



City of Dania Beach

FLORIDA

To: Mayor, Vice Mayor, and Commissioner
Copy: Ivan Pato, City Manager
Patty Varney, Director of Finance
From: Colin Donnelly, Assistant City Manager
Date: July 10, 2007
Subject: Marina Evaluation

A handwritten signature in blue ink, appearing to be "Colin", is located to the right of the "Copy:" line.

Attached is a preliminary evaluation of the Dania Beach Marina performed by Cutcher & Associates, Inc of Jupiter, Florida. It is the consultant's conclusion that the marina can no longer be maintained as is and must be rebuilt.

To rebuild what dock space we have would cost an estimated \$2.1 million. In addition, addressing the bulkhead may run from \$400,000 for repair to \$1.75 million for replacement.

"Broward's First City"

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July 9, 2007

Mr. Colin Donnelly - Assistant City Manager
100 W. Dania Beach Blvd.
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RE: Dania Beach Marina – Preliminary Marina Evaluation.

Mr. Donnelly

On July 5, 2007, Robert Cutcher and Bob Berry from Cutcher & Associates, Coastal Engineers Inc. performed a general evaluation of the Dania Beach Marina. The evaluation of the facility was from a structural and functionality viewpoint. Our findings are summarized below with a list of recommendations and preliminary cost for the identified changes.

A. Findings

1. Bulkhead - The bulkhead is comprised of pre-cast concrete T-piles and concrete panels with a cast – in-place concrete cap. The concrete seawall panels appear structurally sound; however, the T-piles are in poor condition. All have cracks and over 30% have exposed and severely corroded internal rebar and delamination. The T-piles have exceeded their service life and should be either replaced or jacketed. The tie-back system is of primary concern. It is recommended that several of the tierods be exposed to evaluate their condition in conjunction with a review of the original construction drawings. A concrete slab on grade deck is supported by the bulkhead cap. This allows for substantial surcharge loading by cars, trucks and buses parking near the bulkhead. It is strongly recommended that vehicles refrain from parking on this deck as it may cause a catastrophic failure of the bulkhead.

2. Basin - Based on depth measurements at various points along the dock alignment, it appears that an original design depth of -5 ft MLW is fairly consistent. The basin is situated in well protected waters with very little sediment input and therefore does not require frequent maintenance dredging. A more complete survey of ingress and egress areas could confirm this assumption.

3. Fixed Timber Docks - The decking, framework, and pilings are of conventional wood construction. The pilings appear to be in fair condition considering the age of the structure. There was little damage to the pilings from boring worms observed. The decking, stringers and cleat framework are in poor condition. The fasteners are corroded and in some cases missing. The entire dock system has exceeded the expected service life and should be completely replaced.

4. Floating Docks - The floating dock structure is comprised of an aluminum frame with timber decking and polyethylene floatation chambers. The floating dock system is in poor condition. Several of the docks are twisted, bent, or bowed. The timber decking is checked and splitting and generally in poor condition. Many of the stainless steel fasteners are bent, broken or missing. Based on the twisted framing it appears that some of the floats may be leaking or partially flooded. The single access ramp is misaligned and is partially hanging off of the dock. It appears that a single 50-amp electrical service plug provides power for the entire floating dock. Furthermore, this plug is subject to flooding from salt water which poses a significant risk of electrical shock or electrocution to pedestrians on the dock.

5. Utilities - In general, the utilities are in a state of disrepair and do not meet either SBC or local municipal building code requirements. A complete evaluation of the service and load capacities was not performed, however, all utilities were inadequate and in poor condition. The electrical conduit is improperly attached and is supported below the grade of the timber stringers which effectively places it within the intertidal range and subject to inundation during peak tides, as well as, damage from floating debris.

The potable water service appeared to be distributed in improperly sized PVC piping which was poorly supported throughout the marina. Many splices were apparent and it is suspected that these may contribute to leaks within the system

The Fire Suppression system is inadequate. Although there is no fueling capability on site, the number and locations of fire extinguishers is inadequate for the number of vessels and therefore does not meet applicable building code. The stand pipe which supplies water pressure for fire suppression displays piping which is poorly supported and corroded.

The lighting is in poor condition with many broken lamps, cracked bases and exposed wiring.

Currently, there are no provisions for holding tank pump out at the marina. It is recommended that consideration be given to installing a pump out station. This would likely be a requirement in future applications for improvements to FDEP.

6. Marina Functionality - The overall layout of the marina is inefficient in terms of providing the maximum number of slips for the given submerged land lease area. The slip dimensions and layout could be redesigned to increase revenue and maximize public benefit. The basin has a consistent depth of approximately 5.5' MLW and is well protected. There is ample parking close by, although beach goers compete for these spaces on busy holidays and weekends.

Access to the docks is via a single ramp from the parking lot near the south end of the marina. This creates a significant distance for customers located on the floating docks. It also creates a safety hazard in the event of a fire as it is the only way to exist the entire docks system. In conjunction with the single access ramp, the detached dock that runs parallel to bulkhead eliminates the ability to moor vessels adjacent to the bulkhead. This configuration should be modified to facilitate the addition of slips, reduce travel distance and provide for multiple ingress and egress points.

A submerged aquatic vegetation survey prepared by The Chapelle Group indicates that a community of seagrasses is located west of the marina basin. This would allow for complete replacement of the existing docks without encroachment into these communities.

B. Recommendations

1. Replace the fixed timber docks and the floating aluminum dock system with floating concrete docks. The two recommended dock manufactures for concrete docks are Bellingham Marine and the Rixor system manufactured by Southeast Pre-cast. The dock configuration should be designed by a coastal engineer that is well experienced with marina layout and design in order to maximize slip numbers and facilitate ease of use by the customer.
2. Complete replacement of dock utilities. These utilities would be integral to the floating dock and would be in compliance with current design standards and required municipal code.
3. Installation of a holding tank pump out station.
4. Installation of a fish cleaning table with a permit compliant disposal method.

5. Consideration of either a ship's store or leased concession to service customers for such items as ice, bait, boat parts and such. It is our opinion that the addition of a ship's store will add considerable value to the marina and allow for higher slip rates and increase profits for the marina.
6. Installation of ladders to allow persons to climb out of the water. Currently there are no such items and this is a potential liability.

C. Preliminary Cost Estimate

The recommendations do not consider a specific design and therefore a material quantity value does not exist. This being said, typical marina design for similar layouts can be cited. Floating concrete docks and utilities are estimated at \$125 per SF. Replacement of the seawall components can be estimated at \$300 per linear foot of seawall. The combined surface area of the existing docks is approximately 16,525 SF. This would equate to a replacement value of approximately \$2,100,000 for the docks and utilities. The bulkhead retrofit would be approximately \$400,000 while complete replacement of the bulkhead would range between \$1,500,000 and \$1,750,000. A pump out station, fish cleaning station and other minimal cost items could be estimated at approximately \$100,000 inclusive. We have not identified costs for a ship's store as this is dependent upon variables that are outside the scope of this evaluation.