

# BRICK MASONRY

# General Features

- Brick is a compression member
- Made from clay
- Brick structures are generally known as "masonry structures" in which individual brick units are bonded together with mortar

# Some Brick Structures



Duplex Home

# Some Brick Structures (contd.)



Mosque's Dome

# Some Brick Structures (contd.)



Arches

# Some Brick Structures (contd.)



Arch bridge

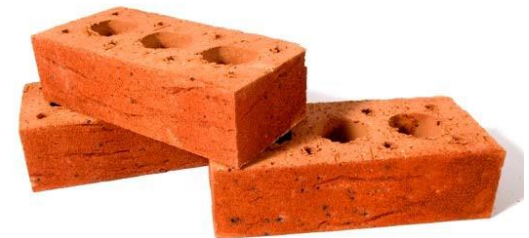
# Some Brick Structures (contd.)



Pavement

# Types of Brick

- Mainly of **two** types:
  - Pressed:** have a deep frog in one bedding surface and a shallow frog in the other
  - Wire-cut:** 3 or 4 holes through them constituting up to 25% of the total volume of the brick.

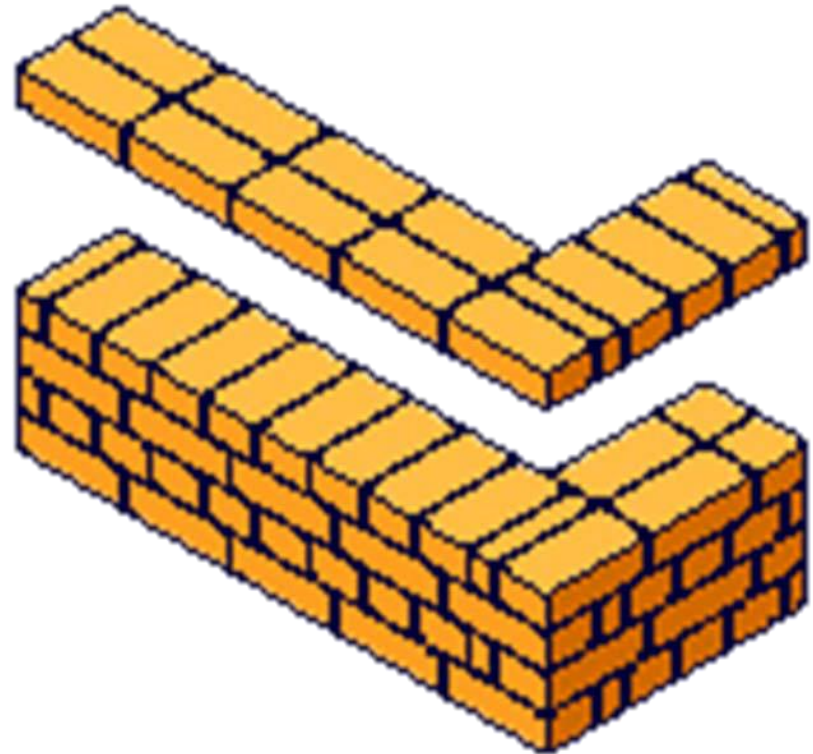


# Brick dimensions

- General Dimension: 10"x5"x3"
- Nominal size: 9.5"x4.5"x2.75"
- Nominal size is a fictitious dimension which is considered in evaluating the quality of brick work
- It represents neither the actual dimension (without plaster/mortar work) nor the overall thickness (with plaster/mortar work)

# Types of Bonds in Brick Work

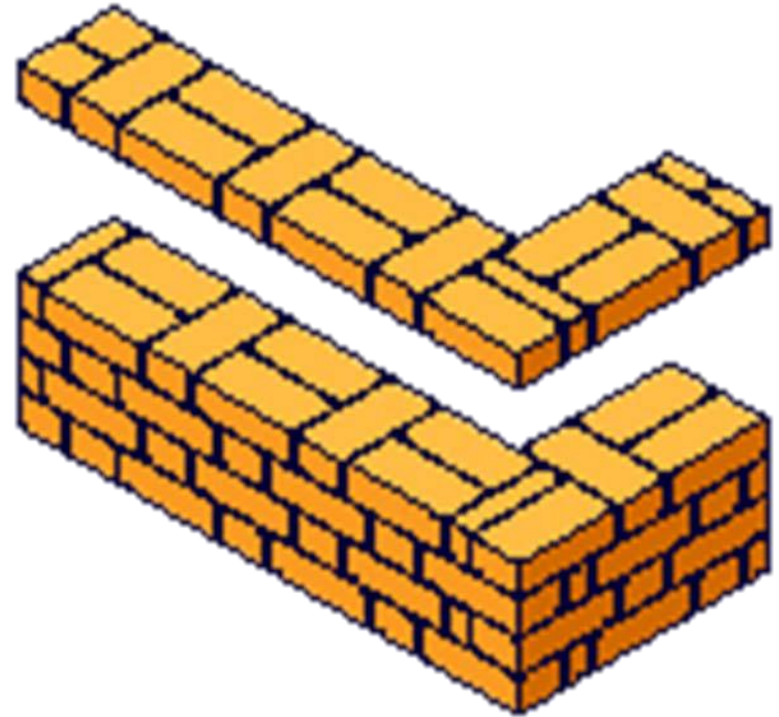
- **English bond**  
Alternative courses of headers and stretchers



English bond

# Types of Bonds in Brick Work

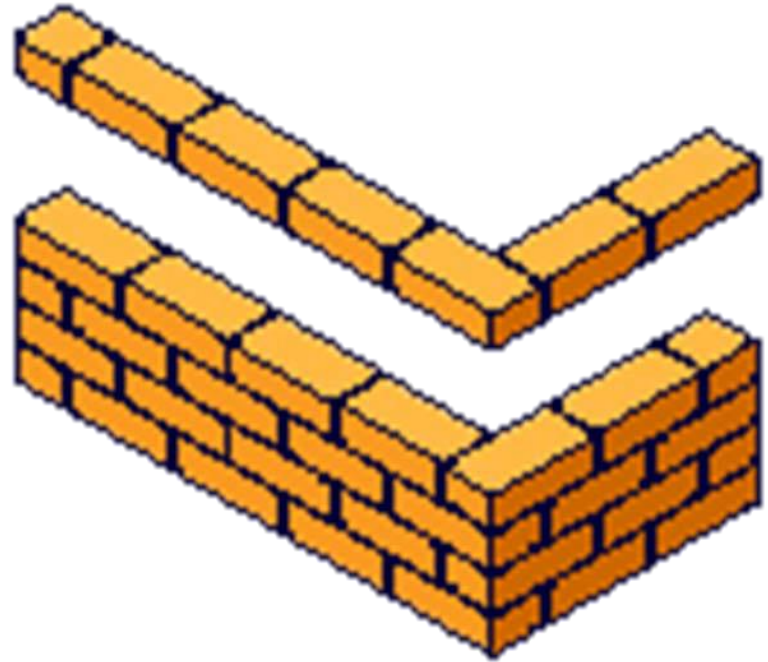
- **Flemish bond:**  
Alternate bricks are placed as header and stretcher in every course.



Flemish bond

# Types of Bonds in Brick Work

- **Stretcher Bond:**  
Originally used for single brick walls



**Stretcher Bond**

# Steps of Brick Work Construction

- Preparing the Mortar
- Laying the Bricks
- Filling the gaps
- Curing



# Structural limitations

- Masonry structures have higher compressive strength (vertical loads) but weak in taking tensile strength (twisting or stretching).
- The tensile strength of masonry walls can be strengthened by
  - v' thickening the wall
  - v' building masonry piers (vertical columns or ribs) at intervals.
  - v' Providing steel reinforcements within brick work

# Defects in Brick Structures

- Sulfate Attack
- Crystallization of salts from bricks (Efflorescence)
- Corrosion of embedded steel
- Shrinkage on drying

# Defects in Brick structures



Sulfate Attack



Corrosion of embedded steel

# Defects in Brick structures



Shrinkage on drying



Efflorescence

# Strength of Brick Masonry

Strength of brick masonry depends on the following factors:

1. Types and strength of brick
2. Mix of mortar
3. Size and shape of masonry construction
4. Method of bonding adopted in construction

# Assignment

Describe the general principles to be observed in brick masonry construction.