

R-2576 Mid-Currituck Bridge

Attachment 4:

# **Construction Narrative, February 21, 2024**

## R-2576 – Construction Narrative

A construction approach for the Mid-Currituck Bridge project has been identified by NCDOT for the basis of determining project-related permit impacts stemming from the construction method. This construction approach has been derived through past project communication with potential bridge contractors, current project design plans, existing site conditions, and the experience of NCDOT staff with similar coastal bridge projects. Construction means and methods will ultimately be the responsibility of the selected project construction contractor. Changes in the construction approach may necessitate a modification of the permit applications and further discussion with the permitting agencies.

### General Approach

Land-based construction activities will be concentrated at three primary locations: 1) the US 158 interchange area, 2) the Aydlett area between the Maple Swamp Bridge and the Currituck Sound Bridge, and 3) the NC 12 area. These three areas include the bulk of the non-bridge construction including roadway, hydraulics, and access for bridge construction. In addition to these three primary construction areas, there will be smaller activity areas at Albacore Street east of NC 12 in Corolla and US 158 east of the Wright Memorial Bridge in Southern Shores in Dare County.

The roughly 1.5-mile-long Maple Swamp Bridge (Sta. 22+45 to Sta. 100+88) will be constructed from each end using a combination of construction mats and construction trestle. This bridge connects the US 158 interchange area with the Aydlett area. Bridge construction materials will be supplied from each end of the bridge.

Construction mats will be used in Maple Swamp on both the west and east ends of the bridge. This will extend on the west for 1,055 feet (Sta. 22+45 to Sta. 33+00) and on the east for 788 feet (Sta. 93+00 to Sta. 100+88). A 40-foot-wide matting area will be used along the north side of the proposed bridge location plus matting under the proposed bridge. During clearing the tree stumps will be cut at ground level followed by the installation of fabric so that all the mats/fill can be removed after construction. No compression of the soil is anticipated as this has not been an issue previously, but should this occur NCDOT will work with the Resident Engineer and the appropriate environmental and regulatory agencies to remediate the site if needed.

A closed deck construction trestle (40 feet wide) will be used for the construction of most of the bridge length (6,000 feet) between the two areas of construction matting (Sta. 33+00 to Sta. 93+00). The trestle will be located on the north side of the proposed bridge. A trestle finger will be used at each bridge pile bent (40-foot width and 30-foot length for each trestle finger). Steel pipe piles (30-inch diameter) will be used as the substructure for the temporary trestle.

The Currituck Sound Bridge is about 4.7 miles in length (Sta. 118+05 to 364+70). The bridge will be constructed using a combination of construction trestles and in-water construction barges. Construction trestles will be used on both the west and east sides of Currituck Sound where the water depths are shallow (generally less than 6 feet deep) and may be habitat for submerged aquatic vegetation (SAV). Barges would be used in the middle areas of the sound where the water is deeper.

There will be two closed-deck trestles on the west side of Currituck Sound and north of the proposed bridge – one (40 feet wide) for construction of the bridge and one (40 feet wide) for delivery of

materials to barges. These trestles will extend 2,040 feet into Currituck Sound and each would be supported by four 30-inch diameter steel pipe piles at each bent on 40-foot spacing. The material supply trestle will widen to 80 feet for the last 120 feet at the east end to support vehicle turnaround and barge loading.

There will be two open-deck trestles on the east side of Currituck Sound – one construction trestle along each side of the bridge. The reason for the two trestles is the added width of the bridge as it approaches the barrier island. The reason for the open-deck trestles is to allow sunlight to reach submerged aquatic vegetation habitat. Each of these trestles will be used for both construction and material supply. Some materials may be supplied from the completed bridge spans when available. The trestle on the north side of the bridge will be 560 feet long and the trestle south of the bridge will be 8,800 feet long. Both trestles will be 40 feet wide supported by four 30-inch steel pipe piles per bent on 40-foot spacing.

In-water construction barges will be used for bridge construction and material supply between the trestles on the west and east sides of Currituck Sound (about 2.6 miles). This approach will keep barge operations in areas of deeper water and away from areas of submerged aquatic vegetation habitat.

Barges with cranes will be used for various bridge-building activities including pile driving, pier cap construction, beam setting, and deck placement. Multiple barges with cranes will be at work simultaneously in Currituck Sound – some for pile driving, others for setting pier caps and beams, and others for deck placement. There will be multiple construction operations using barges with cranes at work in different locations in Currituck Sound simultaneously. Each of these barges with cranes will use spuds to stabilize the barges during construction activities.

Additional barges will be used to carry materials from the west material supply trestle to the various construction operations in Currituck Sound. These barges will generally be mobile during periods of work that involve moving materials from the west trestle to the needed location. Workers will be delivered to the various barges in Currituck Sound by either boat or a material barge.

#### Materials – Fabrication and Delivery

Generally, all materials for this project will be resourced from off-site and delivered to the project site. The materials will be delivered by truck to one of three primary construction locations. The final determination of the method of materials delivery will be decided by the successful contractor that is awarded the project based on their final design and construction methods.

For this construction approach, the two major bridges (Maple Swamp Bridge and Currituck Sound Bridge) will be constructed with concrete bridge elements. This will include prefabricated concrete piles with a concrete cap for the bridge substructure. Prefabricated, prestressed concrete beams would be used along with a concrete deck for the superstructure.

#### Storage

It will be advantageous to store construction equipment and materials at the project site. The most likely locations for storage would be at the US 158 interchange area and in Aydlett near the material supply trestle to Currituck Sound. The NC 12 construction area could have some storage area, but it would be restricted in size due to the limited land area at this location.

## Scheduling and Means/Methods

The construction of this project is anticipated to take about four to five years. The construction moratorium on bottom disturbing activities in the areas of submerged aquatic vegetation (SAV) will affect the production schedule for the construction. Pile driving activities and removal of temporary piles will not be allowed in SAV areas between February 15 and September 30 of any given year. Turbidity curtains will be used when pile driving and pile removal in SAV areas to minimize the spread of bottom surface materials. All piles (permanent and temporary) will be hammer-driven or vibrated into place. No jetting of piles will be allowed on the project.

Specifics on construction means and methods are the responsibility of the selected contractor. This approach for the construction is to establish a reasonable methodology to determine the associated impacts for inclusion in the project permit applications.