



Relieving Water Pressure with Maintainable Weep Hole Filters

Location: Wrightsville Beach Marina, Wrightsville, North Carolina

*Update: Hurricane Florence hit Wrightsville Beach Marina on September 14, 2018. While many seawalls were damaged in the hurricane, the marina has reported their walls did not experience any damage.

The Situation: Seawalls & Bulkheads Bulging After Storm Event

Like many coastal marinas, Wrightsville Beach Marina experiences strong storms and hurricanes that bring flooding caused by heavy rains, high winds and extremely high tides. Coastal North Carolina has experienced record rainfalls as they have been impacted by 120 tropical storms/hurricanes since 1980! These storms can leave a great deal of damage to seawalls and bulkheads.

During a routine inspection after a storm, the Wrightsville Beach Marina team noticed bulging in their steel sheet pile seawall. Bulging in a seawall or bulkhead can occur when water pressure builds up against the soil side of the seawall or bulkhead. Without drainage, the wall can bulge, bow and tilt. If not repaired, the seawall will ultimately fail.

Determining the extent of the damage was greatly hindered by the installation of an eight foot wide walkway and concrete pilings built directly adjacent to the bulkhead. That's when management contacted Intercoastal Contracting to help collaborate and develop a repair plan.



After inspecting the affected areas, Intercoastal Contracting determined that the panel bulging was indeed created by extreme hydrostatic pressures that developed on the landward side of the wall during a recent heavy rain/storm event. Water can more than double the weight that the soil exerts on the wall. Left undrained, the water pressure will eventually push through the wall or under the wall. Either way, the water will erode soil as it escapes.

The team determined that if the pressure could be relieved, the wall would not need to be replaced. In other words, the problem had been discovered in time.

The marina needed a drainage system that could be installed without excavation and without damaging the walkway and the pilings. The solution needed to be implemented quickly to allow the water to drain before the next storm and possible total failure of the seawall. That's when Intercoastal Contracting contacted Jet Filter System of Casey, IL.

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SOLUTION: Installing JET Filter Weep Hole Filters

After reviewing the situation, Jet Filter System recommended installation of their 4" stainless steel **Maintainable Weep Hole Drains**. Unlike any other seawall drainage system, maintainable weep hole drains can be installed and serviced from the front of the wall. This feature makes them the most reliable and cost effective drainage solution on the market.

Jet Filter system recommended the units be installed 10' on center, just above the mean water line to allow proper drainage of the land born water while at the same time eliminating any soil loss.

The filters were shipped and installed quickly by the Intercoastal team. They core drilled weep holes into the sheet pile, scooped out a handful of soil and flush mounting these filters into place. The process for installation each of these filters took only minutes.

Had these filters not been installed, the Marina owner would have possibly been faced with a total loss of the seawall in these affected areas. Had another strong rain event happened, the bulging was a definite indicator that panel separation would be next.



This is a glimpse of the grim reality that can happen to any marina. We all need rain on occasion but in extreme, it can be devastating. Water is heavy! And, rushing water takes anything not tied down with it, including supporting soils!

The Wrightsville Marina owners should be commended for inspecting, identifying, addressing, and repairing the issue promptly! When problems with shifting, settling, bulging and cracking becomes evident, especially around Marina facilities, quick action is needed. If not addressed quickly, the next storm event could cost repairs in the tens of thousands of dollars or more.

RESULTS:

The marina "hasn't had an issue with these walls since the repair was completed"
Mr. Stan Rudd, Intercoastal Contracting

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