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REINFORCED CONCRETE VOL. I **PART-II PART-I**

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REINFORCED CONCRETE VOL. II

Bv Dr. H. J. Shah

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SYNOPSIS OF REINFORCED CONCRETE VOLUME II

This volume includes two major topics namely Multi-storeyed buildings and Water tanks. During last three years very important revisions are made in IS codes like IS:875 Part III, IS:1893 Part I, IS:3370 Parts I to IV, IS:13920, etc. These changes have forced me to entirely revise the existing chapters. Manual calculations are given due importance. In this modern designing world, excel calculations are termed as manual. The subject matter is arranged in two major topics as follows:

PART I: MULTI-STOREYED BUILDINGS: Analysis and design of medium rise buildings have been treated in details. The manual calculations are given sole importance. It is believed that once manual calculations are understood fundamentally, it will be easy to understand complicated programs run by the computer.

The subject matter starts with building fundamentals and overview of analysis and design for gravity loads. Next, the deformations of RCC building are attended since lateral loads are becoming more important with height of the building. The analysis of building for horizontal loads being dynamic, the building dynamics is treated in brief. A thorough discussion on lateral loads like wind and earthquake. Manual calculation of these loads is described with special attention to response spectrum method. The code has made it mandatary to use response spectrum method. An excellent explanation using excel software of the method is treated. Latest ductility provisions as per IS: 13920 are included and lucidly discussed in details. To properly grasp the analysis and design of multi-storeyed buildings, a seven storeyed unbraced building is analysed and typical members are designed with manual (including excel) calculations. Ordinary and special isolated shear walls are treated in details. The design work is carried out by using manual (excel) methods.

PART II WATER TANKS (LIMIT STATE METHOD): Fundamentals of liquid retaining structures are treated in lucid way. Using limit state method, designs are treated for individual members like cantilever wall subjected to flexure, Base slab of an elevated tank, and side wall of a container subjected to flexure and tension. The members are designed step by step considering professional designs. Circular tanks resting on ground are professionally discussed in details. A design of 10 ML USR is presented. Rectangular tanks resting on ground are solved by using approximate methods. A step by step treatment to the calculation of earthquake forces as per IS:1893-Part II is presented for ground supported and elevated tanks. The elevated circular, square and intze tanks of small size are completely analysed (including earthquake forces), designed and detailed. A number of short questions are framed and answered from each of the chapters to clear basic fundaments of the subject.





REINFORCED CONCRETE VOL. I * PART-I



Bv Dr. H. J. Shah



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ABOUT THE BOOK

ISBN

Size

Pages

This book presents the basic principles involved in Analysis and Design of Reinforced Concrete Structures. This 12th edition of Vol. I has been thoroughly revised and extensively enlarged in two parts. Almost all chapters are revised with adding a plenty of new matter, examples and figures. Mix design as per latest IS:10262 with excel programs is added. A number of excel programs have been added to clarify the subject matter and design the elements of structure. As per prevailing market conditions the default combination of materials is revised to M20 grade concrete and Fe 500 grade steel, however, the other combinations of materials have not been completely ignored.

The outline of the book "Reinforced Concrete Vol. I - Part I" is as mentioned below:

Chapter 1 to 3 discuss mainly Concrete Technology. Chapter 1 introduces the subject, while chapter 2 deals with properties of ingredients of concrete. Chapter 3 deals with properties of wet and set concrete. It explains design mix concrete and presents excel programs to design a concrete mix for standard concretes based on IS:10262-2019.

Chapter 4 to 6 discuss fundamentals of flexure design, also discuss working stress method as well as limit state method for flexure design. It designs singly and doubly reinforced rectangular and flanged beams for flexure.

Chapter 7 and 8 presents design for Shear and checking for Development Length, Deflection and Cracking.

Chapter 9 and 10 deal with the design of Simply Supported and Cantilever Beams and Slabs. Chapter 11 Continuous beams and slabs capable of free rotation at supports are discussed, including redistribution of moments.

Chapter 12 and 13 Simple cases of torsion and stairs are discussed.

Chapter 14 and 15 Introduce the Load Calculations and Simple designs. Considering the fundamentals developed in earlier chapters, the load calculations on simple structures like Slabs and Beams, capable of free rotation at supports are considered. A few cases are designed in chapter 15.

Chapter 16 Designs of Framed Beams are introduced with examples considering it appropriate to discuss with the elements that are not free to rotate at their supports.

Now this book "Reinforced Concrete Vol. I - Part I", in its 16 Chapters and Appendix contains:

- 350 Neatly drawn sketches
- 063 Useful tables
- 167 **Design problems**
- Questions at the end of the chapters 243
- 019 Excel programs
- 316 Short questions with answers.

The book in the present form will prove to be extremely useful to the students preparing for the Degree examinations in Civil Engineering and Architecture of all the Indian Universities, Diploma examinations conducted by various Boards of Technical Education, Certificate Courses as well as for the A.M.I.E., U.P.S.C., G.A.T.E., I.E.S., and other similar competitive and professional examinations. It should also be an immense use to practicing Civil Engineers.

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CONTENT

- 01: INTRODUCTION 02: PROPERTIES OF INGREDIENTS OF CONCRETE
- 03: STRUCTURAL CONCRETE
- 04 : DESIGN FOR FLEXURE: FUNDAMENTALS
- 05: DESIGN FOR FLEXURE:
- 06: LIMIT STATE METHOD
- 07: SHEAR AND DEVELOPMENT LENGTH
- 08: DEFLECTION AND CRACKING
- 09: SIMPLY SUPPORTED AND CANTILEVER BEAMS
- 10 : SIMPLY SUPPORTED AND CANTILEVER BEAMS
- 11: CONTINUOUS BEAMS AND SLABS
- 12: TORSION
- 13: STAIRS
- 14: LOAD CALCULATIONS FOR
- 15: SIMPLE DESIGNS
- 16: FRAMED BEAMS
- APPENDIX A : SHORT QUESTIONS WITH ANSWERS

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Checklist

APPENDIX B : USEFUL TABLE

INDEX

REINFORCED CONCRETE - VOL. I PART-I DETAILED CONTENTS

CHAPTER 1 INTRODUCTION

- 1-1. Structural design-role of a structural engineer
- 1-2. Concrete and reinforced concrete
- 1-3. Mechanics of reinforced concrete
- 1-4. Advantages and limitations of using concrete
- Structural elements 1-5
 - (1) Slabs
 - (2) Beams
 - (3) Columns
 - (4) Walls
 - (5) Foundations
- 1-6. Loads on structure
 - (1) Dead loads
 - (2) Live loads
 - (3) Impact loads
 - (4) Wind loads
 - (5) Earthquake loads
 - (6) Longitudinal loads
- 1-7. Load combinations
- 1-8. Ductility versus brittleness
- 1-9. Strength and serviceability
- Response of a structure to wind and earthquake loads 1-10.
- 1-11. Ordinary and ductile structures
- 1-12. Methods of design
 - (1) Working stress method
 - (2) Limit state method
- 1-13. Codes of practice
- 1-14. Adaptation of si units
- 1-15. Presentation of design calculation of a project
- Questions 1

CHAPTER 2 PROPERTIES OF INGREDIENTS OF CONCRETE

- 2-1. Introductory Cement
- 2-2. General
- 2-3.
- Manufacture of portland cement 2-4. Basic chemistry of cement
 - (1) Lime
 - (2) Silica
 - (3) Alumina
 - (4) Iron oxide
 - (5) Magnesia
 - (6) Calcium sulphate
 - (7) Alkalis
 - (8) Sulphur trioxide
 - Properties of chemical compounds
- Chemical properties of cement 2-5.
 - (1) Lime saturation factor
 - (2) Ratio of alumina to iron oxide
 - (3) Insoluble residue
 - (4) Magnesia
 - (5) Total sulphate content as sulphuric anhydride

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- (6) Total loss on ignition
- 2-6. Hydration of cement
 - (1) General
 - (2) Chemistry of hydration
 - (3) Heat of hydration and strength
 - (4) Rate of hydration
- 2-7. Types of cement
 - (1) Ordinary portland cement
 - (2) Rapid hardening cement
 - (3) Blast furnace slag portland cement
 - (4) Portland pozzolana cement

(7) Sulphate resisting cement (8) High alumina cement (9) Super-sulphated cement (10) Oil-well cement (11) Ultra-rapid hardening portland cement (12) White cement (13) Coloured cements (14) Water-proof portland cement (15) Masonry cement

(5) Hydrophobic cement

(6) Low heat portland cement

- (16) Expanding cement
- (17) Quick setting cement
- (18) Air-entraining cement
- 2-8. Selection of cement for production of concrete
- 2-9. Tests for cement
- 2-10. Fineness test
 - (1) By dry sieving
 - (2) Blaine air permeability method
 - Consistency of standard
 - Cement paste
 - Procedure
- 2-12 Test for setting times Procedure
- False set 2-13. Soundness test

2-11.

- Procedure
- 2-14. Autoclave expansion
- Procedure
- 2-15. Density test
 - Apparatus
 - Materials
 - Procedure
 - Calculation
- Specific gravity of cement
- 2-16. Test for compressive strength
- 2-17. Heat of hydration test
- 2 18. Storing of cement
- Mineral admixtures
- 2 19Mineral admixtures
 - (1) Pozzolana
 - (2) Ground granulated blast furnace slag

(1) Compressive strength of prepared samples of parent

(2) Specific gravity based on saturated surface dry basis

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- Aggregates
- 2-20. Introductory

2-23-1. Particle shape

2-23-2. Surface texture

2-23-4. Specific gravity

2-23-5. Bulk density

- 2-21. Aggregate size
 - (1) Single size aggregate

(2) Aggregate crushing value

(3) Ten percent fines value

(4) Aggregate impact value

(1) Apparent specific gravity

2-23-6. Water absorption and surface moisture

(1) Water absorption

- (2) Graded aggregates
- 2-22. Fine and coarse aggregate
- 2-23. Properties of aggregate

2-23-3. Strength of aggregate

rocks

REINFORCED CONCRETE – VOL. I PART-I DETAILED CONTENTS

	(2) Sumfrage maintena	2.0	Curring
2 22 7	(2) Surface moisture	3-0.	Curing
2-23-7.	Bulking of sand		(1) Moist curing
2-23-8.	Deleterious substances in aggregates		(2) Membrane curing
	(1) Organic impurities		(3) Steam curing
	(2) Surface coatings	3-7.	Formwork for r.C.C. Members
	(3) Salt contamination	3-8.	Workability
	(4) Weak or unsound particles		(1) Slump test
2-23-9. Soundness of aggregate			(2) Compacting factor test
2-23-10	Alkali-aggregate reaction		(3) Vee-bee test
2-24.	Sieve analysis	3-9.	Factors influencing workability
	Fineness modulus	3-10.	Strength of concrete and w/c ratio
2-25.	Standard grading		(1) Compaction
	(1) Coarse aggregate		(2) Curing
	(2) Fine aggregate		(3) Fineness of aggregate
	(3) All-in-aggregate		(4) Fatigue and impact
2-26.	Use of grading curves		(5) Age
	(1) Coarse aggregates		(6) Compressive strength of cement and concrete
	(2) Fine aggregates	3-11.	Compressive strength of concrete
	Water		(1) Object
2-27.	Water for mixing concrete		(2) Equipments
2-28.	Water-cement ratio and water-cementitious materials ratio		(3) Preparation
	Chemical admixtures		(4) Capping
2-29.	Admixtures		(5) Testing
	(1) Accelerators		(6) Results
	(2) Retarders	3-12	Tensile strength of concrete
	(3) Water reducing admixtures	J 12.	(1) Split cylinder test
	(4) Air-entraining agents		(2) Standard hearn test — modulus of runture test
	Reinforcement	3 1 3	Non destructive tests
2 30	Steel as reinforcement	5-15.	(1) Pabound hardness test
2-30.	Turnes of reinforcement		(1) Rebound nardness test
2-31.	(1) Plain bars	2 14	(2) Olliasonic puise velocity test
	(1) Flam Dars (2) High strength deformed (had) here	5-14.	(1) Compressive loads
2 21 1	(2) High strength deformed (lisd) bars		(1) Compressive roads
2-31-1.	Plain bars	2.15	(2) Tensile loads
	(1) Mild steel bars	3-15.	Short term static modulus of elasticity
	(2) Medium tensile steel bars		Poisson's ratio
	(3) Hard drawn wire or welded wire fabric	3-16.	Shrinkage
2-31-2.	High strength deformed (hsd) bars		(1) Plastic shrinkage
	(1) Cold twisted deformed (ctd) bars		(2) Drying shrinkage
	(2) Thermo-mechanically treated (tmt) bars		(3) Carbonation shrinkage
2-32.	Corrosion-resistant steel		(4) Autogenous shrinkage
2-33.	Grades of normal and enhanced quality	3-17.	Creep
	Hsd rebars for reinforced concrete	3-18.	Durability of concrete
2-34.	Bending and fixing of bars		(1) Use of inferior quality materials
2-35.	Welding of reinforcement		(2) Improper compaction and curing
2-36.	General notes for site engineers		(3) Limits on cement content
Questio	ns 2		(4) Requirements of concrete cover to steel reinforcement
Exampl	es 2		(5) Improper design and detailing
СНАР	TER 3 STRUCTURAL CONCRETE	3-19.	Temperature change
General		3-20.	Concrete quality control
3-1.	Proportioning of ingredients	3-21.	Sampling and strength tests of concrete
	(1) Design mix concrete		(1) Sampling and frequency of sampling
	(1) Design him concrete(2) Nominal mix concrete		(2) Strength tests
	Dosage of admixtures		(3) Preparing sampling and testing records
3 7	Estimation of materials for nominal mix		(4) Checking the record
3 3	Measurement of materials		(5) Analyse the results
5-5.	(1) Mass batching	3-22.	Statistical analysis of test results
	(1) Mass-batching	0	(1) Density function
2 4	(2) volume-batching		(2) Normal distribution
3-4.	which and placing of concrete		(3) Mean
	(1) Batch mixers		(4) Standard deviation
	(2) Ready mix concrete (rmc)	3-23	Standard deviation
2.5	(3) Continuous mixers	5-43.	(1) Standard deviation based on test strength of sample
3-5.	Compaction		(1) Standard deviation based on test strength of sample
			(2) Assumed standard deviation

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REINFORCED CONCRETE – VOL. I PART-I DETAILED CONTENTS

3-24.	Acceptance criteria	5-6.	Types of problems in singly reinforced concrete
	Design mix concrete	5-7.	Analysis of the section
3-25.	Introductory	5-8.	Design of the section
3-26.	Use of plasticizers and super-plasticizers		(1) Dimensions not given
	Efficiency of super plasticizer		(2) Dimensions are given
	Mix design for ordinary and	5-9.	Use of design aids
	Standard grades of concrete		Doubly reinforced beams
3-27.	Basic assumptions	5-10.	Introductory
3-28.	Data for mix design	5-11.	Derivation of formulae for balanced design
3-29.	Target strength for mix design	5-12.	Transformed area method
3-30.	Assumed standard deviation	5-13.	Types of problems for doubly reinforced concrete
3-31.	Selection of water-cement/	5-14.	Use of design aids
	Water-cementitious materials ratio	Flange	d beams
2.22	Portland pozzolana cement	5-15.	Moment of resistance of a singly reinforced flanged beam
3-32.	Estimation of air content		(1) Neutral axis lies in flange
3-33.	Selection of water content and admixture content	5.10	(2) Neutral axis lies in web
	Note for site work	5-10.	Types of problems for flanged beams
	Type of aggregates	5 10	Doubly reinforced flanged beams
Use of	chamical admixtures	J-10. Examp	
2 24	Colculation of company/companyitious materials content	Examp	
3-34.	Estimation of coarse and fine aggregate	СНАР	TER 6 LIMIT STATE METHOD
5-55.	Proportion in all_in aggregates	6-1.	Inelastic behaviour of materials
	Correction for w/c ratio	6-2.	Limit state method
	Correction for concrete of increased workability	0-5. 6 4	Limit state of collapse
3-36	Estimation of masses of various ingredients	6.5	Limit state of serviceability
3-37	Trial mixes	0-5.	Deflection
Ouestic	ans 3		Cracking
Examp	les 3	6-6.	Characteristic and design values and partial safety factors
СНАР	TED 4 DESIGN FOR ELEVIDE, EUNDAMENTALS		(1) Characteristic strength of materials
	Introductory		(2) Characteristic loads
4-1. 4-2	Review of theory of simple bending		(3) Partial safety factors
4-3	Practical requirements of an r C C Beam		(4) Design values
4-4	Size of the heam	6-7. 🧖	Limit state of collapse: flexure
4-5	Cover to the reinforcement		Assumptions
4-6.	Spacing of bars		Strain compatibility
4-7.	Design requirements of a beam		Singly reinforced rectangular beams
4-8.	Classification of beams	6-8.	Derivation of formulae
	(1) Singly reinforced and doubly reinforced beams		(1) With respect to compression (2) With respect to tongion
	(2) Rectangular and flanged beams	6.0	(2) with respect to tension
4-9.	Effective width of a flanged beam	0-9.	(1) Limiting moment of resistance index
4-10.	Cracking moment		(2) Limiting reinforcement index
4-11.	Balanced, under-reinforced and over-reinforced design	6-10.	Types of problems
	(1) Balanced design	6-11.	Failure of r.C.C. Beam in flexure
	(2) Under-reinforced design	6-12.	Code provisions to prevent the brittle failure
	(3) Over-reinforced design	6-13.	Computer programmes
4-12.	Bending of an r.C.C. Beam		Doubly reinforced beams
	(1) Uncracked concrete stage	6-14.	Derivation of formulae
	(2) Concrete cracked-elastic stresses stage	6-15.	Types of problems
	(3) Ultimate strength stage	6-16.	Use of design aids
4-13.	Design methods	6-17.	Computer programmes for doubly
СНАР	TER 5 DESIGN FOR FLEXURE:		Reinforced rectangular sections
	Working stress method	6.10	Flanged beams
5-1.	Permissible stresses	6-18.	Introductory
	Increase in permissible stresses	0-19. 6 20	Position of formulae
5-2.	Modular ratio	0-20. 6 21	Use of design aids
5-3.	Design for flexure-assumptions	6-22	Doubly reinforced flanged beams
_ .	Singly reinforced beams	6-23	Sections subjected to reversal of moments
5-4.	Derivation of formulae for balanced design	0 20.	(1) Hogging moment
5-5.	1 ransformed area method		(2) Sagging moment
	(1) To declue the type of the beam (2) Relanced design	6-24.	Computer programmes for flanged sections
	 (2) Datanceu design (3) Over reinforced design 	Examp	les 6
		r	

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REINFORCED CONCRETE - VOL. I PART-I DETAILED CONTENTS

CHAPTER 7 SHEAR AND DEVELOPMENT LENGTH

- 7-1. Shear in structural members (1) Flexural shear
 - (2) Punching shear
 - (3) Torsion shear
- 7-2. Flexure and shear in homogeneous beam
- 7-3. Shear in reinforced concrete beams - elastic theory
- 7-4. Diagonal tension and diagonal compression
- 7-5. Limit state theory
- 7-6. Design shear strength of concrete for various member Without shear reinforcement
 - (1) Beams
 - (2) Solid slabs
 - (3) Members under axial compression
- 7-7. Design for shear
- 7-8. Shear reinforcement in beams
 - (1) Vertical stirrups
 - (2) Inclined stirrups
 - (3) Bent bars
 - (4) Shear resistance capacity of a section
- 7-9. Practical considerations
 - (1) Distance of first bent bar from support
 - (2) Maximum spacing
 - (3) Minimum shear reinforcement
- (4) Maximum shear stress
- 7-10. Critical sections for shear
 - (1) Tension in end region of a member
- (2) Compression in end region of a member
- 7-11. Design of a complete beam for shear Simplified approach Using enhanced shear strength
 - Supplementary notes
- Use of design aids 7-12.
 - (1) Minimum shear reinforcement
 - (2) Vertical stirrups
 - (3) Bent bars
- 7-13. Shear design of beams with variable depth
- Development length 7-14. Bond and bond stress
- (1) Features of reinforced concrete attributed to bond
 - (2) Grip or bond attributed to various mechanisms
- Flexural (local) bond and development (anchorage) bond 7-15.
 - (1) Flexural or local bond (2) Secondary effects
 - (3) Development or anchorage bond
- Anchorage length and development length 7-16.
 - (1) Anchorage length
 - (2) Development length
- 7-17. Development length: pull out test Mechanism of bond failure
 - (1) Pull out failure
 - (2) Splitting failure
- 7-18. Code provision
- 7-19. Use of bundled bars
- 7-20. Anchoring reinforcements
 - (1) Anchoring bars in tension
 - (2) Anchoring bars in compression
 - (3) Anchoring bars in shear
 - Bearing stresses at bends
- 7-22. Reinforcement splicing
 - (1) Lap splices
 - (2) End bearing splices
 - (3) Welded splices
- (4) Mechanical splices 7-23. Ensuring ductile failure
- Examples 7

7-21.

Long questions of chapter 7

- **CHAPTER 8 DEFLECTION AND CRACKING**
- Deflection 8-1. Limit state of serviceability 8-2. Deflections in a structure or structural members (1) Structural damage (2) Non-structural damage (3) Discomfort to the occupants 8-3. Span/effective depth ratio 8-4. Control of deflection on site (1) Cambering (2) Controlling concrete work (3) Removal of forms (4) Controlling temporary loads 8-5. Deflection calculations 8-6. Short term deflections (1) Modulus of elasticity of concrete (2) Moment of inertia of the section 8-7. Long term deflections (1) Deflection due to shrinkage (2) Deflection due of creep Cracking 8-8. Introductory (1) Bar spacing controls (2) Crack width calculations 8-9. Bar spacing controls (1) Beams (2) Slabs 8-10. Calculation of crack width (1) Assumptions (2) Approximate method 8-11. Computer programs Examples 8 CHAPTER 9 SIMPLY SUPPORTED AND CANTILEVER BEAMS 9-1. Design procedure (1) Estimation of loads (2) Analysis (3) Design 9-2. Anchorage of bars check for development length 9-3. Reinforcement requirements
 - (1) Tension reinforcement
 - (2) Compression reinforcement
 - (3) Cover to the reinforcement
- 9-4. Slenderness limits for beams to ensure lateral stability
 - Simply supported beams
- 9-5. Introductory
- Design s.F. Diagram 9-6.
- 9-7. Curtailment of bars
- 9-8. Design of a template
- 9-9. Design of a lintel
 - (1) Loads
 - (2) Size
 - (3) Cover
- Cantilever beams
- 9-10. Design considerations
- 9-11. Computer programs
- Examples 9
- CHAPTER 10 SIMPLY SUPPORTED AND CANTILEVER SLABS
- 10-1. Introductory
 - (1) One-way spanning slabs
 - (2) Two-way spanning slabs
 - (3) Flat slabs
 - (4) Grid slabs
 - (5) Circular slabs
 - (6) Ribbed and waffle slabs
- 10-2. Analysis

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REINFORCED CONCRETE – VOL. I PART-I DETAILED CONTENTS

- (1) Elastic analysis
- (2) Using coefficients
- (3) Yield line method
- One-way spanning slabs
 - (1) Effective span
 - (2) General

10-3.

- (3) Reinforcement requirements
- (4) Shear stress
- (5) Deflection
- (6) Cracking
- (7) Cover
- (8) Development length
- 10-4. Simply supported one-way slab
- 10-5. Detailing of slabs
- 10-6. Inclined slabs
 - (1) Slabs spanning perpendicular to the slope
 - (2) Slabs spanning parallel to the slope
- 10-7. Straight slabs having a small length inclined along the span
- 10-8. Cantilever slab
- 10-9. Concentrated load on slabs
- 10-10. Two-way slabs
- 10-11. Simply supported two-way slabs
- 10-12. Computer program
- Examples 10

CHAPTER 11 CONTINUOUS BEAMS AND SLABS

- Continuous beams
- 11-1. Introductory
- 11-2. Analysis parameters
 - (1) Effective span
 - (2) Stiffness
- 11-3. Live load arrangements Arrangement of live load
- 11-4. Redistribution of moment
 - (1) Plastic hinge
 - (2) Fixed beam
 - (3) Code requirements
- 11-5. Reinforcement requirements
- 11-6. Flexure design considerations
- 11-7. Simplified analysis for uniform loads
- 11-8. Moment and shear coefficients for continuous beams
- 11-9. Typical continuous beam details
- Continuous slabs
- 11-10. Continuous one-way slab
- 11-11. Restrained two-way slabs
- 11-12. Two-way slabs subjected to large shear force
- 11-13. Computer program

Examples 11

Questions 11

CHAPTER 12 TORSION

- 12-1. General
 - (1) Equilibrium torsion
 - (2) Compatibility torsion
- 12-2. Effect of torsion: provision of reinforcement
- 12-3. Code provisions
 - (1) General
 - (2) Design rules
- 12-4. General cases of torsion
 - (1) Cantilever slab inducing torsion in supporting beam
 - (2) Cantilever beam inducing torsion in supporting beam

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- (3) Beams curved in plan
- 12-5. Beams curved in plan
- 12-6. Circular beam
 - (1) Support moments mo
 - (2) Shear, moment and torsion at p
- 12-7. Circular arc fixed at ends
- 12-8. Design of beams curved in plan

- Examples 12 Questions 12
- Questions 12

CHAPTER 13 STAIRS

- 13-1. Stair slabs
- 13-2. Classification of stairs
 - (1) Straight stair
 - (2) Dog-legged stair
 - (3) Open well stair
- 13-3. Design requirements for stair
 - (1) Live loads on stair
 - (2) Effective span of stair
 - (3) Distribution of loading on stairs
 - (4) Depth of section
- 13-4. Reducing the span
- 13-5. Tread-riser staircase
- 13-6. Closure
- Examples 13

CHAPTER 14 LOAD CALCULATIONS FOR

- Slabs and beams
- 14-1. Introductory
- 14-2. Loads on slabs
 - (1) Self weight of the slab
 - (2) Floor finish
 - (3) Live loads
 - (4) Any other loads
- 14-3. Loading on beams from one-way slabs
- 14-4. Wall loads and self weight of beams
- 14-5. Loading on beams from two-way slabs

Fixed, cantilever and framed beams

Analysis and design of the framed beams

APPENDIX A SHORT OUESTIONS WITH ANSWERS

Moment of inertia of framed beams and columns

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14-6. Unit loads

Examples 15

16-1.

16-2.

16-3.

16-4.

16-5.

Examples 16

INDEX

Examples 14

CHAPTER 15 SIMPLE DESIGNS

- 15-1. Introductory
- 15-2. Design s.F. Diagram
- 15-3. Loads from two-way slabs

CHAPTER 16 FRAMED BEAMS

Structural joints

(1) Fixed beams

(2) Cantilever beam

Single span portal frame

(3) Framed beams

Substitute frame

APPENDIX B USEFUL TABLE

Moment and shear coefficients



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CHAPTER 17 COLUMNS

- 17-1. Introductory
- 17-2. Loads and displacements for building columns(1) Vertical gravity loads (dead and live loads)
 - (1) Vertical gravity loads (dead and live loads)(2) Horizontal loads (wind and earthquake loads)
- 17-3. Classification of columns
- 17-3-1. Braced and unbraced columns
 - (1) Braced column
 - (2) Unbraced columns
- 17-3-2. No-sway and sway columns
- 17-3-3. Tied, spiral and composite columns
 - (1) Tied columns
 - (2) Spiral columns
 - (3) Composite columns
- 17-3-4. Short and long columns
 - (1) Short columns
 - (2) Long (slender) columns
- 17-4. Reinforcement requirements
 - (1) Longitudinal reinforcement
 - (2) Transverse reinforcements
- 17-5. Minimum eccentricity
- 17-6. Assumptions made for design
- Short columns
- 17-7. Axially loaded tied columns
- 17-8. Axially loaded spiral columns
- 17-9. Short eccentrically loaded columns —
- Uniaxial bending
- Uniaxial bending
 - (1) N.A. Lies outside the section
 - (2) N.A. Lies inside the section
- 17-10. Modes of failure in combined axial load and uniaxial bending(2) Balanced failure
 - (3) Tensile failure
- 17-11. Types of problems
- 17-12. The interaction diagram
- 17-13. Stress block parameters when n.A. Lies outside the section
- 17-14. Construction of interaction diagrams
- 17-14-1.Pure axial load
- 17-14-2. Axial load with uniaxial moment
- 17-15. Neutral axis (n.A.) Lies outside the section
- 17-16. Neutral axis (n.A.) Lies inside the section
- 17-17. Charts for compression with bending
- 17-18. Tension with bending
- 17-19. Use of interaction diagram
- 17-20. Unsymmetrically reinforced columns with Uniaxial eccentricity Define
 - (1) General method
 - (1) General method(2) Approximate method
- 17-21. Using an excel program to draw an interaction diagram of A given rectangular column

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- 17-22. Short eccentrically loaded columns: biaxial bending
- Slender columns
- 17-23. Slender columns
 - (1) Unsupported length
 - (2) Effective length
 - (3) Radius of gyration
 - (4) Slenderness ratio (S.R.)
 - (5) Short and long columns
 - (6) Slenderness limits for columns
- 17-24. Effective length calculations Method 1
 - Method 2

- 17-25. Lengths of column
 - (1) Floor height (h)
 - (2) Length of column (1)
 - (3) Unsupported length of column (1)
 - (4) Effective length of column (lef)
- 17-26. Design of slender columns
 - (1) Braced columns
 - (2) Unbraced columns
- 17-27. Design and detailing of a practical column
- Examples 17

CHAPTER 18 DESIGN OF FOUNDATIONS: FUNDAMENTALS

- 18-1. Introductory
- 18-2. Classification of found ations
 - (1) Flexible and rigid foundations
 - (2) Shallow and deep foundations
- 18-3. Types of footings
 - (1) Continuous wall footing
 - (2) Isolated footing
 - (3) Combined footing
 - (4) Strap footing
 - (5) Strip footing
 - (6) Raft foundation
 - (7) Pile foundation
- 18-4. R.C.C. Footings
 - (1) Column/wall footing connection
 - We may state
 - (2) Aspects of footing design
 - Soil design
- 18-5. Soil exploration
- 18-6. Depth of foundation
- 18-7. Cohesive and cohesionless soils
 - (1) Cohesive soil
 - (2) Cohesionless soil
 - (3) C- ϕ soil

18-8.

- Modes of soil failure
- (1) Catastrophic collapse
- (2) Excessive settlement
- 18-9. Types of shear failures of soil
 - (1) General shear failure

18-10. Vertical stress distribution

18-13. Settlement of soil

Net sbc

18-17-3.Goal of design

- (2) Local shear failure
- (3) Punching shear failure
- (4) Intermediate (mixed mode) failure

18-12. Net safe bearing capacity (net sbc) of soil

(1) The ultimate bearing capacity

(2) Net ultimate bearing capacity

18-15. Allowable bearing capacity (abp) on soil

18-17. Simplified method of soil design for axial,

18-17-4. Selection of abp (allowable bearing pressure)

Inclined and eccentric loads

18-17-1. Transfer of loads from column to soil

18-17-2. Resultant loads at the base of footing

18-17-5. Footings subjected to axial loads

18-14. Safe bearing pressure (sbp) on soil

Overburden pressure

18-11. Contact pressure distribution under rigid footings

18-16. Calculation of net safe bearing capacity (net sbc) of

Soil effective surcharge and effective surcharge/

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- 18-17-6. Footing subjected to axial loads and moments
 - (1) Uniaxial moment
 - (2) Biaxial moment
 - Loss of contact
- 18-17-7. Footing subjected to horizontal loads
- 18-17-8. Use of passive pressure for resisting sliding
 - (1) Cohesionless soil
 - (2) Cohesive soil
- 18-17-9.Use of slab tie and beam ties for Resisting sliding
 - Structural design
- 18-18. Selection of plan dimensions
- 18-19. Upward soil pressure
- 18-20. General soil design considerations
 - (1) Uniform settlement
 - (2) Uniform pressure
 - (3) Non-uniform pressure
- 18-21. Footing for eccentrically loaded columns
 - (1) Concentric footing
 - (2) Eccentric footing
 - Soil design
- 18-22. General structural design considerations
- 18-23. Concrete pedestal
- 18-24. Transfer of load at the base of column
 - **Dowels**
 - (1) Bearing strength
 - (2) Bond strength
 - Practical consideration
- Examples 18

CHAPTER 19 ISOLATED FOOTINGS

- 19-1. Introductory
- 19-2. Wall footings
- 19-3. Axially loaded pad footing
 - (1) Proportioning the size
 - (2) Bending moment (3) Nominal reinforcement
 - (4) Development length

 - (5) Shear
 - (6) Deflection
 - (7) Cover
 - (8) Reinforcement requirements (9) Transfer of load from column to footing
 - (10) Weight of the footing
- 19-4. Axially loaded sloped footing 19-5. Eccentrically loaded footings
 - - (1) Uniaxial moment
 - (2) Biaxial moment
- 19-6. Fixing up footing dimensions
- 19-7. Isolated slab and beam type footing
- 19-8. Footing for multi-storeyed building columns
- 19-9. Excel program for design of an isolated footing
- Examples 19

CHAPTER 20 COMBINED FOOTINGS

- 20-1. Combined footings
- 20-2. Combined footing for two axially loaded columns
- 20-3. Strap footings
- Strip footings 20-4.
- 20-5. Combined footing for generalised load system

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- (1) General
- (2) Collinear columns
- (3) Drawing co-ordinate axes
- (4) Soil design
- 20-6. Raft foundation 20-7. Closure
- Examples 20

CHAPTER 21 PILE FOUNDATIONS

- 21-1. Introductory
- 21-2. Loads on pile groups (1) Axial loads on a group of vertical piles
 - (2) Moment on a group of vertical piles
 - (3) Horizontal load
 - (4) Design of a pile
- 21-3. Soil design of a pile
- 21-4. Structural design of a pile
- 21-5. Design of a pile cap
- General
- Examples 21

CHAPTER 22 CIRCULAR RAFT FOUNDATIONS 22-1.

- Introduction
- (1) Annular raft
- (2) Solid raft
- Annular raft
- 22-2. Formulae for annular raft soil design of An annular raft
- Define

22-3

22-4

22-5.

Constants

23-1. 23-2.

23-3.

23-4.

23-5.

23-6.

(1)

Examples 22

- (1) Raft positioning
- (2) Upward pressures
- Formulae for annular raft
- (1) Axial load
- Constants
- Radial moments
- Tangential moments
- (2) Applied moment m
- Radial shears
- Tangential shears
- Constants
- Radial moments
- Tangential moments
- **R-T** moments
- Design for flexure and shear
 - (1) Flexure
 - (2) Shear (3) Locations for analysis and design Solid raft

Solid raft

Introductory

(1) Gravity wall

(4) Buttress wall

(6) Gabion walls

(7) Box culvert

(2) Cantilever wall

(3) Counterfort wall

(5) Bridge abutment

Earth pressure on walls

(1) Cohesionless soil

23-4-1. Earth pressure of submerged soil

Drainage of retaining walls

The restoring moment (stabilizing moment) should be

(2) The vertical pressure on the soil under the base should

not exceed the permissible bearing pressure of soil

(3) The restoring force against sliding should be more than

the sliding force so as to get a factor of safety not less

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more than the overturning moment so as to

Get a factor of safety not less than 1.55

23-4-2. Earth pressure due to surcharge

Stability requirements

than 1.55

(2) Cohesive soil

Calculation of earth pressure

(1) Axial load (2) Applied moment m

CHAPTER 23 RETAINING WALLS

Types of retaining walls

REINFORCED CONCRETE – VOL. I PART-II DETAILED CONTENTS

(4) Check for combined effect of vertical and horizontal loads Cantilever retaining wall

- 23-7. Preliminary proportioning of cantilever retaining wall
 - (1) Height of wall
 - (2) Base width and position of stem on the base of footing
 - (3) Thickness of base slab
 - (4) Thickness of stem
- 23-8. Design of a cantilever retaining wall
 - (1) Design of stem
 - (2) Design of heel
 - (3) Design of toe
 - (4) Base key
 - (5) Minimum reinforcement in walls with variable depth Counterfort retaining wall
- 23-9. Counterfort wall
- 23-10. Stability and design procedure
 - (1) Stability
 - (2) Stem
 - (3) Base
 - (4) Counterforts

Examples 23

CHAPTER 24 CIRCULAR, RIBBED AND WAFFLE SLABS

Circular slabs

- 24-1. Introductory
- 24-2. Analysis
- 24-3. Introductory
- 24-4. Proportioning the dimensions
- 24-5. Analysis and design procedure
 - (1) Analysis
 - (2) Design

Waffle slabs

24-6. Two-way spanning ribbed slabs: waffle slabs Examples 24

CHAPTER 25 FLAT SLABS

- 25-1. Introductory
 - (1) Flat slab with no drop and no column head
 - (2) Flat slab without drop and column with column head
 - (3) Flat slab with drop and column with column head
- 25-2. Column and middle strips
 - (1) Column strip
 - (2) Middle strip
 - (3) Panel
- 25-3. Proportioning of flat slab elements
 - (1) Thickness of flat slab
 - (2) Drops
 - (3) Column head
- 25-4. Design methods for flat slabs
 - (1) Direct design method (D.D.M.)
 - (2) Equivalent frame method (E.F.M.)
 - Direct design method (D.D.M.)
- 25-5. Total design moment
- 25-6. Distribution of moments in slabs Interior negative design moment Positive design moment Exterior negative design moment
- (1) Moments in column strip
- (2) Moments in middle strip
- 25-7. Effect of pattern loading
- (1) By increasing the flexural stiffness of columns(2) By increasing the positive moment

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- 25-8. Transfer of floor loads into columns
- (1) Transfer of vertical load
- (2) Transfer of moment
- 25-9. Design for shear
 - (1) Calculation of shear stress(2) Permissible shear stress
- 25-10. Provision of reinforcement
- 25-11. Moments in columns

Examples 25

CHAPTER 26 DOMES

- 26-1. Introductory
- 26-2. Stresses in domes
- 26-3. Formulae for forces in spherical domes
 (1) Uniform loads as on dome
 (2) Consummation loads
 - (2) Concentrated loads w on crown-4. Design of a spherical dome
- 26-4. Design of a spherical dome26-5. Section design for pure tension
- 26-5. Section design for pure tension 26-6. Formulae for forces in conical de

6. Formulae for forces in conical domes

Examples 26

CHAPTER 27 DEEP BEAMS AND CORBELS

- 27-1. Introduction
- Deep beams
- 27-2. Definitions
 - (1) Deep beams (2) Effective span (3) Lever arm
- 27-3. Design and details of reinforcements
 - (1) Design of reinforcements
 - (2) Details of reinforcements
- Corbels 27-4. Corbels
- 27-4. Corbels27-5. Shear friction
- 27-5. Corbel dimensions
 - (1) Width of the corbel
 - (1) Width of the corber(2) Width of the base plate
 - (3) Span of the corbel
 - (4) Depth d at root of the corbel
 - (5) Depth d1 at the outer edge of contact area
- 27-7. Design of a corbel
- (1) Primary tension reinforcement (2) Shear reinforcements Examples 27

CHAPTER 28 GRID OR COFFERED FLOORS

- 28-1. Introduction
- 28-2. Analysis of grid floors
- 28-3. Plate theory
 - (1) The flexural rigidities can be obtained from:
 - (2) The torsional rigidity of rectangular section can be obtained from

Examples 28

29-4.

29-5.

29-6.

29-7.

29-8.

29-9.

29-11.

30-1.

30-2.

30-3.

30-4.

30-5.

30-6.

30-7.

INDEX

Examples 29

CHAPTER 29 FORMWORK

- 29-1. Introductory
- 29-2. Requirements for good formwork

Permissible stresses for timber

29-12. Action prior to and during concreting

Shuttering for beam and slab floor

CHAPTER 30 DETAILING OF REINFORCEMENT

Columns framing plan and foundation details

APPENDIX C : SHORT QUESTIONS WITH ANSWERS

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General informations for drawing

Choice of formwork

Loads on formwork

Design of formwork

29-10. Practical considerations

29-13. Striking of forms

Introduction

General notes

Columns details

Slabs and beams details

Drafting

Kicker

Closure

Erection of forms

Shuttering for columns

29-3. Materials for forms (1) Timber (2) Steel