FEASIBILITY STUDY

NC 109
From I-85 Business in Thomasville
To US 311 in Winston-Salem
Davidson and Forsyth Counties, R-2568

Prepared by
Planning and Environmental Branch
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N. C. Department of Transportation

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I. GENERAL DESCRIPTION

This feasibility study covers the proposed widening of NC 109 from I-85 in Davidson County to US 311 in Forsyth County, a distance of 13.5 miles (see Figures 1 and 2). This project is included in the 1990-1996 Transportation Improvement Program for feasibility study and/or right-of-way protection. It is not currently funded for design, right-of- way acquisition, or construction.

II. PURPOSE OF PROJECT

Existing Route Characteristics

NC 109 is a major north-south route that serves as a primary link between cities of Thomasville and Winston-Salem, and as a radial route into each city. The southern end of the project is included in the Thomasville Thoroughfare Plan as a Major Thoroughfare, and a portion of the project in Forsyth County is included in the Winston-Salem/Forsyth County Thoroughfare Plan as a Major Thoroughfare. From I-85 to the Winston-Salem Urban Extension Boundary, NC 109 is classified a Rural Major Collector in the North Carolina Functional Classification System, and the portion of NC 109 within the boundary is classified as an Other Urban Principal Arterial.

The existing cross section on NC 109 consists primarily of a 20-foot pavement with unpaved shoulders varying from 3 to 6 feet in width. At the southern end of the project, NC 109 continues southward as a two-lane road with a 20-foot pavement, but at the northern end of the project, NC 109 has been widened to a five-lane, 64-foot curb and gutter cross section. The existing right-of-way on NC 109 is generally a 60-foot claimed width throughout the project length, with two minor exceptions in Davidson County. From SR 1800 to 200 feet north of SR 1772 (a distance of 0.25 mile), there is a claimed right-of-way width of 50 feet, and from 500 feet south of SR 1730 to SR 1729 in the community of Wallburg (a distance of 0.30 mile), there is a claimed width of 30 feet. The horizontal alignment of the roadway is generally good, with the exception of an 8-degree curve and a 9-degree curve in the Wallburg community. The vertical alignment is fair to good, with maximum grades of 7%, following the rolling terrain of the area. With the exception of interchanges at the project terminals, all intersections on the project are at grade, and are controlled by stop signs on the minor routes. The existing speed limit is 55 mph throughout most of the project length. The speed limit is reduced to 45 mph approaching the I-85 Business interchange and to 50 mph in the Forsyth County portion of the project.

Three bridges are located along the portion of the project in Davidson County. They are described below. None of these structures are scheduled for improvement in the current Transportation Improvement Program.

Bridge No.	Location	Date Built	Length	Width	Sufficiency Rating
109	I-85 Business	1950	167'	28'	48.0
124	Rich Fork Creek	1932	104'	20'	46.8
135	Abbotts Creek	1932	141'	20'	48.1

There are also three culverts on the project. They are described below, with culvert No. 120 being located in Davidson County and the other two in Forsyth County.

Culvert No.	Location	Date Built	Size	Sufficiency Rating
120	Hanks Creek	1933	Double 10' X 12'	97.9
17	S. Fork Muddy Ck.	1933	Quadruple 9' X 9'	97.5
25	Fiddlers Creek	1933	Quadruple 11' X 10'	79.9

Roadside development is primarily rural in character with residential development and farms being the dominant types of development surrounding the project. Much of the land immediately adjacent to the highway is characterized by low to moderate density residential development. Commercial, industrial, and institutional development is interspersed along the project. Ledford School is located on the east side of NC 109 at the SR 1756 intersection.

Traffic Volumes, Capacity, and Accident Record

The current traffic volumes on NC 109 range from a low of 5500 vehicles per day (vpd) to a high of 7300 vpd along the project. These volumes are projected to increase to 10,100 vpd and 13,800 vpd, respectively, by the year 2010. With the current traffic volumes, NC 109 is operating at Level of Service D throughout most of the project length. As traffic volumes continue to grow, the level of traffic service will deteriorate in the future if no improvements are made to NC 109. With the proposed widening, the highway should operate at Level of Service C or better throughout the planning period.

During the period from December 1, 1986 through November 31, 1989, 212 accidents were reported on the subject portion of NC 109. This resulted in an accident rate of 217.9 accidents per 100 million vehicle miles (ACC/100 MVM) compared to a statewide average of 207.2 ACC/100 MVM for all two-lane, rural North Carolina routes over a similar time period. The primary accident types involved vehicles running off the road and rear-end collisions. These types of accidents accounted for 56 % of the accidents. The widening of the road along with the provision of a continuous left-turn lane should reduce the potential for these types of accidents.

Need for Project

The widening of NC 109 in Davidson and Forsyth Counties is needed to provide adequate capacity for existing and future traffic volumes. The proposed improvements will also enhance safety and improve traffic operations in the area.

III. RECOMMENDATIONS AND COSTS

The widening of NC 109 to a multi-lane facility is immediately warranted. The recommended cross section provides five-lanes throughout the project length. It is recommended the improvements begin on the south side of I-85 business in order for the widening to extend through the interchange, eliminating a capacity deficiency at this location. Curb and gutter is recommended in areas where existing development necessitates the use of a narrower right-of-way than would be needed for a shoulder cross section, and shoulders are recommended in the less developed areas or where existing development has sufficient setback from the highway. A description of the sections where curb and gutter or shoulders are proposed is shown below. A 100- foot right-of-way is anticipated for the curb and gutter sections, and a 140-foot right-of-way is anticipated for the shoulder sections.

From I-85 Business to 500 feet north of SR 1772, the recommended cross section is five lanes, 64 feet face to face of curbs. From 500 feet north of SR 1772 to SR 1755, a five-lane shoulder cross section is recommended. This cross section will have a 64-foot paved width, providing five 12- foot lanes and 2-foot paved shoulders, with a total usable 10-foot shoulder width. From SR 1755 to 200 feet north of SR 1970, the five-lane curb and gutter cross section is recommended. From 200 feet north of SR 1970 to 2200 feet south of SR 1724 a five-lane shoulder section on new location is recommended to provide a bypass of Wallburg. The shoulder section will continue along the existing alignment from the Wallburg bypass to SR 1724. From SR 1724, the cross section reverts back to the five-lane curb and gutter section for the remainder of the project to US 311.

The estimated costs of the project are as follows:

Construction	$28,000,000
Right-of-Way	14,500,000
TOTAL	$42,500,000

The construction cost includes engineering and contingencies, and the right-of-way cost includes acquisition, relocation, and utility costs.

IV. ALTERNATIVES CONSIDERED

Since the proposed project involves the widening of an existing highway, the use of an alternative alignment completely on new location was not considered. The alternative of providing a four-lane divided cross section was considered. However; due to the greatly increased cost

and the increased impact on adjacent development caused by a wider right-of-way needed for the four-lane divided alternative, the five-lane alternative was selected as the recommended plan.

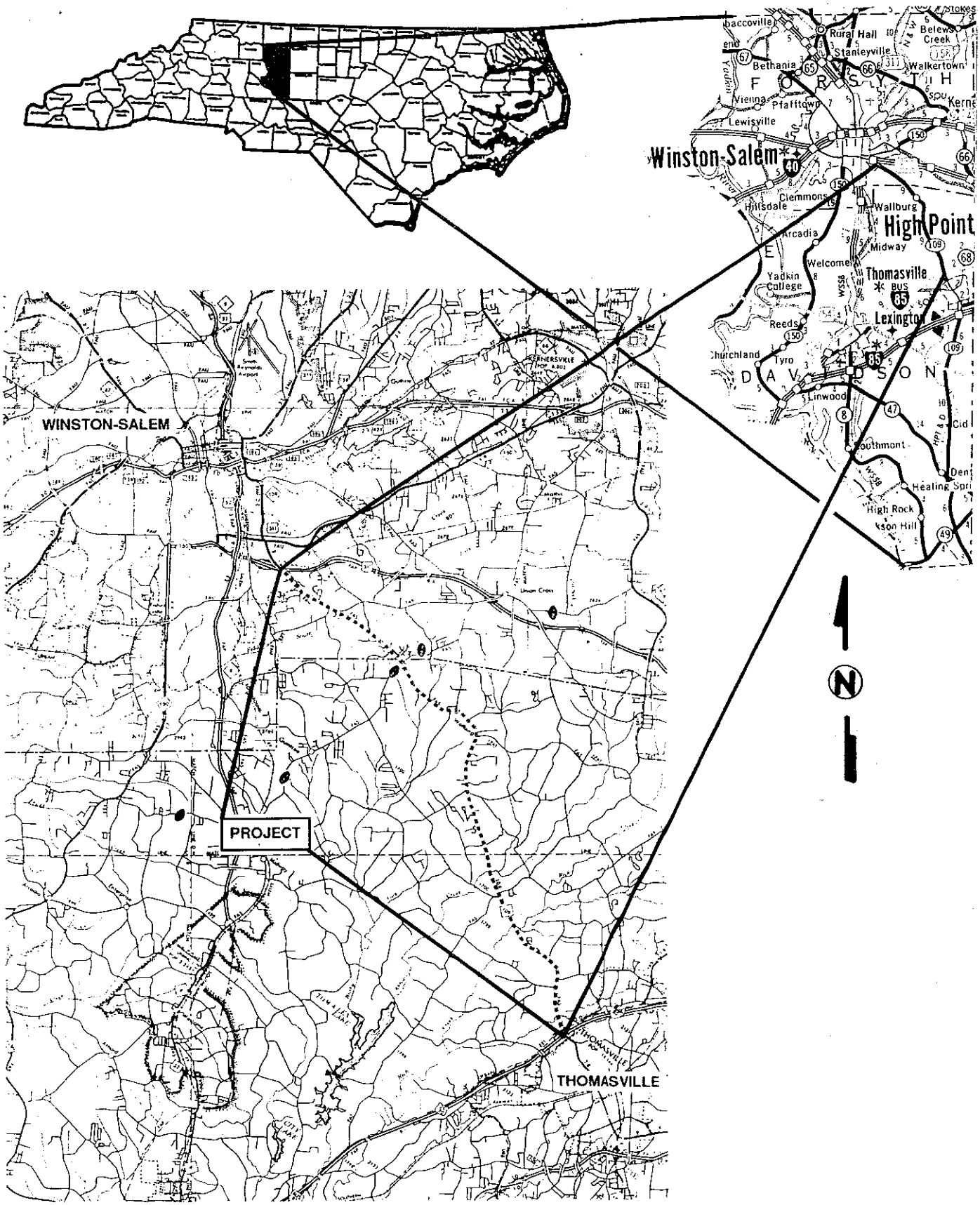
V. ENVIRONMENTAL EFFECTS

The construction of the project will require the relocation of an estimated 57 residences and 11 businesses. The project will also result in increased noise levels for remaining development adjacent to the roadway. Minor wetland impacts can be expected where the project crosses any of the streams along NC 109. Several potentially historic homes were observed on NC 109, primarily in the Wallburg community. The proposed bypass of Wallburg will avoid adversely impacting the majority of the homes. Other impacts will primarily be related to the actual construction of the project and will cease upon its completion. These include minor erosion and siltation, increased noise levels from construction machinery, and delay and inconvenience to motorists and area residents.

VI. FUTURE ACTIVITIES

If the project is to be implemented at a future date, all feasible alternatives and their associated impacts will need to be evaluated in a planning/environmental document prior to that time, and a final decision made as to the most appropriate improvement.

RBD/plr



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PLANNING AND ENVIRONMENTAL BRANCH

NC 109
FROM I-85 BUS. IN THOMASVILLE
TO US 311 IN WINSTON-SALEM
DAVIDSON AND FORSYTH COUNTIES
R-2568

FIG. 1

COPY - NCDOT

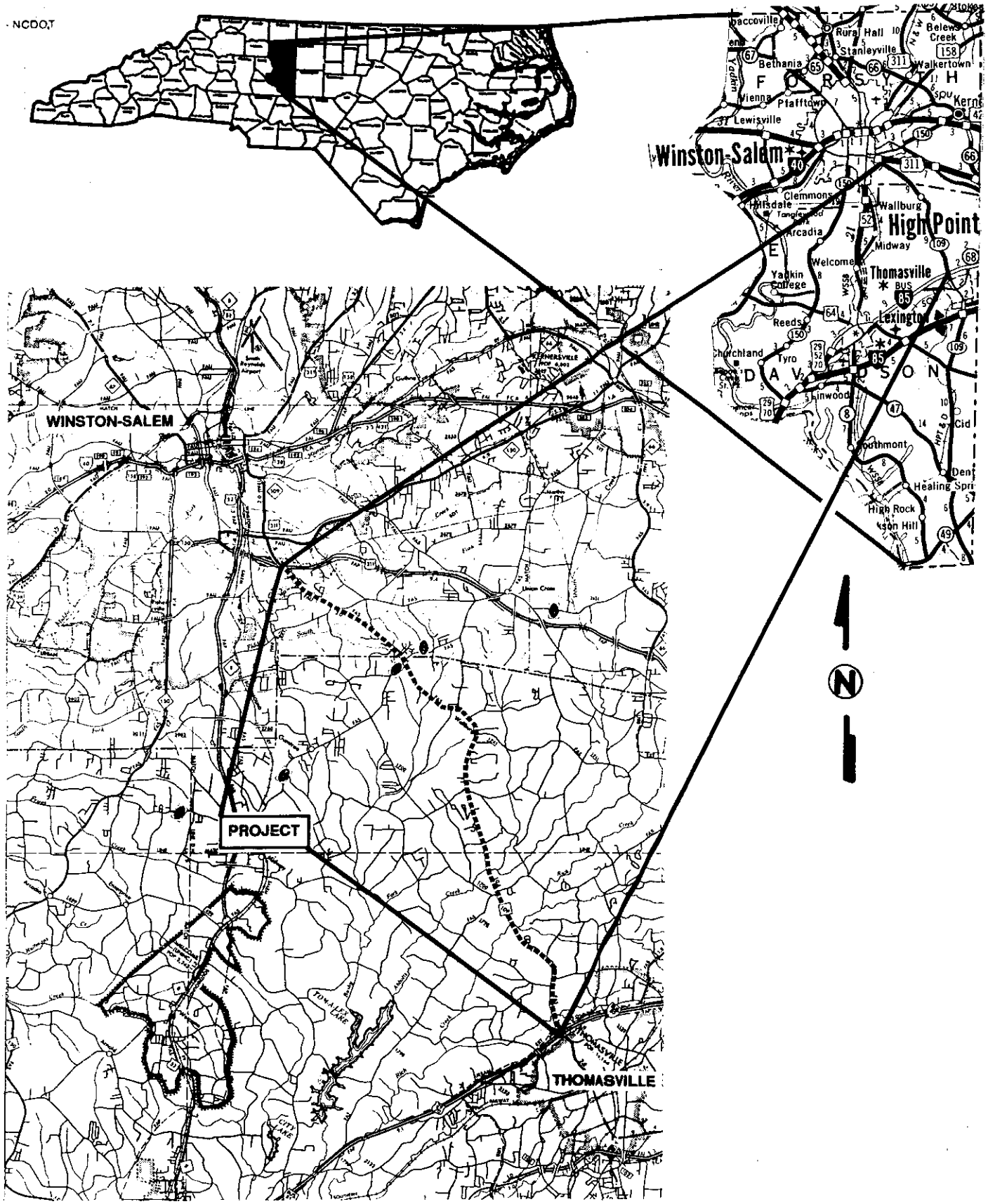


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FIG. 1

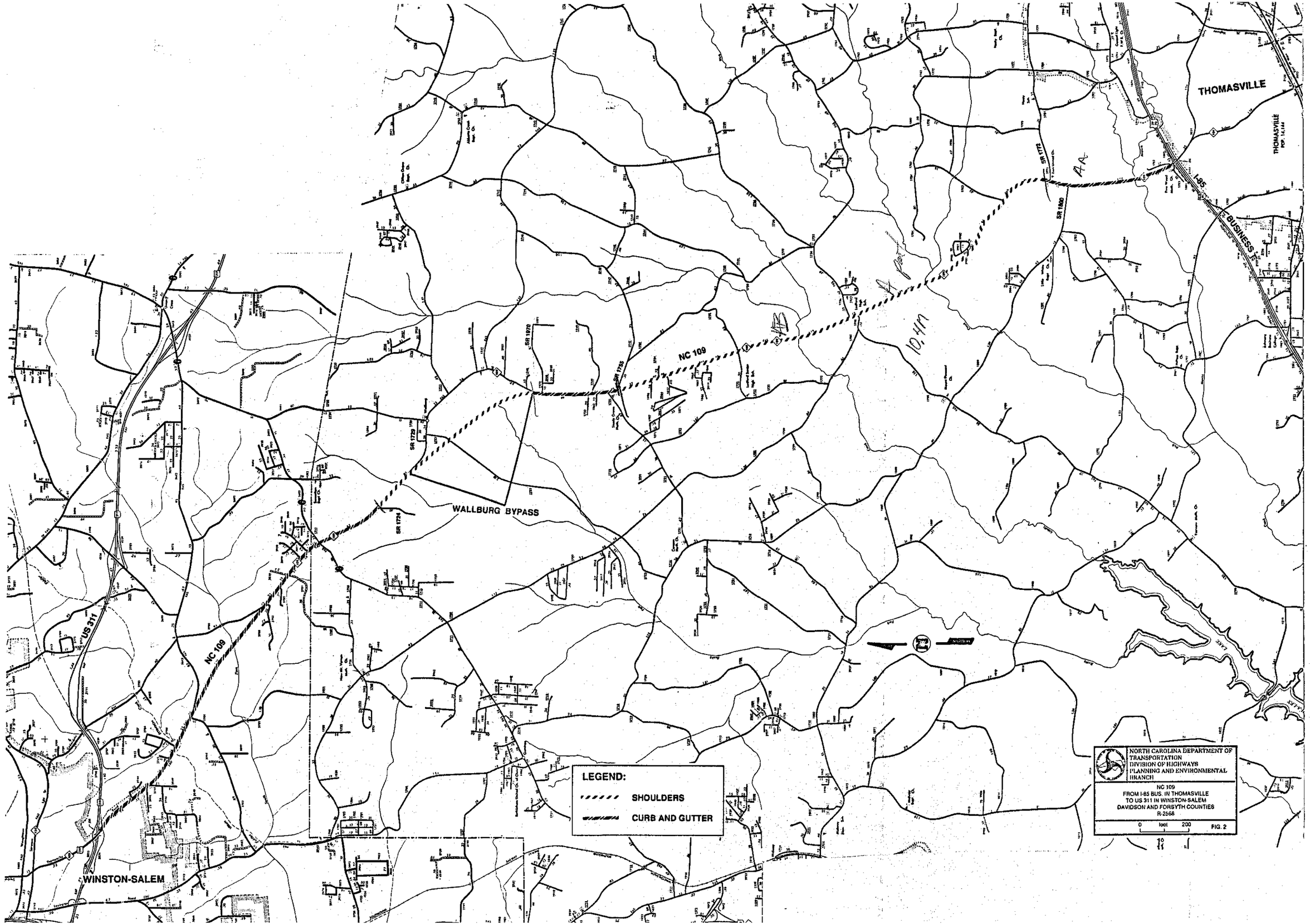
THOMASVILLE
I-85
BUSINESS
SR 1772
SR 1800
NC 109
SR 1970
SR 1755
SR 1729
SR 1724
WALLBURG BYPASS
US 311
NC 109
WINSTON-SALEM
LEGEND:
SHOULDERS
CURB AND GUTTER
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FIG. 2