FEASIBILITY STUDY

US 74
Rockingham-Hamlet Bypass and
Interim Improvements Within Hamlet
Richmond County
TIP No. R-512

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TABLE OF CONTENTS

		Page
A.	General Description	1
B.	Strategic Corridor	1
C.	Existing Facility	2
D.	Project Terminals	3
E.	Other Programmed Projects Along US 74	3
F.	Thoroughfare Plan	3
G.	Bypass Alternatives Considered	3
	1. Alternative 1	3
	2. Alternative 2	4
	3. Alternative 3	4
H.	Environmental Factors	4
I.	Interim Improvements Within Hamlet	5
	1. Alternative 4	5
	2. Alternative 5	6
J.	Conclusions	7
K.	Basis of Study	7

TABLES

Table 1 - Cost Estimates 1

FIGURES

Figure 1 - Alternatives 1, 2, and 3
Figure 2 - Traffic Volumes
Figure 3 - Rockingham-Hamlet Thoroughfare Plan
Figure 4 - Alternative 4
Figure 5 - Alternative 5

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A. General Description

This project is included in the 1989-1996 NCDOT Transportation Improvement Program (TIP) for an EIS and/or right of way protection. The following report summarizes the findings of a preliminary study to determine appropriate improvements to US 74 in the vicinity of Rockingham and Hamlet in Richmond County. The study area covers the 13.1-mile segment of US 74 from approximately 2.3 miles east of the Anson County line to approximately 1.5 miles west of the Scotland County line. The project area is shown in Figure 1.

It has been determined that it is desirable and feasible to construct a US 74 bypass of Rockingham and Hamlet on new location. Possible interim improvements to US 74 in Hamlet are also discussed in this report. Cost estimates for the bypass alternatives (Alternatives 1, 2, and 3) and an interim improvement alternative within Hamlet (Alternative 4) are shown below in Table 1.

TABLE 1

COST ESTIMATES

Alternative	Right of Way	Construction	Total
1	$24,215,000	$81,200,000	$105,415,000
2	22,753,500	64,300,000	87,053,500
3	10,391,000	42,700,000	53,091,000
4	1,324,000	4,450,000	5,774,000

B. Strategic Corridor

US 74 from Charlotte to Wilmington is identified as a Strategic Corridor in the TIP. Highways are identified as Strategic Corridors based upon their importance to a region and their value to the entire state. Strategic Corridors are highways that possess both high traffic volumes and great economic importance and/or potential.

The east-west US 74 corridor is of vital importance to the southern counties it crosses. It connects the state's largest port (Wilmington) to its largest city (Charlotte), thus carrying a large volume of commercial traffic. It also connects I-85 to I-95. US 74 is important to tourism because it links Charlotte and the southern Piedmont to the state's southeastern beaches. This route links Charlotte, Monroe, Wadesboro, Rockingham, Hamlet, Laurinburg, Lumberton, Whiteville, and Wilmington.

US 220, which intersects US 74 in Rockingham, is also identified as a Strategic Corridor. That highway provides a north-south route through the central portion of the state and links US 74, US 64, and I-40/I-85. US 220 provides a valuable commercial and industrial highway to the Piedmont.

C. Existing Facility

From the west project terminal to Rockingham (approximately 2.7 miles) US 74 consists of a four-lane highway divided by a 36-foot median. Within Rockingham (approximately 3.4 miles) the existing highway consists primarily of a five-lane curb and gutter facility. The exceptions to this cross section are between US 220 and US 1 (0.6 mile), where a four-lane curb and gutter facility exists, and between SR 1648 and SR 1925 (0.1 mile), where a seven-lane curb and gutter facility exists. Between Rockingham and Hamlet (approximately 2.8 miles) US 74 consists of a four-lane highway divided by a 30-foot median. Within Hamlet (approximately 2.5 miles) the existing cross section varies from a two-lane curb and gutter section to a five-lane curb and gutter section. From Hamlet to the east project terminal (approximately 1.7 miles) US 74 consists of a four-lane highway divided by a 44-foot median.

There is no control of access along US 74 within the project area. The existing right of way width varies from approximately 60 feet in Hamlet to 220 feet west of Rockingham.

Nine intersections within the study area are signalized; six of these occur within the 2.4-mile segment of US 74 between US 220 and SR 2051 in Rockingham. The remaining intersections are stop sign-controlled. All highway intersections are at-grade. There are three railroad crossings along the project: two at-grade crossings just west of US 220 in Rockingham and a grade separation just west of NC 38 in Hamlet.

Traffic volumes along the project are shown in Figure 2. Estimated volumes for the year 1988 range from 8200 vehicles per day (vpd) just east of the Anson County line to 23,000 vpd between US 220 and US 1 in Rockingham. Projected volumes at the above locations for the year 2008 are 14,100 vpd and 39,600 vpd, respectively.

The terrain within the project area is rolling. The alignment of the existing facility is generally good, except in Hamlet, where US 74 motorists must make two 90-degree turns. Posted speed limits are as follows: 55 miles per hour (mph) from the west project terminal to Rockingham (2.7 miles); 45 mph within Rockingham (3.4 miles); 55 mph between Rockingham and Hamlet (2.8 miles); 35 mph within Hamlet (1.9 miles); 45 mph between the Hamlet east city limits and NC 381 (0.6 mile); and 55 mph from NC 381 to the east project terminal (1.7 miles).

West of Rockingham and east of Hamlet development along US 74 is rural in character with scattered residences and businesses. Side road interference within these areas is relatively light. Between Rockingham and Hamlet roadside development is heavier, resulting in greater side road interference. Within Rockingham and Hamlet roadside development is

heavy. This heavy development is primarily commercial; however, residential areas border US 74 west of US 220 in Rockingham and within Hamlet. The heavy side road interference in these areas contributes to the poor level-of-service at which the existing highway operates.

D. Project Terminals

West of the project US 74 is a four-lane facility divided by a 36-foot median. That cross section continues into Anson County. East of the project US 74 is a four-lane facility divided by a 44- to 60-foot median. That cross section continues into Scotland County.

E. Other Programmed Projects Along US 74

There are no other projects programmed in the TIP within the study limits.

F. Thoroughfare Plan

The Rockingham-Hamlet Thoroughfare Plan was adopted by the City of Rockingham, the City of Hamlet, the County of Richmond, and the North Carolina Department of Transportation in 1979-80. The report includes discussion of both a northern and a southern US 74 bypass of the two cities. The report indicates a northern US 74 bypass is best in terms of accessibility and traffic flow, but that a southern bypass is more compatible with existing and projected land use patterns. For that reason, a southern US 74 bypass is recommended in the thoroughfare plan (see Figure 3).

G. Bypass Alternatives Considered

Improvements to existing US 74 that would be needed to accommodate current and projected traffic volumes would be extremely costly and disruptive due to the amount of development along that route. This is especially true within Rockingham and Hamlet, where heavy roadside development exists. Therefore, both north (Alternative 1) and south (Alternatives 2 and 3) US 74 bypasses of Rockingham and Hamlet were considered for providing a more suitable US 74 facility.

The cost estimates shown in this report for the bypass alternatives are based on a 250-foot right of way, full control of access, two 28-foot pavements, a 46-foot median, and 10-foot useable shoulders (2 feet paved). Interchanges would be provided at major intersections. All intersections would be grade-separated.

1. Alternative 1

Alternative 1 begins near SR 1140 west of Rockingham, passes north of Rockingham and Hamlet on new location, and ends near SR 1615 east of Hamlet (see Figure 1). This design is approximately 15.7 miles in length and has a total estimated cost of $105,415,000, including $24,215,000 for right of way and $81,200,000 for construction.

The Rockingham-Hamlet Thoroughfare Plan indicates a northern bypass would attract approximately 4000 more vehicles per day from existing US 74 than a southern bypass. In addition, a northern bypass would replace portions of the proposed northern loops around Hamlet and Rockingham shown in the thoroughfare plan (see Figure 3). Alternative 1 would also provide better access to residential areas north of Rockingham and Hamlet.

2. Alternative 2

Alternative 2 begins near SR 1140 west of Rockingham, passes south of Rockingham and Hamlet on new location, and ends near SR 1615 east of Hamlet (see Figure 1). This design is approximately 14.2 miles in length and has a total estimated cost of $87,053,500, including $22,753,500 for right of way and $64,300,000 for construction.

This design is less expensive than Alternative 1 and would provide a slightly more direct bypass of Rockingham and Hamlet. In addition, this bypass would serve as a portion of the proposed southern loop around Hamlet shown in the thoroughfare plan (see Figure 3). Alternative 2 would also provide better access to the Rockingham-Hamlet Airport than Alternative 1. As noted earlier in this report, a southern bypass is recommended in the Rockingham-Hamlet Thoroughfare Plan.

3. Alternative 3

Alternative 3 begins near SR 1641 between Rockingham and Hamlet, passes north of Hamlet on new location, and ends near SR 1615 east of Hamlet (see Figure 1). This design is approximately 7.2 miles in length and has a total estimated cost of $53,091,000, including $10,391,000 for right of way and $42,700,000 for construction.

This design bypasses the two- and three-lane segments of US 74 in Hamlet and is less expensive than Alternatives 1 and 2. However, US 74 traffic would continue to be routed through Rockingham. This alternative could be expanded in the future to a full Rockingham-Hamlet bypass by constructing the 11.7-mile segment of Alternative 1 between SR 1140 west of Rockingham and NC 117 north of Hamlet. The estimated cost of this expansion is $71,459,500. Alternative 3 is similar to the proposed northern loop around Hamlet shown in the thoroughfare plan.

H. Environmental Factors

All three bypass alternatives cross a number of streams. Those crossed by Alternative 1 include Marks Creek, Falling Creek, and Hitchcock Creek. Those crossed by Alternative 2 include Marks Creek, Solomons Creek, Black Branch, Hitchcock Creek, and Rocky Branch. Alternative 3 crosses Marks Creek and South Prong Falling Creek. It is anticipated wetlands would be impacted by all three bypass alternatives.

Development in the vicinity of Alternatives 1 and 3 is primarily residential in character and is more dense than development in the vicinity of Alternative 2. Approximate relocatee counts for Alternatives 1, 2, and 3 are 27, 19, and 14, respectively. It is anticipated traffic noise impacts would be greater under Alternatives 1 and 3 due to the greater number of receptors in the vicinity of those bypasses.

A rock quarry is located on SR 1117 near the western limits of Alternative 2. This area should be avoided to minimize construction costs. The Sandhills Game Land, an area owned and maintained by the state for hunting, is approximately 50,000 acres in size and is bordered by US 74 and NC 177 north of Hamlet. Alternatives 1 and 3 may cross portions of this game land.

I. Interim Improvements Within Hamlet

US 74 is primarily a three-lane curb and gutter facility from Williams Street to Hamlet Avenue in Hamlet (1.1 miles). Exceptions to that cross section are where US 74 follows Raleigh Street (four-lane curb and gutter) and at the railroad underpass between Raleigh Street and Bridges Street (two-lane curb and gutter). These reduced cross sections, heavy residential and commercial development, and high traffic volumes (especially during the summer tourist season) result in poor operating conditions along this segment of US 74. Even if a US 74 Rockingham-Hamlet bypass were constructed, it is anticipated a large volume of traffic would continue to use the present route. For that reason, improvements to US 74 in Hamlet are needed regardless of whether a bypass is constructed.

1. Alternative 4

Alternative 4 (see Figure 4) would improve operating conditions along US 74 in Hamlet by providing additional travel lanes and by eliminating the two 90-degree turns where US 74 follows Raleigh Street. That improvement calls for widening US 74 to a four- to five-lane curb and gutter facility from Williams Street to Hamlet Avenue. At the present time US 74 consists of a four-lane curb and gutter facility both west of Williams Street and east of Hamlet Avenue. The estimated cost of Alternative 4 is $5,774,000, including $1,324,000 for right of way and $4,450,000 for construction.

Between Raleigh Street and Bridges Street a five-lane, 64-foot (face-to-face) curb and gutter facility would be constructed due to the close proximity of the Raleigh Street and Bridges Street intersections. Along the remainder of the project a four-lane, 52-foot (face-to-face) curb and gutter facility would be constructed. As shown in Figure 4, a Hamlet Avenue-Spring Street connector (0.2 mile) would be constructed on new location between the Hamlet Avenue/High Street and Raleigh Street/Spring Street intersections. This connector would eliminate the two 90-degree turns along Raleigh Street. The remainder of the proposed widening would be performed along existing US 74. The Hamlet Avenue-Spring Street connector is included in the Rockingham-Hamlet Thoroughfare Plan as a second-priority improvement (see Figure 3).

Widening US 74 to five lanes from Raleigh Street to Bridges Street will require replacing the existing two-lane railroad underpass. That structure (bridge number R-38) provides a 31-foot, 3-inch horizontal clearance and a 13-foot, 11-inch vertical clearance along US 74. A two-lane, 28-foot (face-to-face) curb and gutter section is provided beneath the bridge. Sidewalks are provided along both sides of US 74 beneath the bridge. The bridge was constructed in 1936 and has an estimated remaining life of 25 years. The bridge carries three tracks of the CSX Railroad. It is recommended that the existing bridge be replaced with a new bridge providing sufficient horizontal clearance for a five-lane curb and gutter facility (64 feet face-to-face). It is also recommended that sidewalks be provided along both sides of US 74 beneath the bridge. It is anticipated a two-track temporary railroad detour (including structure) will be required to maintain railroad traffic during construction of the replacement bridge due to the amount of train traffic at this location. The cost estimates in this report are based upon the construction of such a detour along the east side of the existing tracks from approximately 1000 feet south of to approximately 1000 feet north of the existing railroad bridge. Due to the inadequate vertical clearance provided under the existing bridge, it is anticipated a grade change along US 74 will be required.

The claimed right of way width along US 74 in Hamlet is approximately 60 feet. From Williams Street to High Street and from Raleigh Street to Hamlet Avenue it appears more right of way exists north of than south of the existing highway centerline. To minimize right of way costs, it is recommended that the proposed widening within these two segments be performed along the north edge of pavement where more right of way is available. In addition to minimizing right of way damages, widening on just one side of US 74 will also allow the existing curb and gutter and sidewalk along the opposite side to remain in place, thereby reducing construction costs. Adjustments to utilities will also be minimized by widening on one side. It is recommended that the existing sidewalk along the north side of US 74 be replaced as part of the project.

Alternative 4 would result in the displacement of approximately four homes in the vicinity of the proposed Hamlet Avenue-Spring Street connector. No additional displacements are expected. It is anticipated the proposed widening of US 74 would result in increased noise levels for residences and businesses along that route.

2. Alternative 5

An alternative interim improvement within Hamlet is to make Hamlet Avenue and Spring Street a one-way pair. Hamlet Avenue (US 74) would carry eastbound traffic, while Spring Street would

carry westbound traffic (see Figure 5). In order to provide at least four lanes along US 74 throughout Hamlet, the segment between Raleigh Street and Hamlet Avenue would have to be widened. This would require constructing a temporary railroad detour and replacing the existing two-lane railroad underpass as proposed under Alternative 4.

The 0.7-mile segment of Spring Street between Ledbetter Road and Raleigh Street is a two-lane residential street. Due to the number of trucks that travel US 74 and traffic volumes along that facility, it is anticipated local residents may not approve of this alternative. In addition, the one-way pair alternative would not eliminate the two 90-degree curves along Raleigh Street for eastbound traffic. Routing eastbound US 74 traffic through the commercial district situated along Hamlet Avenue between Raleigh Street and Spring Street to avoid these 90-degree turns is not considered a viable alternative. For these reasons, Alternative 4 is preferred over Alternative 5 as an interim improvement within Hamlet.

J. Conclusions

Based on this preliminary study, a southern bypass of Rockingham and Hamlet (Alternative 2) is the most reasonable improvement to US 74. That alternative is cheaper than a northern bypass, minimizes relocatees, and is more compatible with land use patterns. Although Alternative 3 bypasses the two- and three-lane segments of US 74 in Hamlet and is cheaper than Alternative 2, it does not improve operating conditions in Rockingham.

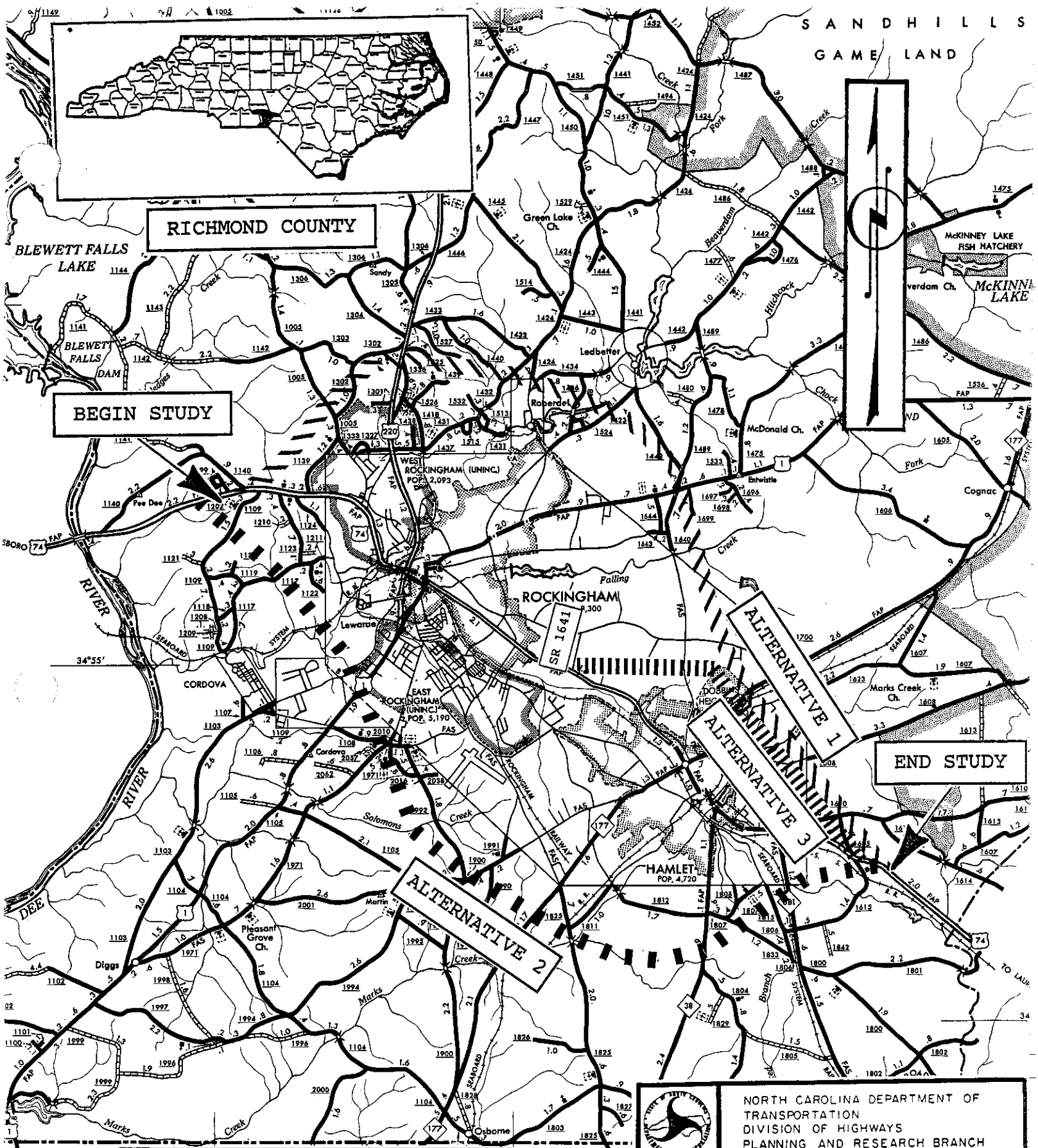
Alternative 4 is the most reasonable interim improvement within Hamlet. That alternative would provide a four- to five-lane US 74 facility throughout Hamlet and eliminate the two 90-degree turns along Raleigh Street.

All feasible alternatives and their associated impacts will be evaluated in a planning/environmental document before a decision is made as to the most appropriate improvements to US 74.

K. Basis of Study

Field investigations and correspondence with the NCDOT Division Engineer, the NCDOT District Engineer, and the Hamlet City Manager served as the bases for the improvements discussed in this report. An aerial mosaic (May 1988 photography) of the project and the Rockingham-Hamlet Thoroughfare Plan (1979) were used in this study. The Right of Way Branch and the Design Services Unit provided the cost estimates.

JWS/wp



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DIVISION OF HIGHWAYS
PLANNING AND RESEARCH BRANCH

US 74
ROCKINGHAM-HAMLET BYPASS AND
INTERIM IMPROVEMENTS WITHIN HAMLET
RICHMOND COUNTY
R-512

LEGEND

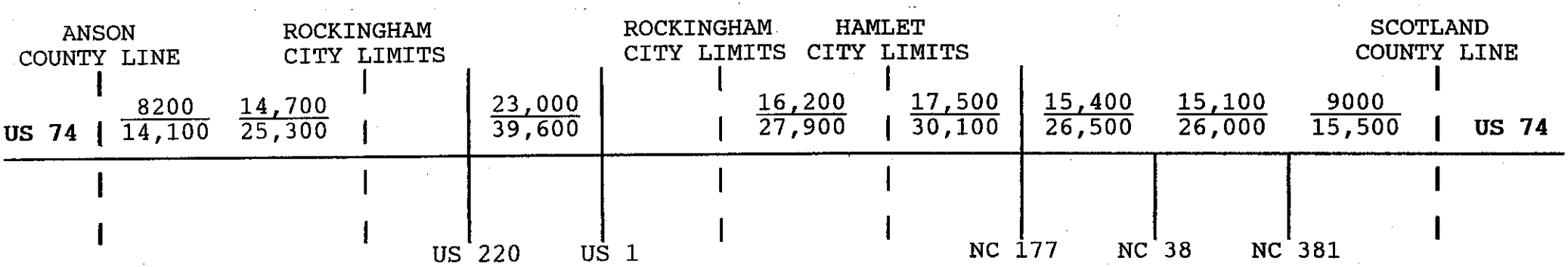
ALTERNATIVE 1

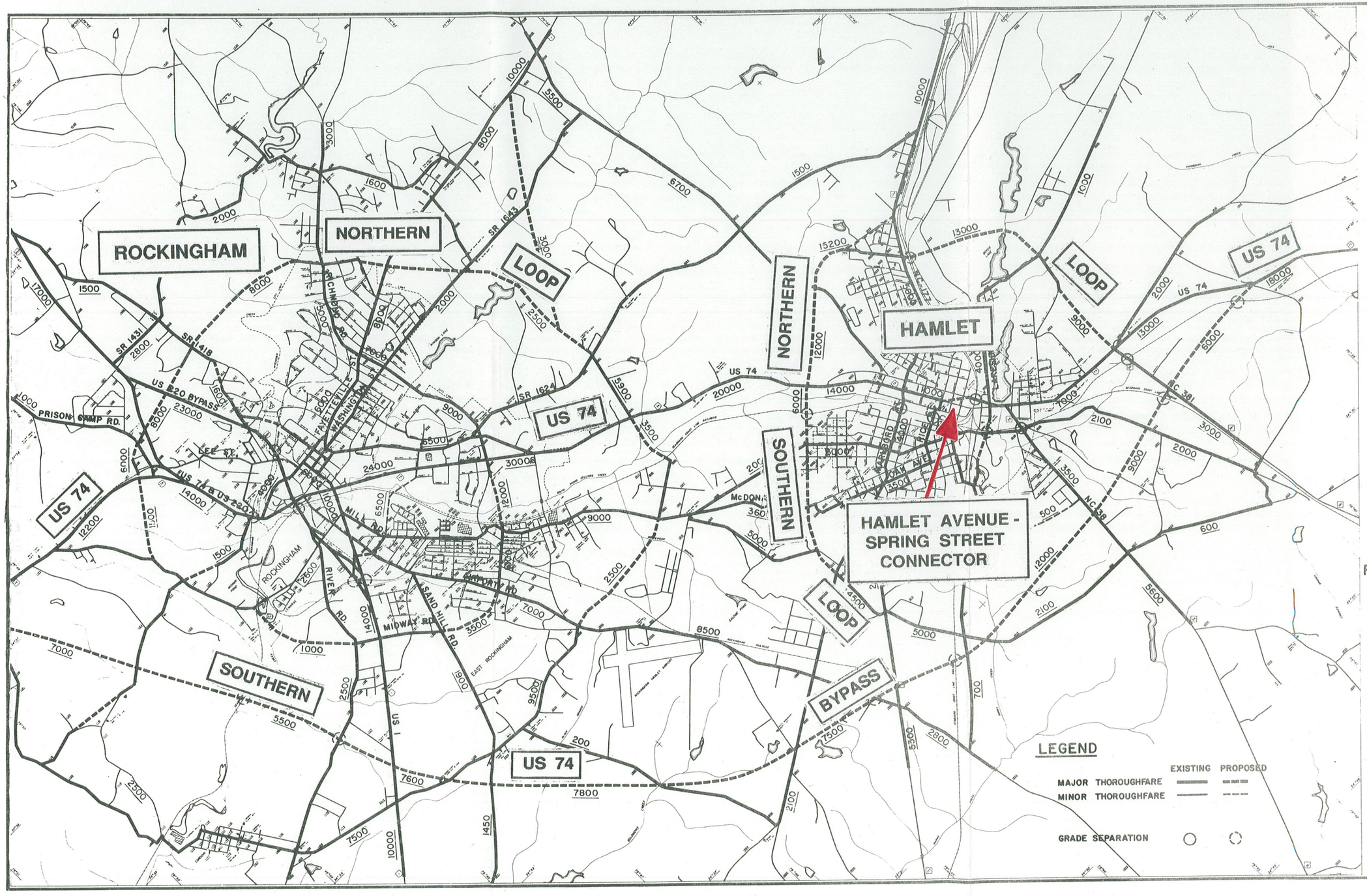
ALTERNATIVE 2

ALTERNATIVE 3

12/88 0 miles 2 FIG. 1

FIGURE 2
AVERAGE DAILY TRAFFIC
1988/2008
EXISTING US 74
R-512





RECOMMENDED PL

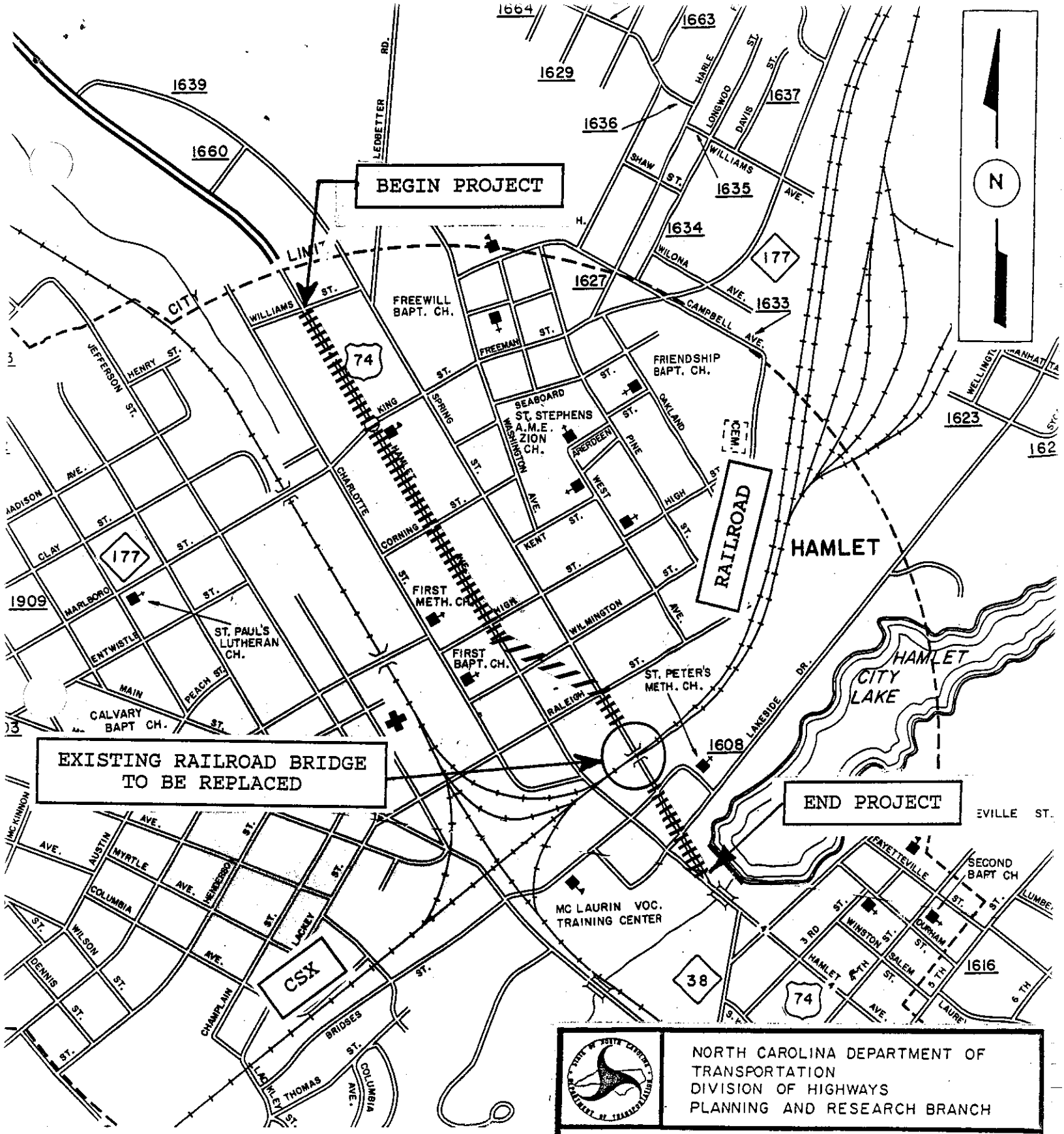
ALTERNATE D
WITH
YEAR 2000
TRAFFIC VOLUME

ROCKINGHAM
HAMLET
AND VICINITY
RICHMOND COUNTY
NORTH CAROLINA
PREPARED BY THE
NORTH CAROLINA STATE HIGHWAY COMMISSION
PLANNING AND RESEARCH DEPARTMENT
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

SCALE

APRIL, 1972

FIGURE



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US 74

ROCKINGHAM-HAMLET BYPASS AND INTERIM IMPROVEMENTS WITHIN HAMLET
RICHMOND COUNTY
R-512

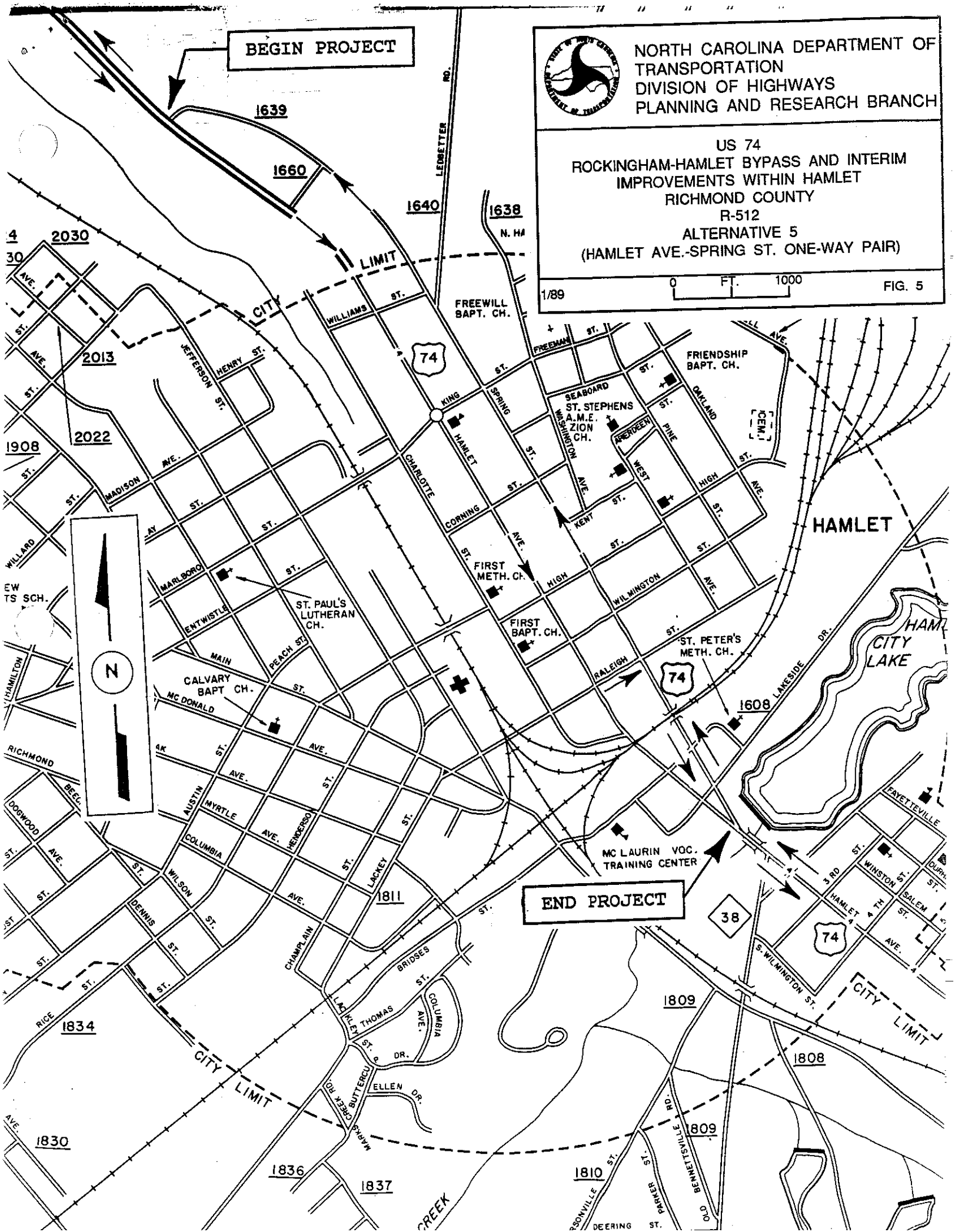
ALTERNATIVE 4
(HAMLET AVE. - SPRING ST. CONNECTOR)

12/88 0 ft. 1000 FIG. 4

LEGEND

PROPOSED US 74 WIDENING

PROPOSED HAMLET AVENUE-SPRING STREET CONNECTOR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US 74
ROCKINGHAM-HAMLET BYPASS AND INTERIM IMPROVEMENTS WITHIN HAMLET
RICHMOND COUNTY
R-512
ALTERNATIVE 5
(HAMLET AVE.-SPRING ST. ONE-WAY PAIR)
1/89
0 FT. 1000
FIG. 5
BEGIN PROJECT
END PROJECT
HAMLET
CITY LIMIT
FREEWILL BAPT. CH.
FRIENDSHIP BAPT. CH.
ST. STEPHENS A.M.E. ZION CH.
FIRST METH. CH.
FIRST BAPT. CH.
ST. PAUL'S LUTHERAN CH.
CALVARY BAPT CH.
ST. PETER'S METH. CH.
MC LAURIN VOC. TRAINING CENTER
CITY LAKE
N
74
38
1639
1660
1640
1638
2030
2013
2022
1908
1608
1811
1834
1830
1836
1837
1810
1809
1808
LEDBETTER RD.
WILLIAMS ST.
FREEMAN ST.
KING ST.
SPRING ST.
HAMLET AVE.
CHARLOTTE ST.
CORNING ST.
WASHINGTON AVE.
SEABOARD ST.
ABERDEEN ST.
PINE ST.
OAKLAND AVE.
WEST ST.
HIGH ST.
KENT ST.
WILMINGTON AVE.
RALEIGH ST.
LAKESIDE DR.
JEFFERSON ST.
HENRY ST.
MADISON AVE.
MARLBORO ST.
ENTWISTLE ST.
MAIN ST.
PEACH ST.
MC DONALD AVE.
AUSTIN ST.
MYRTLE AVE.
COLUMBIA AVE.
HENDERSON ST.
WILSON ST.
DENNIS ST.
LACKEY ST.
CHAMPLAIN ST.
BRIDSES ST.
THOMAS ST.
COLUMBIA AVE.
ELLEN DR.
MARKS CREEK RD.
BUTTERCUP
RICHMOND
DOGWOOD AVE.
RICE ST.
FAYETTEVILLE
WINSTON ST.
SALEM ST.
HAMLET AVE.
3 RD ST.
4 TH ST.
S. WILMINGTON ST.
OLD BENNETTSVILLE RD.
PARKER ST.
DEERING ST.
CREEK