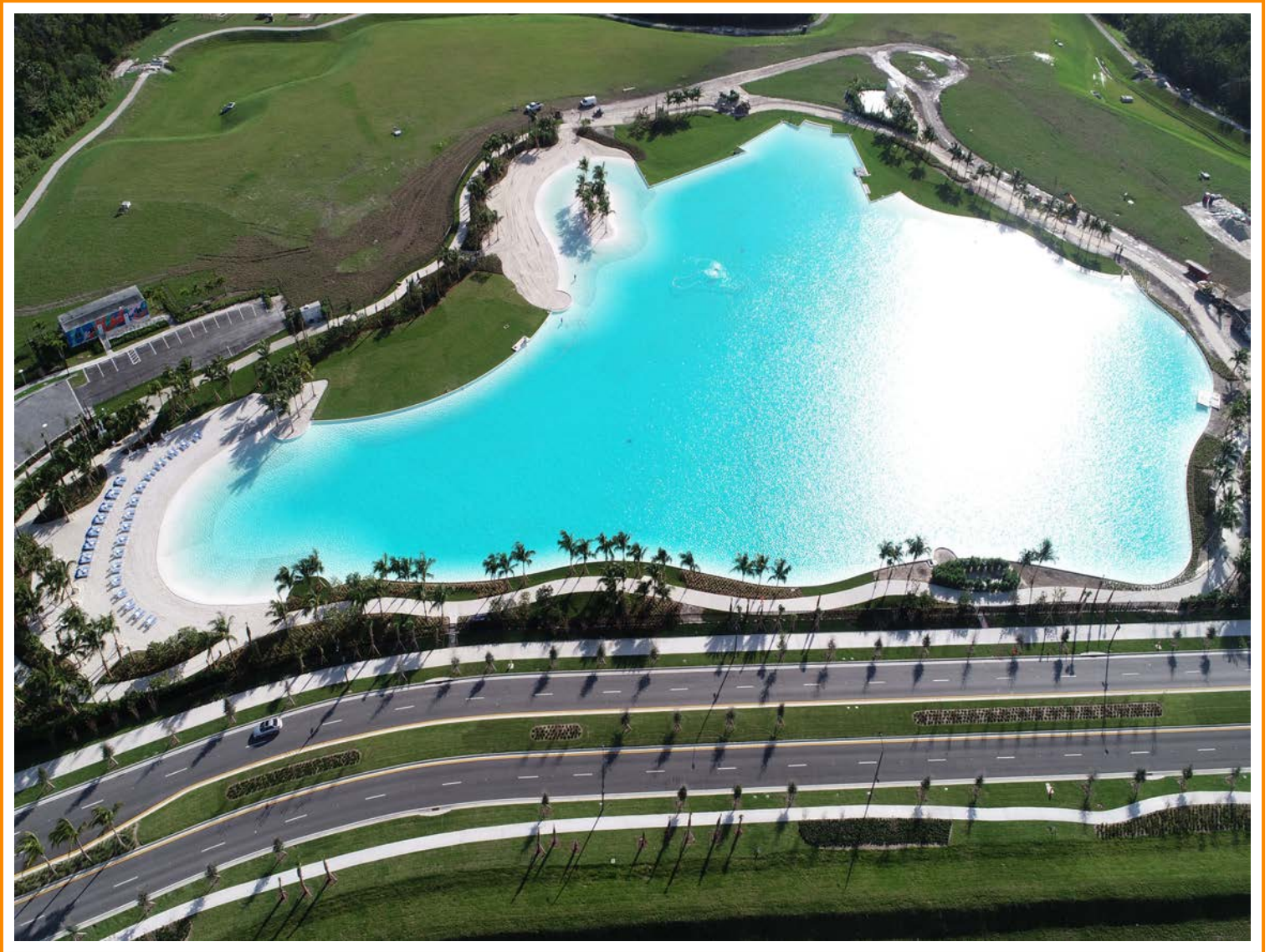


CRYSTAL LAGOONS



PROJECT
INDUSTRY
LOCATION
PRODUCTS

Crystal Lagoons
Hospitality, Residential
St. Augustine & North Miami, Florida & Texas City,
Texas, USA
PENETRON, PENETRON ADMIX SB

CRYSTAL LAGOONS

CASE SUMMARY

The “Crystal Lagoons” projects in Florida and Texas created a striking layout of beachfront homes, restaurants and recreational facilities around large, artificial lagoons. The Crystal Lagoons concept highlights not only an innovative community lifestyle – but also the effectiveness of Penetron crystalline waterproofing technology.

Marketed as an idyllic beach lifestyle concept, Crystal Lagoons is an innovative design that pairs the construction of artificial lagoons with a low environmental impact water filtration and treatment technology. The development of a sustainable technology that allows construction of lagoons of unlimited sizes enables tropical island lifestyle projects that create beachfront housing with swimming, kayaking, paddle-boarding, and sailing – virtually anywhere in the world.

Crystal Lagoons® is a U.S. company that has developed this innovative and cost-effective technology. Both construction and water maintenance costs are comparatively low. The patented water purification technology minimizes the use of additives and energy to keep these lagoons crystal clear all year long.

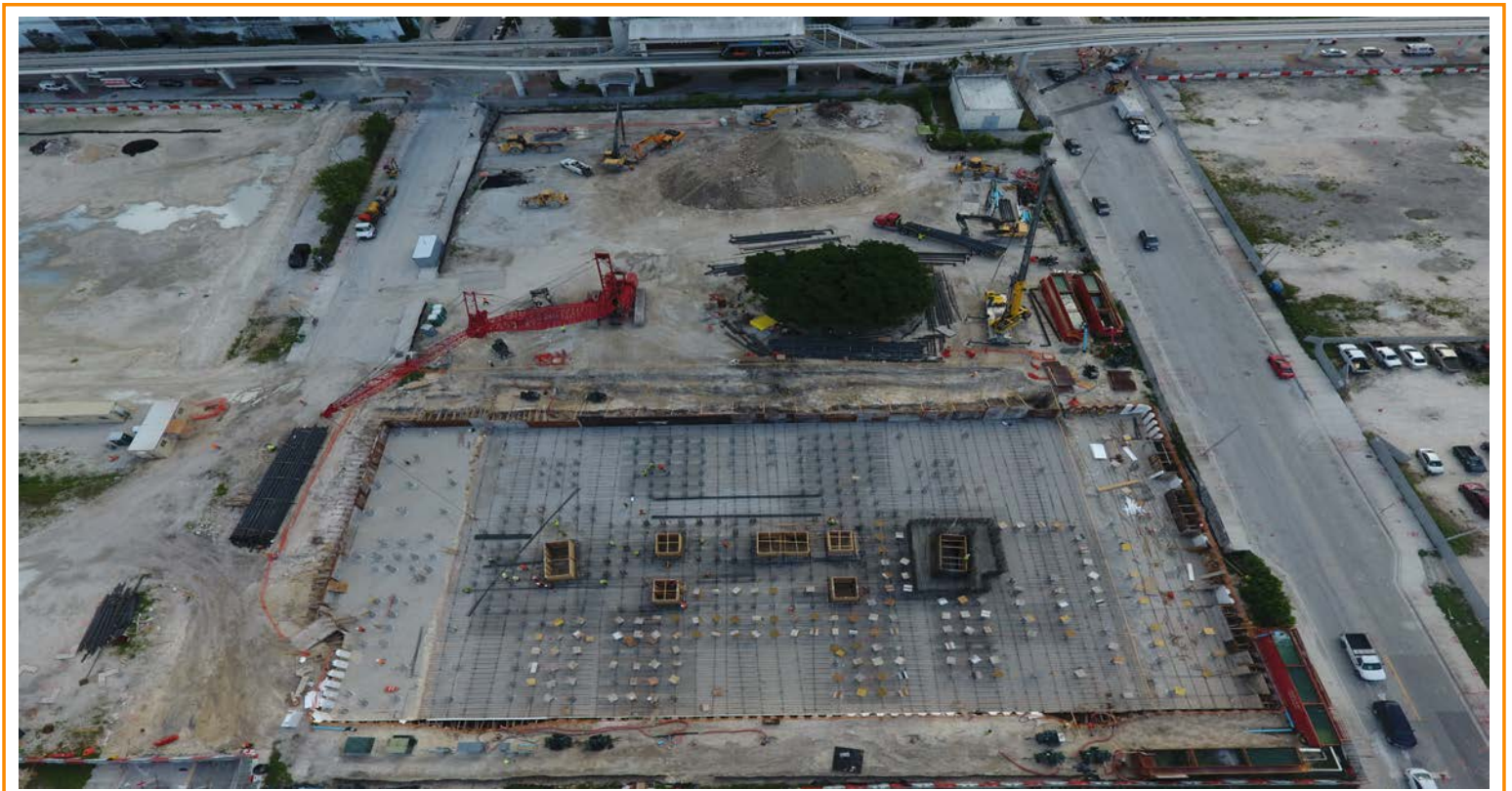
With a white plastic lining stretched across the reinforced concrete basin, a Crystal Lagoon first takes on the natural turquoise hue as it fills with water, and then deepens to a Caribbean blue as it approaches the 10-foot (3.3 m) maximum depth. The artificial lagoons can use any type of water: saltwater, fresh or brackish water, from whatever source is available. The finished lagoons are surrounded by a white sand beach lined with palms and footpaths.

Ideal application for an integral waterproofing solution

The underlying concrete structure and beach areas of a Crystal Lagoon must withstand constant contact with water, which requires a durable and permanent waterproofing solution. So far, Penetron has completed three Crystal Lagoon projects in the USA with many more to come:

Twin Creeks in St. Augustine, Florida – the development encompasses about 3,000 acres, which includes over 3,000 homes, retail and office space, two schools and numerous parks and waterfront dining locations. The lagoon is located between the residential buildings and the retail areas and covers an incredible 14 acres (about 5.6 hectares).

Lago Mar Texas City, Texas – a planned community 45 miles (72 km) southeast of Houston, on 2,033 acres with approximately 4,000 homes (ca. 14,000 residents), several lakes, open areas, parks, and walking trails. The centerpiece is the 12-acre Crystal Lagoon with multiple white sand beaches, a floating obstacle course, a swim-up bar, and an integrated beach club with a cabana pool.



PENETRON-treated paradise takes shape: The concrete structure of the 14-acre artificial lagoon at the Twin Creeks, Florida development was treated with PENETRON ADMIX SB.

CRYSTAL LAGOONS

The Shoreline at Solé Mia in North Miami, Florida – a 184-acre mixed-use luxury rental community with 397-units housed in twin towers; the complex is anchored by a 7-acre Crystal Lagoon and a Costco store. Located between Miami and Fort Lauderdale, the development won the World Design Award in 2020.



Just add white sand: PENETRON slurry was applied to the surface of the Crystal Lagoon's beach area (in Texas City) to help prevent water penetration into the concrete structure.

Superior Alternative to a Waterproofing Membrane

For the Florida projects, a waterproofing membrane was originally specified for installation encapsulating the concrete lagoon structures. Penetron worked with the project owner and developer to provide a more cost-effective – and easier to install – concrete waterproofing solution, eliminating the need for a membrane system. PENETRON ADMIX-treated concrete was specified for both projects in Florida.

PENETRON ADMIX SB (Soluble Bag) is easily mixed in during batching of the concrete mix. The crystalline admixture was used to treat over 2,000 cubic yards (1,540 m³) of concrete for the Saint Augustine lagoon and over 1,000 cubic yards (765 m³) of concrete for the North Miami lagoon. PENETRON ADMIX SB was specifically added to render the concrete basin impermeable to moisture, providing the much-needed concrete

waterproofing and durability benefits. In addition, the distinctive self-healing properties of PENETRON ADMIX will self-heal any future hairline cracks that could form due to thermal expansion and contraction or long-term drying shrinkage. As a result, water and salts that cause concrete deterioration is prevented from penetrating the concrete, ultimately prolonging the service life of the structure. PENETRON ADMIX is also unaffected by climatic conditions and becomes an integral part of the concrete matrix for the life of the concrete.

“Treated with Penetron’s crystalline technology, the Crystal Lagoon’s underlying concrete structure withstands constant contact with water to prevent water penetration and leaks.”

Tailor-made for Penetron crystalline technology

The Texas project opted for a topical application of PENETRON, an integral crystalline waterproofing material. PENETRON was applied as a slurry to the surface of the beach area to prevent water penetration into the concrete aprons.

Once applied to the prepared concrete surface of the Crystal Lagoon’s beach slabs, the chemicals in PENETRON penetrate deep into the concrete matrix during the wet curing process and react in a catalytic reaction to generate a non-soluble crystalline formation throughout the pores and capillary tracts normally found in concrete. This crystalline formation permanently seals microcracks, pores and capillaries against the penetration of water or liquids from any direction, substantially reducing the permeability of usually porous concrete – with identical results to the PENETRON ADMIX used in the Florida projects.

Further Crystal Lagoons projects in the USA are currently being planned and others are in construction phase. Penetron’s technical department is working closely with all parties involved in the upcoming Crystal Lagoon projects, ensuring we provide them with an optimal Penetron solution for every project.

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