

**AN INVESTIGATION INTO THE VARIATION  
OF THE N.A DEPTH OF R.C BEAMS DURING  
LOADING TO FAILURE**

BY  
**ELEFThERIOU ANDREAS**  
&  
**CHRYSANTHOU POLYCARPOS**

PROJECT REPORT

SUBMITTED TO THE DEPARTMENT OF CIVIL  
ENGINEERING OF THE HIGHER TECHNICAL INSTITUTE

NICOSIA - CYPRUS

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR THE DIPLOMA OF

**TECHNICIAN ENGINEER**

IN  
**CIVIL ENGINEERING**

C/970

JUNE 2003

## **SUMMARY:**

-----

The main object of this project is to investigate experimentally the variation of N.A depth of reinforced concrete beams during loading to failure and compare the experimental with the theoretical results.

The mix design chosen to be used for this project is applicable to a cube strength between 30 to 40 N/mm<sup>2</sup>.

Two beams were manufactured one under reinforced and one over reinforced. The cross section of the beam had dimensions 100 X 200 mm. For each beam five cubes of dimensions 150 X 150 X 150 mm were taken to evaluate the compressive strength. The cubes were tested in compression at a testing machine at 7 and 28 days.

The beams were tested to failure, and also enough measurements were taken in order to calculate the position of the N.A at every step. The N.A position was derived theoretically and the results were compared with the experimental data.

## LIST OF CONTENTS

---

**Acknowledgements.**

**Summary.**

**Chapter 1:** Introduction.

**Chapter 2:** Description of the experiments.

**Chapter 3:** Derivation of the N.A position by using a theoretical procedure.

**Chapter 4:** Derivation of the N.A position by using the experimental results.

**Chapter 5:** Conclusions.