

1. Record Nr.	UNINA9910812508203321
Autore	Harrison H. B. <1930->
Titolo	Structural analysis and design : some microcomputer applications / / H. B. Harrison
Pubbl/distr/stampa	Oxford, England : , : Pergamon Press, , 1990 ©1990
ISBN	1-4832-9912-0
Edizione	[2nd ed.]
Descrizione fisica	1 online resource (858 p.)
Disciplina	624.1/71/0285
Soggetti	Structural analysis (Engineering) - Data processing Structural design - Data processing Microcomputers - Programming
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references at the end of each chapters and index.
Nota di contenuto	Front Cover; Structural Analysis and Design: Some Microcomputer Applications; Copyrigh Page; Tabe of Contents; PREFACE TO THE SECOND EDITION; PREFACE TO THE FIRST EDITION; NOTATION; CHAPTER 1. AN INTRODUCTION TO STRUCTURAL COMPUTATION; 1.1. INTRODUCTION; 1.2. THE MINICOMPUTER; 1.3. LANGUAGES; 1.4. SOME SMALL STRUCTURAL PROBLEMS; 1.6. COMMENTS; 1.7. REFERENCES; CHAPTER 2. SOME BEAM CALCULATIONS; 2.1. INTRODUCTION; 2.2. THE SIMPLE UNIFORM BEAM; 2.3. THE NON-UNIFORM BEAM; 2.4. DESIGN OF PLATE GIRDERS; 2.5. COMMENTS; 2.6. REFERENCES; CHAPTER 3. COMPUTATION OF BENDING STRESSES; 3.1. INTRODUCTION 3.2. SIMPLE FLEXURAL THEORY3.3. PROGRAMMING THE AREA CALCULATIONS; 3.4. COMMENTS; CHAPTER 4. ECCENTRICALLY LOADED CONNECTIONS; 4.1. INTRODUCTION; 4.2. ANALYSIS FOR BOLTED SHEAR CONNECTIONS; 4.3. ANALYSIS FOR WELDED SHEAR CONNECTIONS; 4.4. THE PROGRAMS FOR JOINT ANALYSIS; 4.5. COMMENTS; 4.6. REFERENCE; CHAPTER 5. SOLUTION OF SIMULTANEOUS EQUATIONS; 5.1. INTRODUCTION; 5.2. SOME ARRAY OPERATIONS IN FORTRAN; 5.3. SOLUTION BY GAUSSIAN ELIMINATION; 5.4. SOLUTION BY COMPACT ELIMINATION METHODS; 5.5. COMMENTS; 5.6. REFERENCES; CHAPTER 6. ANALYSIS OF PLANE TRUSSES; 6.1. INTRODUCTION

6.2. DISPLACEMENT ANALYSIS OF TRUSSES6.3. AUTOMATING THE DISPLACEMENT METHOD; 6.4. THE FRAME STIFFNESS MATRIX; 6.5. COMMENTS; 6.6. REFERENCES; CHAPTER 7. ANALYSIS OF SPACE TRUSSES; 7.1. INTRODUCTION; 7.2. STIFFNESS EQUATION GENERATION; 7.3. ALLOWANCE FOR INITIAL STRAINS; 7.4. COMMENTS; CHAPTER 8. ANALYSIS OF PLANE RIGID FRAMES (1); 8.1. INTRODUCTION; 8.2. THE STATICS MATRIX; 8.3. THE MEMBER FLEXIBILITY EQUATIONS; 8.4. THE DEFORMATION COMPATIBILITY EQUATIONS; 8.5. THE FRAME STIFFNESS EQUATIONS; 8.6. COMMENTS; CHAPTER 9. ANALYSIS OF PLANE RIGID FRAMES (2); 9.1. INTRODUCTION
9.2. ALLOWANCE FOR FINITE SHEAR STRAINS9.3. ALLOWANCE FOR INTERNAL HINGES; 9.4. ALLOWANCE FOR INITIAL STRAINS; 9.5. ALLOWANCE FOR TRANSVERSE LOADING ON MEMBERS; 9.6. COMMENTS; CHAPTER 10. THE ANALYSIS OF SIMPLE AND CONTINUOUS BEAMS; 10.1. INTRODUCTION; 10.2. STIFFNESS ANALYSIS; 10.3. PLANE FRAME PROGRAM; 10.4. BEAM PROGRAM; 10.5. BEAM LOADING; 10.6. INFLUENCE LINES; 10.7. INFLUENCE COEFFICIENT PROGRAM; 10.8. CONCLUSIONS; 10.9. REFERENCES; CHAPTER 11. ANALYSIS OF PLANE GRILLAGES; 11.1. INTRODUCTION; 11.2. THE BOW GIRDER; 11.3. THE STATICS MATRIX; 11.4. AUTOMATIC GRILLAGE ANALYSIS
11.5. COMMENTSCHAPTER 12. ANALYSIS OF RIGID SPACE FRAMES; 12.1. INTRODUCTION; 12.2. THE STRESS-RESULTANTS; 12.3. THE MEMBER STIFFNESS EQUATIONS; 12.4. THE STATICS MATRIX; 12.5. THE GENERAL PROGRAM; 12.6. COMMENTS; 12.7. REFERENCE; CHAPTER 13. ELASTIC-PLASTIC ANALYSIS OF PLANE FRAMES; 13.1. INTRODUCTION; 13.2. ELASTIC-PLASTIC ANALYSIS; 13.3. AUTOMATIC ELASTIC-PLASTIC ANALYSIS; 13.4. PROGRAMMING THE METHOD OF ELASTIC-PLASTIC ANALYSIS; 13.5. COMMENTS; 13.6. REFERENCES; CHAPTER 14. ANALYSIS OF SUSPENSION CABLES; 14.1. INTRODUCTION; 14.2. THE CHAIN CALCULATION
14.3. IMPROVEMENT OF THE INITIAL VALUES

Sommario/riassunto

This book is designed to give the structural engineer training in microcomputer technology, starting with theory and computer methods in Part 1 and culminating in extensive listings of programs in both Fortran 77 and Basic in Part 2. Because it provides programs and the information to understand and modify them for specific purposes, it can be used as a text for graduate engineering students or by the professional engineer interested in learning how computers can be applied to practical problems. Data files and worked solutions are included. Some forty programs are explained ranging from cross
