A STRUCTURAL ANALYSIS PROGRAM FOR PLANE TRUSSES

BY ANDREAS CONSTANTINIDES

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

NICOSIA JUNE 1995



ACKNOWLEDGEMENTS

The fact that this project became reality was due to the support, guidance, great assistance and patience of my supervisor Dr.Chrysis G. Papaleontiou to whom I would like to express my sincere appreciation.

I would like also to thank those, and they were many ,who helped me one way or another to complete this project.

I am hoping that the end result will actually reflect the work done.

A Structural Analysis Program for Plane Trusses by Andreas Constantinides

Summary

In a few years from now every task or job will be performed through computer devices. Having this in mind I decided to choose this specific project which involves both, manual and computer designing.

At the beginning of my project I was not exactly sure about the final result and I was a little bit frightened. These feelings though , were vanished completely as soon as I began the work and I found out that I was actually enjoying it.

My work was to try to develop a computer program, using specific language(Fortran), in order to analyze Plane Trusses. The purposes of my project were apart of learning the theory of structures involved(Stiffness Method) and to develop programming skills in Fortran but also to get more familiar with the computer use for the reasons mentioned above.

Closing the summary I would like to say that my main concern was to present my work in such a way and order so that even a person who does not have an idea of what a truss is, how it is analyzed, what is Fortran and its main statements, can easily understand exactly and clearly the work done.

CONTENTS

	PAGE
SUMMARY	A
INTRODUCTION	1
CHAPTER 1: ABOUT TRUSSES	2
CHAPTER 2: ABOUT FORTRAN	5
CHAPTER 3: PROGRAM'S THEORY	14
CHAPTER 4: MATRICES	30
CHAPTER 5: THE PROGRAM	38
CHAPTER 6: VERIFICATION PROBLEMS	42
CHAPTER 7: USER'S MANUAL	54
CONCLUSIONS	58
REFERENCES	59