


Framed Building Structure



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What is a structure?

- A structure is a system of inter connected elements to carry loads safely to under ground earth.

Building Structure

□ Basically in building structures there are 2 types of structures:

(1) framed structure

(2) load bearing structure.

Components of framed building structure



This building has ground floor, first floor, second floor, and terrace floor.

The vertical elements are the **columns**.

The horizontal bands are the **beams**.

The flat surface on which you can stand is the **slab**.

Components of framed building structure



Walls, windows are added later to give protection to inhabitants.

The loads such as human beings, furniture etc is carried by this frame.

The walls have no role except protecting the inhabitants from weather.

Components of framed building structure



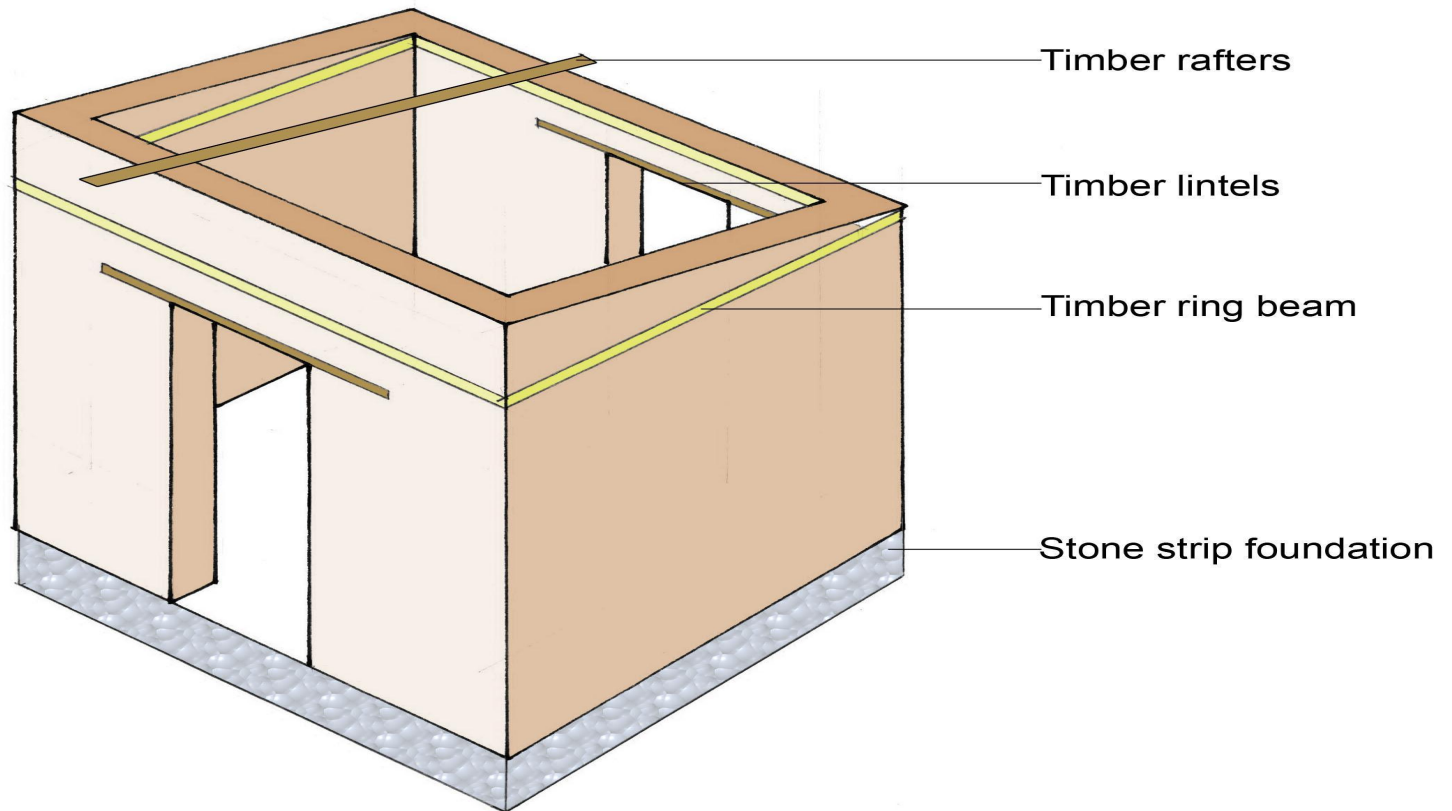
This is a completed building as a framed building.

From the photo, you can see the red color; brick walls, grey color; - vertical columns and beams.

Load Bearing Structure

- In load bearing structure instead of columns and beams, it has walls taking the load.
- Here the walls play a dual role of taking loads and protecting the inhabitants. The walls are generally brick or stone.
- Since the walls take the load they cannot be moved or removed.
- The older structures of 2 to 3 storey were load bearing.

Load Bearing Structure



What is the material of construction of these framed buildings?

- ❑ Most of the framed buildings are constructed in Reinforced Cement Concrete (RCC).
- ❑ RCC is a composite material that is it is made of concrete + steel.
- ❑ Concrete is obtained by mixing cement, sand, small stone chips, water in required proportion.
- ❑ Steel used is called reinforcement. They are round in shape and can be plain or twisted as per requirement.
- ❑ Reinforcement takes care of the weaknesses the concrete has and hence results in economical composite material.

Framed building



Measurement Principles

Element : Framed Structure

Components:

- Column
- Beam

Taking-off items:

- Concrete works in column / beam
- Formwork to sides of column / beam
- Reinforcement work in column / beam
(N.A)

TAKING-OFF LISTS (items to be measured)

□ Reinforced concrete column

■ Concreting works

- Reinforced concrete Grade ____ in column (m³)

■ Formwork

- Sawn formwork to sides of column (m²)

■ Reinforcement works (*not available in this task*)

- High tensile reinforcement bar in column (kg/m)
- Mild steel reinforcement bar in column (kg/m)

TAKING-OFF LISTS (items to be measured)

□ Reinforced concrete beam

■ Concreting works

- Reinforced concrete Grade ____ in beam (m³)

■ Formwork

- Sawn formwork to sides of beam (m²)

■ Reinforcement works (*not available in this task*)

- High tensile reinforcement bar in beam (kg/m)
- Mild steel reinforcement bar in beam (kg/m)