2.3 Masonry:

It is the building of structures from individual units laid in and bound together by mortar; the term *masonry* can also refer to the units themselves. The common materials of masonry construction are brick, stone, marble, granite, travertine, limestone, cast stone, concrete block, glass block, stucco, tile, and cob. Masonry is generally a highly durable form of construction. However, the materials used, the quality of the mortar and workmanship, and the pattern in which the units are assembled can significantly affect the durability of the overall masonry construction. A person who constructs masonry is called a **mason** or **bricklayer**.

Applications

Masonry is commonly used for the walls of buildings, retaining walls and buildings. Brick and concrete block are the most common types of masonry in use in industrialized nations and maybe either weight-bearing or a veneer. Concrete blocks, especially those with hollow cores, offer various possibilities in masonry construction. They generally provide great compressive strength, and are best suited to structures with light transverse loading when the cores remain unfilled. Filling some or all of the cores with concrete or concrete with steel reinforcement (typically rebar) offers much greater tensile and lateral strength to structures.

Advantages

- The use of material such as bricks and stones can increase the thermal mass of a buildingand can protect the building from fire.
- Most types of masonry typically will not require painting and so can provide a structurewith reduced life-cycle costs.

- Masonry is non-combustible product.
- Masonry walls are more resistant to projectiles, such as debris from hurricanes or tornadoes.
- Masonry structures built in compression preferably with lime mortar can have a useful life of more than 500 years as compared to 30 to 100 for structures of steel or reinforced concrete.[*citation needed*]

Disadvantages

- Extreme weather, under certain circumstances, can cause degradation of masonry wallsurfaces due to frost damage.
- Masonry tends to be heavy and must be built upon a strong foundation, such as reinforcedconcrete, to avoid settling and cracking.
- Other than concrete, masonry construction does not lend itself well to mechanization, andrequires more skilled labor than stick-framing.
- Masonry consists of loose components and has a low tolerance to oscillation as comparedto other materials such as reinforced concrete, plastics, wood, or metals.

Stone Masonry and brick stone masonry

Definition:

The art of building a structure in stone with any suitable masonry is called stone masonry

Types of Stone Masonry:

Stone masonry may be broadly classified into the following two types:

1. Rubble Masonry
2. Ashlar Masonry

1. Rubble Masonry:

The stone masonry in which either undressed or roughly dressed stone are laid in a suitable mortar is called rubble masonry. In this masonry the joints are not of uniform thickness. Rubble masonry is further sub-divided into the following three types:

1. **Random rubble masonry**
2. **Squared rubble masonry**
3. **Dry rubble masonry**

1. **Random rubble masonry:** The rubble masonry in which either undressed or hammer dressed stones are used is called random rubble masonry. Further random rubble masonryis also divided into the following three types:

a. **Un coursed random rubble masonry:** The random rubble masonry in which stones are laid without forming courses is known as un coursed random rubble masonry. This is the roughest and cheapest type of masonry and is of varying appearance. The stones used in this masonry are of different sizes and shapes. Before lying, all projecting corners of stones are slightly knocked off. Vertical joints are not plumbed, joints are filled and flushed. Large stones are used at corners and at jambs to increase

their strength. Once "through stone" is used for every square meter of the face area for joining faces and backing. **Suitability:** Used for construction of walls of low height in case of ordinary buildings.

b. **Coursed random rubble masonry:** The random rubble masonry in which stones are laid in layers of equal height is called random rubble masonry. In this masonry, the stones are laid in somewhat level courses. Headers of one coursed height are placed at certain intervals. The stones are hammer dressed.

c. **Suitability:** Used for construction of residential buildings, go downs, boundary walls etc.

1. Squared rubble masonry: The rubble masonry, in which the face stones are squared on all joints and beds by hammer dressing or chisel dressing before their actual laying, is called squared rubble masonry.
2. There are two types of squared rubble masonry.
3. Coursed Square rubble masonry: The square rubble masonry in which chisel dressed stones laid in courses is called coarse square rubble masonry. This is a superior variety of rubble masonry. It consists of stones, which are squared on all joints and laid in courses. The stones are to be laid in courses of equal layers. and the joints should also be uniform.

4. Suitability: Used for construction of public buildings, hospitals, schools, markets, modern residential buildings etc and in hilly areas where good quality of stone is easily available.

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In brick masonry, there are many techniques to stack bricks. These different arrangements are known as bricks bonds. Each bond has its own characteristics. Following are the commonly usedbricks bonds.

1. Stretcher Bond
2. English Bond
3. Flemish Bond
4. Common/American/English Garden Wall Bond
5. Flemish Garden Wall Bond
6. Herringbone Bond
7. and there are many other brick bonds which a designer can design for custom

requirements

1. Stretcher Bond

- Easiest bond to lay & it minimizes the amount of cutting required.
- Originally used for single brick walls.
- It is used for cavity walls as less cutting is required.
- Walls are half brick wide.
- No two adjacent vertical joints should be in line.

2. English Bond

- Alternative courses of headers and stretchers.
- One header placed centrally above each stretcher.
- This is a very strong bond when the wall is 1 brick thick (or more thicker).
- One of the strongest brickwork patterns.

3. Flemish Bond

- Alternate bricks are placed as header and stretcher in every course.
- Each header is placed centrally between the stretcher immediately above and below. This is not asstrong as the English bond at 1 brick thick .

- It can be successfully applied in cavity wall.

4. Common/American/English Garden Wall Bond

- A pattern made like Stretcher bond but with a row of headers replacing every nth course (n isusually odd).

5. Flemish Garden Wall Bond

- In this variant of Flemish bond, one header is placed at every third stretcher.

6. Herringbone Bond

- It is a purely decorative bond. It is used in floor and wall panels

Concrete Masonry Blocks

Concrete masonry blocks have been in existence for centuries. Revolutionary changes in manufacturing technology and material sciences have made multi sized, shaped, colors and textured blocks a reality. They are used as both structural and non-structural components and have been the preferred building blocks in the western world. They are fast replacing traditional bricks and other masonry products in India too.

Concrete Masonry Blocks can either be

- Hollow or Solid
- Load Bearing or Non-load Bearing
- Light weight or Dense

Shield concrete blocks are used in low and high rise buildings, for basements, exterior and interior walls and partitions.

Applications

- Shopping Malls, Multiplexes
- Multifunctional Complexes such as IT Parks
- Institutional Building
- Independent Residences
- Farmhouses, Villas
- Residential Complexes
- Hotels, Resorts
- Schools, Colleges
- Hospitals
- Ports, Airports, Mass Transport Stations
- Factory Buildings
- Warehouses
- Sports Stadiums

SHIEELD - CONCRETE PRE – ENGINEERED HOLLOW BLOCKS

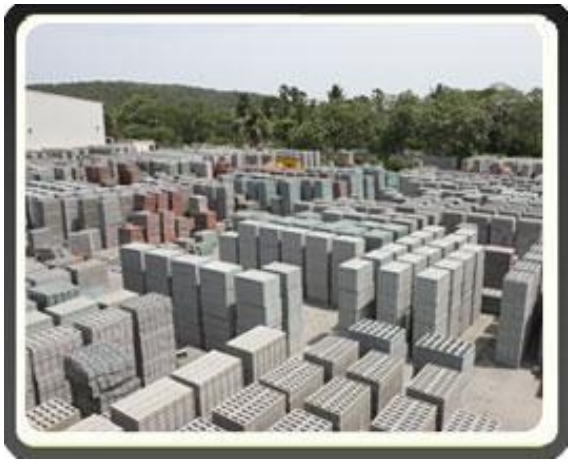
BOTTOM OPEN TYPE
SIZE IN MM
390 x 190 x 190
400 x 100x 200

BOTTOM CLOSE TYPE
SIZE IN MM
390 x 190 x 190
390 x 125 x 190
390 x 90 x 190

ISOLATION BLOCKS
SIZE IN MM
400 x 200 x 200

SHIEELD - CONCRETE PRE – ENGINEEREDSOLID BLOCKS

SIZE IN MM
390 x 190 x 190
390 x 140 x 190
390 x 90 x 190
400 x 200 x 200
230 x 74 x 109



LINTEL BLOCK (U CHANNEL)

SIZE IN MM
390 X 190 X 190

Shieeld Concrete Blocks advantage

Precision	Protection	Economy
□ Excellent Dimensional Tolerance Modular □ Range of Architectural Forms □ Excellent Finish □ Even Textures	□ High Compressive Strength High Flexural Strength □ High Lateral Modulus of Rupture High Bond Strength □ Earthquake Resistant	□ Ease and Speed of Construction □ Low Onsite Wastage □ Low Labour Cost □ Consumes Less Cement □ Low/ No Plastering

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