

OFFSHORE ENGINEERING INC.  
MARINE CONTRACTOR

P.O. BOX 4403

VINEYARD HAVEN MA. 02568

LICENSED AND INSURED

PROPOSAL

TO

TOWN OF CHILMARK  
DUTCHER DOCK BOLT  
REPLACEMENT

ATTENTION

RYAN ROSSI

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[offshoreengineering@comcast.net](mailto:offshoreengineering@comcast.net)

# OFFSHORE ENGINEERING INC.

## REPORT ON DOCK CONDITION:

### Dock Construction:

The dock is constructed with 4 x 12 cross members supporting the 3-inch decking.

The cross members are bolted to the pilings on one end. The other end is bolted to a steel bracket that is welded to the sheet steel wall.

These cross members serve three purposes:

1. They support the decking which is nailed into the cross members
2. They provided support for the piles when a vessel bumps the pile and pushes it towards the steel bulkhead. This bumping is a normal action that occurs when the vessel is docking and while it is tied up.
3. They hold the pile in place when a vessel pulls the pile away from the steel bulkhead. As can happen in high winds and when a surge is in the harbor.

### Bolt Deterioration:

During the emergency repair of the dock last week it was discovered that the 2  $\frac{3}{4}$  inch bolts that secure the 4 X 12 cross member to the steel bracket were in very serious condition.

The Brackets themselves show deterioration but appear to be in good enough condition to service the docks needs for the next 15 years.

The bolts show deterioration where they pass through the steel bracket. It was found after examining the bolts from the 7 brackets that were replaced, that the most significant deterioration was inside the pile on the threaded end of the bolt. The salt water appears to enter the treads from the back side and eroded the bolt down to almost nothing.

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### REPAIRS REQUIRED:

It is our opinion that all the bolts in the Approximately 81 brackets remaining on the dock need to be replaced immediately to ensure not only the safety of those walking on the dock but for the vessels secured to the dock in a storm.

The most economical time to replace the bolts is before they completely fail, and the cross members drop down. For a time, they will be somewhat supported by the cross members on each side until they fail. At which point a section of the dock will sag. When this sag occurs the geometry of the dock begins to change, and it can be quite time consuming to get everything back into place to be re-bolted at that point.

### Repair Method:

There are approximately 81 brackets to be re-bolted in the 600 feet of dock.

Unfortunately, as worn as the bolts are, there is still a section of the bolt towards the middle of the pile that is still a full diameter. This section must be driven out by hand mallets and drift pins.

The most effective way to do the work is from the top. This allows the best access for the workmen and allows work to be done during almost all of the tide cycle.

The 80-foot barge would be spudded next to the dock

The most inshore plank which is under the inshore 6x8 beam will be lifted out of the way and the brackets will be accessible for repair. Once the repair is made the plank and beam will be reset and refastened to the cross members. The stairs will be removed and refastened as required.

In this manner only 80 feet of dock need to be closed at one time. The dock can be made available for foot traffic during non-working hours.

### PROJECT COST: –

Mobilization cost 4000.00 (will be waived if work occurs when barge is back in harbor to finish the balance of the piling and dredging work, project to be week of May 11)

Replacement of bracket bolts, cost per bracket \$ 525.00

Estimated 81 brackets to be repaired – Estimated Project cost \$ 42,525.00

Thank You, John Packer