

Aquila Residence

Dubai, UAE

PRODUCTS USED:

Krytol Internal Membrane™ (KIM®) **Krytol Waterstop Treatment™**
Krytol Plug™ **Krytol Waterstop Grout™** **Krytol Repair Grout™**
Crack Inducing Waterstop

OWNER/DEVELOPER:

Aurora Real Estate Development L.L.C.

ARCHITECT/ENGINEER:

Planquadrat Middle East

GENERAL CONTRACTOR:

Engineering Contracting Co. L.L.C.

READY-MIX SUPPLIER:

Transgulf Readymix

APPLICATOR/DISTRIBUTOR:

Cristal Line Water Proofing Trading L.L.C.

BACKGROUND

After finding a prime location near the highly popular Expo City Dubai, which attracted 20 million visitors during Dubai's 2020 World Expo event, Aurora Real Estate Development L.L.C. knew it would be a perfect spot for those wanting access to more entertainment venues. As a result, they chose to develop a residential building within the area.

Known as the Aquila Residence, the building was designed to reach 12 stories, offering plenty of space for those interested. But there was one key obstacle in the way: the building ground's hydrostatic pressure. Resting at least around 7 m (23 ft), the hydrostatic pressure would likely fully surround the Aquila Residence's lower basement and partially surround half of the building's upper basement. That could lead to a higher risk of water ingress, threatening the structural integrity of the building. All of which posed a quality concern for the two high-level authorities overseeing the building's construction, Dubai Municipality and Trakhees. With that in mind, the Aquila Residence construction team took care to find a reliable, permanent waterproofing solution.

SOLUTION

During the construction team's search for a below grade waterproofing solution, they narrowed it down to two potential specifications: a fully bonded membrane system and Kryton's integral crystalline waterproofing system.

While the first specification choice has been a typical one for builders in the region, it didn't hold up in comparison to the integral waterproofing system. A key reason for that was simply due to quality assurance concerns. Despite fully bonded membranes being highly regarded for localizing any water ingress damage by preventing water from freely traveling between the membranes and the concrete they're bonded to, they are thin and inflexible, making them very easy to damage.



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Their installation can also be time-consuming, costly, and error-prone. If not applied properly and away from dusty conditions, the membranes won't bond effectively to the concrete, increasing the risk of greater water damage and repair costs.

Meanwhile, Kryton's integral crystalline waterproofing system eliminates these issues entirely. It uses a number of solutions to do this, but the core part of it is its award-winning waterproofing admixture, KIM. All it needs to work as intended is to be added directly to the concrete mix during batching. Once there, it disperses throughout the mix, giving the entirety of the concrete the ability to chemically react to water and unhydrated cement particles. This reaction consumes the water in the process and forms solid interlocking crystals, which fill up capillary pores and micro-cracks in the concrete to block any potential pathways that additional water might pass through.

It's a reactive process that protects a structure for the rest of its life. It can't be torn. And its simple installation process eliminates concerns for application errors. Moreover, the rest of the integral system provides extra support for the surrounding construction joints, ensuring both the concrete and its nearby details are protected. It's even backed by a 25-year warranty. All of which has been successfully used to permanently waterproof below grade structures throughout the Middle East without external membrane protection since 2004.

After hearing of these advantages, the contractor of the construction team realized that this integral crystalline waterproofing system would speed up their construction process while saving them money and improving their site productivity and quality. Most importantly, it would keep the Aquila Residence's below grade structure permanently dry.

It was an appealing number of benefits, which led the construction team to work alongside Kryton experts with close monitoring from the Dubai Municipality. That allowed them to provide the most optimal application of 2,400 m³ (84,755 ft³) of KIM in the below grade concrete for direct concrete waterproofing; 1,100 m (3,609 ft) of the Krytol® Waterstop System (consisting of Krytol Waterstop Treatment, Krytol Plug, Krytol Waterstop Grout, and Krytol Repair Grout) to protect the construction joints; and 214 m (702 ft) of supplementary construction protection from the Crack Inducing Waterstop and additional Krytol Waterstop Grout.

It all added up to an end result that was so successful it met the Dubai Municipality's requirements for a pilot project for official approval. That granted Kryton the very first approval certificate for an integral waterproofing system to be used in below grade structures on its own without additional protection from external membranes.

