoulders with full control of access. All improvements are to be contained within the existing right-of-way, which is 292 feet (89.0 m) wide throughout the project limits.

It is recommended to convert the existing interchange at the US 29-601 interchange to a single-point diamond interchange configuration. Analysis of the existing interchange by Traffic Engineering Staff indicates the existing clover-leaf interchange will function adequately with design year traffic volumes, but that the collector-distributor system at this interchange cannot handle the anticipated volumes. The construction of a single-point diamond interchange at this location will eliminate the need for the collector-distributors and will improve the operation of the interchange and the safety of the traffic flow in the area. This configuration will also reduce the number of downstream traffic conflicts with the driveways and commercial accesses on US 29-601. Additionally, the existing overhead structures around the existing interchange will not allow adequate clearance for an eight-lane cross-section. It is recommended to replace Bridges No. 39, No. R119, and No. 122 (see Figure 2) as a part of this interchange redesign.

Four bridges carrying I-85 over waterways will require widening as a part of this project. Each bridge will be widened to 70 feet (21.3 m) in order to support four lanes for each direction. See Appendix A for more information.

All widening for this project is to be contained within the existing median, which is 68 feet (20.7 m) wide through the project limits. The ultimate median width for this project will be 20 feet (6.1 m) wide with fully paved shoulders and a jersey-style concrete barrier. The recommended cross-section will require a design exception from the Federal Highway Administration (FHWA) for acceptable shoulder widths.

No residential or business relocations are anticipated due to the project. The total cost of the project is as follows:

Construction.....	\$ 94,400,000
Right-of-way.....	\$ 300,000
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Total Cost .....	\$ 94,700,000

#### IV. Alternates

The cost of constructing the project as a six-lane section was also examined. As in the eight-lane alternate, this project will have 12-foot (3.7-m) travel lanes, 10-foot (3.0-m) paved inside shoulders and 12-foot (3.7-m) paved outside shoulders with full control of access. All of the proposed widening is to

be done within the existing median, and these improvements will be contained within the existing right-of-way. However the median under this proposal will be 44 feet (13.4 m) wide and will not feature any sort of barrier separation.

This alternate will not require modifications to the US 29-601 interchange in Kannapolis. However, the current configuration of the interchange will not provide an adequate level of service in the design year 2020.

No residential or business relocations are anticipated due to the project. The total cost of the six-lane alternate is as follows:

Construction.....	\$ 55,900,000
Right-of-way.....	\$ 200,000
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Total Cost .....	\$ 56,100,000

While this cross-section will adequately handle the projected traffic, the construction of an eight-lane section is more consistent with the development of I-85 through North Carolina. It is also likely the eight lane section will have a longer design life than a six-lane section. Constructing the eight-lane section now instead of widening the six-lane section later should result in a greater long-term cost savings.

#### V. Additional Comments

An environmental screening was not conducted for this study. However, no impacts to historic properties or wetlands are anticipated.

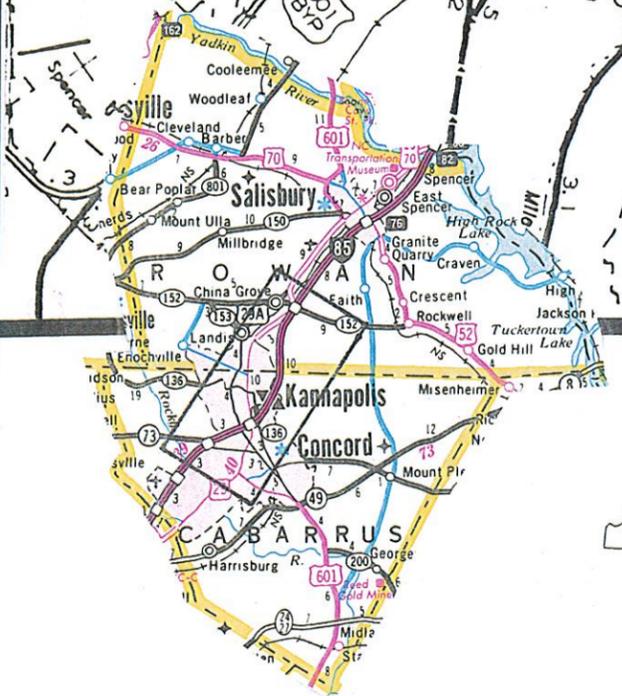
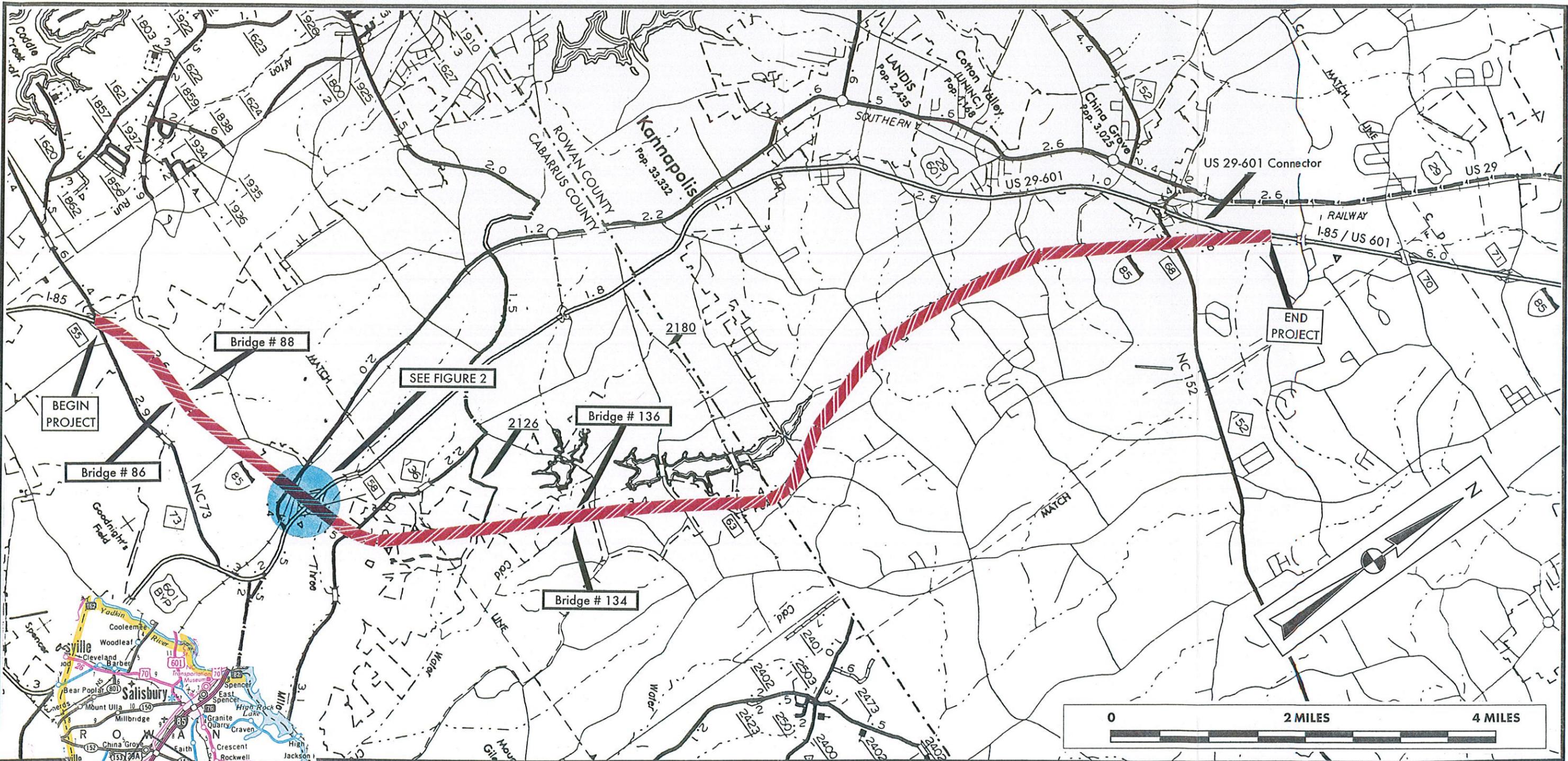
Based on maps at the Department of Environment, Health & Natural Resources - Natural Heritage Section, no threatened or endangered species were identified in the project corridor.

Lake Concord and Lake Fisher are located adjacent to the project corridor. Three Mile Creek is classified as a Class C stream. Irish Buffaloe Creek is classified as WS-III, and Cold Water Creek is classified as WS-IV and is identified as a critical area. The all of the waterways are within the project corridor are part of the Yadkin River Basin.

APPENDIX A - I-3802 Structures to be Modified

Structure Number	Feature Intersected	Structure Description	Structure Length	Deck Width	Year Constructed	Sufficiency Rating	Proposed Treatment
<b>L-Line Structures</b>							
86	Irish Buffaloe Creek	Reinforced concrete deck on I-beams	160'	42.0'	1968	91.7	Widen structure to 70' clear roadway width
88	Irish Buffaloe Creek	Reinforced concrete deck on I-beams	160'	42.0'	1968	90.6	Widen structure to 70' clear roadway width
134	Cold Water Creek	Reinforced concrete deck on precast prestressed concrete girders	242'	42.0'	1967	91.8	Widen structure to 70' clear roadway width
136	Cold Water Creek	Reinforced concrete deck on precast prestressed concrete girders	242'	42.3'	1967	90.8	Widen structure to 70' clear roadway width
<b>Y-Line Structures</b>							
39	US 29 A	Reinforced concrete deck on I-beams	318'	64.5'	1968	91.0	Replace with new structure to accommodate I-85 widening
87	US 29-601 Northbound	Reinforced concrete deck on I-beams	285'	42.0'	1967	78.0	Replace Bridges No. 87 and No. 89 with a single structure 100' wide and 170' long; construct a single-point diamond interchange
89	US 29-601 Southbound	Reinforced concrete deck on I-beams	285'	46.6'	1967	78.0	
R119	NS Railroad	Reinforced concrete deck on I-beams	319'	44.3'	1968	n/a	Replace with new structure to accommodate I-85 widening
122	SR 2001	Reinforced concrete deck on I-beams	355'	36.8'	1968	84.7	Replace with new structure to accommodate I-85 widening

Note: All structures are located in Cabarrus County



**LEGEND**

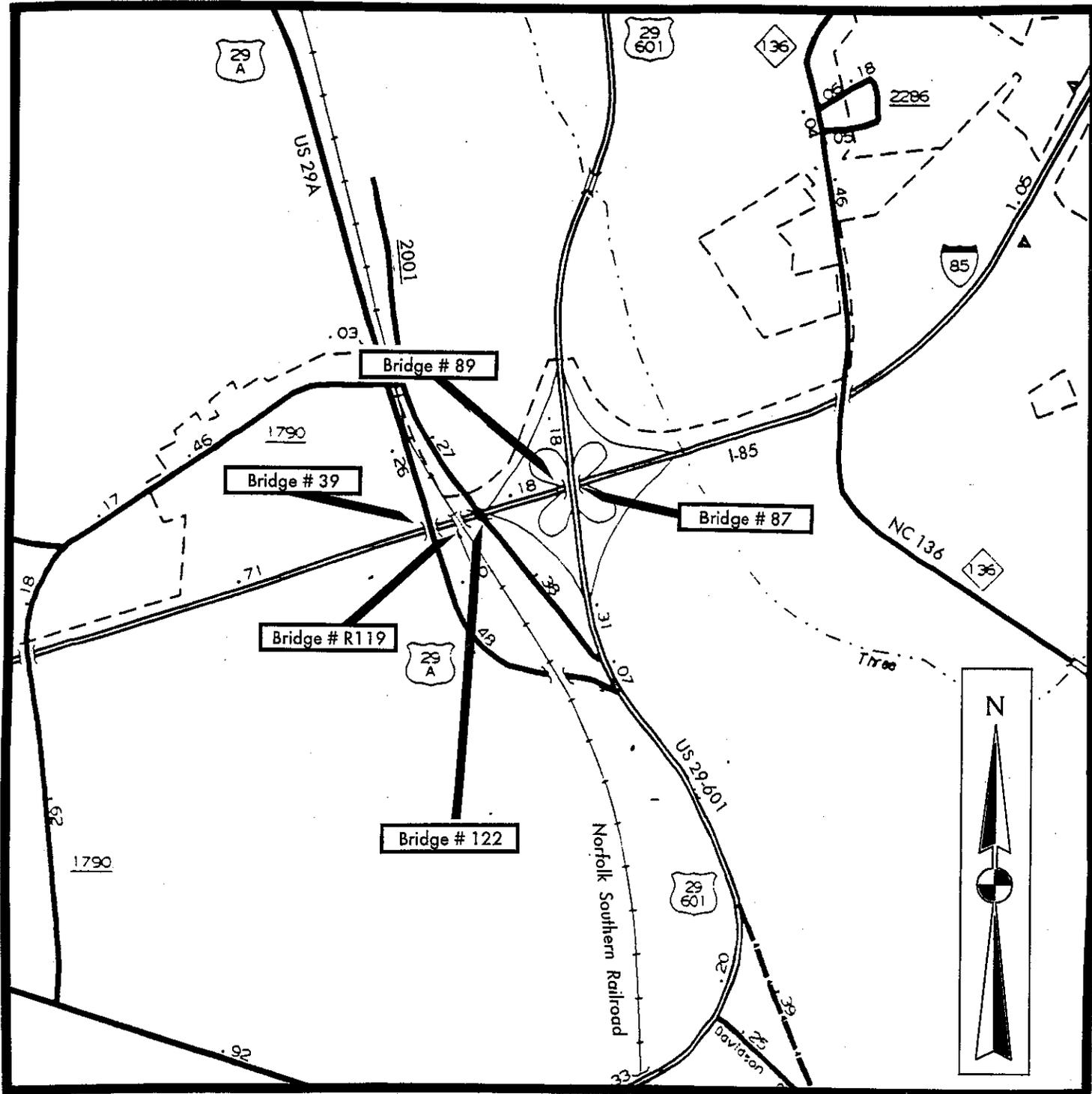
PROPOSED WIDENING

PROPOSED SINGLE-POINT DIAMOND INTERCHANGE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION  
PROGRAM DEVELOPMENT BRANCH

**I-3802  
INTERSTATE 85  
FROM NC 73  
TO THE US 29-601 CONNECTOR**

DIVISIONS 9 & 10	CABARRUS AND ROWAN COUNTIES	FIGURE 1
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION PROGRAM DEVELOPMENT BRANCH		
<b>I-3802</b> <b>INTERSTATE 85</b> <b>US 29-601 INTERCHANGE DETAIL</b> <b>KANNAPOLIS</b>		
<b>DIVISIONS</b> 9 & 10	<b>CABARRUS AND ROWAN</b> COUNTIES	<b>FIGURE 2</b>