FEASIBILITY STUDY

US 421-NC 87, Sanford Bypass
Lee County
R-2417

Prepared by
Planning and Research Branch
Division of Highways
N. C. Department of Transportation

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5.12.89
Date

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I. DESCRIPTION

This report covers a preliminary study of a proposed US 421-NC 87 Bypass in the Sanford area. This project is included in the 1989-1996 Transportation Improvement Program for feasibility study and/or right of way protection. It is not currently funded. A vicinity map of the Sanford area is shown on Figure 1.

II. PURPOSE OF PROJECT

Existing Route

US 421-NC 87 is on the Strategic Highway Corridor Network in North Carolina. The studied portion of road is part of the Greensboro to Wilmington corridor passing through Siler City, Sanford, Fayetteville/ Fort Bragg/Pope Air Force Base, and Elizabethtown. The entire route also serves as an important connector between I-85/I-40 and I-95.

Through the Sanford area with a current population of approximately 20,000 persons, US 421-NC 87 has multilane widths until it diverges into two-lane facilities just south of Sanford. The existing cross sections vary from a four-lane divided roadway northwest of US 1-15-501 Bypass to 4 and 5-lane curb and gutter sections southeast of US 1-15-501.

Traffic Volumes, Capacity, and Accident History

The 1988 average daily traffic volumes on US 421-NC 87 ranged from 12,000 vehicles per day northwest of US 1-15-501 Bypass to over 21,000 vpd at the NC 42-NC 78 intersection. Beyond the intersection of US 421 and NC 87, traffic volumes were 7,000 vpd on US 421 and 13,000 vpd on NC 87. Approximately 10 percent of these volumes is composed of heavy trucks, which is an indication of its significant impact on traffic operation and roadside development through Sanford.

Traffic flow through Sanford is greatly restricted by numerous traffic signals, a speed limit of 35 mph, two signalized railroad crossings, and roadside interference. These conditions, combined with the effect of trucks limit existing capacity of US 421-NC 87 in Sanford to approximately 18,000 vpd. Thus, when comparing the capacity to current traffic volumes, the studied road appears to be experiencing capacity problems in some locations.

Accident records for the past four years showed an accident rate of 5.9 accidents/million vehicle miles through the urban portion of US 421-NC 87. This accident rate is significantly more than the statewide average rate of 4.2 acc/mvm for multi-lane undivided US urban routes during 1988. The major accident patterns were rear-end, left turn, and angle collisions. The vast majority of these accidents occurred at signalized intersections.

Need for Project

Justification for an US 421-NC 87 Bypass of Sanford stems from a need to provide a higher and safer level of service for through traffic desiring to avoid travel restrictions through Sanford such as signals, lower speeds, and periods of congestion. A bypass with design standards commensurate with the function of a strategic corridor route would significantly reduce travel time and cost and accident potential and provide relief to the existing route through Sanford. A noticeable part of this relief is the removal of a significant volume of trucks from a heavily urbanized area. Also, the bypass would improve accessibility to certain areas of local traffic generation.

III. RECOMMENDATIONS AND COSTS

Location

Based on consideration of overall existing development in the area, route directness, and relationship to the ultimate thoroughfare system, the logical corridor for a US 421-NC 87 Bypass is the east side of Sanford, generally along the location shown on Figure 2. (Note: An aerial mosaic showing the bypass corridor is on file in the Planning and Research Branch).

Design

Initial traffic volumes that would use the proposed bypass are estimated to range up to 10,000 vpd. This volume is estimated to increase to 20,000 vpd by year 2010. Based on the traffic estimates, a four-lane roadway is warranted initially.

In keeping with desirable standards for a strategic route and to ensure long term high level of traffic operation in an area of growing development, a freeway type facility is recommended. Access to the bypass would be allowed only at interchanges. Suggested interchange locations are shown on Figure 2.

The recommended route is approximately 11 miles long. The new facility would tie into a four-lane facility with a 44-foot grassed median on US 421 to the northwest and a planned five-lane shoulder section on NC 87 (R-2238) to the southeast. Travel distance along the new route, which extends up to about 2 miles east of the existing route, would be approximately one mile longer than the existing route.

The bypass route should include a one-mile connector from the interchange with SR 1509 to Charlotte Avenue (SR 1002) to improve access to the center of town. The connector would replace a poorly aligned portion of SR 1509 and connect with an existing 4-lane curbed section on Charlotte Avenue. Charlotte Avenue and SR 1509 are designated as major thoroughfares in the Sanford Thoroughfare Plan.

Estimated Costs

less 4 interchanges $ 73,600,000

Estimated construction cost of a four-lane freeway (with a 46-foot grassed median) is $85,600,000. The cost includes provision of new interchanges at each end of the bypass, SR 1415, SR 1509, NC 42, and US 421 and revision of the existing US 1-15-501 interchange into a full clover interchange. Because of limited interchange spacing along US 1-15-501, a full access-controlled facility, the US 1-15-501/SR 1405 (McNeil Road) interchange is the only suitable location for the proposed bypass. The interchange revision would require McNeill Road to be terminated at the US 1-15-501 interchange and realigned to connect with the existing service roads fronting US 1-15-501 bypass. The cost also includes provision of a new two-lane connector to Charlotte Avenue.

Estimated cost of acquiring an estimated 300-foot right of way with full control of access along the bypass route, additional right of way for the interchanges and grade separations at selected locations, and estimated 150-foot right of way for the two-lane connector is $10,400,000. Thus, total cost of the considered improvements is $96,000,000. The cost estimates were made by the Preliminary Construction Cost Engineer and Right of Way Branch.

IV. Comments

No other corridor for a US 421-87 bypass of Sanford was found to be more desirable or feasible from traffic service, environmental, and cost standpoints. Consideration was given to other possible locations such as along the west side of Sanford and along an outer loop shown in the Sanford Thoroughfare Plan approved in 1979. The westside location would involve approximately 3 miles of additional construction due to spreading development, location of the Sanford Airport, and the difficulty of tying the new location back into US 421 south of Sanford. The outer loop location (see Figure 3) is closer to town and would attract more local traffic but could not be economically developed to desirable standards without substantial disruption to existing development and environment. However, regardless of the recommended corridor for the bypass, if the project is to be implemented at a future date, all feasible alternatives and their associated impacts will have to be evaluated in a detailed planning/environmental document prior to that time, and a final decision made as to the most appropriate location and improvement.

Along the studied corridor, possible negative impacts that would result from construction of the new road are: (1) loss of forested land and wildlife habitat; (2) loss of land required for right of way; (3) displacement of approximately 71 residences and 5 businesses; (4) increased noise levels for nearby development, and (5) change in the traffic pattern of the existing street system affected by the bypass.

GD/rm

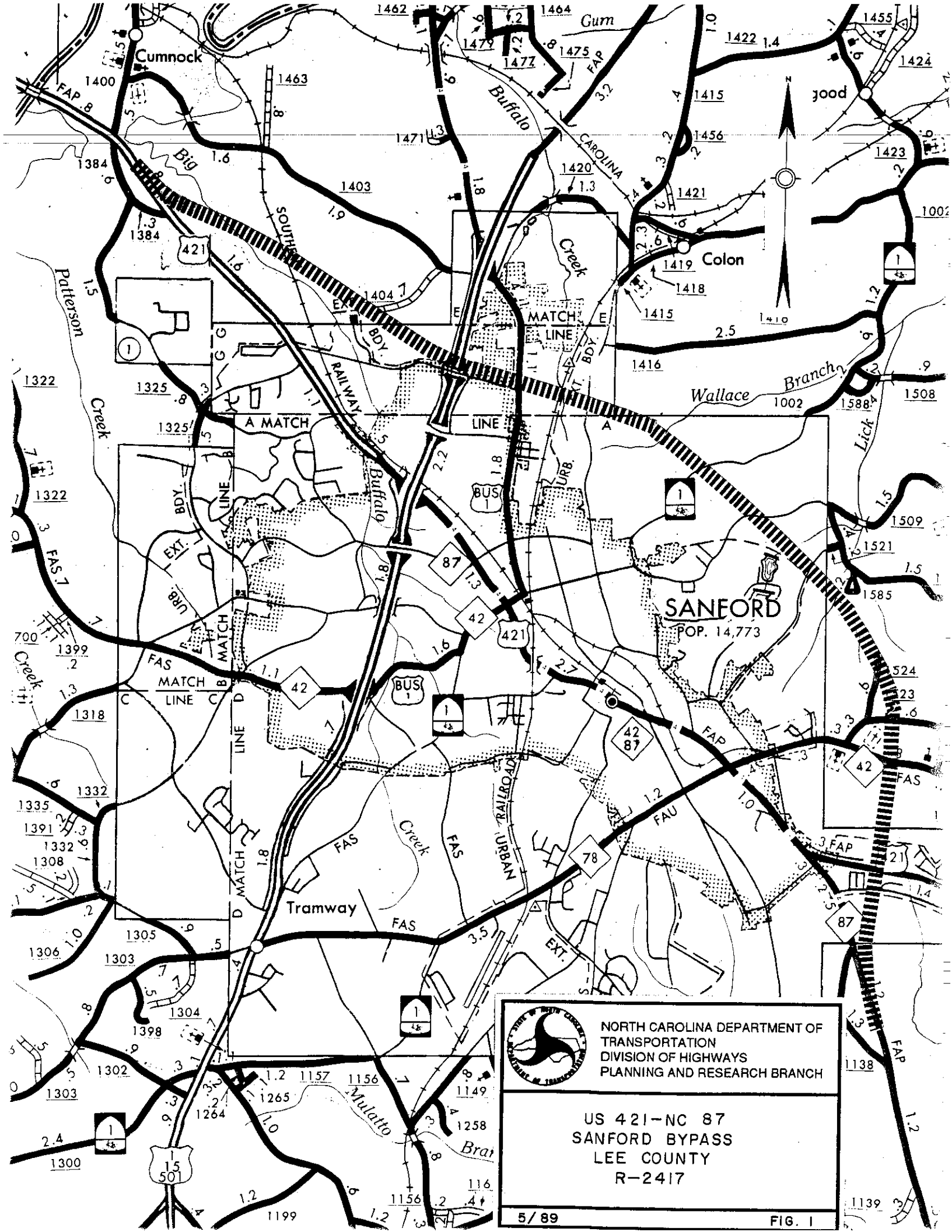
Cumnock
Colon
SANFORD
POP. 14,773
Tramway
Buffalo
Creek
Big
Patterson
Creek
Wallace
Branch
Lick
Mulatto
Gum
CAROLINA
SOUTHERN
RAILWAY
RAILROAD
URBAN
MATCH
LINE
FAP
FAS
FAU
421
87
42
78
501
NORTH CAROLINA DEPARTMENT OF
TRANSPORTATION
DIVISION OF HIGHWAYS
PLANNING AND RESEARCH BRANCH
US 421-NC 87
SANFORD BYPASS
LEE COUNTY
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FIG. 1

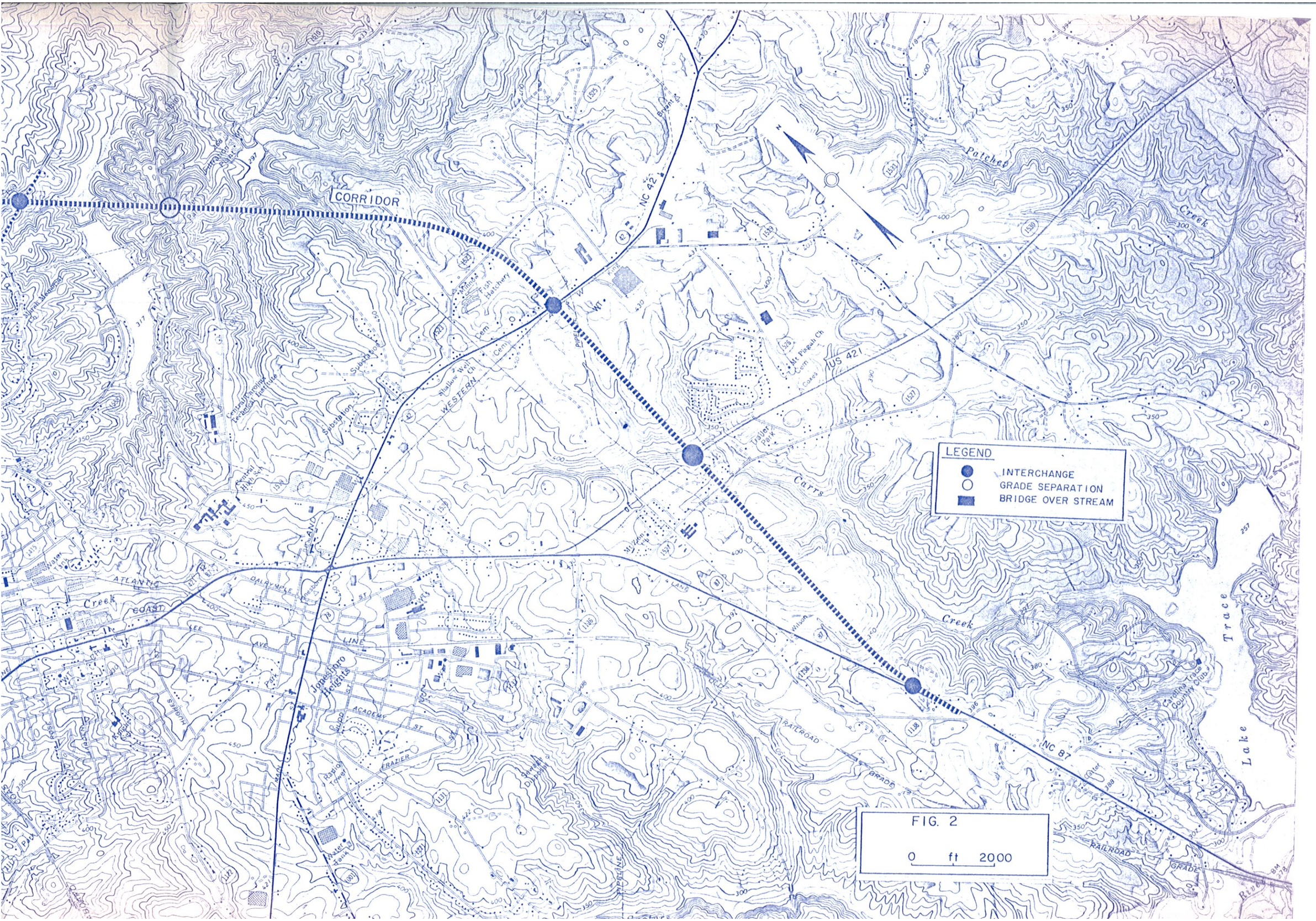
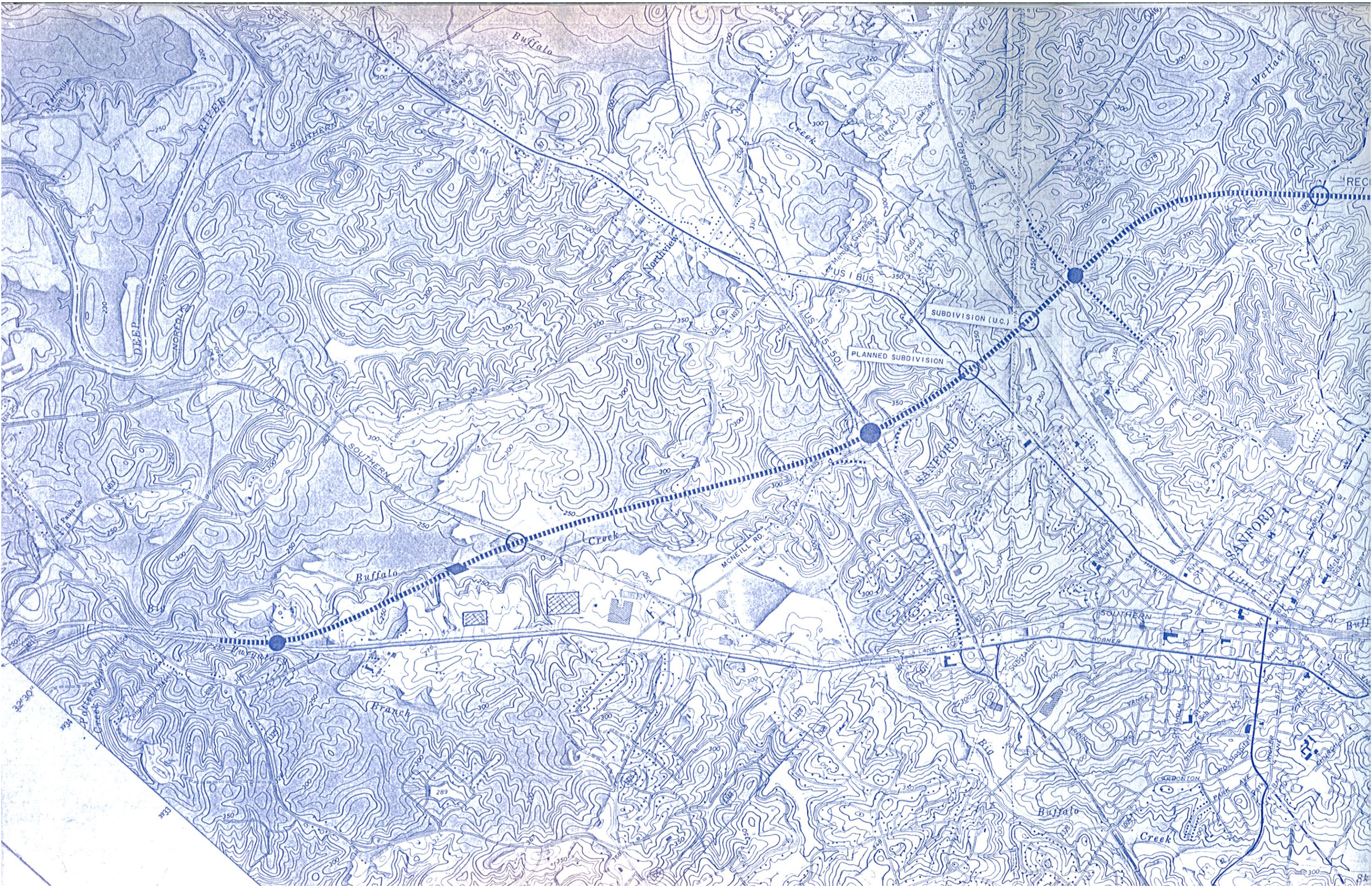

CORRIDOR
NC 42
US 421
NC 87
Patchet
Creek
Carrs
Creek
Lake
Trace
Jonesboro Heights
Fish Hatchery
Minnow
Substation
Central Carolina Technical Institute
Shallow Well Ch
Mt Pisgah Ch
Trailer Park
Carolina Trace Country Club
Radio Tower
Water Tank
Sewage Disposal
ATLANTIC
COAST
LINE
DALRYMPLE
LEE
AVE
ACADEMY
ERAZIER
RAILROAD
GRADE
PIPELINE
LEGEND
INTERCHANGE
GRADE SEPARATION
BRIDGE OVER STREAM
0 ft 2000

FIG. 2



Buffalo
Creek
SOUTHERN
RIVER
DEEP
NORFOLK
Northview
US I BUS
US I-15-501
SEABOARD
SUBDIVISION (U.C.)
PLANNED SUBDIVISION
SANFORD
Wallace
Big
Buffalo
Creek
Branch
MCNEILL RD.
SOUTHERN
HORNER
Little
Buffalo
Creek
CARBONTON
32'30"

ALTERNATE ROUTE

HAWKINS AVE.
COLON RD.
OSGOOD RD.
VINEYARD RD.
GRAPE
KELLY DR.
NASH ST.
BRAGG ST.
SEVENTH ST.
THIRD ST.
LEE AVE.
INDUSTRIAL DR.
CHARLOTTE AVE.
McIVER ST.
WEATHERSPOON ST.
HARKEY RD.
MAIN ST.
McNEILL RD.
HORNER BLVD.
LANE
US 1
US 421
NC 42
NC 87
CITY LIMITS

LEGEND

	EXISTING	PROPOSED
MAJOR THOROUGHFARES		
FREEWAYS		
OTHER		
MINOR THOROUGHFARES		
INTERCHANGE		

SCALE

ADOPTED BY CITY OF SANFORD ON SEPTEMBER 18, 1979.

RECOMMENDED APPROVAL BY PLANNING AND RESEARCH BRANCH ON SEPTEMBER 25, 1979.

ADOPTED BY NORTH CAROLINA BOARD OF TRANSPORTATION ON NOVEMBER 9, 1979.

FIG. 3

COPY – NCDOT