

Prepared for: Homes of Riviera Dunes, Palmetto, FL

Floating Dock Assessment Report



Prepared by:



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Introduction

In January-February 2026, J Foster Consulting (JFC), a marine structural engineering firm, was contracted to evaluate the condition of the floating docks at the Homes of Riviera Dunes in Palmetto, Florida. The subject docks are located in a manmade basin that is roughly 1500' wide by 2000' long on the northern bank of the Manatee River. Given the relatively large size of the basin, small waves can develop in the basin which can impact the outer finger piers during high wind events. The assessment includes the evaluation of the major structural components of the floating docks (floats, c-channels, hardware), along with analyzing any observed listing of the finger piers.



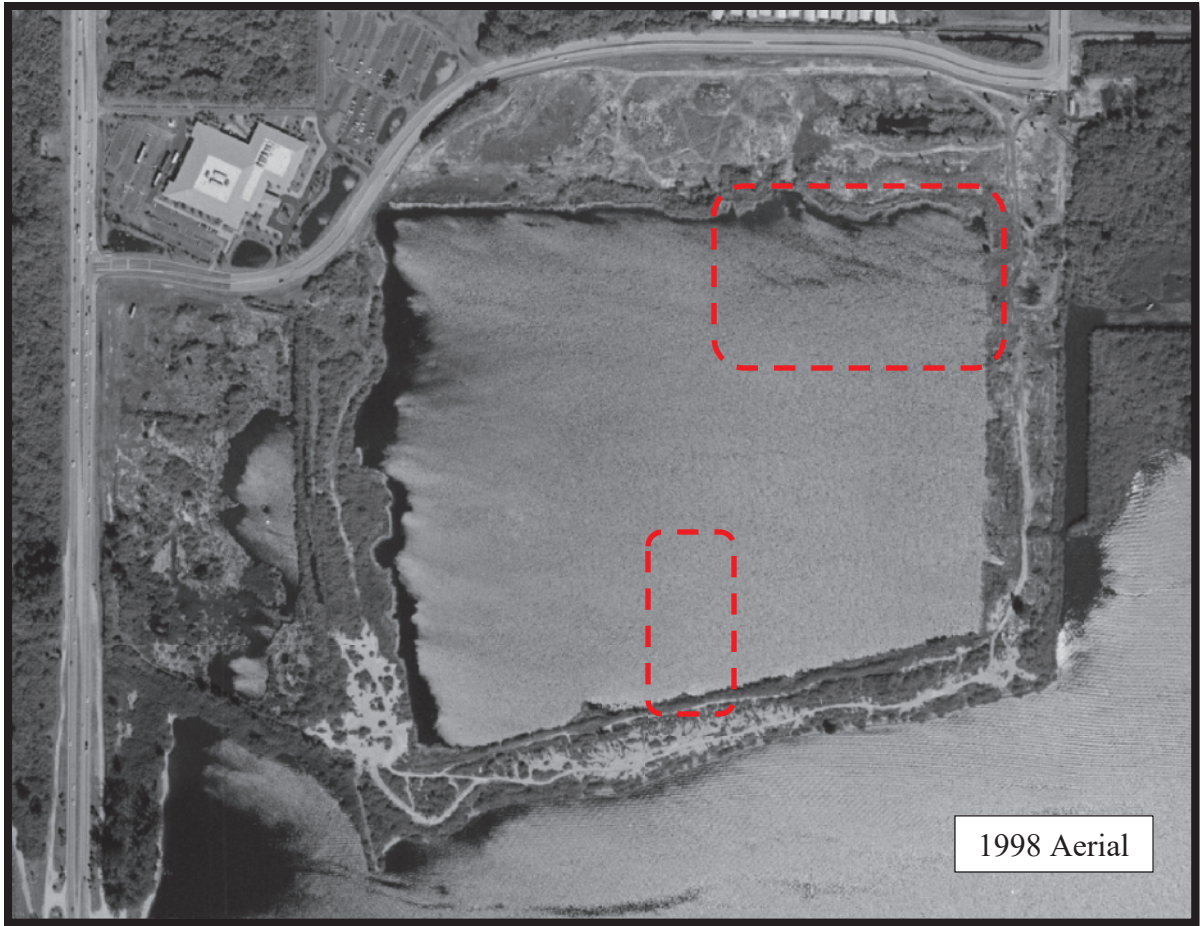
The purpose of the inspection was to observe and document the existing conditions of the docks for a baseline condition report, identify the areas with structural deficiencies, provide recommendations & details for repair methods to a sufficient level to be used for budgetary pricing, and provide phases and timeframes on when repairs should be carried out.

General

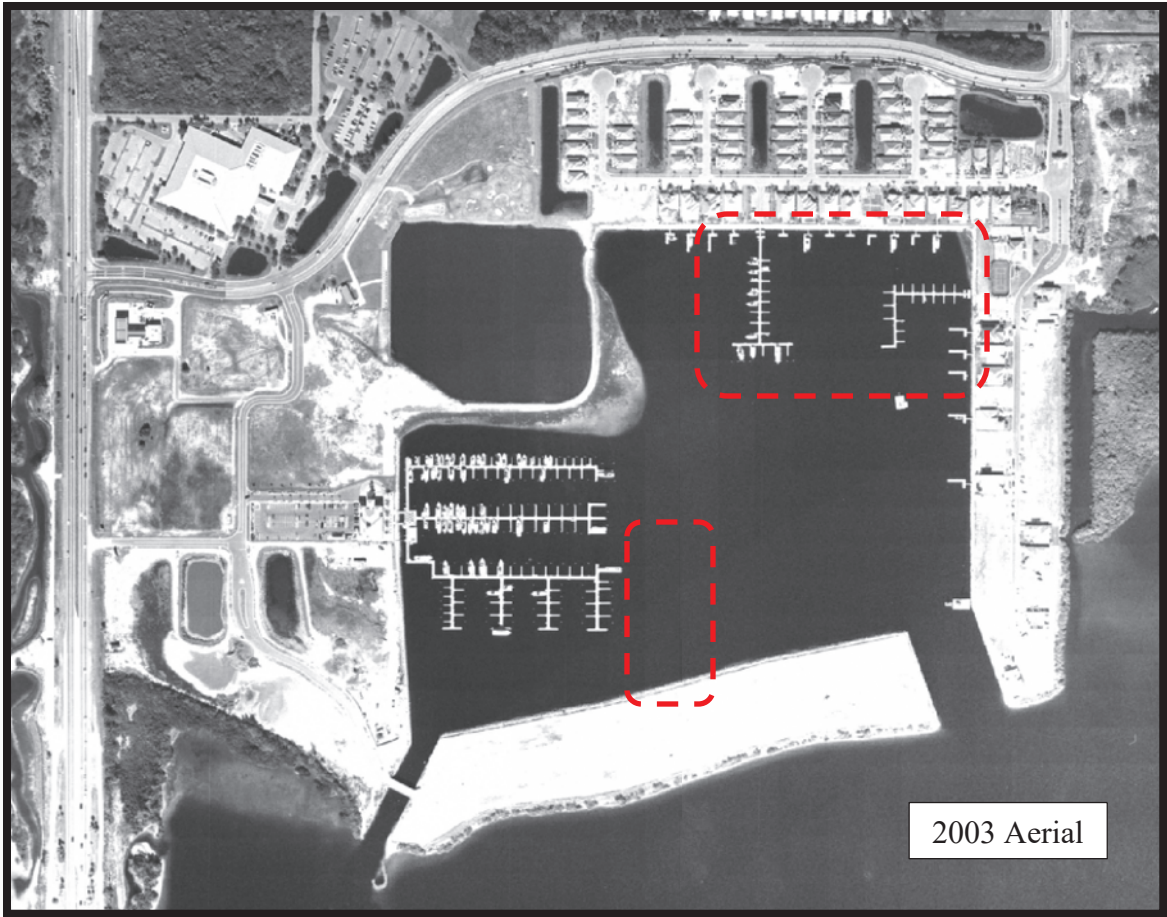
The inspected floating docks A, B, and C consist of approximately 1,600 linear feet (LF) of access dock in total, a floating utility platform at each gangway (3 in total), and a total of 52 finger piers. The individual floating dock modules measure approximately 26' long by 8' wide. The finger piers are approximately 3.5' wide and vary in length.

History

A review of historical aerials shows that Docks A and B were constructed sometime between 1998 and 2003. Dock C was constructed sometime between 2003 and 2006. This makes the subject docks somewhere between 20 and 28 years old. The approximate design life of the concrete floating docks used at the subject marina is 25 years, placing these docks near the end of their design life.



1998 Aerial





Terms and Definitions

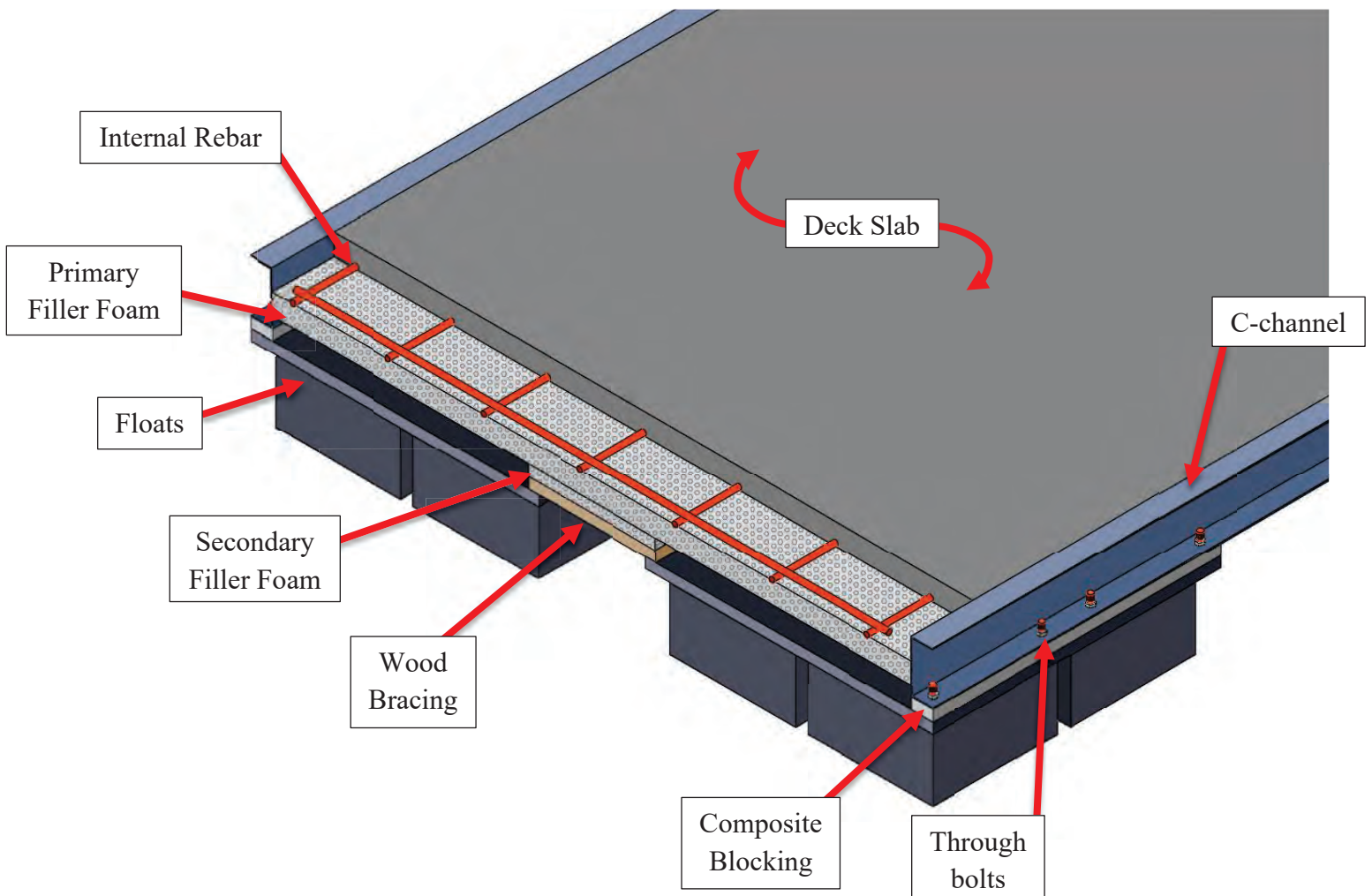
For the purposes of this report and to develop an understanding of the structural components of the subject floating docks, the following terms and schematic are presented below:

Deck Slab – Concrete slab, reinforced with internal rebar, serving as decking for the floating docks.

C-channel – Steel structural member serving as connection between floats and concrete deck slab, fastened to the floats with through bolts through composite blocking.

Filler Foam – Foam between deck slab and floats, serving as blocking and providing additional rigidity to the deck slab.

Floats – Dock floats providing buoyancy to keep docks afloat.



Executive Summary

While Docks A, B, and C all remain functional, structural issues were found indicating the docks are approaching the end of their useful life.

- The piles were found to be in generally good condition.
- Upon review of historical aerial images, Docks A and B were determined to be between 23 and 28 years old. Dock C was determined to be between 20 and 23 years old.
- Some of the floats supporting the docks were either punctured or displaced. This has led to an observable list in some of the access docks and finger piers. **Approximately one third of the finger piers exceed the 2% cross-slope recommended by the ADA for pedestrian comfort.**
- The C-channels and through bolts were found to be heavily corroded throughout each of the docks.
- Some of the pile guides at the concrete piles were unable to properly function likely due to excess marine growth on the piles. This can lead to internal stress in the dock modules and at the juncture between the finger piers and access docks.
- Each of the utility platforms was found to be listing severely. This is likely due to a combination of heavy utilities (lack of adequate buoyancy) along with damaged floats. It is recommended that, in the short term, additional floatation be installed to prevent damage to the utilities.

Overall, while there is still some usable life remaining in the docks, the main structural components show significant corrosion and are beyond economical repair. With this said, the docks are not at risk of imminent failure. **It is recommended Docks A and B be replaced in 5± years, the projected cost being \$3,800,000.** Dock C is newer and was found to be in better condition, but **it is recommended that Dock C be replaced in 10± years, the projected cost being \$1,600,000.**

Observations/Data

Finger Piers – A number of the finger piers throughout each of the docks, along with portions of the access docks, were observed to be listing. This is typically due to one or more of the floats beneath the docks being compromised, either due to being punctured/waterlogged or displaced.

The typical guideline for maximum cross-slope in pedestrian walkways is 2% grade, or approximately 1.15°. Slopes were collected at each of the finger piers and intermittently along the access docks, and the data is displayed below:

DOCK A	
Finger Pier	Cross-slope (deg)
1	0.8
2	1.4
3	0.6
4	0.8
5	0.4
6	0.6
7	1.1
8	0.6
9	1
10	1.4
11	1.3
12	0.7
13	2.6
14	0.5
15	0.6
16	1.6
17	1.1
18	1.3
19	0.8
20	1.8
21	0.9

DOCK B	
Finger Pier	Cross-slope (deg)
1	0.5
2	0.4
3	0.8
4	1.1
5	0.8
6	2.7
7	2.2
8	0.2
9	1.1
10	0.8
11	0.4
12	2
13	1.8
14	1
15	1.6
16	1.4
17	0
18	1.8
19	0.3
Terminal Platform	3.5

DOCK C	
Finger Pier	Cross-slope (deg)
1	0
2	0.5
3	1.4
4	0.5
5	0.8
6	0.4
7	0.4
8	2
9	0.8
10	0.8
11	0.8
12	0.6
Terminal Platform	1.2

As shown, approximately one third of the finger piers were observed to have a list greater than the recommended 1.15°, particularly in Docks A and B. Replacing damaged/displaced floats is likely not an economical repair option, but may be explored at the Association’s discretion.

Hardware (C-channels, Angles, Through Bolts) – A prevalent defect in the floating docks is the corrosion of the c-channel which joins the deck slab to the floats underneath. In some extreme cases, there was visible material loss, such that the through bolts providing connection to the floats had no material to bear upon. The through bolts themselves were also found to be heavily corroded.

The junctions between the finger piers and the access dock were found to be in particularly poor condition.

These are all critical components of the floating dock system, and failure of any one of them could constitute failure of the docks as a whole.

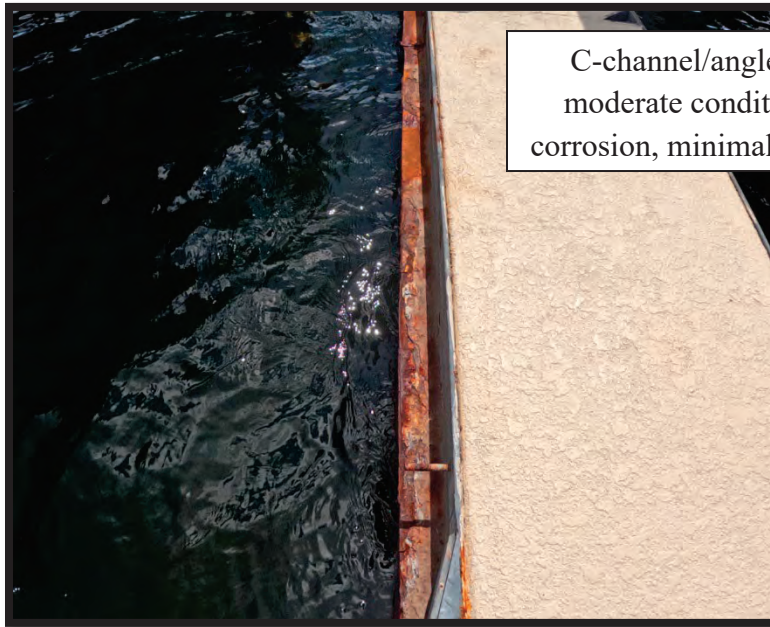


Heavy corrosion at juncture between finger pier and access dock

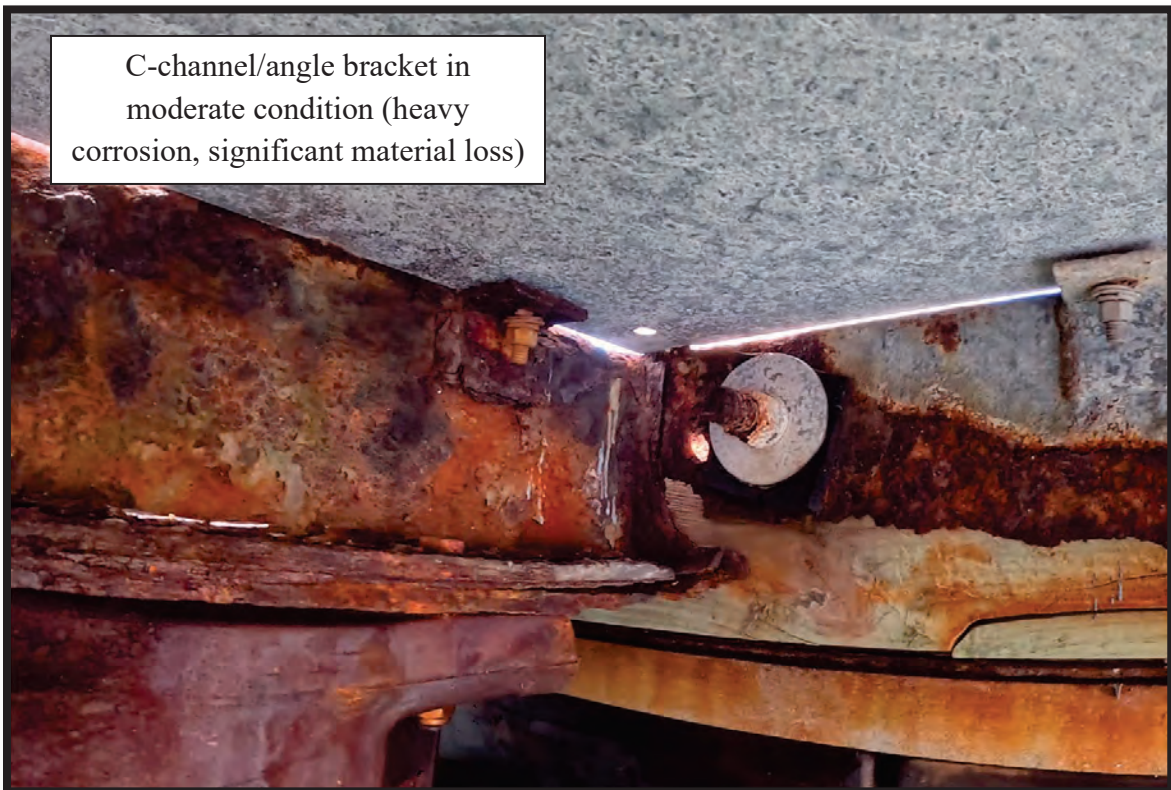


Heavy corrosion at c-channel

Each c-channel was assessed a label of either fair, moderate, or poor based on its observed condition. A condition map may be found on the following pages. In summary, the majority of the c-channels at Docks A (74%) and B (58%) were found to be in either moderate or poor condition, while Dock C was in better shape with just over one-third of the c-channels being in either moderate or poor condition (36%). This is to be expected, as Dock C is the newest of the three Docks.



C-channel/angle bracket in moderate condition (surface corrosion, minimal material loss)



C-channel/angle bracket in moderate condition (heavy corrosion, significant material loss)

DOCK B

C-CHANNEL CONDITION LEGEND

- GOOD-FAIR
- MODERATE
- POOR



NEW FINGER PIER

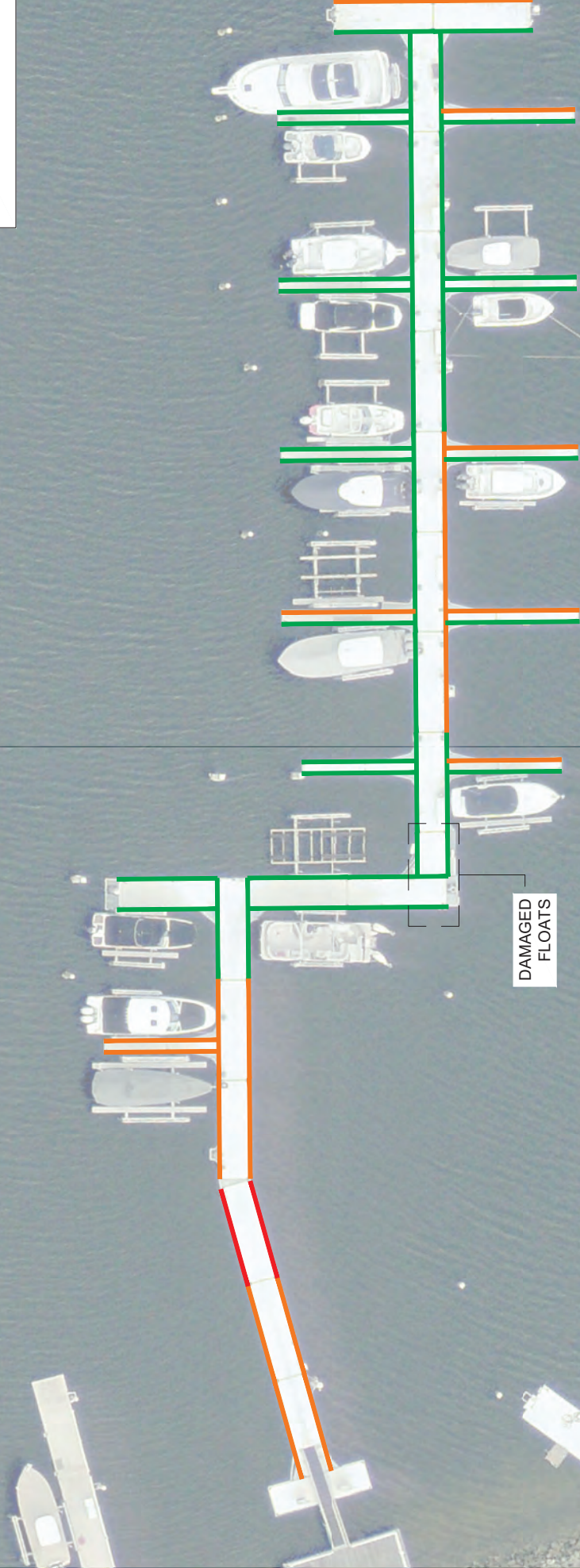
NEW FINGER PIER

DAMAGED FLOATS

DOCK C

C-CHANNEL CONDITION LEGEND

- GOOD-FAIR
- MODERATE
- POOR



DAMAGED FLOATS

Pile Guides – An issue observed at a number of the concrete piles was the buildup of excess marine growth causing the rollers of the pile guides to “hang up” on the piles, preventing the docks from falling with the low tides. This may be due to an improper fit on the pile guides preventing the rollers from periodically destroying marine growth, allowing an excess to build on the pile. This is a relatively minor issue; however, clearing the inter tidal zone (approximately 3’) of marine growth from the concrete piles is a minor repair option which may help extend the remaining life of the docks.

Utility Platforms – Each dock has a utility platform behind the gangway access point. Each of these utility platforms was found to be listing severely. The utility platforms are very well-shielded from wave energy, relative to the rest of the docks; therefore, this list is likely due solely to the weight of the utilities being run through the platform. Additional floatation can be added to help with the listing. The listing of these platforms can lead to stress in the busbars housed inside the panels; therefore, it is recommended that this issue be addressed ASAP.





Displaced float at utility platform



Heavy utilities deflecting wooden brace

Vessel Loading on Floating Docks – Preliminary vessel windage calculations for the existing boating facilities were completed and determined that the floating dock system is under-moored when compared to industry-standard marina design criteria. A similar condition was previously identified at Riviera Dunes Marina (inspected by JFC in 2024).

One significant difference for the better in comparison Riviera Dunes Marina is that the subject facilities include a significant number of boat lifts. These lifts effectively remove vessels loading from the floating dock system. As a result, the overall demand on the mooring system is reduced, making the dock system less susceptible to wind-induced loading and potential failure.

It should be noted that while the use of boat lifts may help relieve the mooring system of a portion of the load it would bear otherwise, it is not industry standard to rely on the use of boat lifts to entirely eliminate the burden from the floating docks.

Conclusion

Overall, while the concrete deck slabs themselves are in good condition (as opposed to what was observed during the previous inspection of the marina docks), the critical components – the through bolts and c-channels – of these docks are beginning to fail, particularly at Docks A and B. As noted above, replacing damaged/waterlogged floats at the listing finger piers may be explored as a minor repair option, but may not be economical.

In the short term, the listing of the utility platforms should be addressed to prevent any potential failure of the busbars housed on the utility platforms.

Phase 1 – 1 year: Install supplemental floats at each utility platform to prevent damage to utility lines/utility housing.

Phase 2 – 5± years: It is recommended that Docks A and B be replaced within 5± years (extreme storm activity may shorten this timeline). **Projected cost \$3,800,000.**

Phase 3 – 10± years: It is recommended that Dock C be replaced within 10± years. Similar to Docks A and B, this timeline is contingent on storm activity. **Projected cost \$1,600,000.**

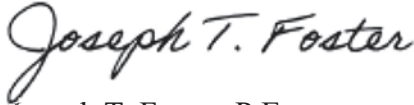
As discussed prior, the boatlifts reduce the stress on the docking system and can extend the useful life of the docking system.

Required to Reconstruct – When the docks are rebuilt, State, Federal (USACE), and Local permits will be required. The State permit should be completed through the ERP permit process. The USACE permit should be able to be completed under a Nationwide permit; this assumes that

the existing docks have a USACE permit. The contractor who will perform the work will secure the local building permit (Local). Due to the USACE lengthy review time, an 18-month post submittal timeframe should be accounted for to secure the permit. The State and Local permits should be a much shorter timeframe.

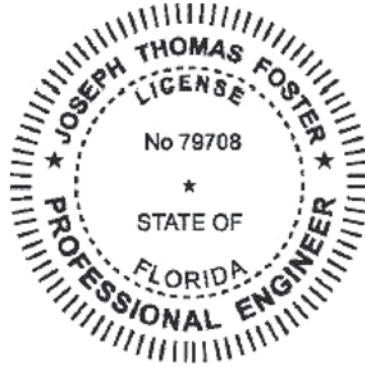
If there are any questions, please call. Thank you for the opportunity to be of service.

Sincerely,



Joseph T. Foster, P.E.

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Joseph
Foster

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Joseph Foster
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