



**Project:** Marina Renovation

**Client:** Safe Harbor Oxford, MD

**Prime Contractor:** Dissen & Juhn Company

**Engineer:** Davis, Moore, Shearon & Associates, LLC

**BACKGROUND**

Safe Harbor Oxford, formerly Brewer Oxford Boat Yard & Marina, like many marinas throughout the Chesapeake Bay, had fallen into disrepair and obsolescence after decades of use, and damage by marine borers.

Lack of adequate maintenance and modernization had taken its toll, and the marine infrastructure was simply worn out. In 2017, Safe Harbor Marinas acquired Oxford Boat Yard & Marina, and made a commitment to renovate and rebuild the deteriorating marina. Dissen & Juhn Company of Stevensville, MD, was hired to do the work, which began in 2020, and was completed in time for the 2021 boating season.

**GOALS AND OBJECTIVES**

The goal of the two phase project was to rebuild the marina and to do so not only with the priorities of today’s boaters in mind, but also with the determination to build it better and stronger to withstand the storms that can batter the Eastern Shore from time to time, while also accommodating anticipated sea level rise.

Phase 1 work included:

- Replacing the entire 962 LF timber bulkhead with a heavy vinyl bulkhead.
- Replacing the deteriorating fixed timber docks in the facility’s west basin with a new 6’W x 380’L floating main dock with 10 quantity 3’W x 24’L finger docks for a total of 20 slips. Each slip was supplied with 30 amp electrical service and water.
- Installing a new and larger floating fuel dock.
- Constructing one 20’L, one 40’L, and two 60’L fixed timber finger docks on the north side of the marina which is subject heavier wave climate.

Phase II work included:

- Dredging 3,750 cubic yards of sand, silt and clay from the marina’s east basin.
- Replacing all the remaining fixed timber docks with new floating docks for a total of 47 new slips ranging in size from 25’ L to 50’ L with added room on the 83’L and 103’L “T” heads.
- Upgrading all electrical and water systems.



**CHALLENGES AND SOLUTIONS**

As is the case with many marine construction projects, unanticipated challenges arise. The Safe Harbor Oxford project was no exception. For this project, varying site conditions posed significant design challenges so that no one bulkhead design would satisfy the total requirement. Part of the new structure was anchored with conventional steel tie rods and timber deadman piles.

However, where the bulkhead ran along a town road, there was no room for deadman piles, so the sheeting was driven in “cantilever.” In this design approach, the supporting bulkhead piles, which form the backbone of the structure, are driven closer together for greater strength, and the sheet piles are driven sufficiently deep so that they don’t need to be tied down with an anchor.

And lastly, where the new bulkhead passed in front of the marina office building, the fuel pier, and the swimming pool, it was supported with “batter” piles. Here the timber piles were driven at an angle to support, or buttress, the new bulkhead from the front. Three different design approaches were executed, each to address a specific site requirement.

