

DURABILITY OF CONCRETE

SUMMARY

REFERENCES

CHAPTER I

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SUMMARY

Concrete and steel are the two most commonly used structural materials. They sometimes complement one another and sometimes compete with one another so that structures of a similar type and function can be built in either of these materials. And yet, the engineer often knows less about the concrete of which the structure is made than about the steel.

Reinforced concrete is the most versatile and potentially one of the most durable materials that a designer can choose for almost any type of building structure. Good durability can be achieved, but it does demand careful attention to detailed design and painstaking supervision and workmanship during construction.

This project explains in detail the importance of durability of concrete and how the Engineers and contractors can produce a durable concrete.

Secondly the mechanism of the following:

- 1) Alkali - Silica reaction
- 2) Carbonation and
- 3) Chemical attack

are explained in detail and also several tests, in order to resist concrete these attacks by chemicals is carried out.

Furthermore explanations and precautions, remedies for the prevention and repair of concrete, generally used, are mentioned and explained step by step.

Finally, a brief gather and tabulation of the results of investigations carried out in Cyprus on the problem of Alkali-Silica reaction, was mentioned.

Apart from the above many unique diagrams, photographs, and summary tables are included to serve as a warning or as design aid.

From the above it must not be concluded that making good concrete is difficult. "Bad" concrete - often a substance of unsuitable consistence, hardening into a honeycombed, non-homogeneous mass - is made simply by mixing cement, aggregate and water.

The usual primary requirements of a good concrete in its hardened state is a satisfactory compressive strength. This is aimed not only so as to ensure that the concrete can withstand a prescribed compressive stress but also because many other desired properties of concrete are concomitant with high strength. The various properties of concrete - density, durability, tensile strength, impermeability, resistance to abrasion, resistance to sulphate attack and generally chemical attack, and many others - are discussed in the appropriate chapters.

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