

**A STUDY ON THE EFFECT OF WATER- REDUCING  
ADMIXTURES ON THE HIGH STRENGTH OF CONCRETE**

**A Project report presented in partial fulfillment of the requirements for the  
award of Advanced Diploma in Civil Engineering, Mara Institute of  
Technology.**

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## **SYNOPSIS**

**This project is carried out in part fulfillment of Advanced Diploma in Civil Engineering, Mara Institute of Technology. The objectives of this project are to study the 'Effects of Water-Reducing Admixtures on the Behaviour of Fresh and Hardened Concrete'.**

**In this study, locally made materials are used which are commonly encountered in construction industry in this country.**

**The materials used were as follows ;**

**1. Ordinary Portland Cement which comply to MS 522. Part 1 1977**

**2. 20 mm graded crushed granite.**

**3. Tap water.**

**4. Water-Reducing Admixture : Admix AP- The water reducing plasticizers.**

**manufactured by FOSROC EXPANDITE SDN.BHD.**

# CHAPTER ONE

## 1.0 INTRODUCTION

### 1.1 General

Increasing demands for good quality concrete with better durability properties has focus interest on high strength concrete. Most countries have their own programmes to develop high strength concrete. Strength is primarily a function of the porosity of the cementing matrix, the lower the porosity, the higher the strength will be. Thus to achieve very high strength concrete, the porosity of the paste and the water to binder ratio must be reduced as much as possible. At the same time complete compaction must be maintained. Concrete is a composite material and many variations are possible when choosing its two major components, their deformation properties and the adhesion between the paste and aggregate surface.(1)

Due to the extensive use of high strength concrete in the construction industry, numerous types of admixtures has been introduced in the market to enhance concrete properties. The quantities used could impact certain desirable properties to the concrete.

Water reducing agent are admixtures can be used to produce normal workability at low water-cement ratio with a consequent general improvement in strength, water tightness and durability or produce extremely workable concrete at constant water-cement ratio.