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

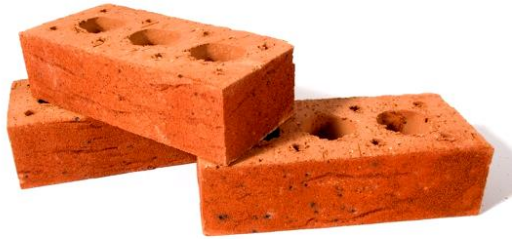
Types of Brick

- Mainly of **two** types:

a) **Pressed:** have a deep frog in one bedding surface and a shallow frog in the other

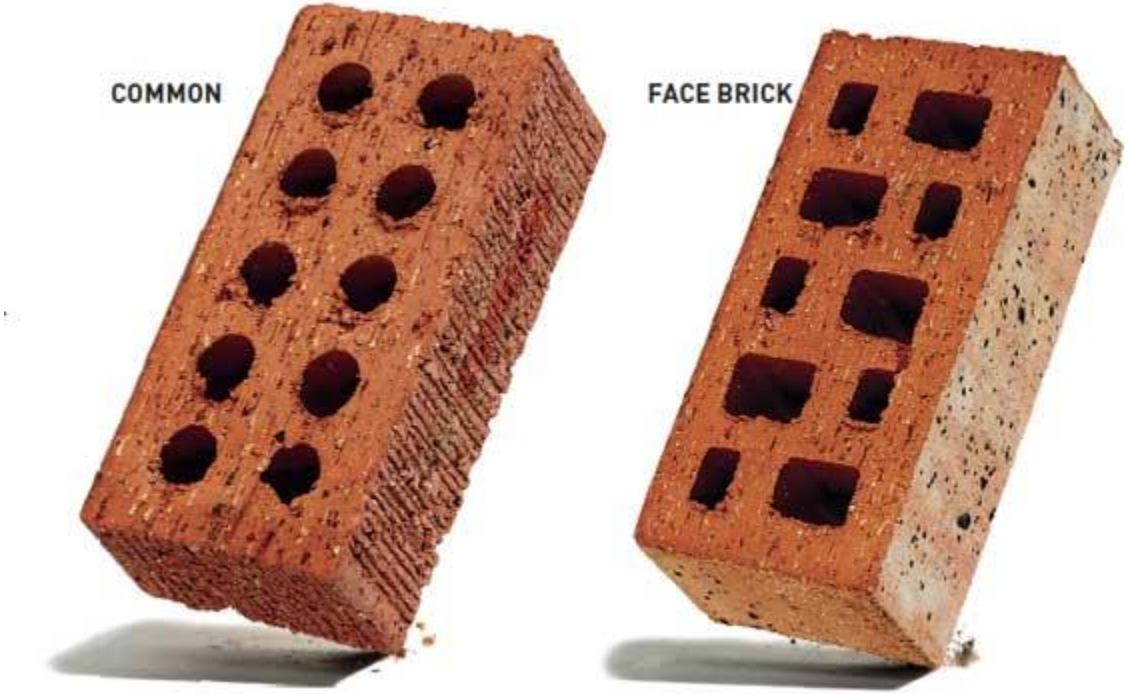


a) **Wire-cut:** 3 or 4 holes through them constituting up to 25% of the total volume of the brick.



Wire-Cut Brick

- **Wire-cut or Extruded Bricks:**
- Clay is extruded through a die to form a column. Column of clay is then cut with wires.
- Reduced amount of clay, cheaper and lighter.

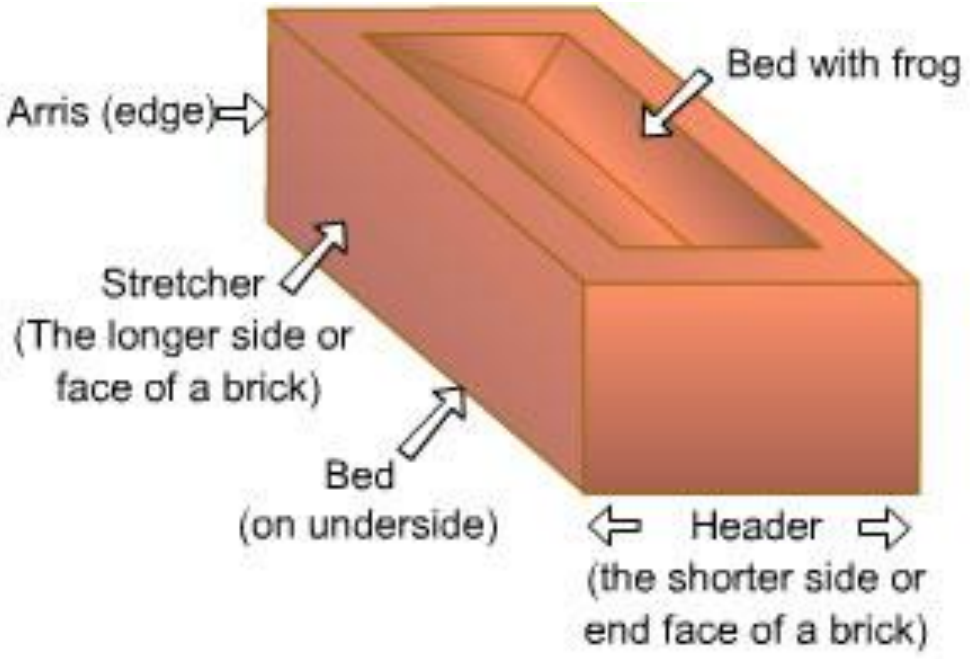


Brick dimensions

- 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)

Brick

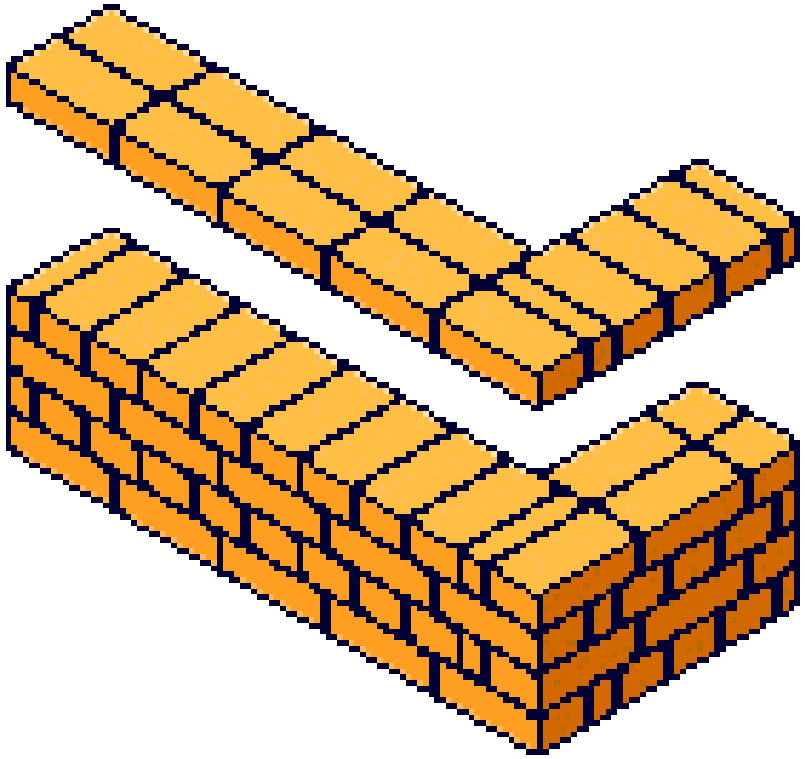
- Frog – indent
- Stretcher – longer side or face of a brick
- Header – shorter side or end face of a brick
- Arris – edge



Types of Bonds in Brick Work

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

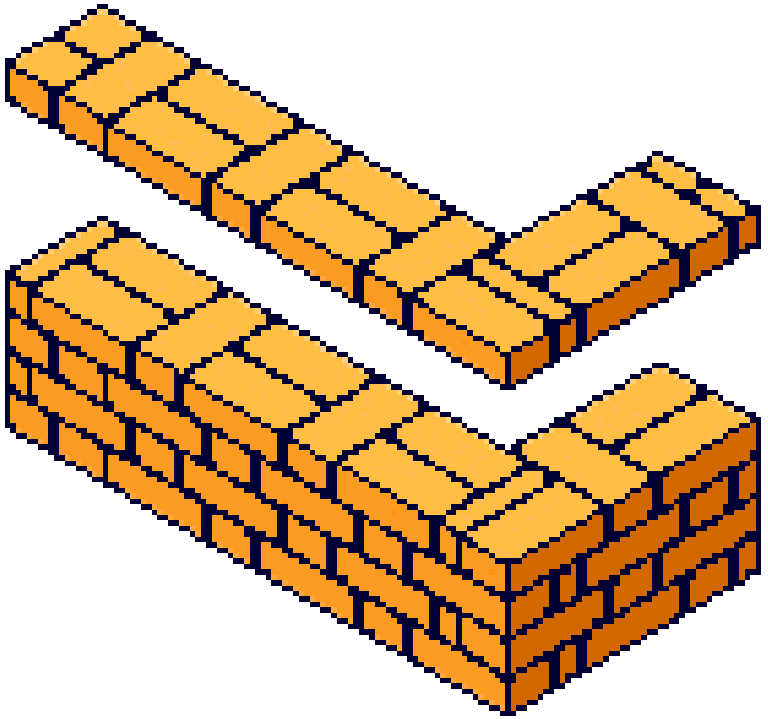
- Decorative bond, often used in garden landscaping for screen walls



English bond

Types of Bonds in Brick Work

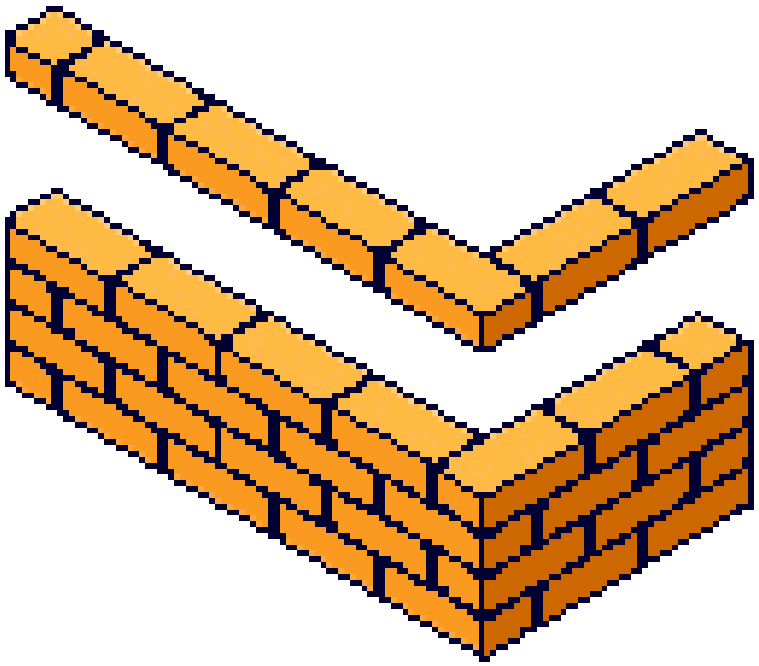
- **Flemish bond**: Alternate bricks are placed as header and stretcher in every course.
- Previously for strength and aesthetic look to buildings
- Now more suited to garden walling



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


depositphotos





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

✓ thickening the wall

✓ building masonry *piers* (vertical columns or ribs) at intervals.

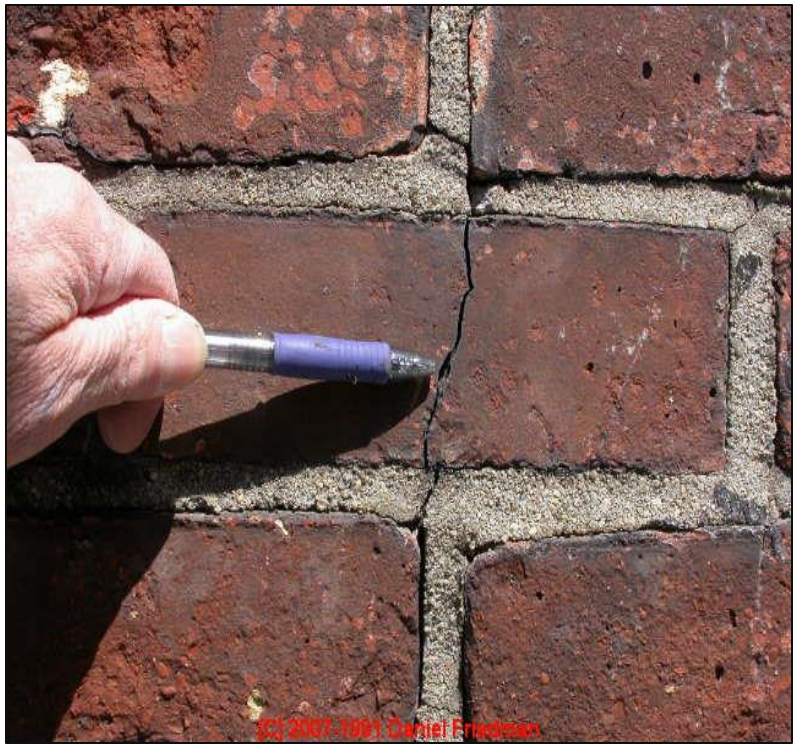
✓ Providing steel reinforcements within brick work

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

Defects in Brick structures



Shrinkage on drying

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.