



Better Understanding of Tide's Influence on Half-cell Potential Measurements for Reinforced Concrete in Marine Environment

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Abstract

Main damage occurring on reinforced concrete (RC) structures can be attributed to the corrosion of the rebar. Chloride ions penetration and/or carbonation, as major causes of RC corrosion, are well understood for onshore structures. When dealing with structures in marine environment, more parameters must be considered, as the different exposure zones (tidal, splash and atmospheric) will have a significant influence on the corrosion behavior.

This article deals with the corrosion diagnosis of the piers of the ile de Ré bridge. The objective is to provide an effective method to identify the different exposure zones based on the non-destructive measurements (half-cell potential) that are modelled taking into account the influence of the tide.

Keywords: reinforced concrete, bridge, marine environment, corrosion diagnosis, concrete durability, half-cell potential

1 Introduction

Corrosion is the main cause of degradation of reinforced concrete structures [1-3]. This later is relatively well known for atmospheric structures

but many other parameters are involved in marine conditions, including the different exposure zones [4-6]. Non-destructive techniques for corrosion evaluation of rebars are more difficult to apply in