

FEASIBILITY STUDY

Second Bridge to Oak Island  
Brunswick County  
R-2245

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

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

I. GENERAL DESCRIPTION

The studied improvement would provide a new connector from NC 211 near Smith (see Figure 1) to Middleton Avenue in the Town of Long Beach. The project would include a high-level, fixed span bridge over the Intracoastal Waterway to connect Oak Island with the mainland.

II. PURPOSE OF PROJECT

Oak Island, located south of Wilmington, is separated from the mainland by the Intracoastal Waterway.

Currently, the only access to Oak Island is via NC 133 near the east end of the island. A two-lane, high-level, fixed span bridge crosses the waterway at this point. This bridge was constructed in 1974 after a barge demolished an old drawbridge which previously served as the only means of access to the island.

The principal areas of development on Oak Island are Long Beach, Yaupon Beach, and Caswell Beach. The majority of development is located on the eastern half of the island; however, development is intensifying and spreading rapidly westward. This results in a need for additional traffic service to the island.

Existing roads on the island are becoming congested, especially during the summer. The studied connector would provide a second means of access to the island, thus reducing travel delays and distance. A second access point would provide a more direct connection between the mainland and the western half of the island.

Another primary purpose of the project would be to provide a means of emergency egress in the event of a disaster at the Brunswick Nuclear Plant near Southport. If any evacuation were necessary, residents of the island would be required to drive toward the nuclear plant, passing within two miles of the facility.

Initially, the proposed connector would serve approximately 5600 VPD. Ultimately, this traffic volume would increase to approximately 9400 VPD by the end of the 20-year planning period.

### III. RECOMMENDED IMPROVEMENTS

The most feasible method of providing additional access to Oak Island is to extend SR 1105 (Middleton Avenue) across the waterway at a point referred to as "Yellow Banks". The extension would intersect NC 211 at Smith where SR 1500 extends north to US 17 just south of Bolivia.

Middleton Avenue is a major north-south street and the only street on the western half of the island which extends across Davis Creek to the beach. It is located 5.5 miles west of the existing bridge and has a 100 ft. right-of-way. Part of the street is on the State System and the remainder is the responsibility of the Town of Long Beach.

On the mainland, the studied improvement consists of a connector on new location for a distance of 3.7 miles. A two-lane (24-foot) roadway with 10-foot shoulders would be constructed initially. A right-of-way width of 150 feet should be acquired to accommodate an ultimate four-lane, undivided roadway. Partial control of access is recommended.

On the mainland side of the waterway, the studied facility would be on new alignment through an area that is presently inaccessible.

The bridge over the waterway would have a 30-foot clear roadway width, a 65-foot vertical clearance, and a  $\pm$  1250-foot length.

On the island side of the waterway, the fill required for the bridge approach would necessitate raising the grade of Middleton Avenue for a distance of approximately 700 feet from the waterway.

Yacht Drive, an existing non-system street in Long Beach, parallels the Intracoastal Waterway. This street will 30 to 35 feet below the proposed bridge and should remain in place underneath the structure.

### IV. ALTERNATIVES

Past studies have concluded that the recommended alignment is the most feasible location for a new highway facility. Middleton Avenue is the only north-south street that is continuous across the island. When the island was subdivided, a 100-foot right-of-way width was reserved along Middleton Avenue.

The "Yellow Banks" location is ideally suited for a structure over the waterway. Elevations at this point are 20 to 30 feet above sea level. Therefore, it is easier to achieve the required 65-foot vertical clearance over the waterway.

It has been assumed that a two-lane structure and approaches on the island will be adequate. It may become necessary to evaluate a four-lane structure and approaches. A major development is being contemplated on the mainland near the bridge site. If this development materializes, traffic volumes will be substantially higher than those included in this report. As a result, it may become necessary to acquire four-lane right-of-way on the island. This would substantially increase the number of

relocatees and the project costs outlined in this report.

#### V. ENVIRONMENTAL IMPACT

The primary impacts of the project are expected to be positive. Improved access will benefit the entire area.

Possible adverse impacts include: (1) relocation of four families; (2) disruption of wetlands; (3) conversion of woodlands to highway purposes; and (4) increased noise levels.

#### VI. ESTIMATED COST

The estimated cost of studied improvements is as follows:

Structure	\$ 2,060,000
Approaches	3,840,000
Right-of-Way	600,000
Total	<u>\$ 6,500,000</u>

#### VII. SCOPE OF STUDY

Construction cost estimates, furnished by the Roadway Design Unit, were based on a county map for the portion of the project on the mainland. A inch = 200 feet aerial mosaic was utilized for the portion on the island. Right-of-way estimates, made by the Planning and Research Branch, were based on the same mapping. Only sketch designs were utilized to approximate bridge length, right-of-way requirements, etc. Right-of-way limits on the island can only be approximated until preliminary designs are prepared.

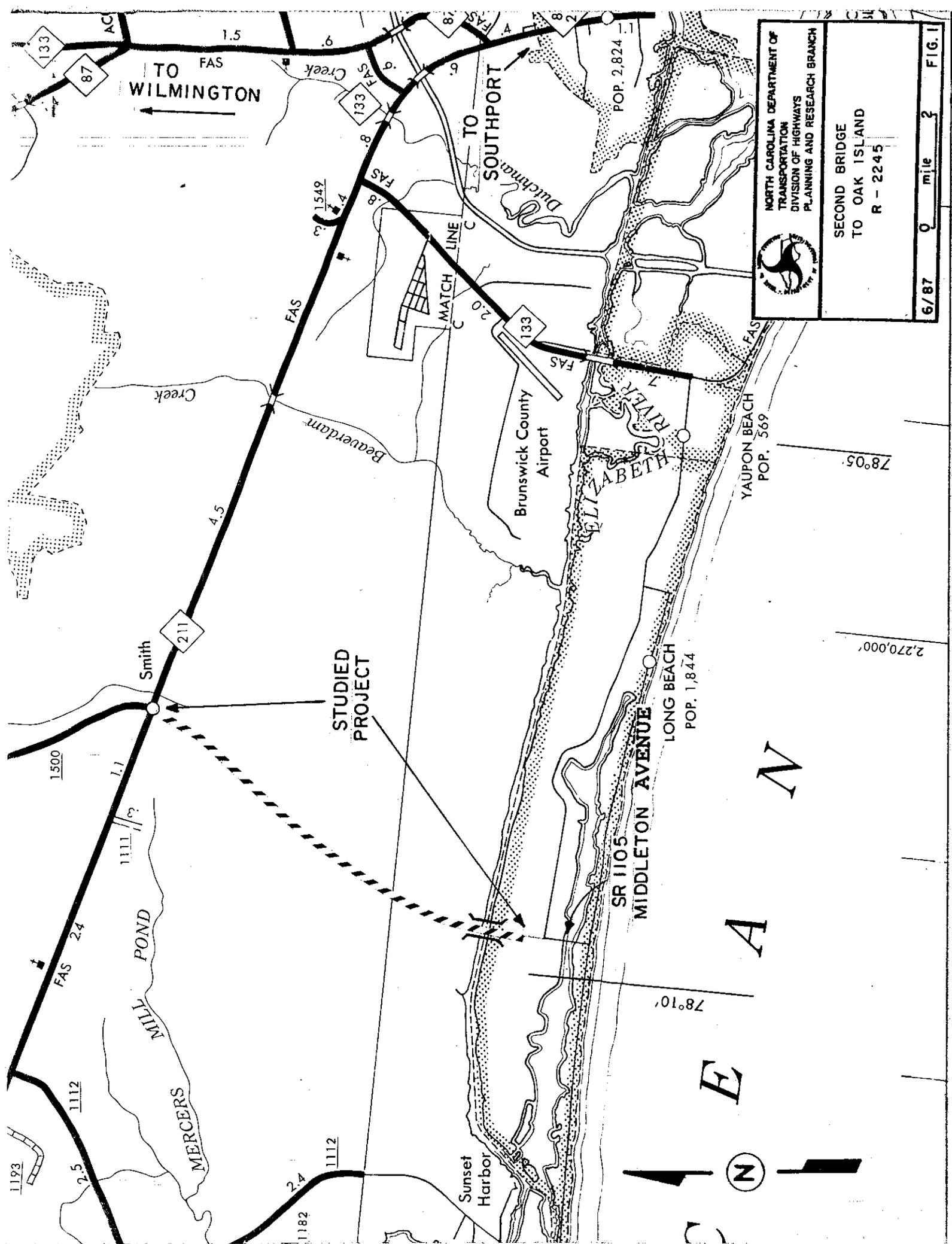
#### VIII. SUMMARY

Provision of a second bridge to Oak Island is desirable and justifiable. For several years, local officials and residents have sought a second means of access that would connect the western half of the island to the mainland.

Several discussions have taken place with local officials and developers who have expressed an interest in participating in the cost of the project.

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.

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

SECOND BRIDGE  
TO OAK ISLAND  
R - 2245

6/87 0 mile 3 FIG. 1

STUDIED  
PROJECT

N  
E  
A



2,270,000'

78°05'

78°10'

TO WILMINGTON

TO SOUTHPORT

MILL POND  
MERCERS

Brunswick County  
Airport

SR 1105  
MIDDLETON AVENUE

LONG BEACH  
POP. 1,844

YAUPOON BEACH  
POP. 569

POP. 2,824

FAS

FAS

FAS

FAS

FAS

Creek

Beaverdam

Dutchman's

MATCH LINE

Smith

211

Sunset  
Harbor

1500

1111

FAS 2.4

1112

2.5

1182

1112

1549

7.4

8

2.0

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1.9

8

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