PROJECT REPORT

KRYSTALINE
WATERPROOF CONCRETE

Harbour Lofts Apartments (Spain)

Classification	New construction
Type of structure	Luxury Apartments
Place	Palma de Mallorca Balearic Islands, Spain
Time	2021
Concrete Supplier	Cemex

Project	Luxury apartments with sea and harbour views in Palma de Mallorca. The residential complex offers in total 15 apartments, with prices ranging between 750.000€ for lofts to 4.600.000€ for duplex penthouses. Each unit has its own terrace and a total constructed area between 80 and 212 square meters. The three penthouses have their own roof terrace with a private pool. The communal areas offer a large outdoor pool with sun terraces and gardens with Mediterranean plants. There is also a spa area with indoor pool, sauna and fitness areas.
Purpose for application	The project faced considerable waterproofing challenges from the start, due to the very nature of the location. The inclusion of three underground car park levels so close to the sea added to the difficulties. The site was mostly composed of “mares”, a type of sandstone typical of the Balearic Islands, which is infamously brittle and permeable. This, combined with the very high water table in the port area, made dewatering virtually impossible. A tailor-made waterproofing system, combining underwater pours with Krystaline Add1 concrete and cast in place metal waterstops was proposed to solve this challenging situation.

Project location in the port of Palma, only a few dozen meters from the salty Mediterranean Sea.

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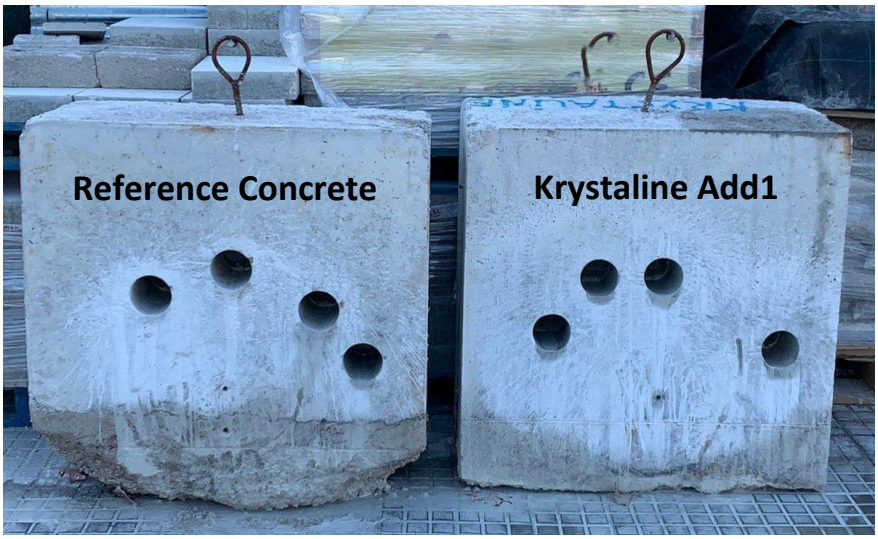
As can be noted by the initial state of the project, water was a problem.

Prior to application, the owner requested onsite testing to ensure the waterproofing effectiveness of the Krystaline Add1 admixture.

To this effect, two samples, each measuring 1 m^3, were poured underwater to compare the reference concrete to the Krystaline Add1 concrete:

Diver pouring samples



Note: Once cured, the Krystaline Add1 concrete sample on the right already shows improved cohesion in underwater conditions.

Core samples were taken from the two concretes to test compressive strength and depth of penetration of which the Krystaline treated concrete showed vastly improved results, much to the pleasure of the owner and the contractor.

The solution was greenlit following the release of the results.

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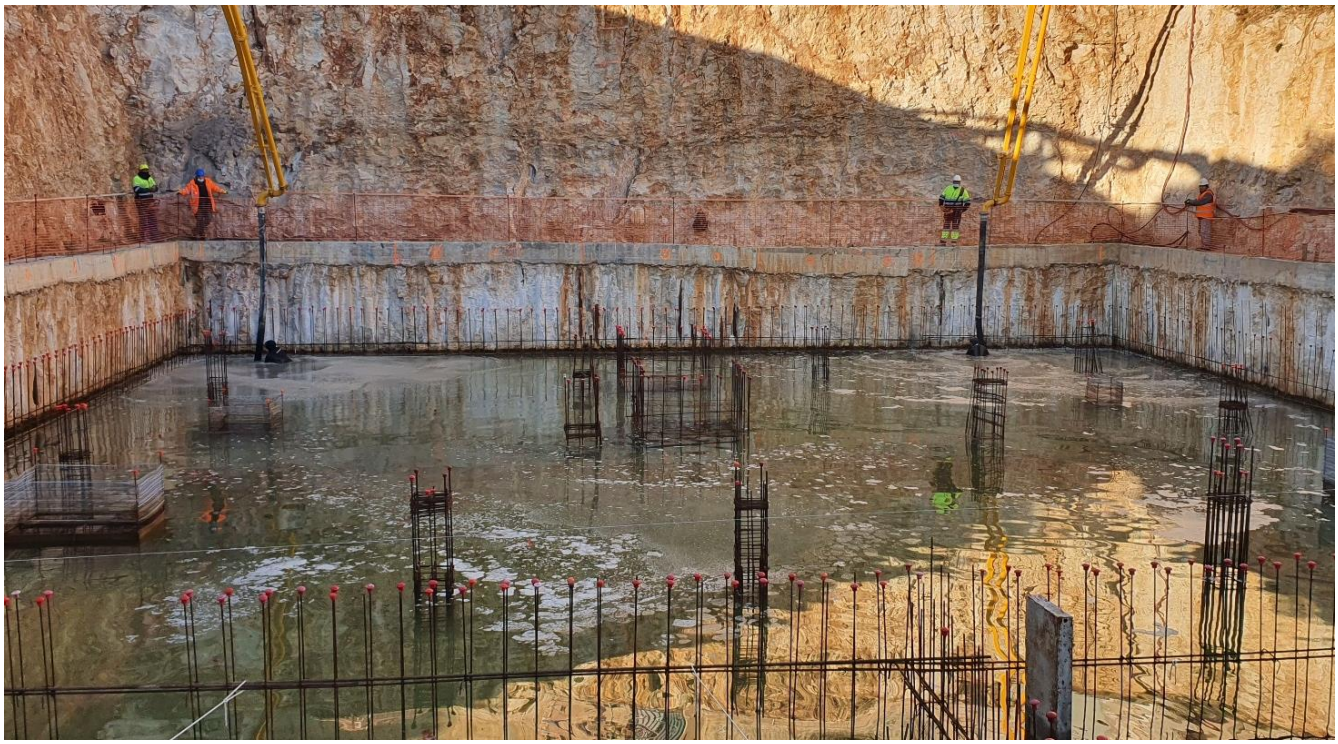
Products applied	Krystaline Add1 for the concrete, Krystaline 1 and Krystaline DRY were used for joints and penetrations.
Application methods	Krystaline Add1 was used as an integral waterproofing solution for below grade walls and the 120 cm thick slab foundation, which was poured underwater by commercial divers. A system of cast in place metal waterstops was affixed to the reinforcing steel beforehand. The pour started at the early hours of the morning, ensuring the slab could be completed in one piece with no issues. The waterproofing treatment was completed by further treating the wall-slab joints with Krystaline mortars as part of the Krystaline joint design system.

Slab pour in progress, using two pump trucks and two commercial divers.



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Following the successful completion of the slab foundation, the project was dry allowing for construction to continue:

Progress as of July 2021: