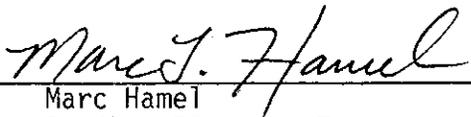


FEASIBILITY STUDY

Graham, Graham-Hopedale Road
(SR 1716), From Providence Road to US 70
Alamance County
U-2410

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

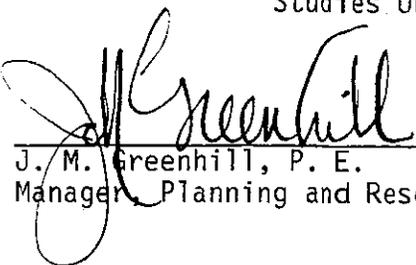


Marc Hamel
Project Planning Engineer



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

6-27-89
Date



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

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I. DESCRIPTION

This report covers the proposed upgrading of Graham-Hopedale Road from Providence Road to US 70 (Church Street) in Burlington and Graham. The location of this 1.2-mile project is shown on Figure 1. 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

Graham-Hopedale Road (SR 1716) appears as a major thoroughfare on the Alamance County Urban Area Thoroughfare Plan (adopted 1985). It serves as a major north-south route between east Burlington and Graham.

Graham-Hopedale Road from Providence Road in Graham to Piedmont Way in Burlington is a 2-lane, 24-foot paved facility without curbing. The roadway is widened at Hanover Street to accommodate a northbound left-turn lane. From Piedmont Way north to US 70 (Church Street), SR 1716 has a 3-lane, 36-foot paved section with curbing on the west side. There are existing traffic signals at the Providence Road, Hanover Road, Mebane Street, and US 70/Church Street intersections. The intersection with the Southern Railway is protected with crossbucks, flashing lights, and gates.

To the south of the project, North Main Street is a 32-foot, 2 lane curbed section extending for several blocks before it widens to a 5-lane curbed section. North of the project, Graham-Hopedale Road has a 33-foot, 3-lane section at the US 70 intersection.

Existing development along the project consists mainly of commercial property, with some residential development near Providence Road, Hanover Road, and Piedmont Way. Development is sparse on the east side between Hanover Road and Mebane Street due to land utilized in the past as an airstrip for Western Electric. Fairchild Park in Burlington occupies the land west of SR 1716 between Hanover Road and Piedmont Way.

Current traffic volumes on the route range from a low of 11,400 vehicles per day (vpd) on the south end of the project to approximately 12,600 vpd north of Hanover Road. Estimated traffic along the project for the year 2010 is a low of 16,000 vpd and a high of 20,000 vpd. The speed limit along the entire project is currently 35 miles per hour.

The accident rate from January 1985 through December 1987 for this route is 819 accidents per 100 million vehicle miles. The accident rate over the same period for all urban secondary roads in the State is 378

accidents per 100 million vehicle miles, showing that Graham-Hopedale Road has a poor accident history. Predominant accident types were rear-end (36%), angle (24%) and left-turn (19%) collisions.

Need for Project

Justification for widening Graham-Hopedale Road stems from a need to improve traffic operation and safety and alleviate congestion on this dominant north-south route between east Burlington and Graham. The current dogleg encountered when traveling from North Main Street to Graham-Hopedale Road (see Figure 1) adversely affects traffic flow on the southern end of the project. Also, the volume of 6 trains per day utilizing the Southern Railway also warrants consideration of a grade separation with Graham-Hopedale Road to reduce accident potential and eliminate congestion caused by blockage of traffic due to train movements.

II. RECOMMENDATIONS AND COSTS

The recommendations for the subject project are separated into two segments: (A) from North Main Street to a point 800 feet north of Hanover Road; and (B) from this point northward to US 70 (Church Street). Segments A and B are each approximately 0.6 mile in length.

Due to the combined volumes of train and vehicular traffic, a grade separation of Southern Railway is desirable (see Figure 2). Current rail and vehicular volumes warrant a separation to reduce accident potential, provide a higher level of service for traffic, and possibly allow higher rail speeds in the future. The projected traffic volumes and the potential for more rail traffic will make all of the factors more critical in the year 2010. Restoration of a prior regional rail service between Raleigh and Charlotte is under consideration by NCDOT. Such service would add at least two more trains per day along this railroad. Also, topography in the area favors an overpass of the railroad.

Segment A of Graham-Hopedale Road is recommended to be relocated along the approximate alignment shown on Figure 2. The relocation would eliminate the undesirable offset movement between Main Street and Graham-Hopedale Road and allow desirable grade separation of Southern Railway.

Recommended cross section is a 4-lane, 52-foot curb and gutter roadway from North Main Street across the grade separation to a point 700 feet south of Hanover Road where it would transition to a 64-foot, 5-lane curb and gutter section. This 5-lane section would extend to Segment B described above.

The fill section for the railroad separation and road alignment would necessitate the removal of the Sidney Cotton Mills building that is eligible for, but not included on, the National Register of Historic Places.

The upgrade recommended for Segment B is widening of the existing road to a 5-lane, 64-foot curb and gutter facility. Widening should be accomplished on the east side of the road to minimize right-of-way costs and avoid encroachment on Fairchild Park.

Cost estimates for the recommended improvements are as follows:

	<u>Construction Cost</u>	<u>Right-of-Way Cost</u>	<u>Total Cost</u>
Segment A	\$2,200,000	\$2,500,000	\$4,700,000
Segment B	900,000	1,800,000	2,700,000

Thus, the total estimated cost for the recommended plan is \$7,400,000, with a construction cost of \$3,100,000 and a right-of-way cost of \$4,300,000. The estimated cost for the recommended grade separation is approximately \$1,000,000. Cost estimates were prepared by the Preliminary Estimate Engineer and the Right-of-Way Branch.

IV. ALTERNATIVES

Two alternatives to the recommended improvements were evaluated, one along the existing alignment and one following a similar alignment in the recommended plan. Each alternative would retain the at-grade crossing of Southern Railway.

Alternative 1 utilizes the same Segment B as above, but in Segment A would follow a new at-grade alignment as shown on Figure 3. The proposed cross section treatment would be the same as described above. This alternative causes the least disruption to existing development and also has the least total cost. It does not, however, address the desirability of a railroad grade separation as described above. The project will also impinge on the Sidney Cotton Mill building, which is eligible for inclusion on the National Register of Historic Places. The estimated cost for this alternative is as follows:

	<u>Construction Cost</u>	<u>Right-of-Way Cost</u>	<u>Total Cost</u>
Segment A	\$1,200,000	\$1,400,000	\$2,600,000
Segment B	900,000	1,800,000	2,700,000

Thus, the total estimated cost for Alternative 1 is \$5,300,000, with \$2,100,000 for construction and \$3,200,000 for right-of-way.

Alternative 2 again utilizes Segment B as in the recommended plan, but proposes widening of the existing route in Segment A (see Figure 4) to a 5-lane, 64-foot curb and gutter facility with realignment of undesirable 90° turns at the south end of the project. This alternative minimizes disturbance to the Sidney Cotton Mills property. However, it would cause extensive disruption to existing development along the entire southern section of the route. It also does not provide a desirable grade separation at the railroad. The cost for this alternative is as follows:

	<u>Construction Cost</u>	<u>Right-of-Way Cost</u>	<u>Total Cost</u>
Segment A	\$1,000,000	\$2,300,000	\$3,300,000
Segment B	900,000	1,800,000	2,700,000

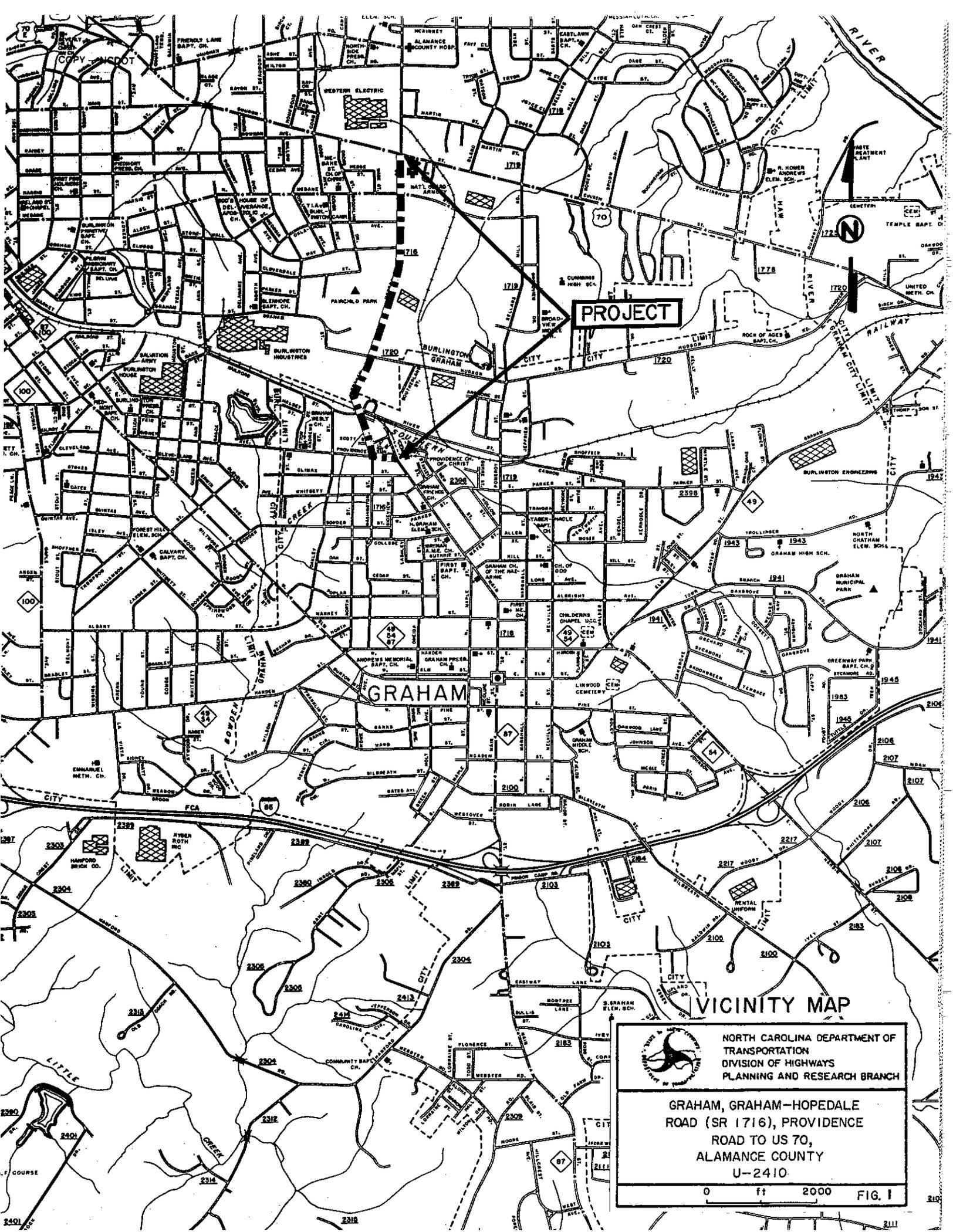
Thus, the total estimated cost for Alternative 2 is \$6,000,000, with \$1,900,000 in construction cost and \$4,100,000 in right-of-way cost.

V. OTHER COMMENTS

The recommended alignment would necessitate the removal of the Sidney Cotton Mills building as described above. Other possible negative impacts of the project include the relocation of 21 residences and 3 businesses, and an increased noise level for the remaining development.

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

MH/rm



PROJECT

GRAHAM

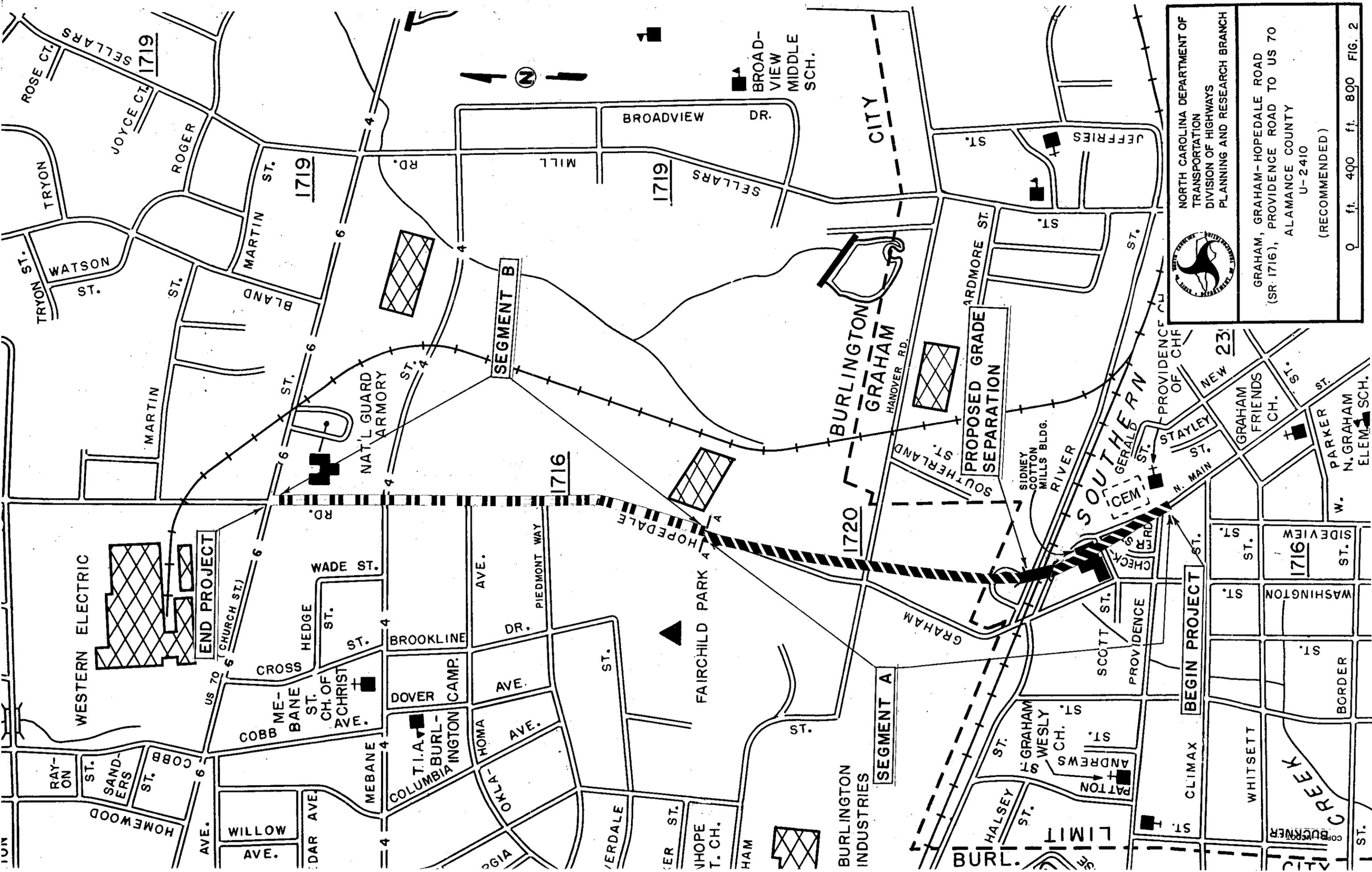
VICINITY MAP



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

GRAHAM, GRAHAM-HOPEDALE
ROAD (SR 1716), PROVIDENCE
ROAD TO US 70,
ALAMANCE COUNTY
U-2410

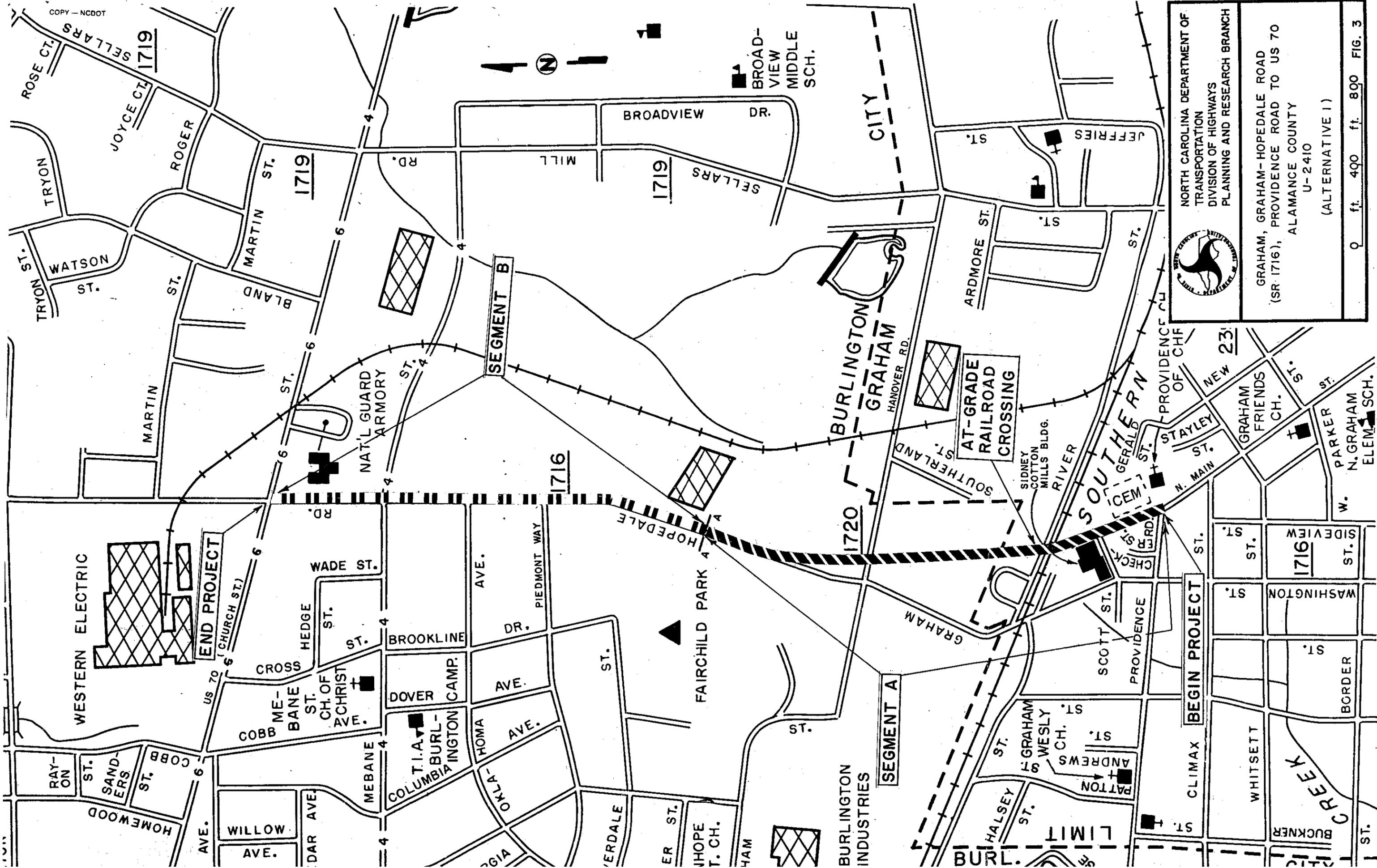
0 ft 2000 FIG. 1



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

GRAHAM, GRAHAM-HOPEDALE ROAD
(SR 1716), PROVIDENCE ROAD TO US 70
ALAMANCE COUNTY
U-2410
(RECOMMENDED)

0 ft. 400 ft. 800 ft. FIG. 2



NORTH CAROLINA DEPARTMENT OF
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DIVISION OF HIGHWAYS
PLANNING AND RESEARCH BRANCH

GRAHAM, GRAHAM-HOPEDALE ROAD
(SR 1716), PROVIDENCE ROAD TO US 70
ALAMANCE COUNTY
U-2410
(ALTERNATIVE 1)

0 ft. 400 ft. 800 ft. 3

END PROJECT
(CHURCH ST.)

BEGIN PROJECT

SEGMENT B

SEGMENT A

BURLINGTON
GRAHAM

BURLINGTON
INDUSTRIES

GRAHAM
WESLEY
CH.

SOUTHERN
RAILWAY

AT-GRADE
RAILROAD
CROSSING

NAT'L GUARD
ARMORY

FAIRCHILD PARK

BROAD-
VIEW
MIDDLE
SCH.

GRAHAM
FRIENDS
CH.
N. GRAHAM
ELEM. SCH.

ROSE CT.
SELLARS
1719

MARTIN ST.
1719

SELLARS
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1716

1720

1716

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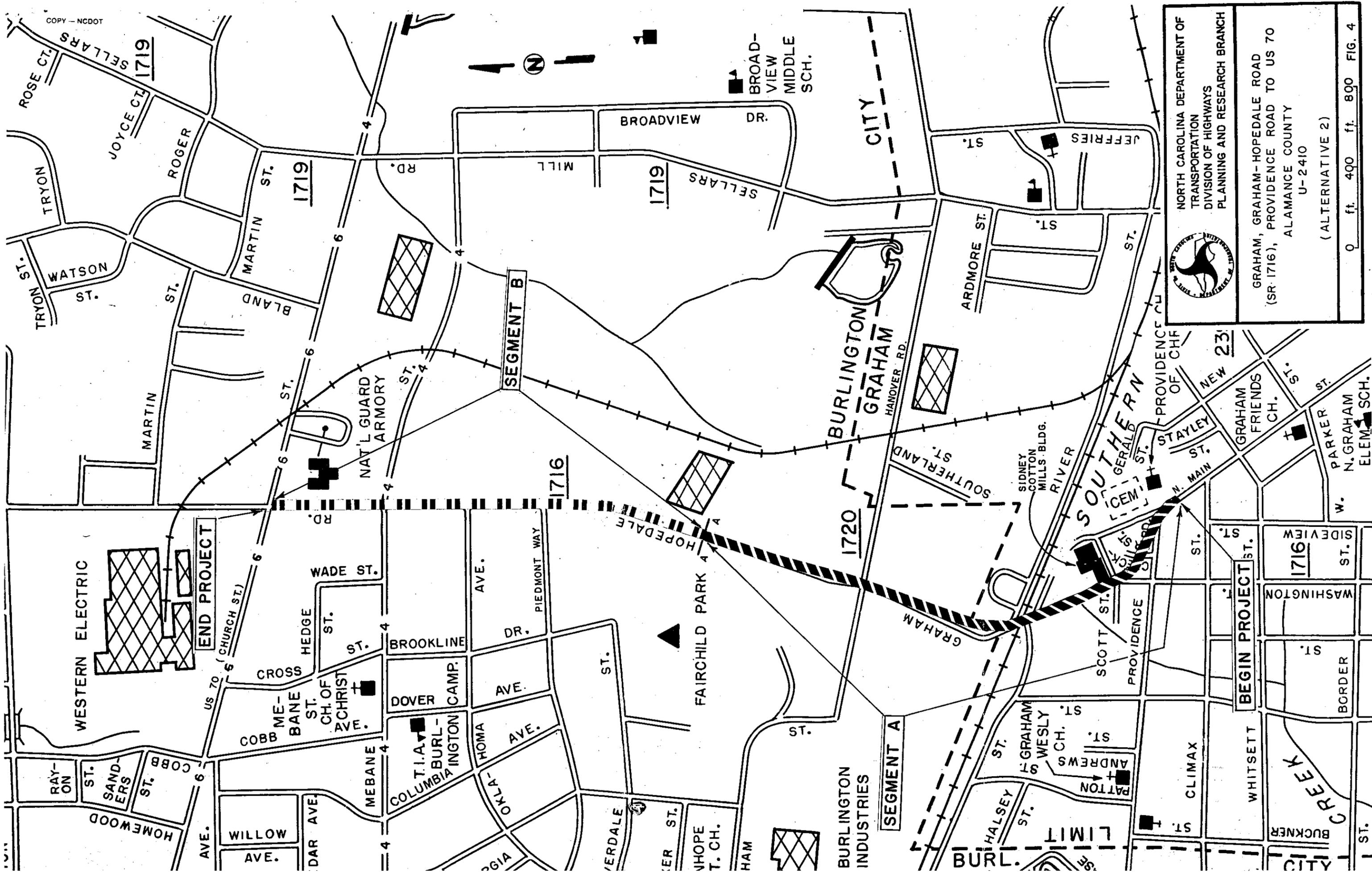
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(ALTERNATIVE 2)

0 ft. 400 ft. 800 ft. FIG. 4