MASONRY & TIMBER STRUCTURES
INCLUDING EARTHQAUKE RESISTANT DESIGN

CHAPTER 1 Step in Design

Introduction, Loads, Structural Arrangement, Determination of Stresses, Proportioning members

CHAPTER 2. Brick Masonry in Building

Brickwork, Brick Walls, Brick Columns, Allowable Stresses, Cross Sectional Area, Shape Factor of Units, Slenderness Ratio, Type of Loading, Net Permissible Stress, Composite Brick-Concrete Piers, Bed Stones and Bed Plates, Problems

CHAPTER 3 Laterally Loaded Masonry Structures

Structures and Loads, Stability of Masonry, Masonry Dams, Retaining Walls, Problems

CHAPTER 4 Foundations, Piers, Walls and Abutments

Wall and Column Footings in Buildings, Bridge Foundation, The Substructure, Loads on the Substructure, Normal Allowable Stresses in Masonry, Combination of Loads and Permissible Increase in Working Stresses, Limiting Eccentricity, Determination of Safe Bearing Capacity, Lateral Load Resistance of Well Foundations, Problems

CHAPTER 5 Masonry Arches and Domes

The Arch, Arches in Buildings, Stability of Masonry arches, Design of Masonry Arches by Elastic Theory, Analysis of Masonry Domes, Stability of Masonry Domes, Problems

CHAPTER 6 Properties of Structural Timber

General, Factors Affecting Strength of Timber, Permissible Stresses, Bearing Stress, Live Load for Design, Problems

CHAPTER 7 Joints in Timber Structures

Types of Joints, Framed Joints, Design of Bolted Connection, Nailed Joints, Disc-Dowelled Joints, Metal Connectors, Problems

CHAPTER 8 Timber Beams and Compression Members

Beams, Compression Members, Solid Columns, Box Columns, Spaced Columns, Combined Bending and Direct Stresses, Glued Laminated Members, Nail-Laminated Timber Beams, Problems

CHAPTER 9 Wooden Roof Trusses

General, Roof and Side Covering, Design Loads, Problems

CHAPTER 10 Earthquake Force for Design of Structures

Introduction, Nature of Earthquakes, Magnitude and Intensity Scales, Seismic Zoning of India, General Nature of Earthquake Motions, Design Response of Single Degree Systems, Earthquake Resistant Design Approach, Soil Effects, Design Seismic Force, Permissible Stresses

CHAPTER 11 Earthquake Resistant Design of Masonry Buildings

Behaviour of Different Construction in Past Earthquakes, General Planning and Details, Recommendations for Masonry Walls, Structural Action of Elements of a Building, Design of Bands, Free Standing Walls, Partition Walls, Roofs and Floors, Gable Ends of Walls, Design of Shear Walls, Vertical Reinforcement in Masonry Walls, Design of Projecting Parts, Framing of Thin, Load Bearing Walls, Reinforcing Detail for Hollow Block Masonry

CHAPTER 12 Earthquake Resistant Stone Buildings

Introduction, Typical Damage and Failure of Stone Buildings, General Construction Aspects, Seismic Strengthening Provisions

CHAPTER 13 Earthquake Resistant Earthen Buildings

Introduction, Typical Damage and Collapse of Earthen Buildings, Classification of Walls Material Properties, Construction of Walls, General Recommendations for Seismic Areas, Seismic Strengthening Features, Plastering and Painting

CHAPTER 14 Earthquake Resistant Wooden Buildings

Introduction, Typical Damage and Failure of Wooden Buildings, Typical Characteristics of Wood, Buildings Plan, Wood-wall Construction, Stud Wall Construction, Brick Nogged Timber Frame, Braced Wooden Frames, Foundations

CHAPTER 15 Seismic Design of Bridge Sub-structures

Earthquake Performance of Bridge sub-structures, Earthquake Force for Design, Hydrodynamic Effects on Bridge Piers, Recommendations for Design

CHAPTER 16 Seismic Earth Pressure on Retaining Walls and Abutments

States of Earth Pressure, Active Earth Pressure Under Seismic Condition, Passive Earth Pressure Seismic Condition, Effect of Submergence on Earth Pressures