

FEASIBILITY STUDY

Durham
Southern Parkway Interchange at U. S. 15-501
Durham County
U-2206

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

June, 1987

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The captioned project is included in the 1987-1995 Transportation Improvement Program for a feasibility study and/or right-of-way protection but is not currently funded. This report includes a brief analysis of possible improvements.

DESCRIPTION OF SOUTHERN PARKWAY

Southern Parkway is a proposed major thoroughfare which is to run generally in an east-west direction through the southern environs of Durham extending about 12 miles between U. S. 70 near the Durham-Wake County line and the existing U. S. 15-501 Business/Bypass interchange as shown on Figure 1. The multi-lane facility is presently planned to be primarily a divided highway along new location but is to follow part of SR 2028 (Alexander Drive), part of SR 1121 (Cornwallis Road), and SR 1146 (Archdale Road).

Full control of access has been proposed along some sections of the route along with provisions for interchanges at major intersecting roads. The 3.2 mile section between U. S. 70 and SR 2028 at SR 1959 (Miami Boulevard) is presently under construction and was scheduled for construction as a multi-lane highway by developers with NCDOT participation during fiscal years 1987 and 1988 as R-2249 in the 1987-1995 Transportation Improvement Program.

SCOPE OF THIS PROJECT

Planning and Research recommended modification of the existing trumpet type U. S. 15-501 Business/Bypass interchange plus a new interchange at University Drive (see attached aerial photo) in a September 4, 1984 feasibility study for the Parkway. It was also recommended that the Parkway's access be fully controlled along the \pm 2500-foot length between these interchanges due to the direct connection to the U. S. 15-501 Business/Bypass interchange which presently operates at 45 to 55 mph.

The interchange modification at U. S. 15-501 Business/Bypass should entail extension of the Parkway eastward at least to the proposed University Drive interchange or preferably to Shannon Road about one mile east of U. S. 15-501. Either of these two concepts is considered a practical functional part of the modification and is adaptable to orderly development of other sections of the Parkway.

The preliminary concept for the layout of these two interchanges is illustrated on Figure 2. Developed by the City of Durham in cooperation with NCDOT, the U. S. 15-501 Business/Bypass interchange modification results in a "hybrid" interchange not having provision for traffic movements between U. S. 15-501 Business southbound and Southern Parkway

eastbound. The proposed University Drive interchange includes ramps in the north and south quadrants only allowing movements in all directions.

TRAFFIC ESTIMATES

Estimated average daily traffic during the years 1985, 2000, and 2010 in the project vicinity is included on Figure 3 along with turning movements. The estimates are based on implementation of the March 24, 1980 Durham Thoroughfare Plan shown on Figure 1.

NEED FOR THE PROJECT

The project is a need as an integral part of the important Southern Parkway. The Parkway will serve to improve access to the rapidly expanding Research Triangle Park area from the Durham area, assist in reducing high peak-hour traffic demand on I-40 in the area of the Parkway, and result in better access between origins and destinations for local traffic in the area. Strong local support has been expressed for the project.

ALTERNATIVES

There are no practical alternatives to the location of Southern Parkway in the vicinity of the proposed interchange modification.

Alternatives investigated during this study involve the extent of control of access along the Parkway east of the proposed University Drive interchange:

Alternate 1 - At-grade intersection with Shannon Road

Alternate 2 - Grade separation at Shannon Road

Alternatives to the preliminary interchange layouts at U. S. 15-501 Business/Bypass and at University Drive are also a possibility.

ESTIMATED COSTS

Preliminary estimated costs of the alternates are as follows. They are subdivided to assist in establishing programming for the interchange modification and possible participation by the City of Durham.

	<u>Alternate 1</u>	<u>Alternate 2</u>
U. S. 15-501 Business/Bypass to University Drive ¹		
Construction		
15% Engineering & Contingencies		
Right of Way		
TOTAL		

¹ Includes U. S. 15-501 Business/Bypass interchange modification and proposed University Drive interchange.

Alternate 1Alternate 2University Drive to Shannon Road

Construction
 15% Engineering & Contingencies
 Right of Way
 TOTAL

Shannon Road to Chapel Hill Street

Construction
 15% Engineering & Contingencies
 Right of Way
 TOTAL

CONCLUSIONS

Proposed ramps in the northeast quadrant of the U. S. 15-501 Business/Bypass interchange may need further evaluation. However, parts of these ramps at US 15-501 Business are under construction and will initially serve as access to business and office developments presently served by Petty Road. Such construction may require an additional traffic signal and crossover on US 15-501 Business between the ones at Westgate Road (West Service Road) and Shannon Road (Cosmo Avenue).

Further evaluation of the preliminary design concepts presented in this study and any practical alternative(s) to the proposed interchange layouts at U. S. 15-501 Business/Bypass and University Drive along with associated environmental impacts may be required in a planning/environmental document to establish a final decision in regard to the most appropriate action.

POTENTIAL ENVIRONMENTAL IMPACTS

The primary potential consequences on the natural environment resulting from construction of the project would be the impact on any wetlands and other ecological resources in the area. Displacement of businesses and/or residences, increases of ambient noise levels, and effects on existing air quality are the potential impacts on the human environment. These impacts are not expected to be of major consequence.

BASIS OF FINDINGS

Proposals contained in this study were based on the following:

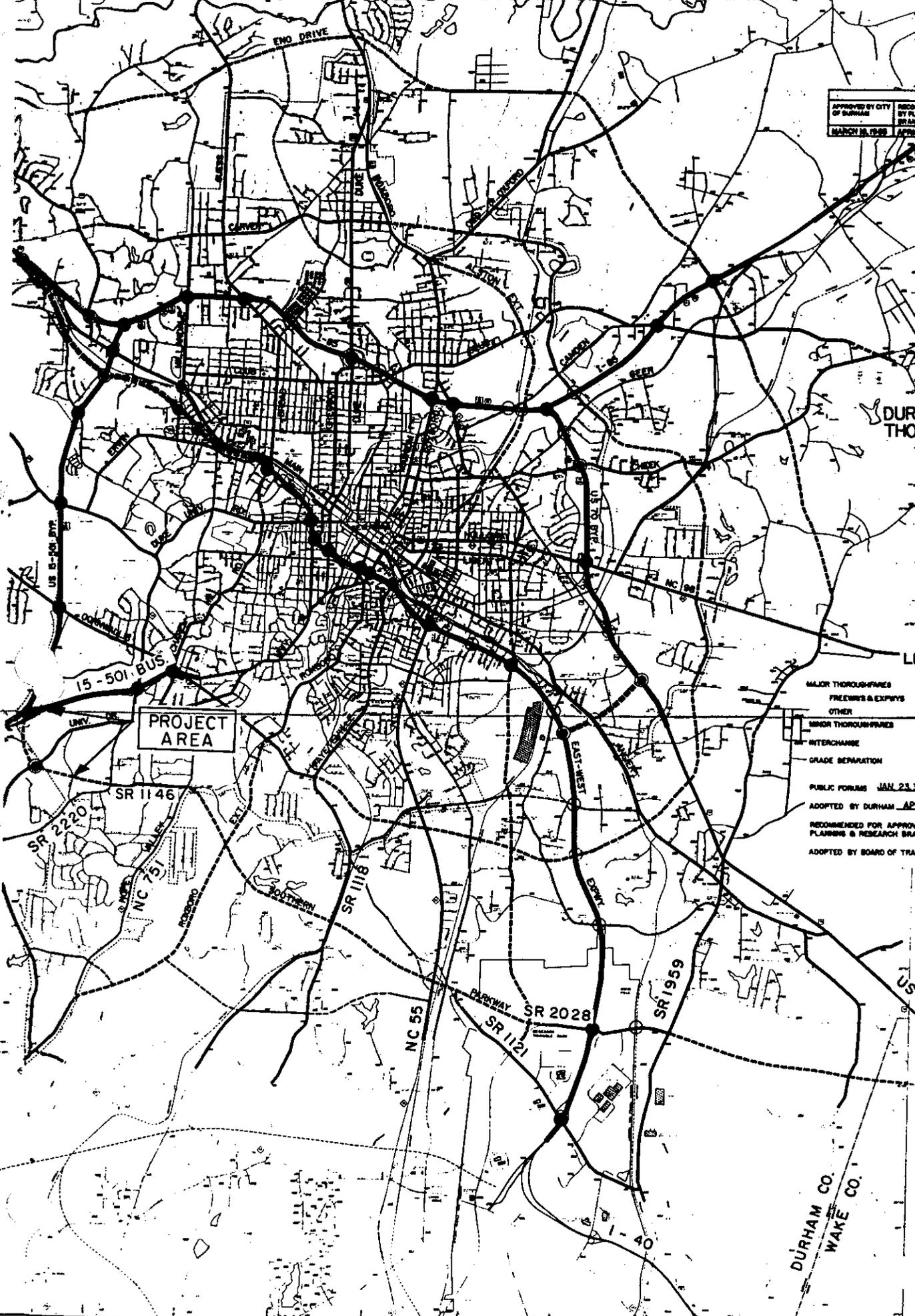
- Field investigations
- A September 1984 feasibility study on the Southern Parkway
- Functional designs developed in association with the City of Durham
- The 1985 mutually adopted Durham Thoroughfare Plan

Construction cost estimates were based on contour mapping (1"=200') and furnished by the Roadway Design Unit. Right of way estimates were made by the Right of Way Branch following a field review.

REVISIONS		
APPROVED BY CITY OF DURHAM	RECOMMENDED APPROVAL BY PLANNING & RESEARCH BRANCH	APPROVED BY N.C. BOARD OF TRANSPORTATION
MARCH 18, 1980	APRIL 24, 1980	JUNE 14, 1980



DURHAM URBAN ARE THOROUGHFARE PL
MARCH 24, 1980

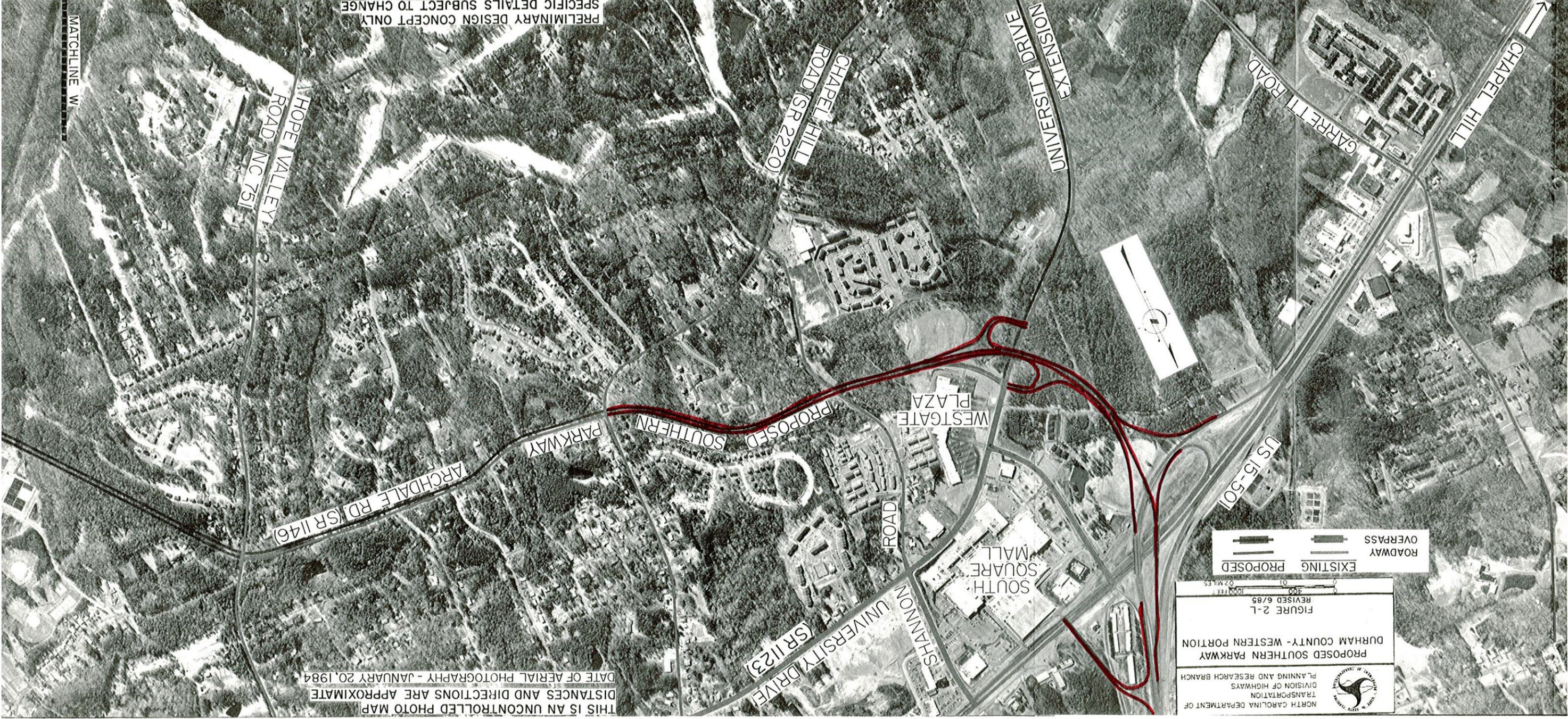


LEGEND

MAJOR THOROUGHFARES	EXISTING	PROPOSED	LOAN RAN
FREEWAYS & EXPRESS			
OTHER			
MINOR THOROUGHFARES			
INTERCHANGE			
GRADE SEPARATION			
PUBLIC FORUMS	JAN 23, 30, & FEB 19, 20, 25, 26, 27, 1980		
ADOPTED BY DURHAM	APRIL 21, 1980		
RECOMMENDED FOR APPROVAL BY PLANNING & RESEARCH BRANCH	APRIL 22, 1980		
ADOPTED BY BOARD OF TRANSPORTATION	MAY 9, 1980		

FIGURE 1
DURHAM
AND VICINITY
SHEET NO. 1
MAY 9, 1980

DURHAM CO.
WAKE CO.




 NORTH CAROLINA DEPARTMENT OF
 TRANSPORTATION
 DIVISION OF HIGHWAYS
 PLANNING AND RESEARCH BRANCH
 PROPOSED SOUTHERN PARKWAY
 DURHAM COUNTY - WESTERN PORTION
 FIGURE 2-L
 REVISED 6/85
 0 100 FEET
 0.2 MILES

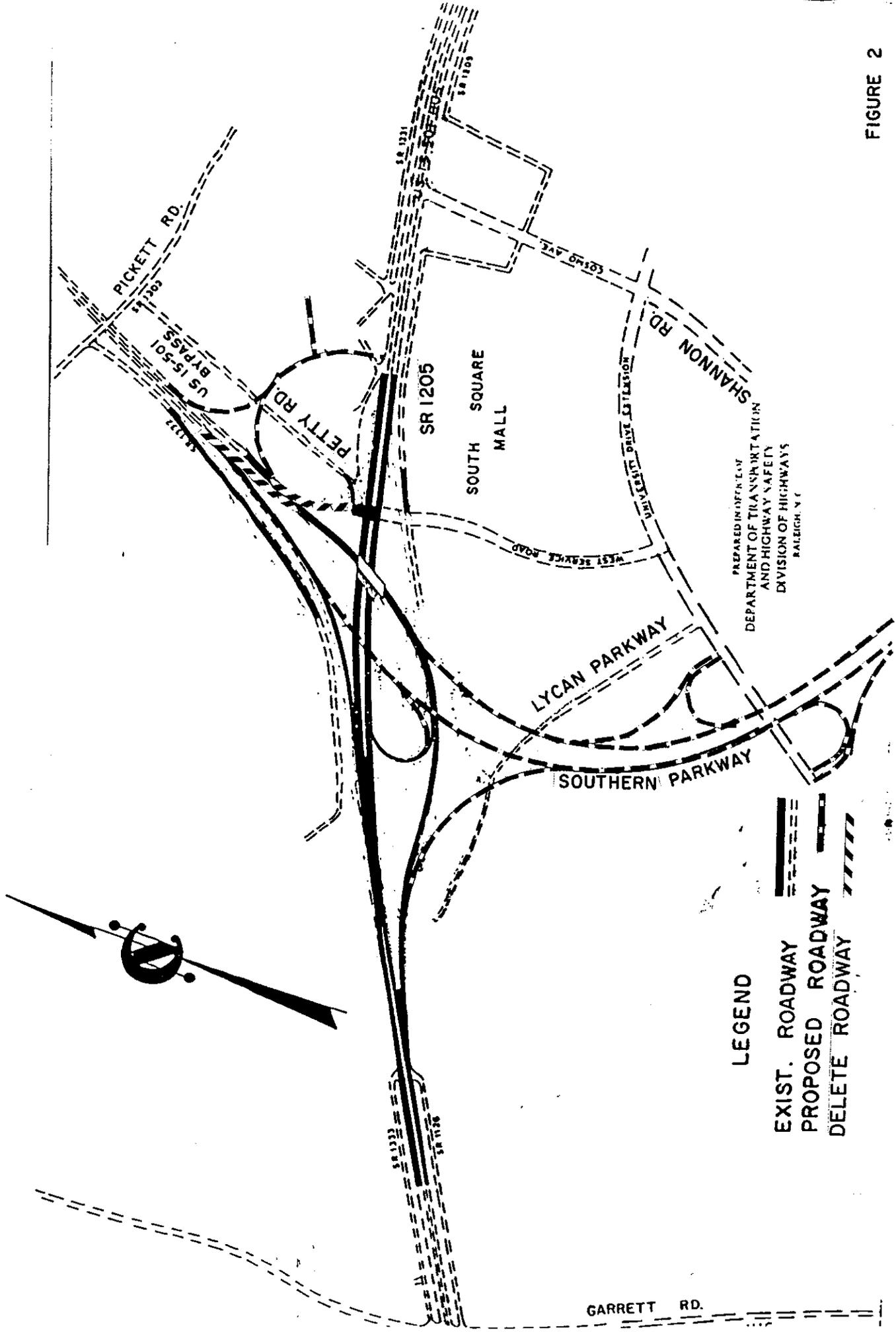
ROADWAY
 OVERPASS
 EXISTING
 PROPOSED

THIS IS AN UNCONTROLLED PHOTO MAP
 DISTANCES AND DIRECTIONS ARE APPROXIMATE
 DATE OF AERIAL PHOTOGRAPHY - JANUARY 20, 1984

PRELIMINARY DESIGN CONCEPT ONLY
 SPECIFIC DETAILS SUBJECT TO CHANGE

MATCHLINE W

PROPOSED SOUTHERN PARKWAY AT
 US 15-501 BYPASS
 US 15-501 BUSINESS
 INTERCHANGE



PREPARED IN OFFICE BY
 DEPARTMENT OF TRANSPORTATION
 AND HIGHWAY SAFETY
 DIVISION OF HIGHWAYS
 RALEIGH, N.C.

LEGEND

- EXIST. ROADWAY
- PROPOSED ROADWAY
- DELETE ROADWAY

FIGURE 2

DAILY TRAFFIC ASSIGNMENTS
ESTIMATED ALONG SOUTHERN PARKWAY
IN DURHAM

US 15 - 501 BYP.

US 15 - 501 BUS

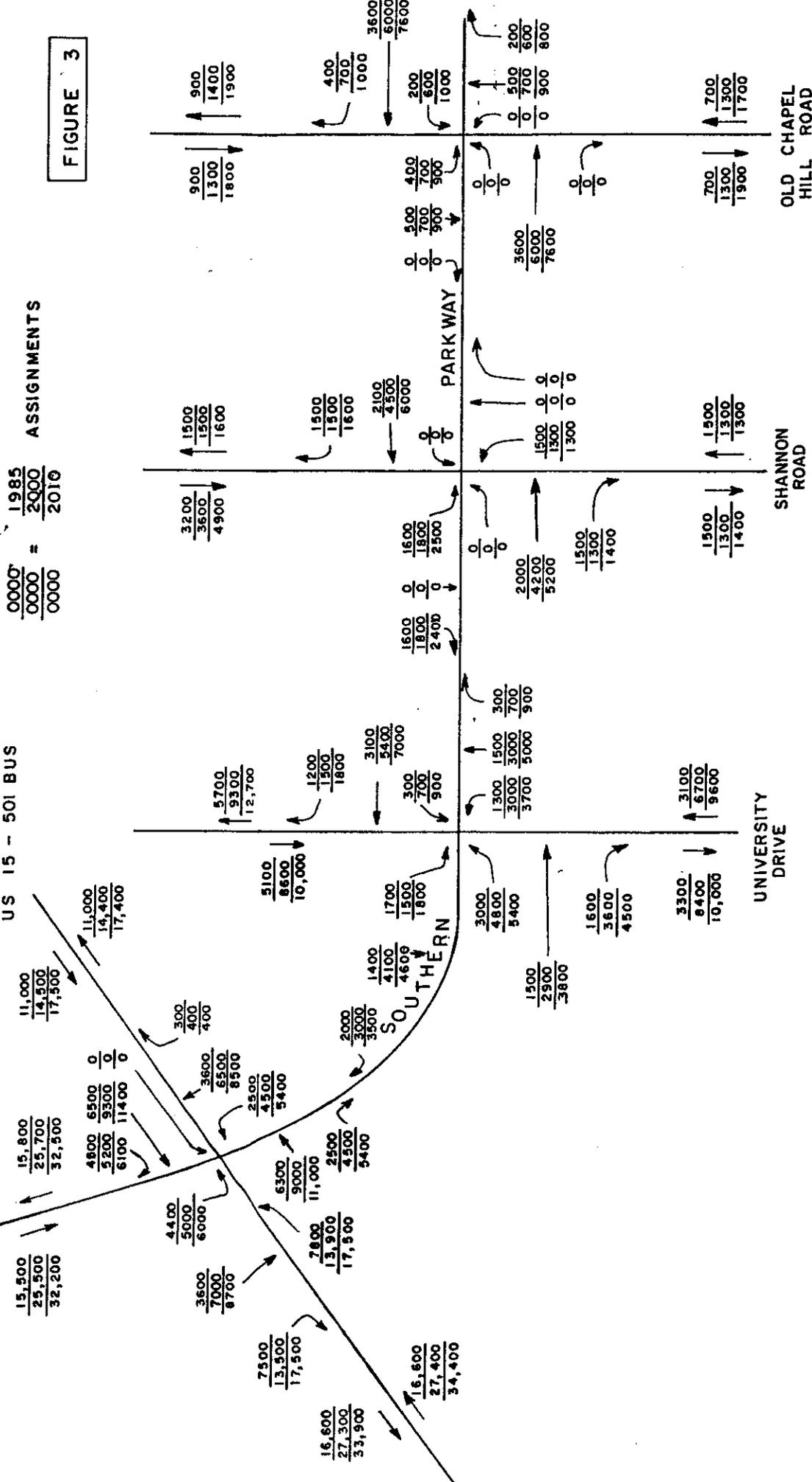


FIGURE 3

NOTE: SOME MOVEMENTS AT SHANNON ROAD AND OLD CHAPEL HILL ROAD HAVE BEEN PROPOSED TO BE ELIMINATED TO ASSIST IN ELIMINATING THE NEED FOR TRAFFIC SIGNALS