UNIT II
CONSTRUCTION PRACTICE - SUPER STRUCTURE

Topic 3 Solid and Hollow Block Masonry

Introduction to Masonry Blocks

- **Masonry blocks** are construction materials made from cement, sand, and water, formed into solid or hollow blocks.
- **Purpose**: Used for constructing walls, foundations, and partitions in buildings.
- **Types**:
    - **Solid blocks**: Full-sized, dense blocks with no voids.
    - **Hollow blocks**: Have voids or cavities that reduce weight, improve insulation, and allow for reinforcement.

Solid Blocks

1. **Material Composition**: Typically made from concrete or cement mortar.
2. **Sizes**:
    - Standard size: 400 mm x 200 mm x 150 mm.
    - Varies depending on regional standards.
3. **Advantages**:
    - Higher strength and durability.
    - Used in load-bearing walls.
    - Better sound insulation due to density.
4. **Disadvantages**:
    - Heavyweight makes handling and transportation difficult.
    - Less thermal insulation compared to hollow blocks.
5. **Applications**:
    - Load-bearing structures.
    - Foundation walls, basements, and retaining walls.

Hollow Blocks

1. **Material Composition**: Made from lightweight concrete mixtures, often with aggregates like fly ash, slag, or volcanic cinders.
2. **Sizes**:
    - Standard size: 400 mm x 200 mm x 200 mm (can vary).
    - Has around 30-50% voids by volume.
3. **Advantages**:
    - Lighter weight reduces the dead load on the structure.
    - Better thermal and sound insulation.
    - Can be reinforced with steel bars in the cavities for added strength.
    - Easier to transport and handle due to the reduced weight.
4. **Disadvantages**:
    - Slightly lower strength than solid blocks.
    - Not suitable for highly load-bearing structures without reinforcement.
5. **Applications**:
    - Partition walls, infill walls, and cavity walls.
    - Multi-story buildings where dead load reduction is necessary.

Comparison: Solid vs Hollow Blocks

Feature	Solid Blocks	Hollow Blocks
Weight	Heavier	Lighter
Strength	Higher	Lower (unless reinforced)
Thermal Insulation	Low	Better
Sound Insulation	Better (due to density)	Moderate
Ease of Handling	Difficult	Easier
Cost	Higher (due to higher material usage)	Lower
Application	Load-bearing walls, basements	Non-load-bearing, partitions