Seafood Processing Facility

Westport, WA, USA (2020)

PRODUCTS USED:

Krystol Internal Membrane™ (KIM®) Hard-Cem®

READY-MIX SUPPLIER:

Bayview Redi-Mix, Inc.

BACKGROUND

While they're not the first item that people think of when they consider what makes a successful facility, the facility floors are crucial to creating a productive workplace. When smooth and even, these floors allow employees at a facility to work at an optimal pace, keeping productivity up and running. But after enough wear and tear, these floors can become rough and uneven, which is a major cause for workplace slips, trips, and falls.

These injuries cost businesses in the United States of America (USA) around $70 billion a year. However, they aren't the only expense to worry about. There's also the cost of possible damage to equipment that ends up tipping or falling over from the uneven flooring. All of which culminates in the owner having to eventually pay a costly fee to replace the flooring.

It's not an uncommon business dilemma, and it was one that the owner of a seafood processing facility in Washington was trying to prevent. The owner had gotten into a routine where they would have to replace part of their concrete floor slab and dock system every five years. It was an understandable situation as the facility is exposed to liquid nitrogen, fish and crab processing, and salt water on a daily basis. As a result, both the floor slab and dock system experienced significant abrasion, wearing out their concrete surfaces quickly over the years.

However, the owner wanted to reduce the impact of this abrasion so they'd have fewer maintenance costs and a concrete floor with a longer service life. So they went out in search of a product that could increase their slab's resistance to abrasion.

SOLUTION

During the search, the owner went to Kryton. After several in-depth discussions about which of Kryton's Smart Concrete® solutions could create the concrete the owner wanted, they decided that they would combine the KIM and Hard-Cem admixtures together. While KIM would provide protection for the concrete structure, Hard-Cem would increase the concrete's resistance to abrasion and erosion, doubling the concrete's wear life.

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This would be the first project in the USA and the third project throughout North America to apply a combination of these two admixtures, and much like with the other two projects, this combination would turn out to be a great success.

Added during batching, 2,000 ft^2 (185.81 m^3) of KIM supplied the concrete mix with Krystol® technology, which would activate in the presence of water. Once activated, the Krystol will chemically react to water and unhydrated cement particles to form insoluble needle-shaped crystals. These then fill up any potential pathways in the concrete for water and waterborne contaminants, preventing them from weakening the concrete paste or corroding the reinforcing rebar within the concrete.

At the same time, matching the amount of KIM used, Hard-Cem was also added during batching to harden the concrete mix's paste and reduce the mix's fine and coarse aggregate exposure. That ensures the concrete will have the durability to withstand harsh conditions without degrading significantly. So the concrete will need to be replaced less often, reducing maintenance fees and saving up to 40% in CO_2 emissions.

With all these benefits, this concrete mix design is perfect for industrial operations where concrete waterproofing and abrasion resistance is required. It ensures that the operations are more sustainable while finding a way to protect the physical structure of the operations and raise the structure's resistance to abrasion and erosion. Both of which will ensure that the Washington seafood processing facility's concrete will last for many years despite the frequent encounters with liquid nitrogen, seafood items, and salt water every day.

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