U-2406

FEASIBILITY STUDY

Elon-Gibsonville Bypass
from US 70 south of Gibsonville to NC 100
East of Elon College, Alamance
and Guilford Counties
U-2406

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

Marc L. Hamel
Marc Hamel
Project Planning Engineer

R. G. Dawson, Jr.
R. G. Dawson, Jr., P. E.
Head of Feasibility & Special Studies Unit

5/22/89
Date

J. M. Greenhill
J. M. Greenhill, P. E.
Manager, Planning and Research

Elon-Gibsonville Bypass
from US 70 south of Gibsonville to NC 100
East of Elon College, Alamance
and Guilford Counties
U-2406

I. DESCRIPTION

This report covers a preliminary study of a bypass in the Elon-Gibsonville area. This project is included in the 1988-1996 Transportation Improvement Program for feasibility study and/or right of way protection. It is not currently funded.

II. PURPOSE OF PROJECT

Existing Route

NC 100 in the Elon-Gibsonville area presently carries the majority of the traffic that would be accommodated by the proposed bypass. Through the project area, NC 100 is basically a two-lane, 24-foot facility on rolling terrain, with some areas of 44-foot curb and gutter sections in the town of Elon College. The present routing not only goes through heavily developed areas of both towns, but it also requires three 90° turns in Gibsonville to continue travel beyond the town.

Current traffic volumes on NC 100 range from 7000 to 11,000 vehicles per day (vpd) in the Elon College area. Traffic volumes in the Gibsonville area range from 4,000 to 6,000 vpd.

Need for Project

Justification for an Elon-Gibsonville Bypass stems from a need to provide a higher level of service for through traffic desiring to avoid restrictions such as lower speed limits, signalization, congestion and roadside interference along the existing route through Elon College and Gibsonville. This proposed facility will also provide access to an interchange with I-85. This route appears on the Alamance County Urban Area Thoroughfare Plan mutually adopted in 1985 by Elon College and Gibsonville and NCDOT (see Figure 3).

III. RECOMMENDATIONS AND COSTS

Location

The recommended location of this project, broken into Section A (from US 70 Southwest of Gibsonville to NC 100 west of Elon College) and Section B (from NC 100 west of Elon College to NC 100 Northeast of Elon College), is shown on Figure 1.

The proposed location for Section A is situated to maximize utilization of NC 61 (and its interchange at I-85), and minimize interference

with existing residential development. Alignment in the Alamance County segment of Section A is critical due to development and will need to be examined in depth if funding for the project is approved. This alignment varies from the proposed alignment shown on the Thoroughfare Plan due to development since the plan's adoption.

The proposed location for Section B is substantially as shown on the Thoroughfare Plan and is in accordance with the alignment supported by the Town of Elon College.

At the west end of the project, it is proposed that a section of NC 61 north of US 70 be realigned to tee into the proposed bypass alignment and therefore maintain a four-way intersection of US 70 and the proposed bypass. On the east end of the project, NC 100 should be teed into the proposed bypass, making the new facility allow the most direct movement.

Design

Traffic projections for the Elon-Gibsonville Bypass in the year 2010 are as follows:

	Volumes (vpd)	
Section	High	Low
A	8,800	5,900
B	15,000	10,000

Based on these volumes, a two-lane roadway should suffice for most of the planning period. However, sufficient right-of-way should be acquired to provide for future expansion to a 5-lane urban facility to be assured of a continuing desirable level of service.

The recommended route is approximately 5.8 miles between its termini (Section A-3.3 miles, Section B-2.5 miles). Travel distance along the new route is approximately the same as that of the existing route.

Costs

Construction cost for a 24-foot pavement with 2-foot paved shoulders within 10-foot usable shoulders is estimated to be $7,000,000 ($4,050,000 for Section A, $2,950,000 for Section B). It is estimated that 3 culverts would be required along Section A, and all intersections would be at-grade. Cost of acquiring an estimated 80-foot right of way is $3,025,000 ($1,650,000 for Section A, $1,375,000 for Section B). Thus, the total cost of the bypass is $10,025,000. The above cost estimates were made by the Preliminary Estimate Engineer and the Right of Way Branch.

IV. ALTERNATIVES

A proposed project currently being studied to improve NC 87 (from Reidsville to I-85) may provide a possible alternative to the western portion of the subject project. This improvement to NC 87 would include 4-laning on existing location for most of the length, with NC 87 following new location north of Elon College, passing between Elon and Gibsonville and tying into I-85 (see Figure 2).

The purpose of this NC 87 project, studied at legislative and board member request, is to provide a long needed upgrade to the heavily traveled route from Reidsville to I-85 at Burlington. The NC 87 realignment to the west would ease serious congestion in Burlington and Graham.

If implemented, the realigned section of NC 87 between NC 100 and I-40/I-85 would basically eliminate the need for Section A. This alternative may be less controversial since Gibsonville has recently expressed opposition to any bypass on the east side of town.

The proposed Section B would still serve the function described above. The changes to its alignment would consist of a small alignment deviation of the west end of the Elon Bypass, and teeing NC 100 into the Bypass just east of the proposed NC 87 crossing of NC 100 (see Figure 2).

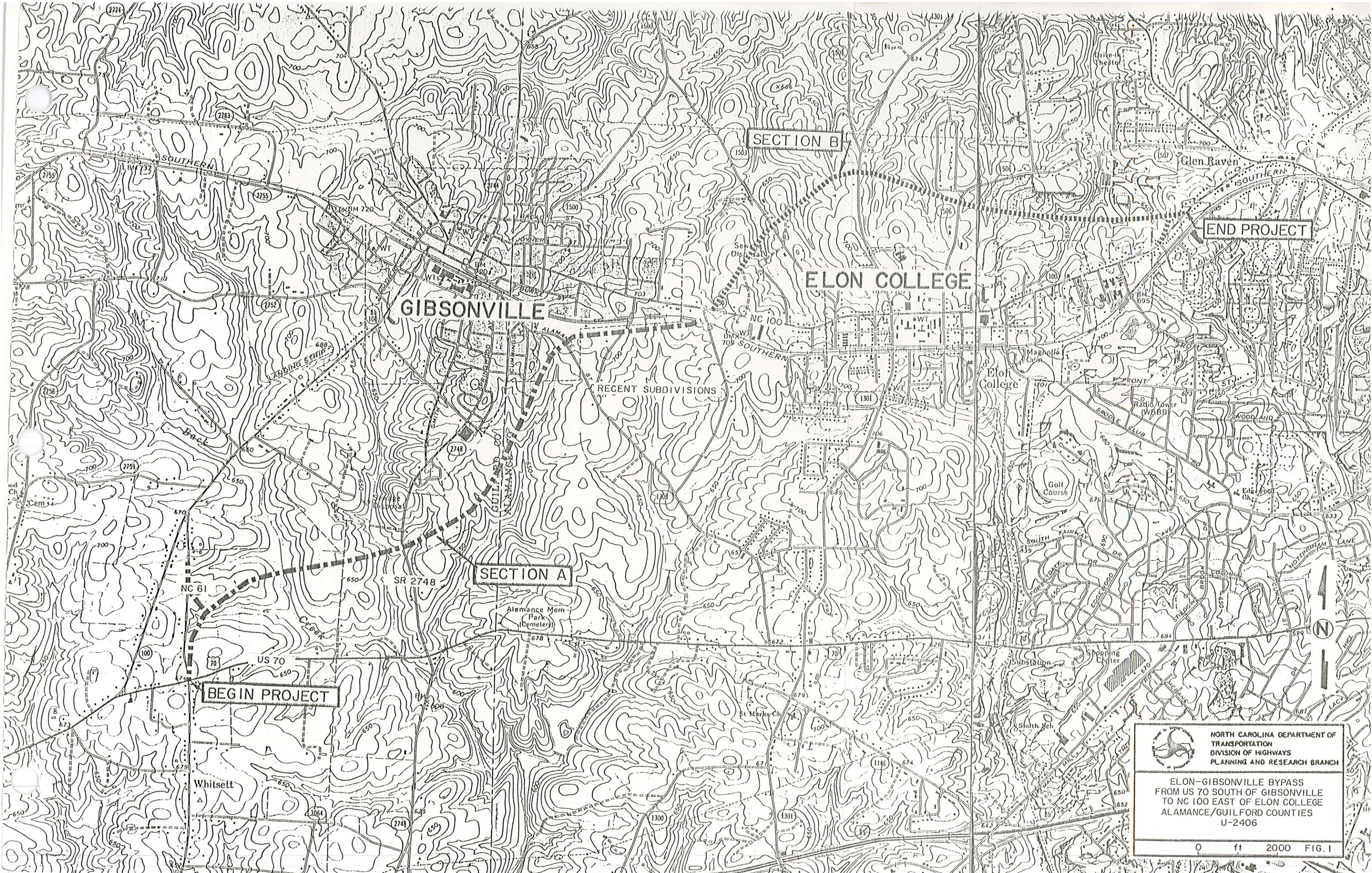
If NC 87 is to be relocated and Section A is no longer a valid consideration for construction, the estimated cost for the Elon portion of the studied project would be $4,325,000, with $2,950,000 for construction and $1,375,000 for right-of-way.

V. OTHER COMMENTS

The potential negative impacts of this project are: (1) loss of woodlands; (2) relocation of 2 businesses and 16 residences; and (3) potential noise increase for nearby subdivisions in Gibsonville.

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 and environmental document prior to that time, and a final decision made as to the most appropriate improvement.

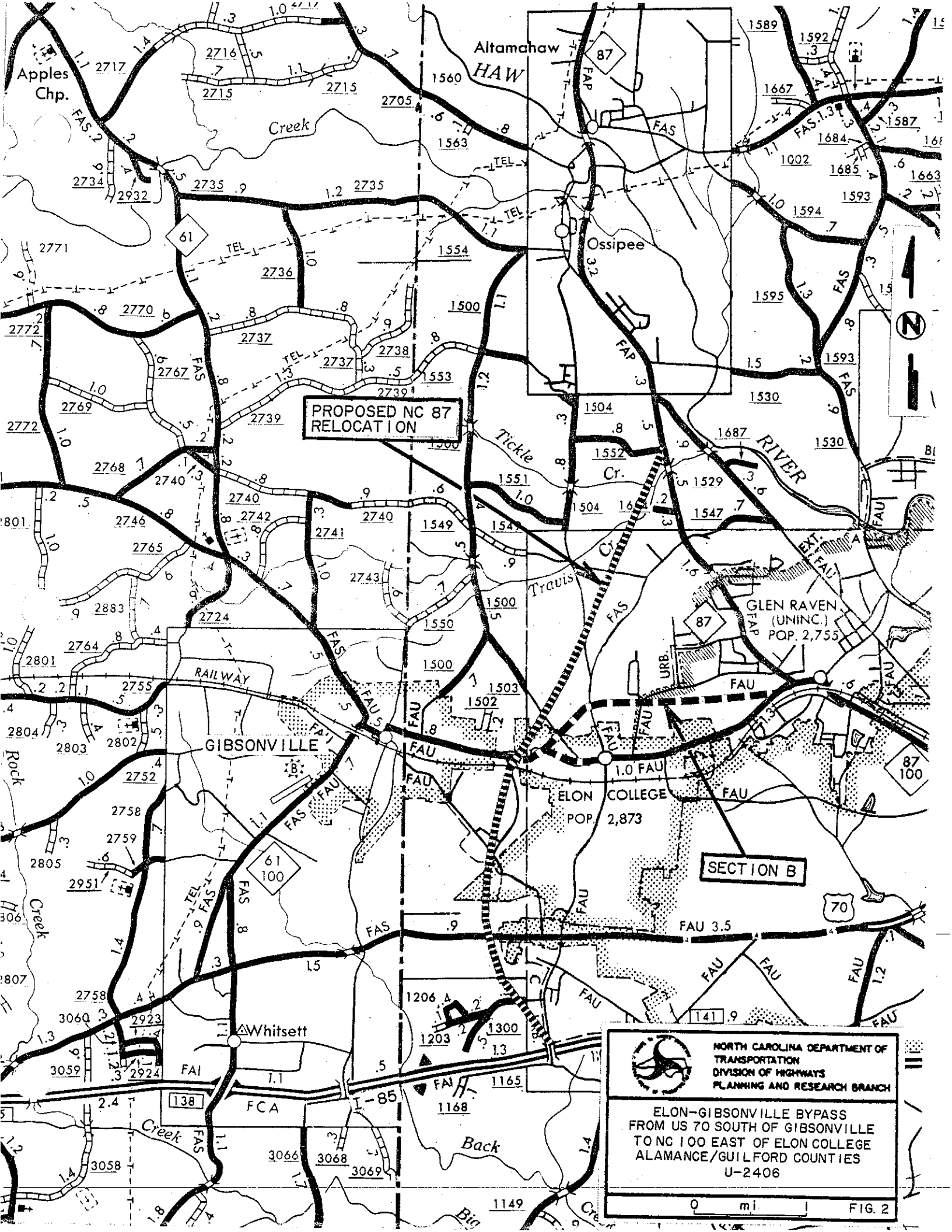
MH/sdt



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

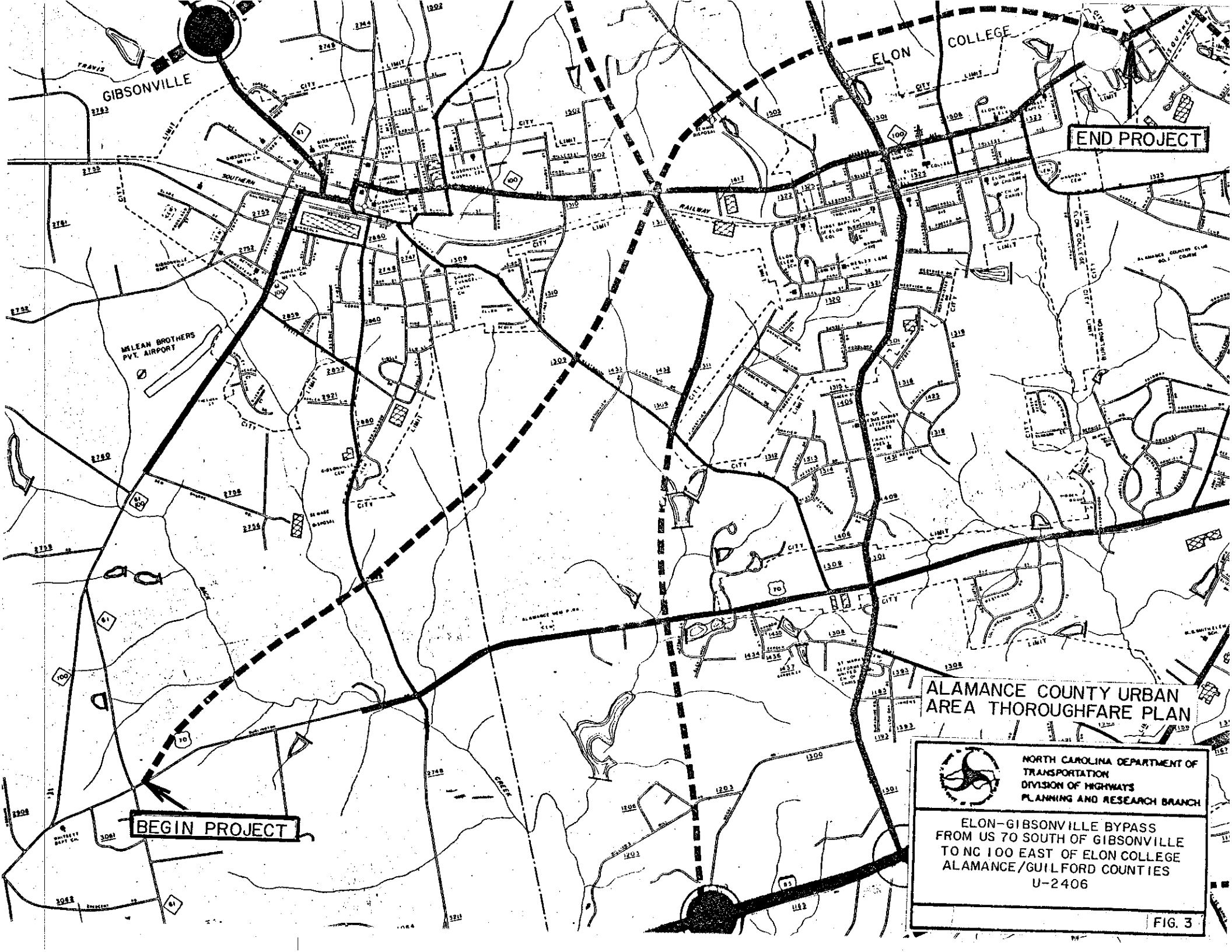
ELON-GIBSONVILLE BYPASS
FROM US 70 SOUTH OF GIBSONVILLE
TO NC 100 EAST OF ELON COLLEGE
ALAMANCE/GUILFORD COUNTIES
U-2406

0 ft 2000 FIG. 1



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

ELON-GIBSONVILLE BYPASS
FROM US 70 SOUTH OF GIBSONVILLE
TO NC 100 EAST OF ELON COLLEGE
ALAMANCE/GUILFORD COUNTIES
U-2406


GIBSONVILLE
ELON COLLEGE
END PROJECT
BEGIN PROJECT
RAILWAY
MELEAN BROTHERS PVT. AIRPORT
ALAMANCE COUNTY URBAN AREA THOROUGHFARE PLAN
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PLANNING AND RESEARCH BRANCH
ELON-GIBSONVILLE BYPASS
FROM US 70 SOUTH OF GIBSONVILLE
TO NC 100 EAST OF ELON COLLEGE
ALAMANCE/GUILFORD COUNTIES
U-2406
FIG. 3