

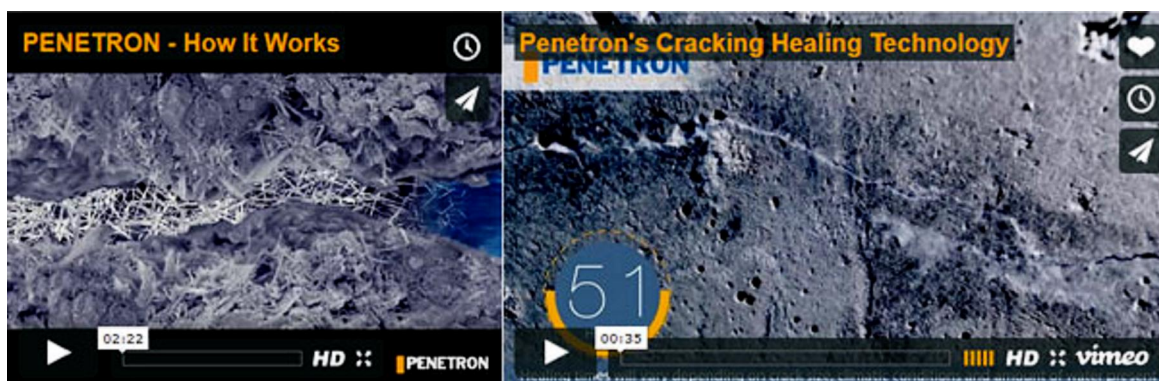


This special issue addresses the challenges of “Concrete Durability & Waterproofing in Extreme Weather” as posed by the current season of historically powerful hurricanes (Harvey, Irma and Maria) that have battered the Caribbean islands and the North American mainland this past summer. We look at prominent seaside hotel and residential projects that have applied [PENETRON](#) crystalline technology as a concrete protection system in and around the Miami, Florida, area.

With construction projects adjacent to the Atlantic Ocean, concrete structures are already subject to extensive groundwater pressure and direct exposure to saltwater. Add the most destructive coastline threats from hurricane weather – storm surges and rising saline groundwater – and you suddenly have the very real potential for catastrophic damage to seaside properties. This situation demands an absolutely reliable waterproofing solution to optimize hydrostatic resistance (for improved corrosion resistance to chloride ions) and overall durability of concrete structures.

Read through the projects below for a closer look at how owners and contractors take preventative steps to help concrete structures in marine locations endure without damage – even in extreme weather.

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Mansions at Acqualina, Miami FL



The Mansions of Acqualina, a top level luxury residential address, with 7 units in a floor tower (feet1 m tall), is the fifth tallest building in Florida. Coastal Construction, the project's construction team and ready mix supplier, added [PENETRON ADMI](#) to the 2,200 cubic yards (1,700 m) of concrete for the tower's large foot thick mat foundation, essentially a hydrostatic cap that also functions as the finished floor of the parking garage.

The improved impermeability of the foundation concrete substantially reduced chloride ion penetration, preventing corrosion of the underlying steel reinforcement.

The Club at Bay Harbor

Across the water from Miami, the Club at Bay Harbor is less than 100 feet from Indian Creek on the Intracoastal Waterway. The six floor, 2 unit condominium building features a heated pool, elevators, and a parking garage. Originally, a bentonite type rubber membrane was specified to ensure a waterproof structure at the construction site. [PENETRON](#) worked with the contractor, the waterproofing consultant, and installer/concrete supplier to come up with a better solution that would provide tangible cost benefits and eliminate all installation issues inherent with a membrane.

[PENETRON ADMI](#) – in pre measured soluble bags – was added to the concrete (to treat 10 cubic yards (2 m³)) for the pile caps and footings of the building's foundation. The integral waterproofing has kept the concrete elements sound and dry.

The Grove at Grand Bay



Only a block away from Dinner Key Channel, across the water from Bay Iscayne, a pair of visually distinctive towers distinguish the Grove at Grand Bay luxury residences in the Coconut Grove area of Miami. Designed by the renowned Japanese Group (JG) architects, both towers are 20 floors high with 100 units in the North Tower and 70 units in the South Tower – and are only 11 feet (.2 m) above sea level.

The originally specified conventional waterproofing system and dewatering plan for the job site quickly became problematic. CEME offered a [PENETRON ADMI](#) treated concrete mix as a solution. Used for the building foundation elements, the matrix withstood the hydrostatic pressure at the site, keeping the foundation and garage completely dry.

Miami Bay Club

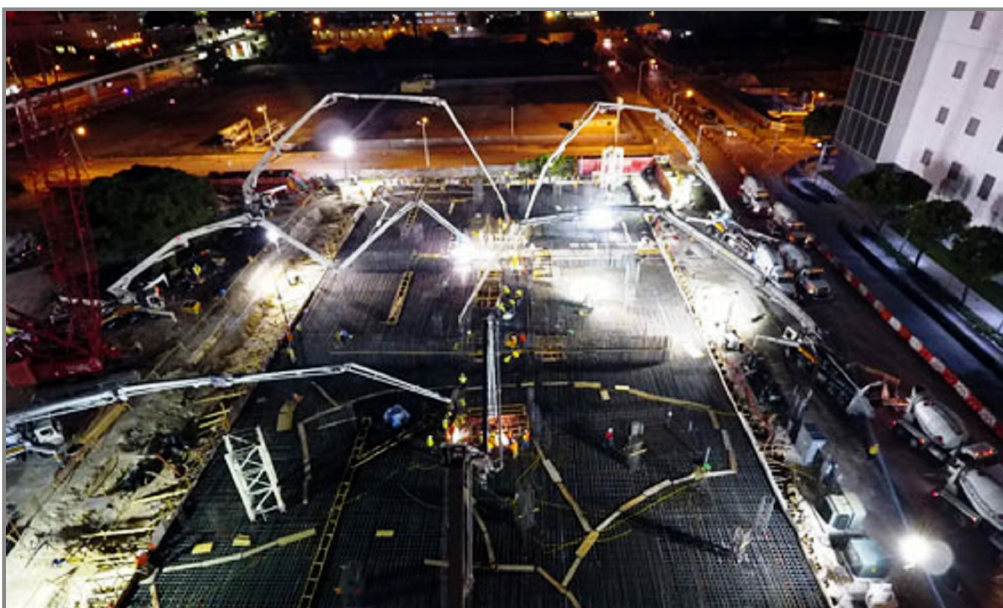


A spacious multi family luxury apartment complex, the Miami Bay Club was developed in the Edgewater district directly on Biscayne Bay by Milton Associates. It comprises two structures a 22,000 square foot (2,032 m²) tower with 12 units and a 22,200 square foot (2,063 m²) low rise building with 17 units.

Because of the high water table at the construction site, the developer chose [PENETRON ADMIX](#) to replace the originally specified membrane/bentonite waterproofing system. About 2,000 cubic yards (2,000 m³) were treated with [PENETRON ADMIX](#) in the foundation cap footings and the 2" (50 mm) post tension slab on grade the slab alone used 2,000 cubic yards (1,000 m³) of [PENETRON ADMIX](#) treated concrete. All resulting construction joints were permanently sealed with PENEAR W waterstop.

Once the treated concrete was poured, nothing more was needed to ensure an impermeable concrete structure. Compared to the complexity, time factor and costs of installing a membrane, the savings provided by the crystalline admixture were substantial. The self healing properties provided by the now integrated crystalline technology also provided much improved durability.

Paramount Miami Worldcenter



et to open in 201, the Paramount Miami Worldcenter comprises seven residential and office buildings, several hotels, as well as a 1,700 room Marriott Maruis and a convention center. These are laid out along a six block long shopping and dining promenade in a gigantic retail, residential, business and public transportation (MetroMover and MetroRail) complex. The signature 0 floor, 700 foot (21 m) tall, 00 million residential skyscraper features 12 luxury apartments.

The monumental multi day pour of over 1,000 cubic yards (10,70 m) of concrete launched the initial construction phase of the project. According to upermix, the concrete supplier, pouring the concrete foundations for the Paramount Miami Worldcenter comprised a non stop loop of 1,00 concrete truck deliveries to the construction site, where over 700 construction workers poured 2 million pounds (2,0,000 kilos) of concrete into a massive ,000 suare foot (, m), nine foot (2.7 m) deep excavated hole. The concrete flowed from six boom pumps at a rate of 00 cubic yards (2 m) per hour. Additionally, crews installed . million pounds (2,17,000 kilos) of perimeter steel reinforcements.

PENETRONs crystalline technology provides permanent protection from any hydrostatic pressures the structures of the Paramount Miami Worldcenter may be exposed to and prevents corrosion of the embedded reinforcing steel.



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