

FEASIBILITY STUDY

US 70
Beaufort Channel Drawbridge
Carteret County Bridge No. 29
B-2224

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

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This feasibility study provides a brief, initial analysis of possible improvements and preliminary estimated costs for replacement of the subject crossing. This project is not currently funded but is included in the Transportation Improvement Program for feasibility study.

I. GENERAL DESCRIPTION

The proposed project involves improvements at the existing 2-lane drawbridge on US 70 on the west side of Beaufort in Carteret County (see Figure 1 for location). Provisions for a high-rise, 4-lane span of this channel appear feasible.

II. PURPOSE OF PROJECT

The subject drawbridge has a ± 15 -foot vertical navigational clearance (with the draw span in closed position) and carries an average of more than 15,000 vehicles daily. Frequent openings of the span for waterway traffic during the summer months when highway traffic is heaviest cause many vehicles to be delayed. Even without the congestion created by the openings, the anticipated design year traffic volumes will exceed the capacity of this two-lane bridge. The provision of a new crossing with additional lanes will alleviate congestion in this rapidly developing area. The provision of a high-rise crossing to eliminate openings and the necessary delays will eliminate equipment and operating cost and provide an improvement with a much greater capacity for accommodating traffic demand.

The project has received strong local support. The Board of Commissioners of the Town of Beaufort passed a resolution in February 1985 requesting NCDOT to study and construct a high rise bridge at this location. Requests for the project have also been made by the County of Carteret and the Carteret County Economic Development Commission during the area Transportation Improvement Program update hearings.

III. Existing Conditions

Bridge No. 29, a 673 feet long double leaf bascule bridge with a 28-foot clear roadway width and three-foot walkways on each side, was constructed in 1957. It is rated in fair overall condition with a 22 year remaining life. Currently, Bridge No. 29 has a sufficiency rating of 48.8. It has a posted weight limit of 28 tons for single unit vehicles and 34 tons for combination trucks. The existing bridge has navigational clearances of 60-foot horizontal and 15-foot vertical (with draw span in closed position) over Beaufort Channel. Operating costs of this draw span have averaged approximately \$100,000 annually over the last several years.

In 1986, Bridge No. 29 carried an average daily traffic (ADT) volume of 15,400. Traffic on the existing bridge operated near capacity, at LOS E, on summer weekends in 1986. The design year (year 2006) traffic demand estimate is 29,000 (ADT) for the existing bridge. This figure is expected to grow to around 35,000 on design year summer weekends. Based on nearby manual intersection counts, summer weekend traffic exceeded the ADT by ± 20 percent. Peak hour traffic amounted to approximately eight percent of the 24 hour total.

The draw span opened a total of 4,707 times (in 1986) delaying an estimated 515,000 vehicles. The average time the bridge was closed to highway traffic per draw opening was 3.5 minutes. The greatest number of draw span openings in 1986 occurred in July when the draw opened 661 times. The maximum number of draw openings in a single day also occurred in June when there were 31 openings. The majority of vessels passing through the open draw were commercial (work) vessels but there were also a large number of sailing vessels. Yachts accounted for the small remaining percentage of vessels passing through the open draw span.

In 1983, restrictions were placed on opening the crossing to pleasure craft during the summer months. Since that time, from May 1 through October 31 the draw span only opens on the hour between 7 AM and 7 PM for pleasure craft except for emergencies. This restriction initially helped reduce the number of openings, but in 1986, the maximum number of openings in one month (661) exceeded the 1982 maximum number of openings in one month (589) when openings were not restricted.

An alternate navigational route is available for Beaufort Channel users via the Newport River and under the US 70 bridge at that location which provides 65 feet of vertical clearance. According to the Beaufort Channel bridge tender, there is an occasional vessel which cannot pass under the US 70 Newport River bridge due to mast height and high tidal conditions so they use Beaufort Channel. The bridge tender also said "a good number of high vessels" pass through the open draw span ("high vessels" would likely require a 65 foot vertical navigational clearance). Seasonal observation of vessels moored at the Beaufort waterfront confirm the bridge tender's statement.

Restriction of the currently unlimited vertical clearance (when draw span is open) to a fixed span bridge with less than 65 feet of vertical clearance would be an inconvenience to Inland Waterway travelers with stopovers in Beaufort. Vessels unable to use Beaufort Channel due to restricted vertical navigational clearances would have to use Newport River and increase their Inland Waterway journey by $2.7 \pm$ miles (for a stopover in Beaufort). Justification for a fixed bridge with less than 65 feet of vertical navigational clearance should include documentation on the height of vessels using Beaufort Channel. This requires contacting vessel owners which was not done in this preliminary study.

IV. Alternatives Considered

Aerial photography and cursory field investigations were used in determining possible relocation alternatives. Two alternate locations were selected for further evaluation (Figure 2).

Alternate 1 is located adjacent to the existing bridge on the north side. This alternate makes maximum use of existing approaches and has the least adverse environmental impact on the natural environment. It does, however, have the same disadvantages as the existing bridge in that the eastern approach is through the center of Beaufort. Alternate 1 displaces seven businesses, one sewer lift/pumping station, and three families.

Alternate 2 crosses further north across Beaufort Channel and Town Creek estuary to tie into SR 1170 (West Beaufort Road) at the Beaufort - Morehead City Airport. It provides a bypass of central Beaufort but requires major improvements to SR 1170, an 18-foot wide road, to bypass central Beaufort, and to 24 to 32-foot wide (varies) SR 1174 (Turner Street) for access to Beaufort (see Figure 2). Alternate 2 displaces five businesses and 21 families. The Alternate 2 alignment will substantially alter existing traffic patterns and affect the airport operation.

Cost estimates for both Alternates 1 and 2 provide four travel lanes with a five-foot walkway/bikeway on each side for a total out-to-out structure width of 60.8 feet. Both estimates are based on a 65-foot vertical clearance over the waterway.

Current estimated costs for bridge replacement Alternates 1 and 2 follow. These estimates include \$105,000 for removal of the existing structure and are based on a maximum thirty foot high fill due to sandy soil and wind erosion. Bridging is required at elevations over thirty feet.

V. Estimated Cost

	<u>Alternate 1</u>	<u>Alternate 2</u>
Approaches	\$ 1,592,000	\$ 3,457,000*
Structure	9,460,000	13,690,000
Structure Removal	105,000	105,000
Engineering and Contingencies	1,668,000	2,171,000*
Right of Way	<u>2,620,000</u>	<u>4,000,000</u>
TOTAL	\$15,445,000	\$23,423,000*

*Includes 4,500± feet of improvements to SR 1170 and 2,000± of improvements to SR 1174.

VI. Environmental Concerns

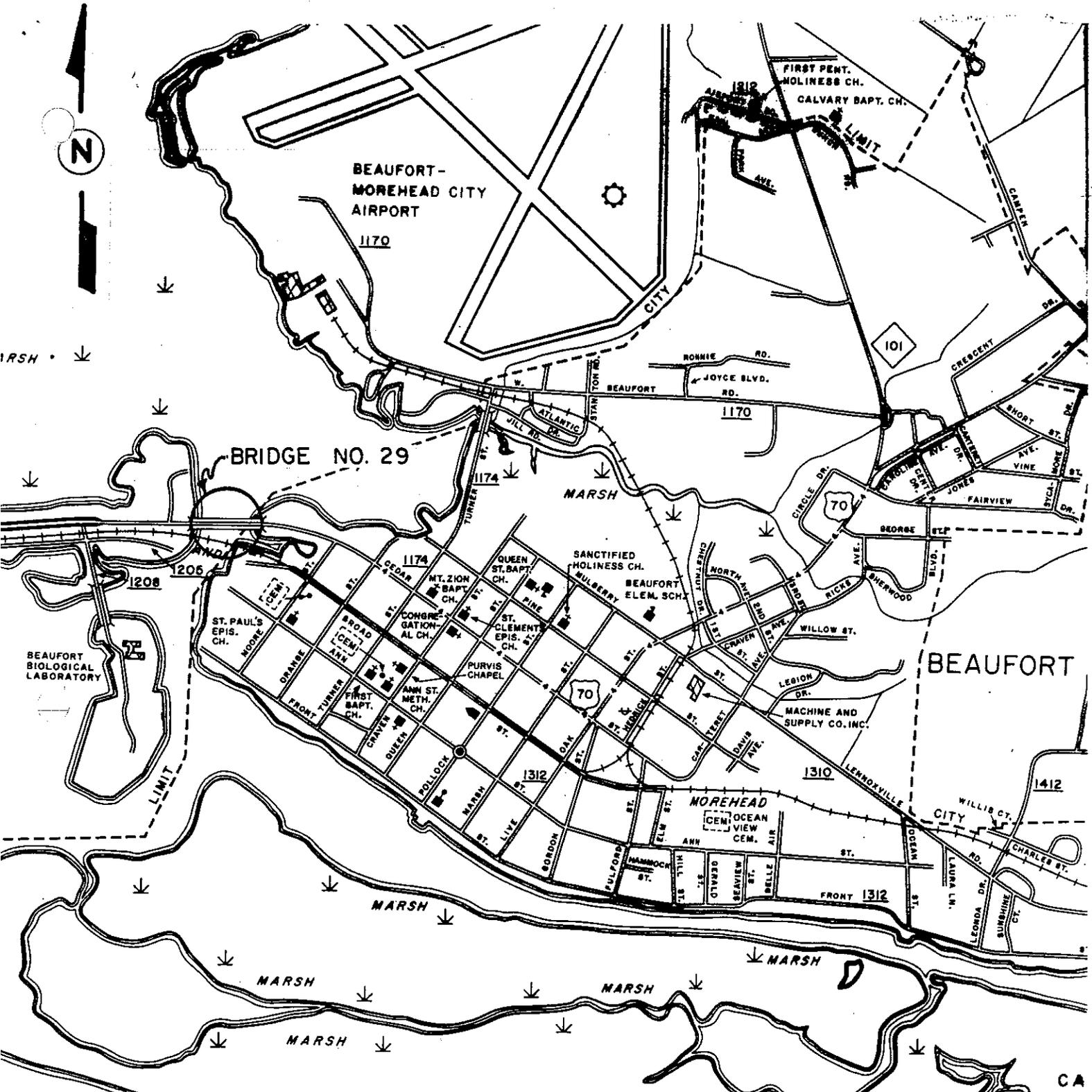
Permits from the Corps of Engineers, the U. S. Coast Guard and the NC Office of Coastal Area Management will be needed for any replacement of the subject crossing. Therefore, an in-depth study of each alternative will be required to justify a recommended alignment, length and vertical clearance of the crossing. The in-depth study should also include acreages of the various types of wildlife habitat, commercial and residential development, and recreational facilities which are present and will be affected. The necessary permits and approvals will require mitigation of these affects. Therefore, such a study will require a substantial commitment of time and personnel to determine specific recommendations and proper mitigation.

VII. Conclusion

Increasing traffic demands make the replacement of this crossing inevitable. The existing crossing is currently eligible for Federal-Aid Bridge Replacement funds. Therefore, due to the time required to develop recommendations and negotiate approvals for such a major expenditure, this project should receive a priority for inclusion in the Transportation Improvement Program if only for future right of way protection. Also, it can be noted that this is the type of project for which it is desirable to have replacement plans in an advanced state of readiness to be in a position to take timely advantage of possible, unanticipated funding opportunities.

It is not possible at this stage of study to make a determination as to which alternative would provide the best balance of cost, traffic service, local acceptance, and environmental impacts.

JKB/plr



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

US 70, CARTERET COUNTY
BRIDGE NO. 29 OVER BEAUFORT CHANNEL
IN BEAUFORT
B - 2224

5/87
0 ft. 1300
FIG. 1



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US 70, CARTERET COUNTY
BRIDGE NO. 29 OVER BEAUFORT CHANNEL
IN BEAUFORT

5/87 0 ft. 500 FIG. 2



AIRPORT

US 70

ALTERNATE 2

BRIDGE NO. 29

BEAUFORT CHANNEL

ALTERNATE 1

SR 1174 TURNER ST.

BEAUFORT ROAD

SR 1170

CEDAR ST. US 70

OAK ST.

US 70