

**CENTRE OF STUDIES FOR BUILDING SURVEYING
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING
UNIVERSITI TEKNOLOGI MARA**

**THE MAINTENANCE ON SALINITY EFFECT ON
REINFORCEMENT CONCRETE STRUCTURE AT COASTAL
AREA**

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**“I hereby declare that this academic project is the result of my own
research except for the quotation and summary which have been
acknowledged”**

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ABSTRACT

Development at coastal area has its own demand either for residential, recreation or tourism purposes. Thus, a lot of new building construction can be seen at along coastline in order to fulfill the demand. Building that constructed along coastline likely can be effected by salinity since it built nearby sea especially building that has physical contact with sea water, such as chalets built above the sea water. Salinity can be found in sea water where it refers to concentration of salt element that contains in sea water. The aim of this dissertation is to establish factors that need to be considered by the maintenance team on the salinity effect on reinforcement concrete building structure at coastal area. Three chalet development located at coastline and built above sea water has been chosen for the case study. The first objective of this dissertation is to find out the properties of saline water that contribute to deterioration of reinforcement concrete structure. The second objective is to find the common defect of reinforced concrete structure on building at coastal areas. For the third objective is to examine the consequences of the salinity effect if no remedy's action taken. The method of data collection is through interview with maintenance department representative and condition survey on the selected case studies. For condition survey, it carries out and focus on defect that occur in reinforced concrete structure such as column, beam and slab. Then after all data, finding analyze, conclusion and recommendation provided according to the objective of this dissertation. The result of this dissertation show all maintenance representative lack of information about effect of salinity on reinforcement concrete. On the other hand, condition survey result show defect cause by salinity are not treated properly by the maintenance team. Thus the maintenance team should be equip with information about the effect of salinity through workshop or other learning process. This is important to make sure building around coastal area are maintained properly from defect cause by salinity.

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Thank You

CHAPTER 1

1.1 Introduction

According to worldoceanreview.com (2010) more than a billion people mostly of them in Asia live in coastal regions and this number will likely increase dramatically in the next decade. Coastal areas attract a variety range of industry due to the very good location where near to port and also offer a lot of opportunities for recreational activities. As a result, they attract lots of businesses and people to make development of coastal area (Panda.org, n.d).

Coastal development is a broad category which includes an array of human activities including beachfront construction of homes and tourism such as hotels, restaurants and road for access. Also included are things like seawall construction, shore dredging and oil platform construction. Development of coastal area exposed to extreme climate that lead to defect on a building. Coulbourne. (2011) said construction methods in a coastal environment should be resistant to flood and wind damage, wind-driven rain, corrosion, moisture, and decay. This may happen due to sunlight, aging, insects, chemicals, temperature or other factors.

Construction at coastal area required special considerations that must be made when selecting building materials for a coastal building (Smith & Virmani, 2000). The harsh environment requires that more substantial building materials be used and more care taken when using these materials in order to ensure durability, hazard resistance, and reduce maintenance. One of the main material used for construction is concrete, according to Eid and Daye (2008) concrete that suitable for coastal development must sound, durable mix and made with a sulfate-resisting cement. Beside that it also has strength of 5,000 psi minimum for a 28-day compressive test.