

FEASIBILITY STUDY

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Greenville  
Bridge No. 411 on SR 1531 (Greene Street)  
over Tar River  
Pitt County  
B-2225

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

June, 1987

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over Tar River  
Pitt County  
B-2225

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 provides a brief analysis of possible improvements.

EXISTING CONDITIONS

Following is a description of Bridge No. 411 which is located immediately north of the Greenville downtown area:

Year constructed - 1927  
Type - Parker Camelback steel truss main span on concrete piers and reinforced concrete approach spans on untreated timber piers  
Length - 852 feet (200-foot steel truss and 652 feet of approach spans)  
Horizontal alignment - steel truss and one approach span on tangent; remaining approach spans on curve  
Clear roadway width - 24 feet 3 inches  
Vertical clearance (truss) - variable, ranging between 12 feet 2 inches and 14 feet 1 inch  
Operation - 2-lane, 2-way  
Raised sidewalk - 5 feet wide on east side of bridge  
Utilities - gas line and 8-inch water line attached underneath deck; steel light poles attached outside east rail  
Posted weight limits - 28 tons single unit vehicles & 33 tons TTST  
Sufficiency rating - 5.0 (January 1987)

The steel truss has been determined eligible for inclusion in the National Register of Historic Places.

Cross sections along SR 1531 in the area are as follows:

First Street to south end of bridge - 40 feet face to face of curbs  
with 7-foot sidewalk behind each  
curb  
North end of bridge to a point about 700 feet north - 24-foot pavement  
with 8-foot shoulders and gravel  
sidewalk on east shoulder  
700 feet north of bridge to a point about 1000 feet north - Pavement  
tapers from 24 feet to 48 feet  
(ff)

Pitt Street is also 40 feet (ff) and located west of and parallel to SR 1531. It dead ends immediately south of Tar River and has been proposed as the southbound leg of a one-way pair with SR 1531 in the Greenville Thoroughfare Plan (see Figure 4).

## TRAFFIC ESTIMATES

Estimated 1987 average daily traffic of 16,900 vehicles along SR 1531 at Bridge No. 411 is predicted to increase to 27,000 vehicles during the year 2007 based on the existing street system. Implementation of the SR 1531 - Pitt Street one-way pair by extending Pitt Street directly northward across Tar River to SR 1531 would result in an estimated ADT of 8500 vehicles on each bridge during 1987 and 13,600 vehicles, including about 135 TTST and 545 DTT, on each during 2007.

## OPTIONS FOR IMPROVEMENT

The following options were investigated for the project (see Figure 3):

- Option 1 - Extend Pitt Street across Tar River to SR 1531 north of the river and replace Bridge No. 411 at its present site
- Option 2 - Replace Bridge No. 411 about midway between its present site and the Pitt Street extension site of Option 1

Each of these options considers implementation of a one-way pair along Pitt and Greene Streets through the downtown area as proposed by the thoroughfare plan. Each includes provisions for maintaining both traffic and utility services during the construction period. Option 1 considers extension of the one-way pair north of the river whereas Option 2 considers merging the one-way pair immediately south of the proposed bridge.

Replacement of Bridge No. 411 at its present site without the Pitt Street extension as proposed in conjunction with Option 1 is not considered a good proposal for the following reasons:

- Traffic (16,900 vpd) would have to be detoured off-site during the construction period (at least 12 months)
- Disruption of services provided by utilities suspended from the existing bridge

The Bridge Maintenance Unit advises that rehabilitation of the present bridge in lieu of its replacement in conjunction with Option 1 is not a good proposal. Piers on the approach spans are deteriorating and have shifted somewhat. It would be very difficult, if not impossible, and expensive to increase its sufficiency rating to a minimum of 80 as required by federal standards. Also, its substandard clear roadway width and vertical clearance over the roadway at the truss span would remain.

COST ESTIMATES

Estimated costs of each option are as follows:

	<u>Option 1</u>	<u>Option 2</u>
Construction	\$ 4,550,000	\$ 4,150,000
Right of Way & Utilities	<u>128,000</u>	<u>409,000</u>
Total	\$ 4,678,000	\$ 4,559,000

A 2-lane width along both the Pitt Street extension bridge and along the Greene bridge is appropriate with Option 1 whereas a 4-lane bridge would be required with Option 2. Estimates include a sidewalk along the east side of the Bridge No. 411 replacement in conjunction with Option 1, and a sidewalk on the east side of the new bridge with Option 2. Provisions for attaching utilities presently carried by the existing bridge should be made on the Pitt Street extension bridge in conjunction with Option 1 and on the new bridge with Option 2.

COMPARISON OF OPTIONS

Option 1 offers superior operational characteristics when compared with Option 2. Option 2 requires somewhat restrictive horizontal alignments along the Pitt and Greene Street connectors between the south end of the new structure and the vicinity of First Street. Property damages to implement these connectors would be significant.

POSSIBLE ENVIRONMENTAL IMPACTS

The primary environmental impact of either of the options would be their effect on wetlands north of Tar River. Section 404 permits likely would have to be obtained from the U. S. Corps of Engineers prior to any work in this area. Other possible impacts on the natural environment are not presently considered to be of major consequence.

CONCLUSIONS

The Option 1 proposal is preferred due to its superior provisions for traffic operation and safety. Although its implementation may require an exception to present FHWA qualifying criteria for full funding eligibility under the Federal-Aid Bridge Replacement Program (FABRP), its total preliminary estimated cost is nearly identical to Option 2 which is the only reasonable proposal when strictly viewed from the qualifying criteria standpoint. Therefore, full funding of Option 1 under the FABRP is considered appropriate.

Further evaluation of each of the options presented in this report and associated environmental impacts in a planning/environmental document will be required in order to establish a final decision in regard to the most appropriate improvement.

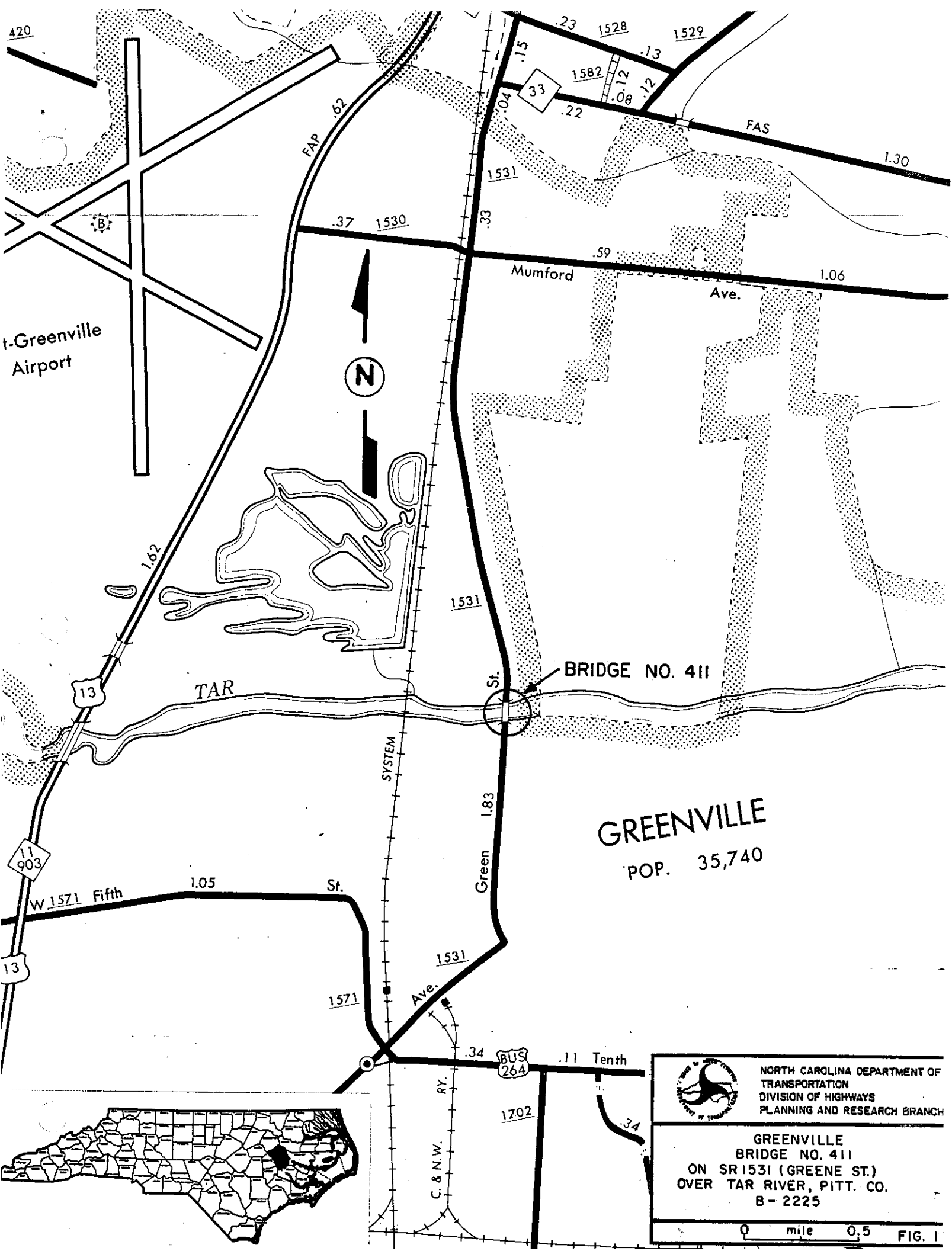
BASIS OF FINDINGS

Proposals contained in this study were based on the following:

- Field investigations
- The 1984 mutually adopted Greenville Thoroughfare Plan
- Contact with the Greenville Director of Transportation and Inspection

Construction cost estimates were based on 1" = 100' contour mapping and prepared by the Roadway Design Unit. Right of way estimates were made by the Right of Way Branch following a field review.

ONB/sdt



t-Greenville  
Airport

N

Mumford Ave.

TAR

BRIDGE NO. 411

GREENVILLE

POP. 35,740

Sr.

Green

Ave.

Tenth

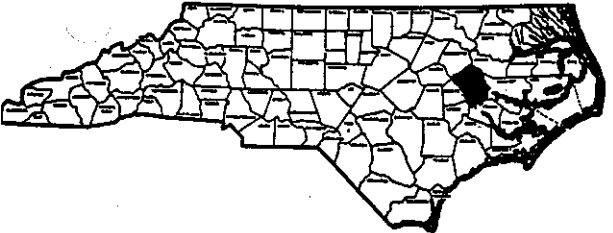
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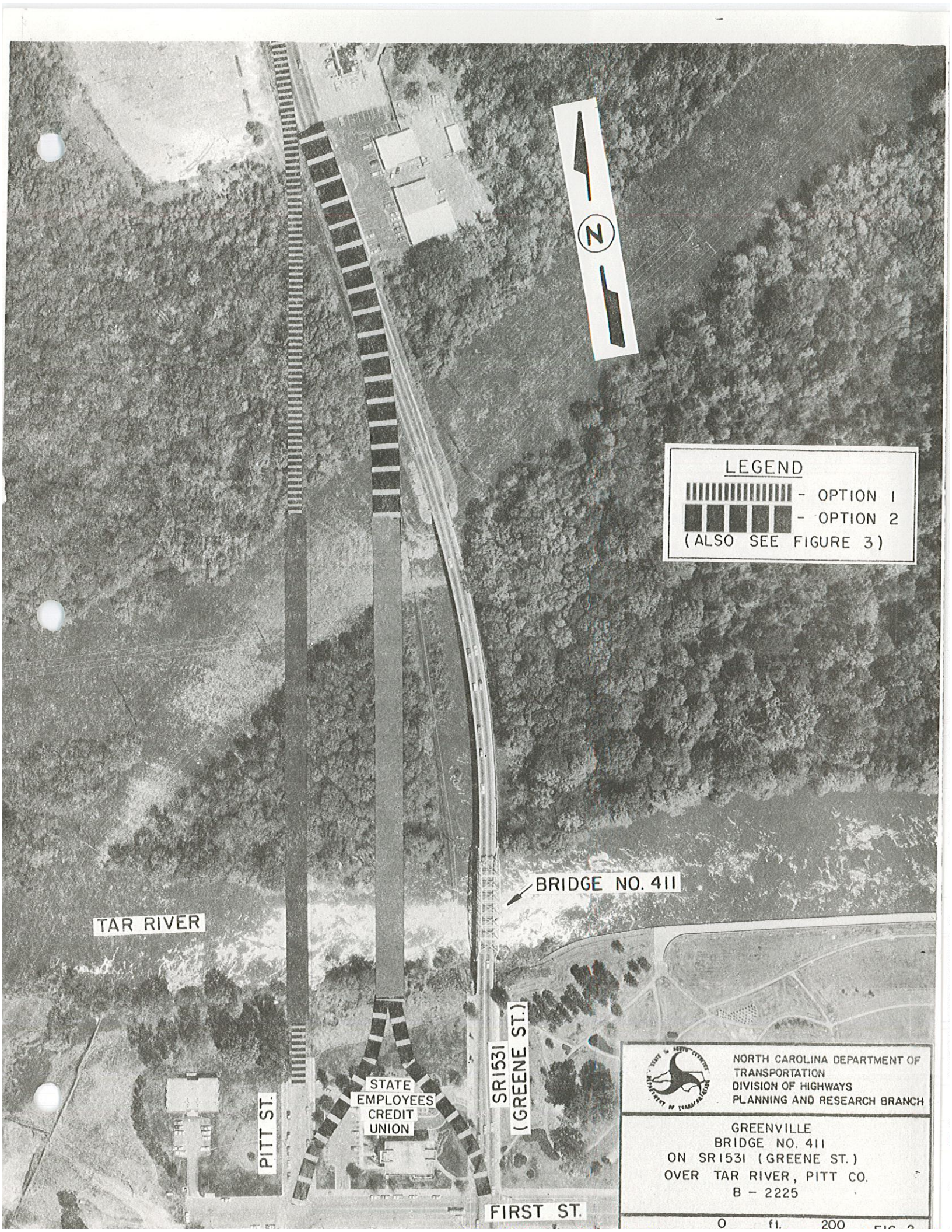


NORTH CAROLINA DEPARTMENT OF  
TRANSPORTATION  
DIVISION OF HIGHWAYS  
PLANNING AND RESEARCH BRANCH

GREENVILLE  
BRIDGE NO. 411  
ON SR 1531 (GREENE ST.)  
OVER TAR RIVER, PITT. CO.  
B-2225

0 mile 0.5 FIG. 1





N

**LEGEND**

||||| - OPTION 1

■ ■ ■ ■ ■ - OPTION 2

(ALSO SEE FIGURE 3)

TAR RIVER

BRIDGE NO. 411

PITT ST.

STATE  
EMPLOYEES  
CREDIT  
UNION

SR1531  
(GREENE ST.)

FIRST ST.



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GREENVILLE  
BRIDGE NO. 411  
ON SR1531 (GREENE ST.)  
OVER TAR RIVER, PITT CO.  
B - 2225

GREENVILLE PITT COUNTY; OPTIONS FOR REPLACEMENT OF BRIDGE NO. 411 ON SR 1531 OVER TAR RIVER

OPTION 1

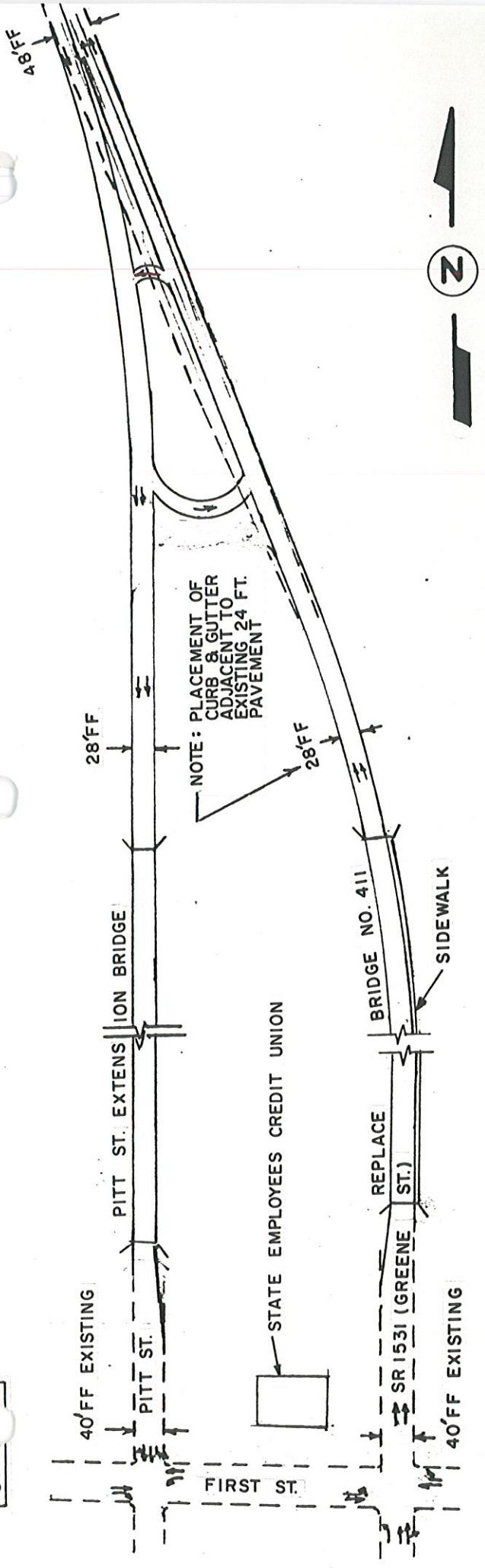
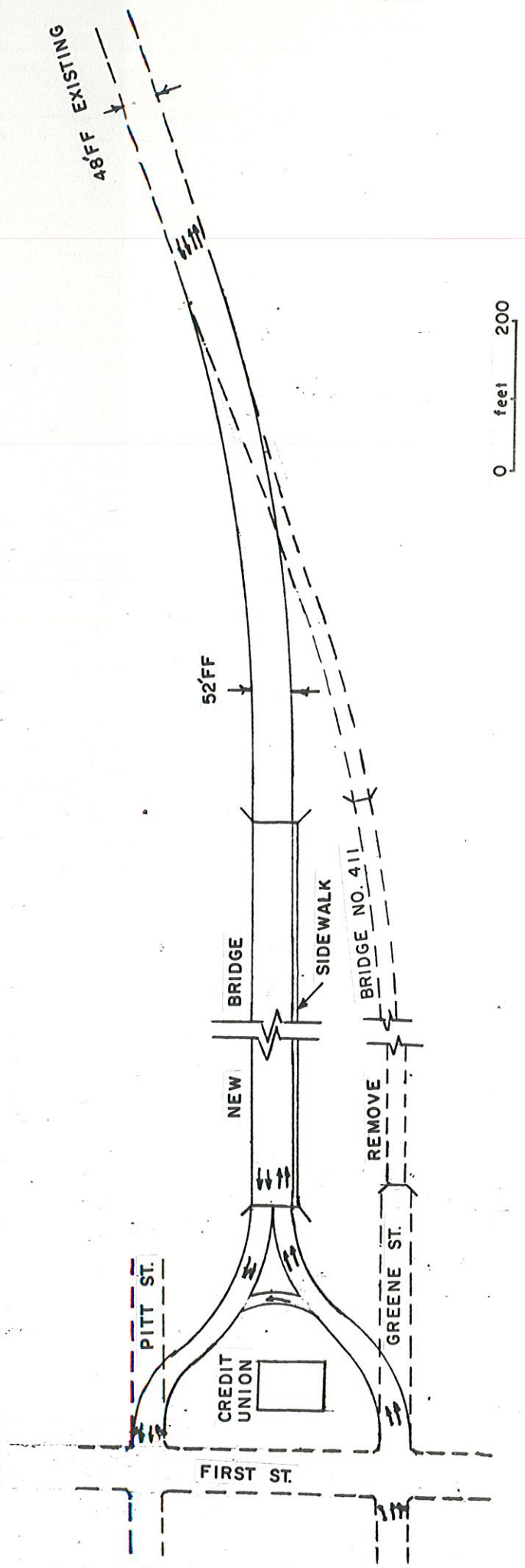


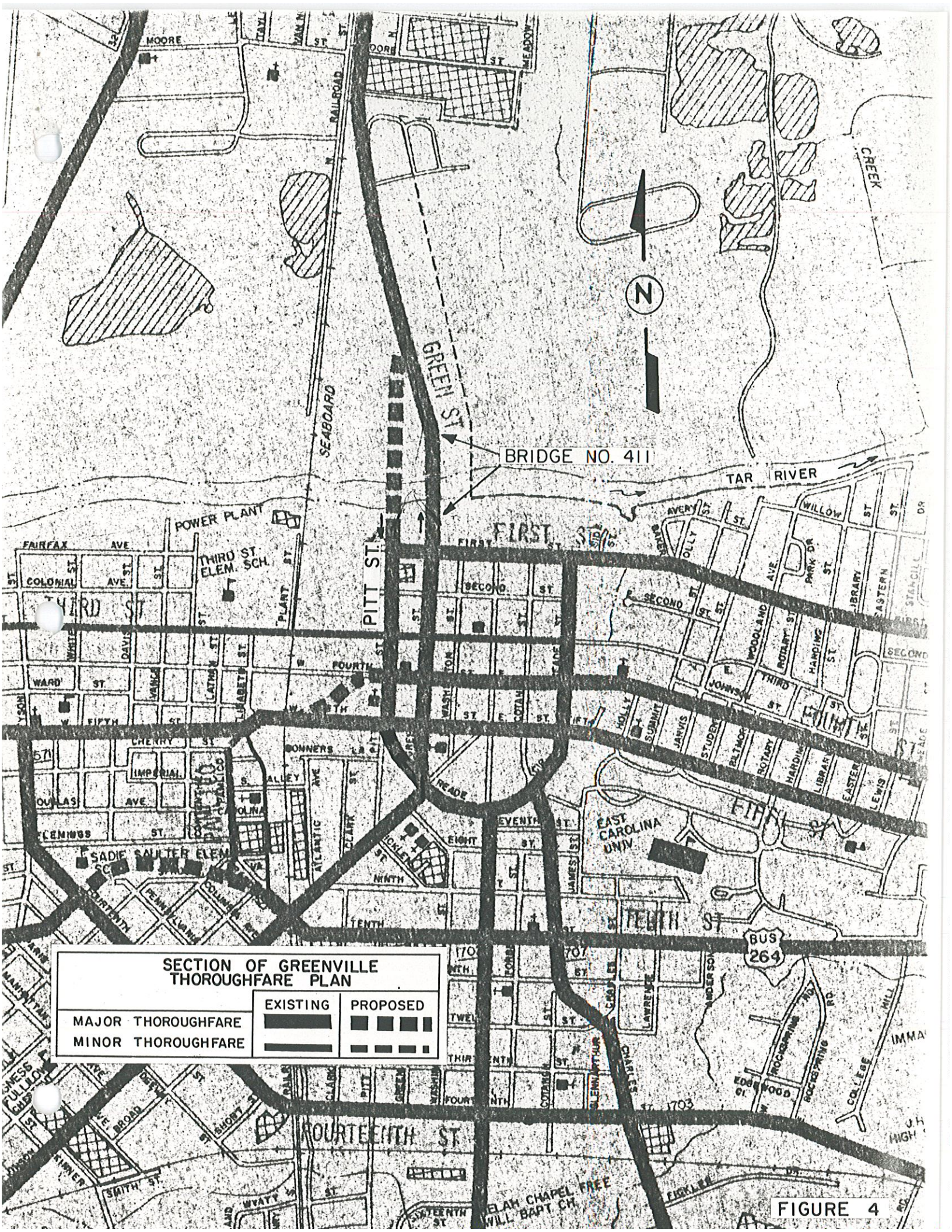
FIGURE 3

OPTION 2



0 feet 200





**SECTION OF GREENVILLE THOROUGHFARE PLAN**

	EXISTING	PROPOSED
MAJOR THOROUGHFARE		
MINOR THOROUGHFARE		

**FIGURE 4**