

New Developments in Corrosion Research and Investigation for Reinforced Concrete Marine Structures

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ABSTRACT

The prediction of asset life and the assessment of risk of damage due to corrosion are the main questions facing the owners of any reinforced concrete asset that is exposed to the corrosive elements of the marine environment. This paper presents two recent developments with regard to corrosion rate and corrosion risk assessment in reinforced concrete marine structures. It also argues that to ensure the long-term serviceability of any infrastructure in the marine environment, it is important to implement a regular maintenance program and to use advanced techniques in the inspection, repair and protection of these structures.

Recent research at the ACCI indicates that crack width in submerged concrete structures does significantly influence the macrocell induced corrosion rate in the crack zone. However, the influences of crack width on microcell corrosion are still under investigation.

Secondly, a unique method of corrosion assessment, the *Potential Curvature Method*, has been developed at the ACCI. This new method overcomes the major limitations of ASTM C876 criteria on corrosion assessment based on half-cell potential values. It is a powerful tool for the effective identification of corrosion hot spots in concrete structures.