

Rose City Yacht Club Breakwater

September 20, 2023

Background

Rose City Yacht Club has a breakwater structure on the north side of its leasehold. The purpose of the breakwater is two fold:

First to calm with waters within the marina caused by wakes of other small boats or generated by wind. This is accomplished by the mass of the breakwater as well as its depth and width. There is a limit to the waves that can be attenuated by the breakwater. Long period waves such as those generated by large boats will not be calmed by the breakwater. Strong winds generally come in the winter from the east and are attenuated by walk one. The current design of the breakwater has accomplished this calming task with reasonable success.

Second to provide additional moorage space for transiting boats from reciprocal clubs as well as additional moorage for members as needed. As the moorage is on the outer portion of the marina the spaces are subject to the wave action that is not attenuated by the breakwater.

The original breakwater consisted of 6 logs in cross section fastened together by 4 X 10's. A 10' deck was laid over the top of the breakwater. Styrofoam barrels provided additional floatation as needed in specific areas. At that time the positioning piling consisted of three piling wooden tripods.

Repairs over time changed the cross members to 6 X 8's and reduced the deck width to 6'. In 1993 member Tom Stringfield did an extensive survey and recommended a project that resulted in what you see today. The stringers were replaced with new 6 X 8's, the pile hoops were replaced with the square pile collars as well as new fender boards and a handrail. This repair project was projected to have a 30 life span.

In XXXX the wooden tripod piling were replaced with the steel pipe piling that you see today.

Preliminary Survey Results

On Saturday September 16, 2023 a survey was conducted by Christian Steinbrecher, Ian Cannon, Ron Moran and George Kapllani. The purpose of the survey was to develop a general overview of the current state of the breakwater and develop repair/replacement scenarios.

Logs – the logs appear to be in relatively good shape from the splash zone down. The upper portions have deteriorated and show extensive rot. A core sample will be taken to verify their condition. However the recent experience from the club house construction demonstrated the inner parts of those logs were as expected still in good condition.

Piling – the piling were installed in XXXX and show only minor surface rust. There is no extensive deterioration in the splash zone area. An ultrasound would verify the wall thickness but it is not likely that there has been any significant reduction.

Stringers – three locations were chosen to pull up deck planks and do a close examination. These locations, at walk one, in the middle and at the Donaldson end showed the following:

At walk one deterioration in the outer 1 – 4 inches.

In the middle deterioration throughout

At the Donaldson end half of the stringer was deteriorated.

In addition a floating examination was conducted on the inside of the marina from a work boat and each visible stringer was sounded with a 2# telephone pole sounding tool. Those not considered sound were marked with yellow paint. About 2/3 were marked. However not all stringers were accessible from the work boat. The outside of the marina was also viewed at the workboat level and most stringers showed extensive end deterioration.

Joists – these are the members that are on top of the stringers and support the deck planks. They are in reasonable condition.

Deck Planks – they all exhibit extensive splintering and sun related damage

Handrail – About half is deteriorated.

Fenderboards – All are sun damaged.

Tie points – All are sun damaged.

Recommendations:

1. Replace all stringers, joists, deck planks, handrail, boat tie up and fender boards.
 - 1a. Replace stringers with steel beams
2. Replace the logs.

Both of these options may be beyond the capabilities of the club to self perform and should be contracted out.