PROJECT SHEET

Lascelles Wharf Facility Upgrade

1995

ABOUT THIS PROJECT:

Market Segment:
General Construction

Client:
Port of Geelong Authority (now TOLL Geelong Ports)

Products Used:
Xypex Admix

Location:
Geelong, Australia

Contractor:
Dimac Constructions

Third-Party Testing:
2014 and 2021

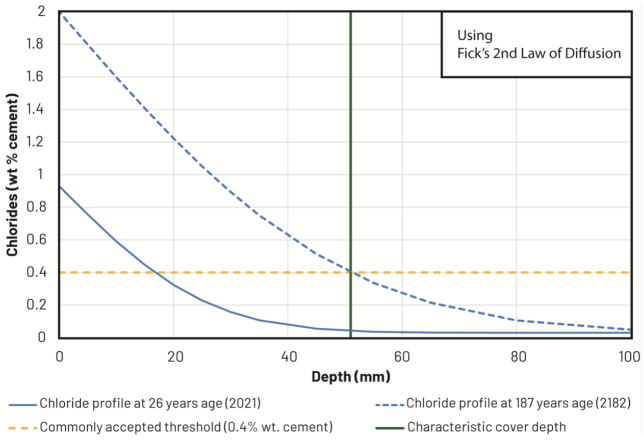
In 1995, the Lascelles Wharf facility in Geelong, Australia, underwent an upgrade to address the degradation of its existing structures. The facility replaced these elements with durable slabs designed to withstand the conditions of a high-wear, chemically aggressive marine environment. The design mix for these slabs incorporated Xypex Admix C-Series to meet the project's requirements, ensuring strength, durability, and water impermeability.

The slabs, each weighing over 20 tonnes and with a compressive strength of 40 MPa, were installed in an area exposed to saltwater, bulk chemicals, and fertilizers. Positioned in the splash zone, these slabs are subjected to constant wear and chemical exposure from off-loading operations at the wharf. The conditions demanded a concrete solution capable of providing long-term durability and protection against water ingress, chloride penetration, and chemical attacks.

The project engineers selected Xypex Admix C-Series given its proven effectiveness in concrete waterproofing and its ability to enhance the durability of structures. Xypex's Crystalline Technology transforms concrete at the microstructural level. Its proprietary chemicals react with cement hydration byproducts to form a non-soluble crystalline structure that permanently blocks water and chemicals.

By integrating Xypex into the concrete mix, the slabs achieved up to 120% of their design strength within seven days of casting. Unlike conventional waterproofing methods, Xypex continues to improve the concrete over time due to its ability to reactivate whenever water is present. This allows the crystalline formations within the concrete to grow and self-heal any new micro cracks that may develop, providing continuous protection against water ingress and chemical attack.

Independent third-party tests conducted on the Lascelles Wharf slabs in 2014 and 2021 confirmed the effectiveness of Xypex-treated concrete. The 2014 tests showed minimal damage, low chloride penetration, and no significant carbonation, estimating a service life of 164 years using Fick's 2nd Law of Diffusion. Even after 26 years exposed to a harsh environment, the 2021 tests showed improved results, with zero carbonation and lower average chloride penetration, now estimating a service life of 187 years.



The use of Xypex Admix C-Series in the Lascelles Wharf facility upgrade ensured the immediate performance of the slabs and provided long-term durability in a challenging marine environment. The self-healing properties of Xypex-treated concrete continue to enhance the structure's lifespan, reduce maintenance requirements, and ensure the wharf's operational integrity for decades to come.

To learn more about how Xypex protects concrete in marine environments, **click here**.