



Cronulla Marina

New South Wales, Australia



Owner / Designer / Applicator
SEA SLIP MARINAS PTY. LTD.



The Cronulla Marina is located within Gunnamatta Bay in New South Wales, Australia. The floats are subject to aerosol chlorides and the top surfaces are within the splash zone. The conditions can be described as a severe marine environment.

The marina floats were cast in October 1994, employing a high early strength concrete design that incorporated 530 kg of GP cement and 4.2 kg of Xypex Admix NF C-Series. The 100 mm thick panels are pre tensioned with wire strands and have foam flotation attached to the soffit. The wire strand steel reinforcing is only 40 mm below the top surface of the concrete panel. The top surfaces of the panels are a nominal 350 mm above sea level.

In 1998, 4 years after the floats were commissioned a condition survey incorporating a visual inspection, chloride penetration and half-cell testing was commissioned. The results of this testing indicated that the performance of the Xypex treated concrete exceeded that of untreated concretes in high chloride environments. Testing of the same properties was commissioned in May 2013 after 19 years of service. The same array of tests and inspections were performed by the same durability consultants.

The testing included concrete sampling at various depths and analysis of those samples for chloride contents as well as half-cell equipotential mapping. The results are extraordinary with very low chloride diffusion coefficients and half-cell results which are indicative of passive or near passive conditions. Visual inspection of the float also revealed no rust spotting or staining and no cracking indicative of corrosion of the embedded steel.

Cronulla Marina (cont.)



The key issues nominated in the testing were; “concrete durability”, “chloride permeability” and “performance life”. The key results of the latest testing are:

1. An expected time to corrosion of 129 years (this is after 19 years of service so a total of nearly 150 years expected time to corrosion from the time of commissioning).
2. Chloride diffusion rates that are 92% lower than the initial test after an additional 15 years of exposure.
3. The absence of any significant half-cell potential gradients.

Given the very low concrete cover and the severe environment, this real life long term test lends very strong support to the test results showing Xypex's ability to improve a concrete's resistance to chloride ingress and corrosion.