DURABILITY OF REINFORCED CONCRETE

by

Christos Hadjiyiannis

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CHAPTER 1

INTRODUCTION

The word concrete comes from the Latin "concretus" meaning compounded. Today concrete is understood to consist of a graded range of stone aggregate particles bound together by a hardened cement paste.

Concrete is required to be strong free from excessive volume changes and resistant to penetration by water. It may also need to resist chemical attack or possess a low thermal conductivity.

Concrete is a material which although relatively in compression is weak in tension and for structural members subject to tensile stress may be reinforced by steel bars. The effectiveness of reinforced concrete as a structural material depends on the following:

1. The interfacial bonding between steel and concrete which allows it to act as a composite material.
2. The passivating effect of the concrete environment to inhibit steel corrosion.
3. The similar coefficients of thermal movement of concrete and steel.

The requirement of good quality concrete and the provision of adequate reinforcement cover is a fundamental importance to the specification of durable concrete. Low permeability is identified as being the key to durable concrete and is governed by W/C ratio, cement content curing and the degree of compaction obtained.

Concrete will not deteriorate if the specifications covering its production are correct and are followed. It follows, therefore, that when concrete does deteriorate either the specifications were improper or they were violated.

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