



ABSTRACT

Although concrete has for many decades been thought to be a durable material, evidence shows that concrete in aggressive environmental conditions such as the marine environment is susceptible to premature deterioration. Various methods including hydrophobic impregnation have been implemented in practice for addressing concrete durability problems, both for new and existing reinforced concrete structures. This project aims to investigate the use of hydrophobic impregnation to extend the service life of existing marine structures that have already been contaminated with sufficient chlorides to initiate corrosion. This work will provide insight into the mechanisms by which hydrophobic impregnations limit steel corrosion in marine reinforced concrete structures, and the appropriate timing of application of the product. The results of the study will be used in the development of an empirical model for the propagation of corrosion in silane treated marine reinforced concrete structures, and eventually, practical recommendations on using hydrophobic treatments for corrosion control and service life extension of deteriorating structures.
