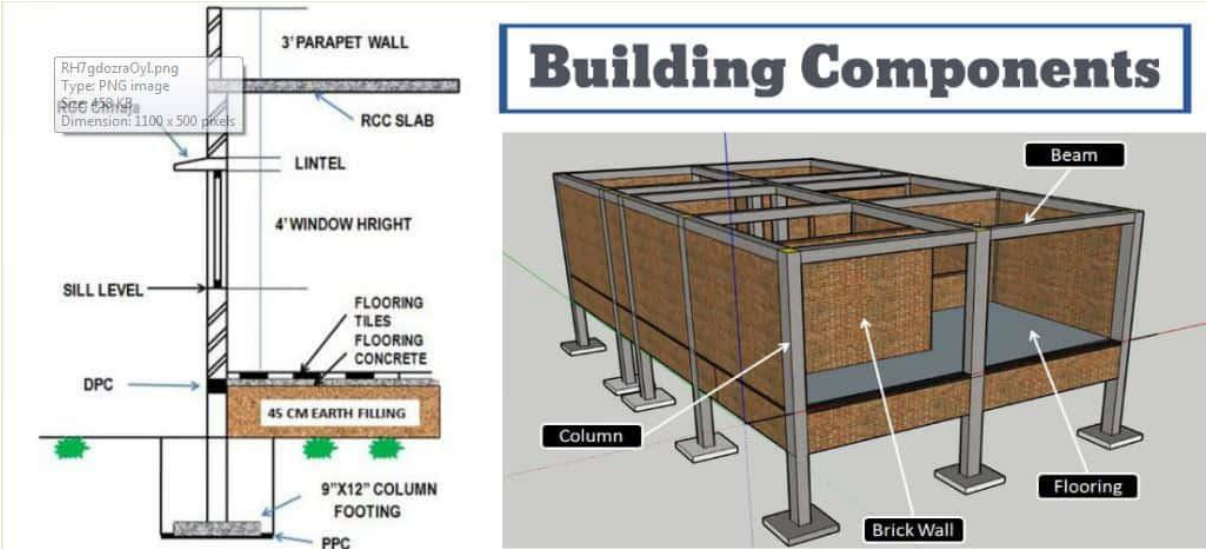
COMPONENTS OF A BUILDING

The basic Components of a Building Structure are the Footing, Column, Beam, Slab, Lintel, Doors, Windows, Sill, and DPC. Earth Filling, Parapet Wall, etc.

These parts of the building serve the purpose of supporting, enclosing, and protecting the building structure.



Components of Building With Their Standard Dimensions

1. Foundation
2. Plinth Level
3. Earth Filling
4. DPC (Damp Proof Course)
5. Flooring
6. Walls
7. RCC Column
8. Sill Level
9. Lintel
10. Ceiling
11. Chajjas
12. RCC Beam
13. Roof or RCC Slab
14. Doors
15. Windows
16. Parapet Wall
17. Waterproofing on the Terrace
18. Copping

1. Foundation

A Foundation is the lowest part of the building structure resting on soil below ground level. All loads of building are transferred to the foundation through beam and column arrangement.

Its main function is to distribute the load evenly and safely to the ground.

In framed structures, Footings are generally used as foundations to support the structural load of the building.

The following are various types of foundations and footings used in construction:

Shallow foundation

Individual footing or isolated footing

Combined footing

Strip foundation

Raft or mat foundation

Deep Foundation

Pile foundation

Drilled Shafts or caissons

Standard Dimensions

Foundation size and depth totally depend on the structural and site ground condition. So, there are no standard dimension recommendations for it.

But, for small structures like row houses depth of the foundation should be at least 1.5 m from ground level.

2. Plinth Level

The Plinth level or Plinth is the offset created between ground level and the superstructure of the ding. It is made by constructing a brick wall from ground level to the ring level of the building.

Its main function is to prevent the entry of moisture from the ground surface to the building superstructure.

Standard Dimensions

The plinth height of any building must be at least 45 cm or 3 feet from the ground level.

3. Earth Filling

An Earth Filling or Soil Filling is done between the plinth wall. It is essential to fill the open space left between the ground level to the plinth level.

Earth filling must be very well compacted so that the flooring gets a sufficiently hard surface base.

Standard Dimensions:

Earth must be filled to the top of the plinth level. Different materials can utilize as earth fills like soil, coarse aggregate, waste materials, Brick Bat, etc.

4. DPC (Damp Proof Course)

DPC is a layer of waterproofing material such as asphalt or waterproof cement at the plinth level.

The superstructure walls are constructed above the DPC layer so that no dampness rises from the ground surface into the walls.

In short, DPC prevents the rise of water to superstructures.

If dampness rises in the wall of the superstore it reduces the strength of the walls and creates unhealthy living conditions.

Also, it created many defects in paint and plaster and ultimately increases maintenance costs.

In the case of Plinth, beams are provided above ground level DPC is not required. Because the plinth Beam itself performs as a DPC layer to restrict the entry of dampness.

Standard Dimensions

Generally, DPC is laid on brick masonry construction up to the plinth level. So the width of DPC is the same as the width of the Brick wall and thickness may vary from 2.5cm to 5cm.

5. Flooring

Flooring is an important component of the home. It is one that provided an attractive and pleasant look to the house. Flooring is made by laying tile on it.

There are different types of flooring designs and materials available,

Timber Flooring

Laminate Flooring

Vinyl Flooring

Porcelain or Ceramic Tile Flooring

Natural Stone Flooring – Marble, Granite, etc.

Standard Dimensions

Flooring is provided above the earth filled with a base made of cement concrete (1:2:4). The flooring material should have sufficient thickness and strength.

6. Walls

Walls are the vertical component of any structure. It can be constructed using stones, bricks, concrete blocks, etc. Different types of bonds are used for constructing walls.

Bricks walls are essential to enclose the inside area and protect against wind, sunshine, rain, etc. Doors and Windows are provided in the walls for ventilation and access to the building.

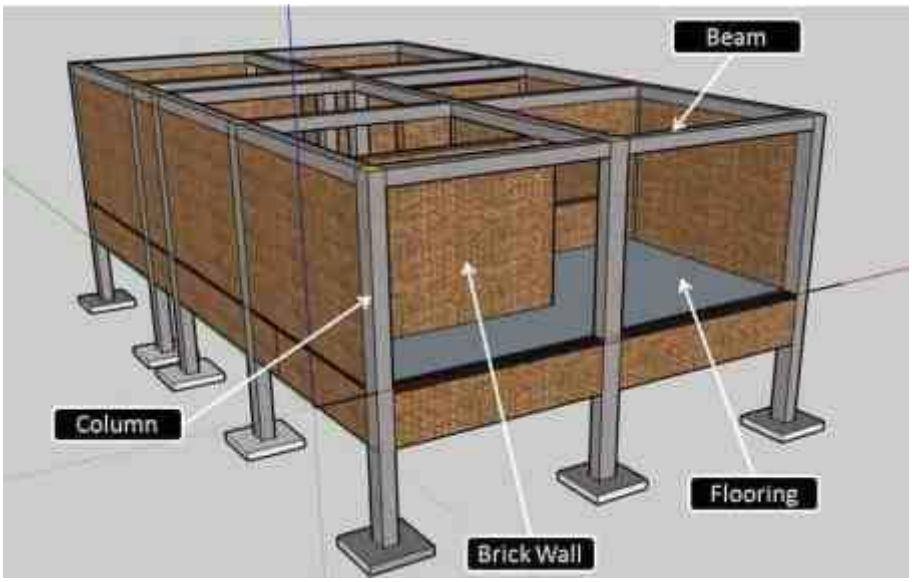
Standard Dimensions

Walls may be made of single brick walls or double brick walls. The single brick wall has a thickness of 100 mm and the Double brick wall has a thickness of 230mm.

7. RCC Column

Columns are vertical members constructed to support any structural frame. Load Coming from the Slab, Beam transferred to column and column transfer load to the footing safely. Building structures may have two types of columns.

Architectural columns and structural columns. Architectural columns primly used to increase the aesthetic appearance of a building while a structural column takes the load coming from the slab above and transfers it safely to the foundation.



Standard Dimensions

Columns may have various sizes as per the structural load requirements. But, for minimum dimension for any structural column is restricted to 9” x 9” or 225mmx225mm.

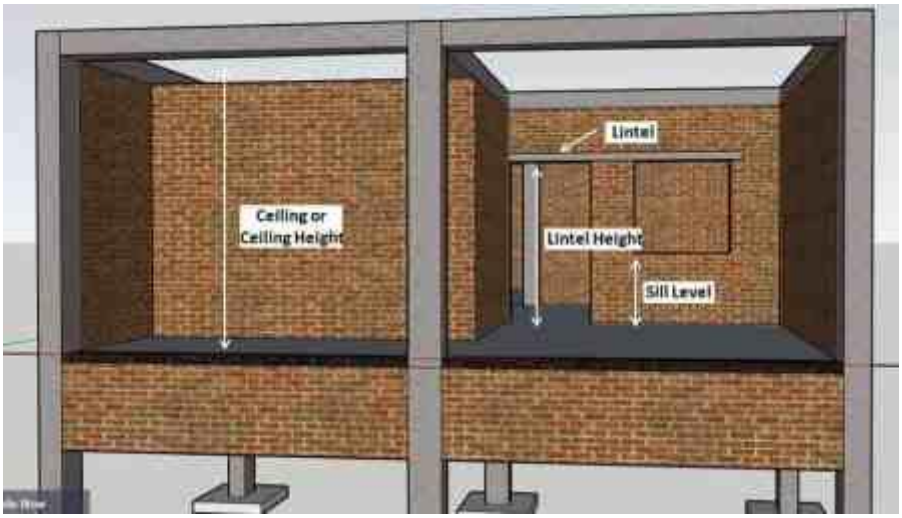
8. Sill Level

It is the base point of any window in the house or it is a level where windows are placed. The Sill level is very important to ensure evenness in all window levels.

A sill is a height which is ensuring that the proper amount of light enters the house. It also provides easy habitat to look outside through the window without any discomfort. It provides a solid base for window installment.

Standard Dimensions:

The sill level of any house should be around 3 ft or 900 mm.



9. Lintel

Lintels are constructed from reinforced cement concrete. It is provided above the wall openings like doors, windows, etc. The Lintel actually takes the load coming on window and door openings.

In Sort, the lintel safeguards the door and window from excess load coming from above. In residential buildings, lintel can be constructed from concrete or brick masonry.

Standard Dimension

Generally, the lintel width is as same as the width of the wall, and the thickness is between 4” to 6”

10. Ceiling

The ceiling is not a separate part but is the bottom face of any slab. The ceiling is the most important part of any room because it can be decorated to increase the aesthetic appearance. POP (Plaster of Paris) is a material used for making false ceilings.

It is a location where we can hang decorative items, fans, etc to increase the architectural view of the room.

Standard Dimension

The ceiling height is kept from 9’ 6” to 10’ 6”. (it can be more or less as per requirement)

11. Chhajjas

Chhajjas is also called a Weather shed. This is a structure that is constructed above the window and projected outside from the window face.

The main function of the weather shed is to restrict the direct entry of rainwater and sunlight. Chhajjas are constructed from reinforced cement concrete.

Standard Dimensions

Length of Chhajjas = Width of Window + 0.15m Bearing on both Side

Width of Chhajjas = 0.45 m to 0.60 m.

12. RCC Beam

RCC Beam is an important component in any frame structure. The beam is a horizontal member which connects columns on both sides.

Its main function is to take the load from the upper structure and transfer it to the column.

Generally, the column-to-beam connection is called direct support while the beam-to-beam connection is called indirect support.

In most cases, the beam is supported by two columns, and the most rarely used is the cantilever beam.

Standard Dimension

Beam minimum dimension is 9” x 9” (Thumb Rule)

13. Roof or RCC Slab

The roof is an essential structural component of building any structure, which provides protection again environmental factors like sun, wind, and rain.

Generally, All roof rests on sidewalls and required anchoring so that wind and another mechanical impact cannot destroy them.

Roofs may have different shapes, but flat and sloped roofs are more popular. Typically most roofs are constructed from RCC, stone slabs, tiles, etc.

Standard Dimension

Generally, RCC Slab Thickness can have a minimum dimension of 4” to 6” as per requirement.

14. Doors

Doors are the main entry and exit points of any house. Without doors, there will be no security in the house. They are the ones that separate one room from the others.

Doors have a lock-key facility, so we can lock the house by locking the door and going out freely. They are made of strong materials like steel, wood, and iron. Therefore, they are not easily breakable.

There are different types of doors used in the house,

Hinged Doors

Dutch Doors

Roller Doors

Bifold Doors

Sliding Doors

Pivot Doors

French Doors

Panel Doors

PVC Doors

Flush Doors

Standard Dimension

The main door of the drawing room, bedroom, the kitchen may have a width up to 2'6" to 3', and in other rooms like the bath, W/C is 2' to 3'. The height of the Doors is almost 7' every time or up to the lintel level.

15. Windows

Windows are one of the essential components of any house or building. It is one that allows fresh air and light to enter the house. Without the window, the house becomes a darkroom or jail.

Windows are provided at sill level and their height is extended up to lintel level. There are various types of windows used in houses like

Single Hung Windows

Arched Windows

Awning Windows

Bay Windows

Bow Windows

Casement Windows

Garden Windows

Glass Block Windows

Round Circle Windows

Skylight Windows

Sliding Windows

Transom Windows

Standard Dimension

Window opening width may change depending on requirement but its height is generally kept at 1.4m from sill level or up to the bottom of the lintel.

16. Parapet Wall

It is a low-height wall built along the edge of the roof, terrace, walkway, balcony, etc.

Parapet walls can be constructed using different materials like reinforced cement concrete, steel, aluminum, glass, etc. It is generally constructed with a single brick wall.

Standard Dimensions:

The parapet wall height is 3 ft or 0.90 m.

17. Waterproofing on the Terrace

The damp proof course is the protective layer to restrict the movement of moisture, and water through the roof slab.

For DPC on the roof flexible materials are used which provide a lesser number of joints like mastic, asphalt, bitumen felts, plastic sheets, etc.

18. Copping

Coping is a structure that is constructed on top of Boundary walls & parapet walls etc. to protect rainwater directly store on brick masonry walls.

The main function of coping is to drain off rainwater during the rainy season & improve the aesthetics of the structure/wall.