DESIGN AND ANALYSIS OF CONTINUOUS REINFORCED CONCRETE BEAMS USING A COMPUTER PROGRAM

by

Mina Christakis and Papadopoulos Marinos

Project Report submitted to the Department of Civil Enginnering of the Higher Technical Institute Nicosia Cyprus in partial fulfillment of the requirements for the diploma of TECHNICIAN ENGINEER

in

CIVIL ENGINEERING

June 1992

	1000
BUTHER	1928



ACKNOWLEDGEMENTS

We would like to express our gratitude to Mr. Nicholas Demetriou for his substantial assistance to this project. Also special thanks to Dr. Christis Chrysostomou, our supervisor, for his valuable help and guidance to us. We would like to thanks, also, our friends Rolandos Louca and Louca Costas for their support and help. Finally our gratitude go to our families, Mr. and Mrs Andrea Mina and Mr. and Mrs Philippou Papadopoulou, for their support and help during these three years of studies at the Higher Technical Institute.

Thank you all !

i

<u>SUMMARY</u>

Authors : Mina Christakis and Papadopoulos Marinos Project : Analysis and design of continuous reinforced concrete beams using a computer program

The purpose of this project is to produce a computer program , using any computer language , which will analyze and design continuous reinforced beams. Any method of analysis and any design code could be used. In this project we used the following :

(a) For the analysis we used the Moment distribution method.

(b) For the design we used " British Standards BS 8110 , structural use of concrete ".

The main conclusion of the project is that the use of computers in engineering and generally can make your life easier. Also the computers offer speed and accuracy to the calculations and in every respect.

We are living into the century of computers so to learn programming and using a computer is a must.

$\underline{C} \quad \underline{O} \quad \underline{N} \quad \underline{T} \quad \underline{E} \quad \underline{N} \quad \underline{T} \quad \underline{S}$

•

<u>P_A_G_E</u>

<u>CHAPTER 1</u> : Computers 1.1 What is a computer system 1.2 Computer languages 1.3 Quick BASIC version 4.5	2 – 5 2 4 5
<u>CHAPTER 2</u> : Methods of analysis and design 2.1 Methods of analysis 2.1.1 Slope deflection method 2.1.2 Moment distribution method 2.1.3 Three moment equation method 2.2 Methods of design 2.2.1 Design of reinforce concrete structures 2.2.2 Design reinforcement for moment 2.2.3 Design reinforcement for shear 2.2.4 Check for deflection	8 - 21 8 12 14 15 15 15 17 20 21
CHAPTER 3 : The programs 3.1 Presentation of the programs 3.1.1 Program MAIN1.BAS 3.1.2 Program ANALYS92.BAS 3.1.3 Program DESIGN92.BAS 3.2 Manuals 3.2.1 Manual for ANALYS92.BAS 3.2.2 Manual for DESIGN92.BAS 3.3 Listings	23-122 23 24 28 35 35 39 42
<u>CHAPTER 4</u> : Example of anaysis and design of a continuous reinforced concrete beam by hand	122
<u>CHAPTER 5</u> : Example of analysis and design of a continuous reinforced concrete beam using the programs	138
<u>CHAPTER_6</u> : Conclusions / Comments	165
<u>REFERENCES</u> :	166