CONCRETE BLOCK MASONRY
CONTENT

- Introduction
- Types
- Manufacturing process
- Properties
- Advantages
Introduction

• These are the concrete blocks either hollow or solid.

• A hollow unit is that unit which has core void area greater than 25% of the gross area.

• They may be used for both load bearing as well as non load bearing walls.
TYPES

Solid blocks
HOLLOW BLOCKS
MANUFACTURING PROCESS

- C/A ratio 1:6
- The aggregate consist of
  - 60% fine aggregate (sand or stone dust)
  - 40% course aggregate (6 to 12 mm size)
- Mixing
- Filling in the mould
- Compacting
- Vibrating
- Curing
PROPERTIES

- **Size:**
  - 39cm X 19 cm X 30 cm
  - 39cm X 19 cm X 20 cm
  - 39cm X 19 cm X 10 cm

- **Density:**
  - Solid concrete blocks: 1500 to 2000kg/m³
  - Hollow concrete blocks: 1000 to 1500kg/m³

- **Compressive Strength:**
  - Solid concrete blocks: >5 N/mm²
  - Hollow concrete blocks: >2 to 4 N/mm²

- **Water Absorption:** <10 to 15% by weight
ADVANTAGES

- No dressing work.
- Light in weight.
- Not much skill required.
- Structurally stronger than bricks.
- Thinner walls possible, hence giving more carpet area.
- Large in size, hence no. of joints are less. Saving in mortar.
- Better insulating against heat, sound & dampness.
- Need not require plastering.
CAVITY WALLS
CONTENT

- Introduction
- Advantages
- Construction procedure
INTRODUCTION

- It is a wall consist of two parallel walls separated by a continuous air cavity & interconnected by ties at regular intervals.
- The outer (external) wall is known as “outer leaf”. The inner (internal) wall is known as “inner leaf”.
- It is usually outer leaf is thinner than inner leaf.
ADVANTAGES

- Moisture insulation.
- Heat insulation improves by around 25%.
- Good insulation against sound.
- Cheaper and economical.
- Efflorescence reduces.
CONSTRUCTION PROCEDURE

- Constructed in two leaves- inner & outer with a hollow space in between them.
- The width of cavity is constant with a suitable value between 40 to 100 mm & cavity is continuous in vertical direction except at lintel on openings.
- The inner & outer walls are interconnected by means of “metal ties” or “bonding bricks”.
- The bottom of cavity wall should be well-ventilated by use of air bricks and ducts.
- The metal ties are generally wrought iron or mild steel bars. They are coated with hot tar or are galvanized to prevent from corrosion or rusting.

Cont....
METAL TIES

Stainless-steel wire wall tie with plastic disc to hold sheet insulation in place.
ARRANGEMENT OF METAL TIES
CAVITY WALL

- Cavity
- Metal ties
- D.P.
- C
- Stretcher bond
CONSTRUCTION AT OPENING

The cavity is discontinued at lintel level and sill level of the window, doors or ventilators. The DPC is provided below the sill block or above the lintel top to prevent entry moisture or water inside the cavity.

Cont....
CONSTRUCTION AT OPENING

(e) Details at sill

(f) Details at lintel
CONSTRUCTION AT FOUNDATION

The cavity wall may start from top of the foundation concrete extending up to 150 mm below the DPC course of plinth level.
CONSTRUCTION AT FOUNDATION

(c) Cavity concreted upto G.L.

(d) Ventilation provisions

Concrete flooring

150 mm (min.)

Concrete fill

Air bricks

Duct
CONSTRUCTION AT TOP OF THE WALL

- The cavity is provided up to the top of the parapet wall of terrace & covered with DPC below coping block of parapet on terrace.
Dropping of mortar is prevented by covering the cavity by a wooden batten of teak wood with its thickness marginally less than the width of cavity.
USE OF WOODEN BATTEN TO PREVENT ENTRY OF MORTAR
REINFORCED BRICKWORK
USES

- It is used in the soils with weak foundation strata i.e. Black cotton soil which leads to uneven settlement.
- It is used in the industrial buildings subjected to vibrations, sudden impact loading due to machine foundations.
- It is used in buildings in seismic zones.
- It is used as lintels over opening for doors, windows, as a column for supporting arches & lintels.
- It is used as columns or walls subjected to heavy compressive load.
TYPES

- Reinforced Masonry wall
- Reinforced Masonry piers
- Reinforced Masonry lintels
- Reinforced Masonry slab
REINFORCED MASONRY WALL

A) Reinforced masonry wall with horizontal reinforcement.

B) Reinforced masonry wall with vertical reinforcement.
REINFORCED MASONRY WALL WITH HORIZONTAL REINFORCEMENT

• Mild steel flat (20 to 32 mm wide & 0.2 to 1.6 mm thick), hoop iron flats of similar c/s, round mild steel bars (6mm to 12 mm dia.) laid horizontally.

• Used in every 6th course of bricks with 2 to 5 bars.

• Steel meshed strips either Exmet or Bricktor is laid horizontal-longitudinal course joints after every 3rd course.  

Cont....
- Exmet are the expanded metal strip in diamond pattern available in width of 65mm, 178mm, 230mm or 305 mm with thickness of 0.6 to 1.0mm.
- Bricktor is the straight tension wires about 1.4mm dia. interlaced with binding wires about 1.1mm dia.
- Protection against rust is provided by dipping the bars in hot tar.

Cont.…. 
EXMET
• The flats in the form of reinforcement are provided with single or double hook joint at the intersection of them at the wall junction or corners.
• It is also used for brick lintels.
REINFORCED MASONRY WALL WITH VERTICAL REINFORCEMENT

- Mostly used for retaining walls because of the economy up to 3m height.
- Round mild steel bars of 8 to 16mm dia. are placed through grooves of the specially manufactured bricks.
- The plastering coats and cement mortar joints be provided with rich mix of mortar (1:3)
REINFORCED MASONRY
PIERS

- Mostly provided for piers of trusses of factory shed or piers of supporting arches of long spans.
- Vertical bars of 8-16 mm mild steel are inserted in the grooves of bricks, steel plates of 2-3 mm thickness or stirrups of 6mm dia. are provided to anchor the bars at every 4th course of masonry of piers.
- Cement mortar with rich mix of (1:3) is used.
REINFORCED MASONRY LINTELS

• Provided for covering the openings in masonry i.e. on the top of the doors or window.

• The bars are provided with anchoring stirrups at every 3rd vertical joint along the span of lintel.

• The bricks used must be quality bricks.
REINFORCED MASONRY
SLAB

- Rarely used. Seen mostly with old monumental structures.
- The centering of wooden planks supported on wall or beams is erected to required level.
- It is covered with fine sand layer.
- Reinforcement is placed in position in between the vertical joints of the bottom layer of Bricks with proper mortar bed.

Cont….
REINFORCED MASONRY SLAB

- The bricks of bottom layer are laid properly. Joints are filled properly.
- Bed mortar for upper bricks layer is provided in level & upper layer of bricks are laid.
- Slab is kept wet by water ponding for 4 weeks. Then centering is removed.
Glass Block Masonry

- Bubble
- Bromo
- Clear
- Diamond
- Iceberg
- Ocean View
- Pristal
- Quadra
- Wave
Thank You !!!