



**FINAL YEAR PROJECT REPORT
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MARA INSTITUTE OF TECHNOLOGY
SHAH ALAM**

**STUDY ON CRACK BEHAVIOUR
OF
STRUCTURAL ELEMENT**

BY

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ABSTRACT

This report deals with the result of systematic observation of cracking and deformation development in reinforced concrete structures (beam) at The School Of Architecture And Planning, MARA Institute Of Technology, Shah Alam.

There are two cases to be analysed by using ANSYS. The result of crack monitoring are compared with the manual calculation from theory and computer software of ANSYS.

1.0 INTRODUCTION

1.1 GENERAL

There are many cracks that are not wanted in a structure; cracks which impede its performance, lead to the onset of the corrosion and cracks which are aesthetically unacceptable. It is these cracks to which we need to pay attention and exert control over. They are known as *intrinsic cracks* and occur when the concrete is in the plastic state as well as in hardened concrete.

Cracking behaviour is a complex and random phenomenon and is influenced by a number of factors, including the geometry of the reinforcing element, the number of reinforcement layers and the properties of the matrix.

Cracks are generally expected to occur in reinforced concrete structures without or with partial prestress, when the tensile stresses exceed the strength of the concrete in tension. Reduction in stiffness of members due to cracking must be considered in the calculation of the displacements in reinforced concrete structures. The weakest section in cracked member is obviously at the location of the crack.

Factors affecting failure of structural element are:

- a. incorrect selection of materials
- b. errors in design calculations and detailing
- c. poor construction methods and inadequate quality control and supervision