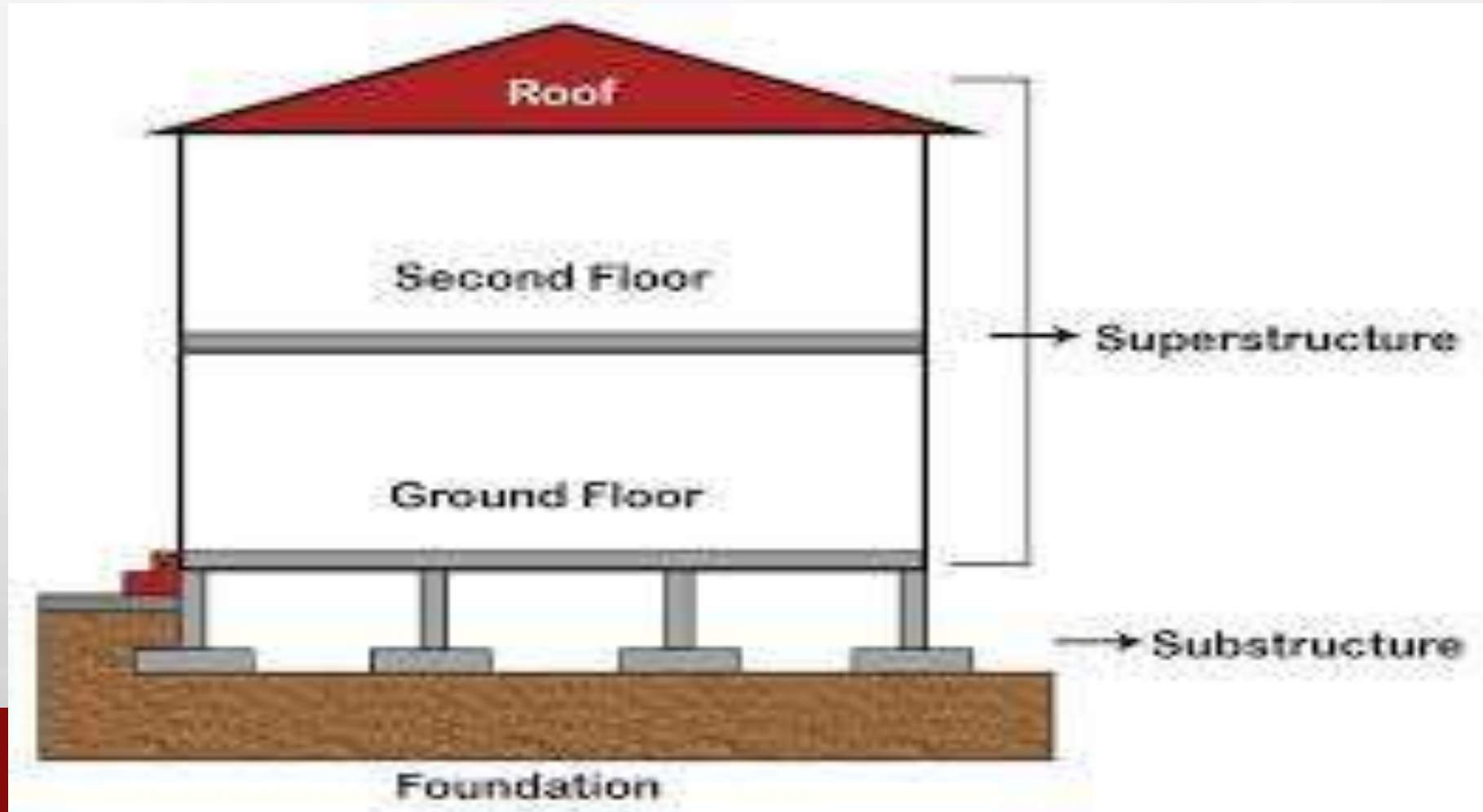


INTRODUCTION TO BUILDING CONSTRUCTION

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BASIC COMPONENTS OF STRUCTURE



BASIC COMPONENTS



LOAD/WALL BEARING & FRAMED STRUCTURE

TYPES OF STRUCTURES



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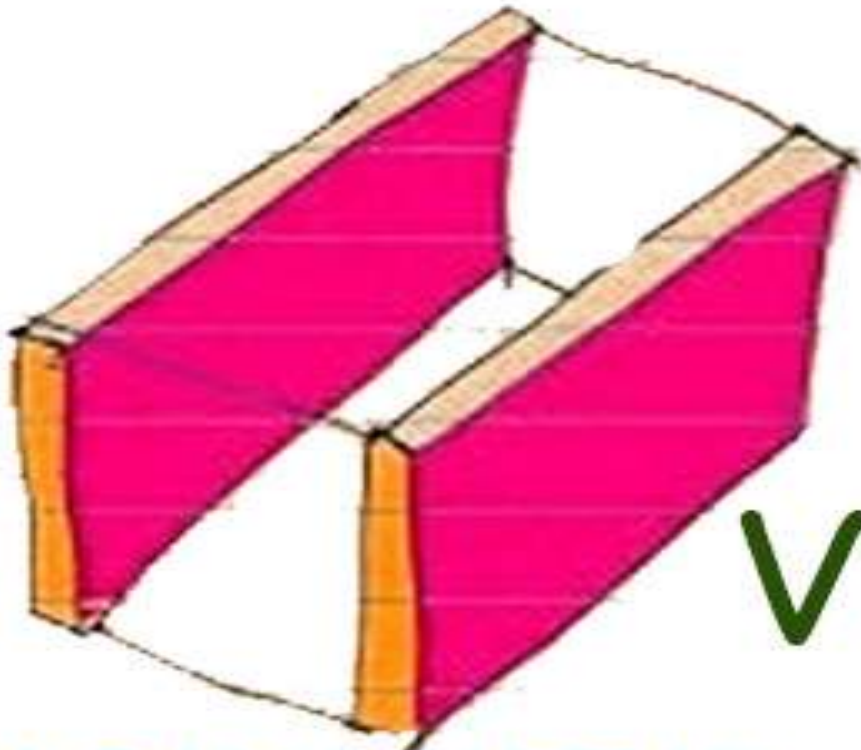
WHAT IS LOAD BEARING STRUCTURE?

LOAD BEARING STRUCTURE IS PROBABLY THE OLDEST AND MOST COMMON TYPE OF STRUCTURE, AND IT IS THE STRUCTURE IN WHICH THE LOADS OF THE ROOFS AS WELL AS LATERAL LOADS SUCH AS EARTHQUAKE, WIND ETC. ARE BORNE (BEAR) BY WALLS, AND THROUGH WALLS THEY ARE TRANSFERRED TO LOWER FLOOR AND EVENTUALLY TO FOUNDATIONS. IT IS ALSO KNOWN AS WALL BEARING STRUCTURE.

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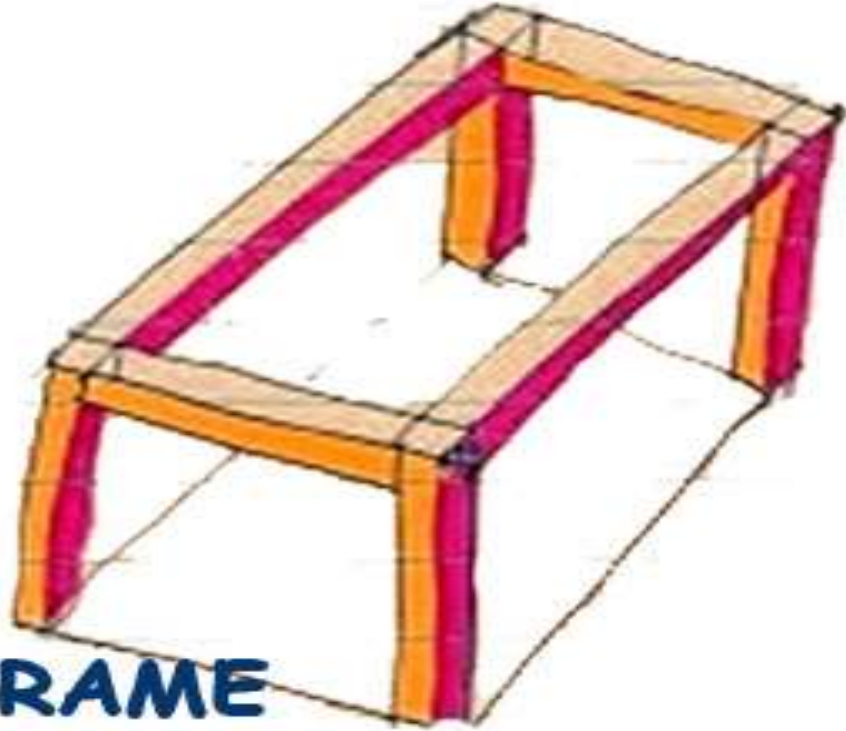


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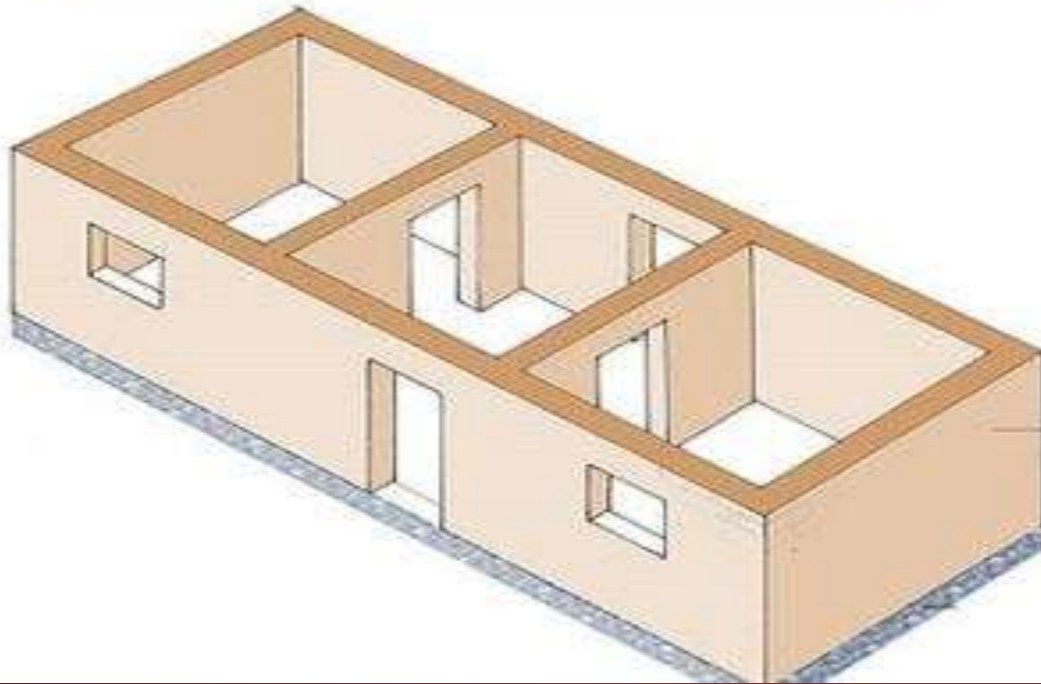
**LOAD BEARING
STRUCTURE**

V/S.

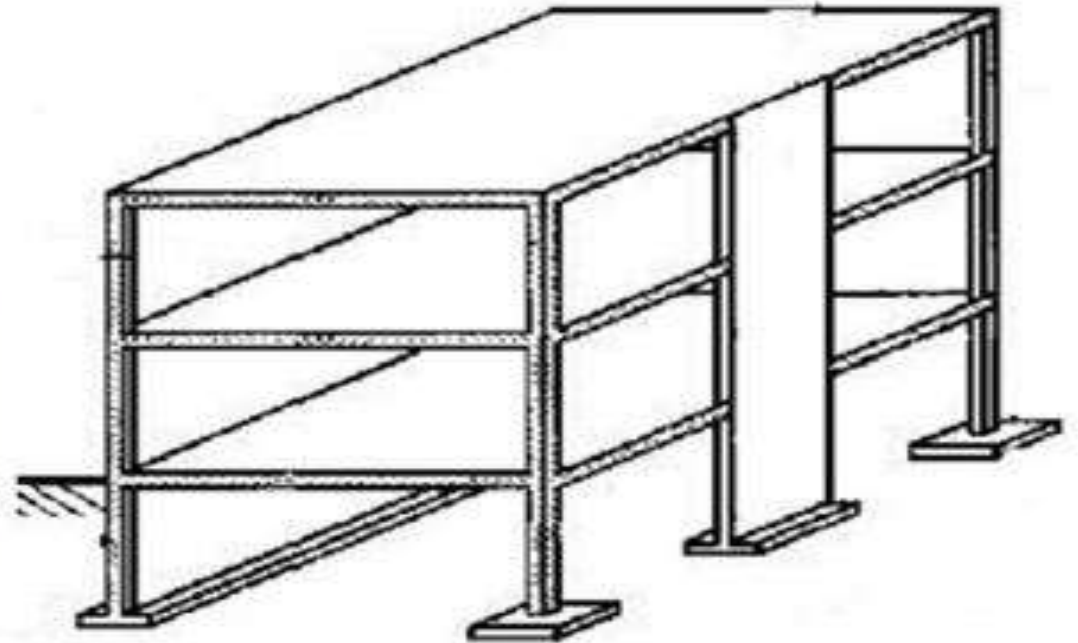


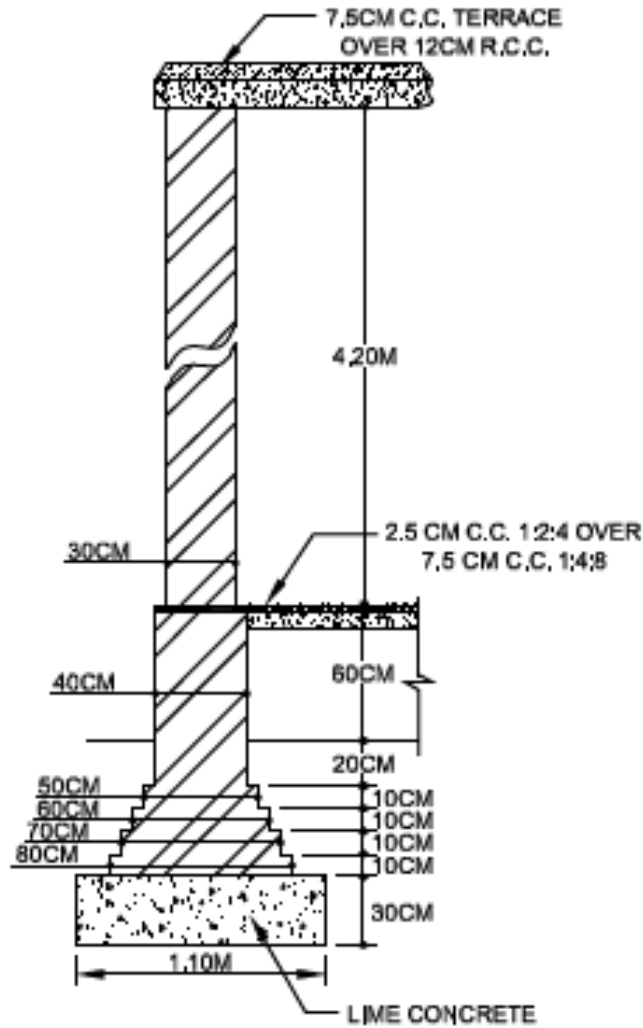
**FRAME
STRUCTURE**

Load Bearing Structure

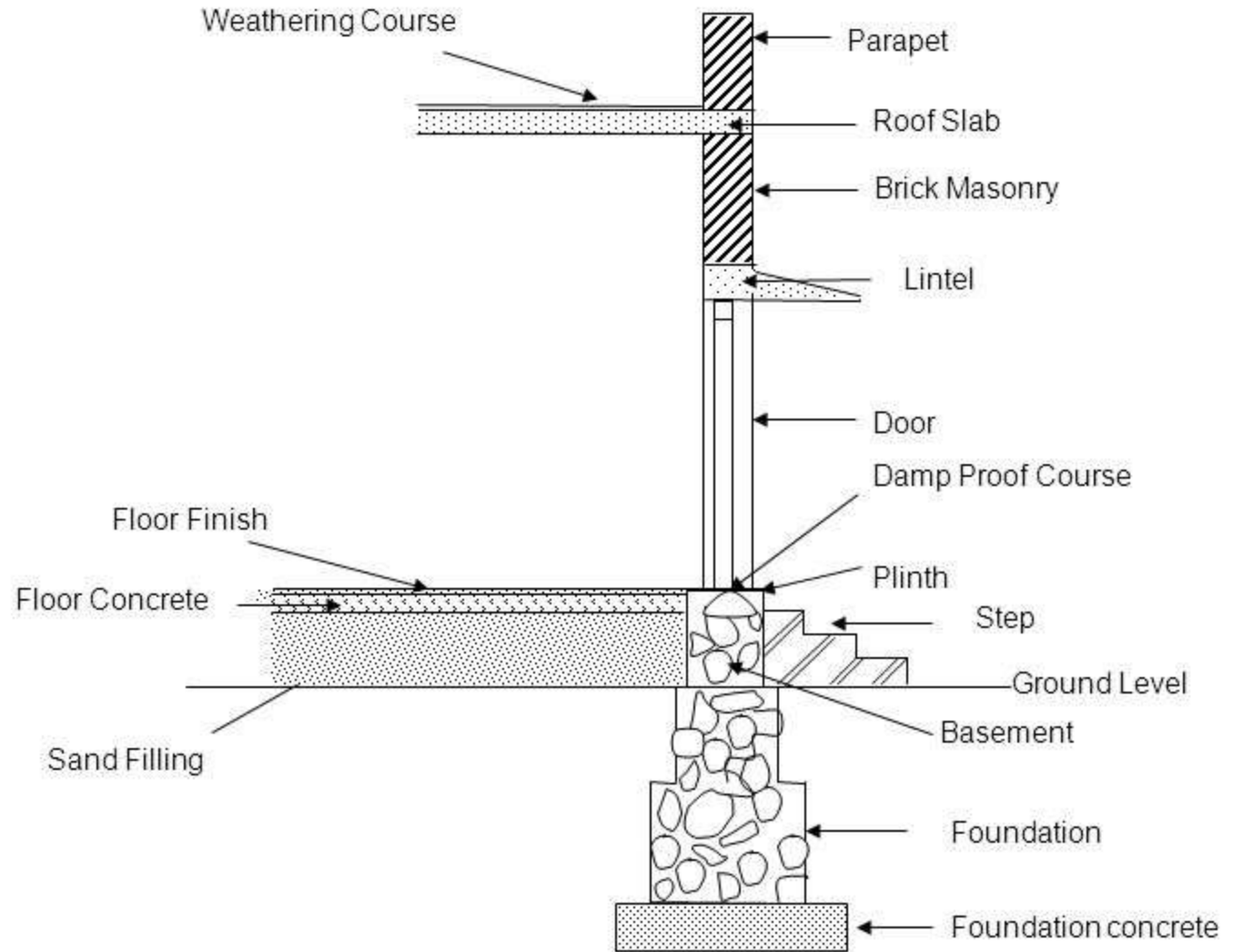


RCC Framed Structure



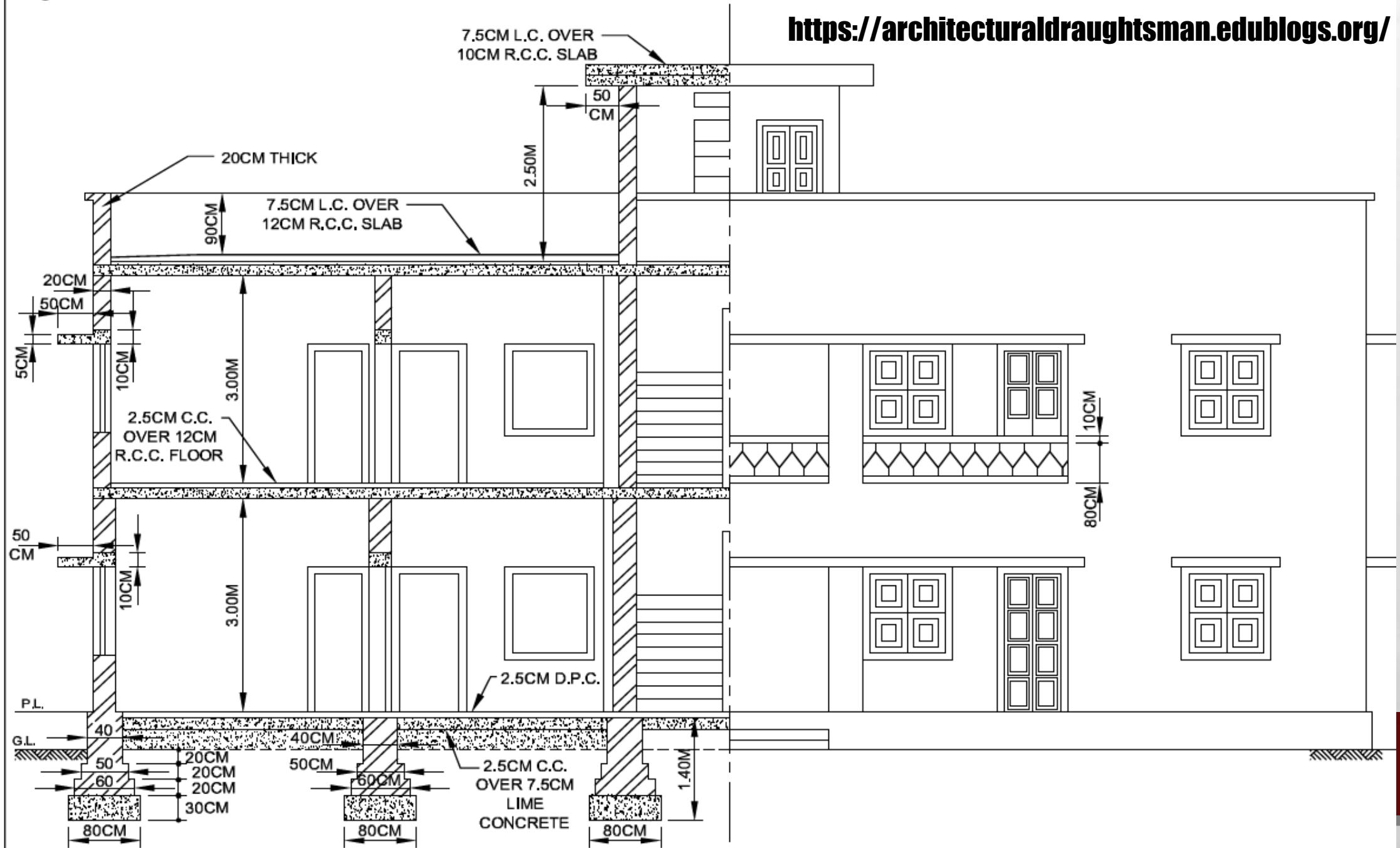


CROSS SECTION OF WALL ON AA

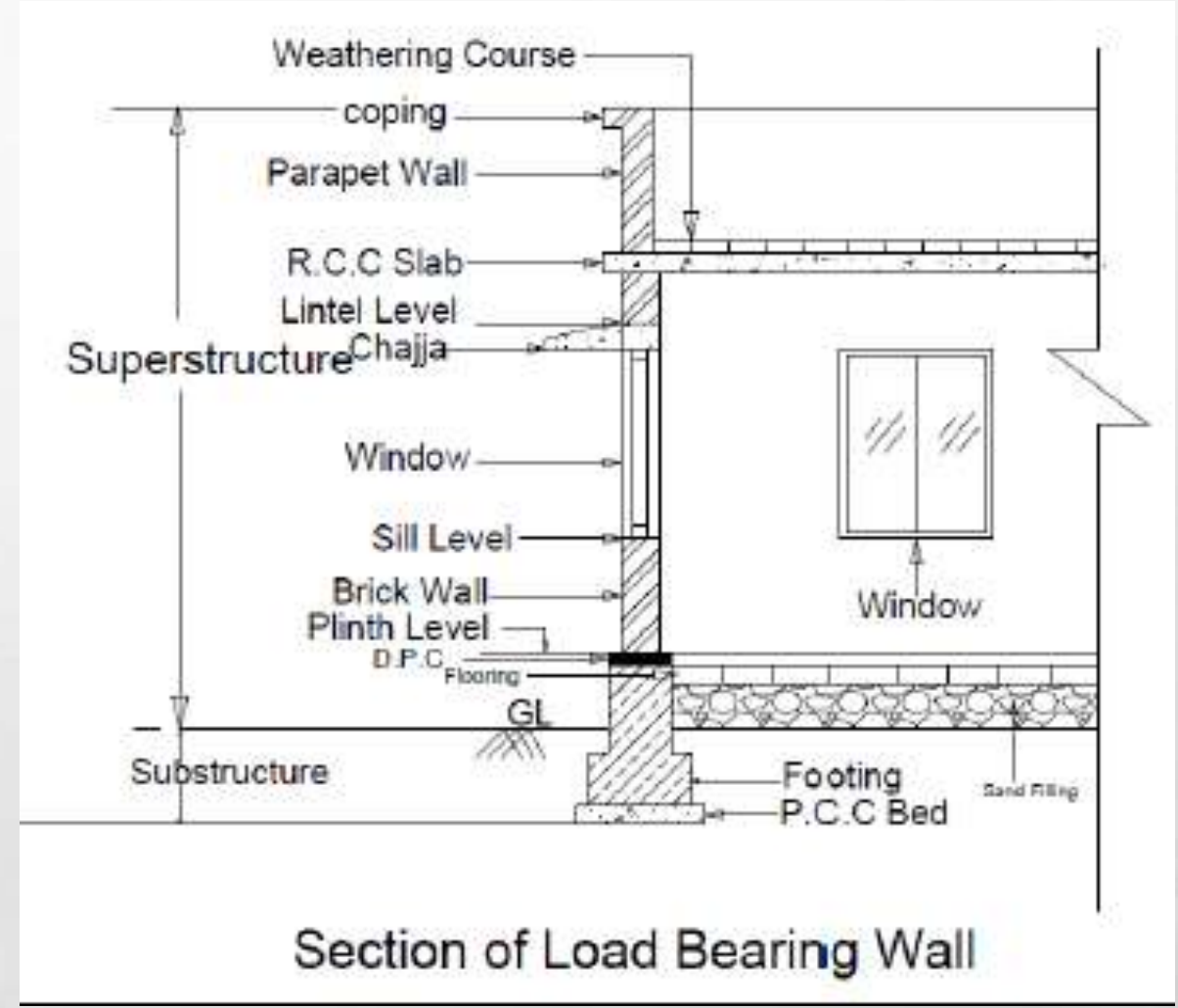
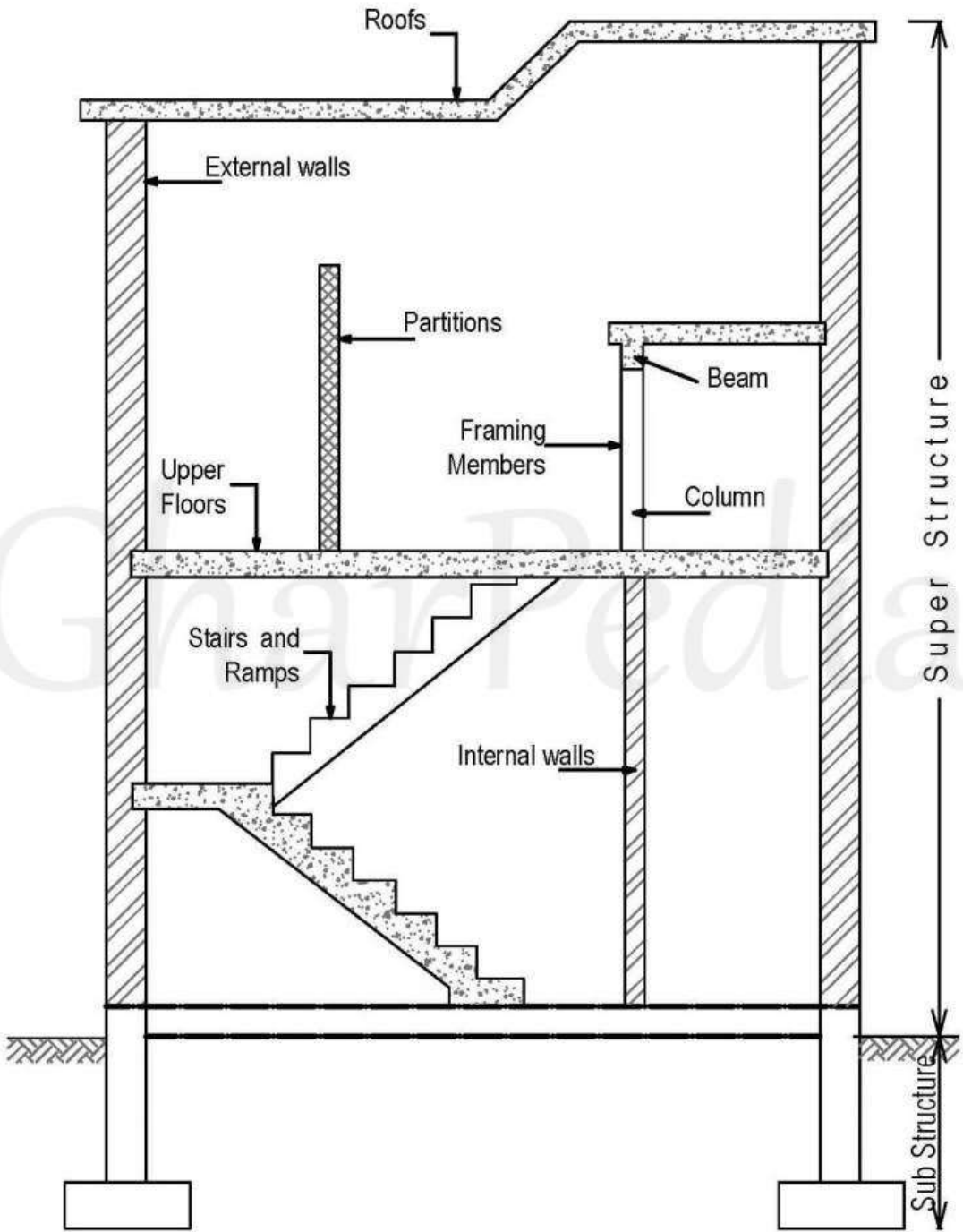


COMPONENTS OF A BUILDING

Fig 1



SECTIONAL ELEVATION ON ABCD

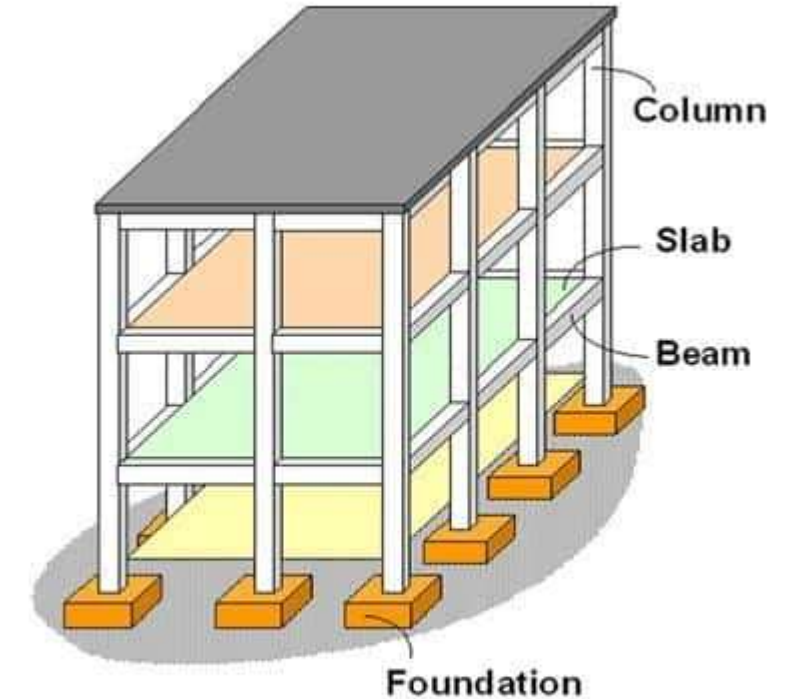


Section of Load Bearing Wall

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WHAT IS A FRAMED STRUCTURE?

A framed structure is a structure having the combination of structural components i.e. beam, column and slab connected together to resist the gravity and different lateral loads. These structures are generally used to overcome the large forces, moments developing due to the applied loads. It is also known as beam column structure.



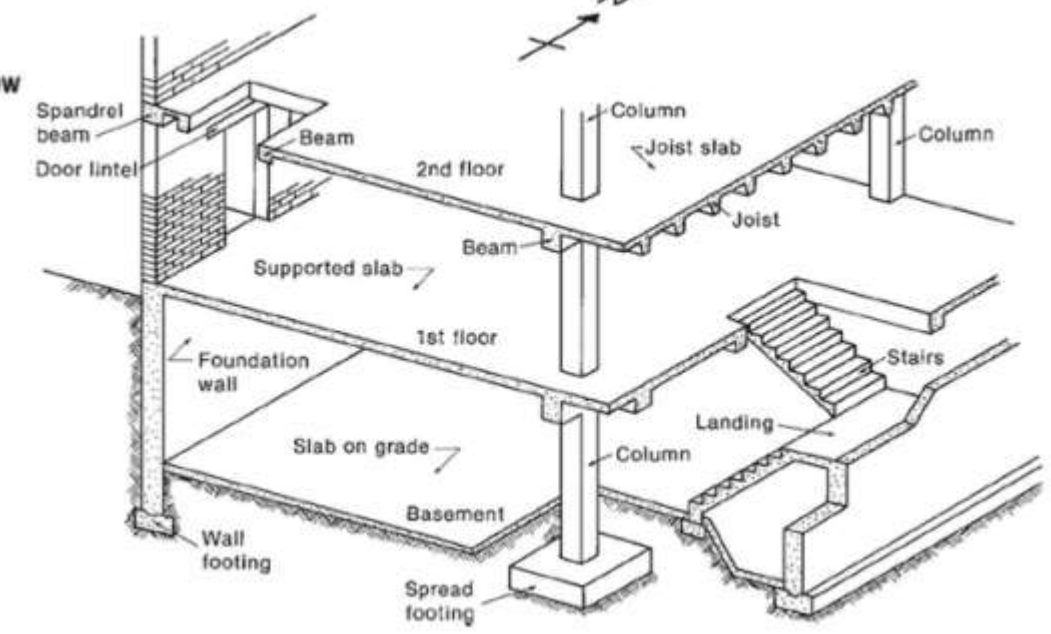
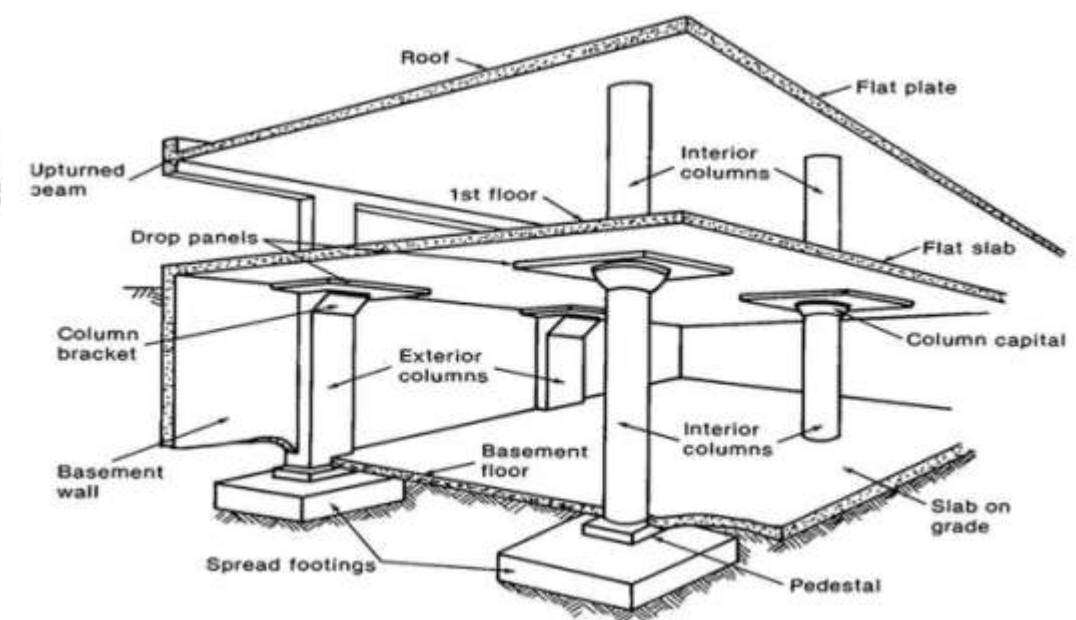
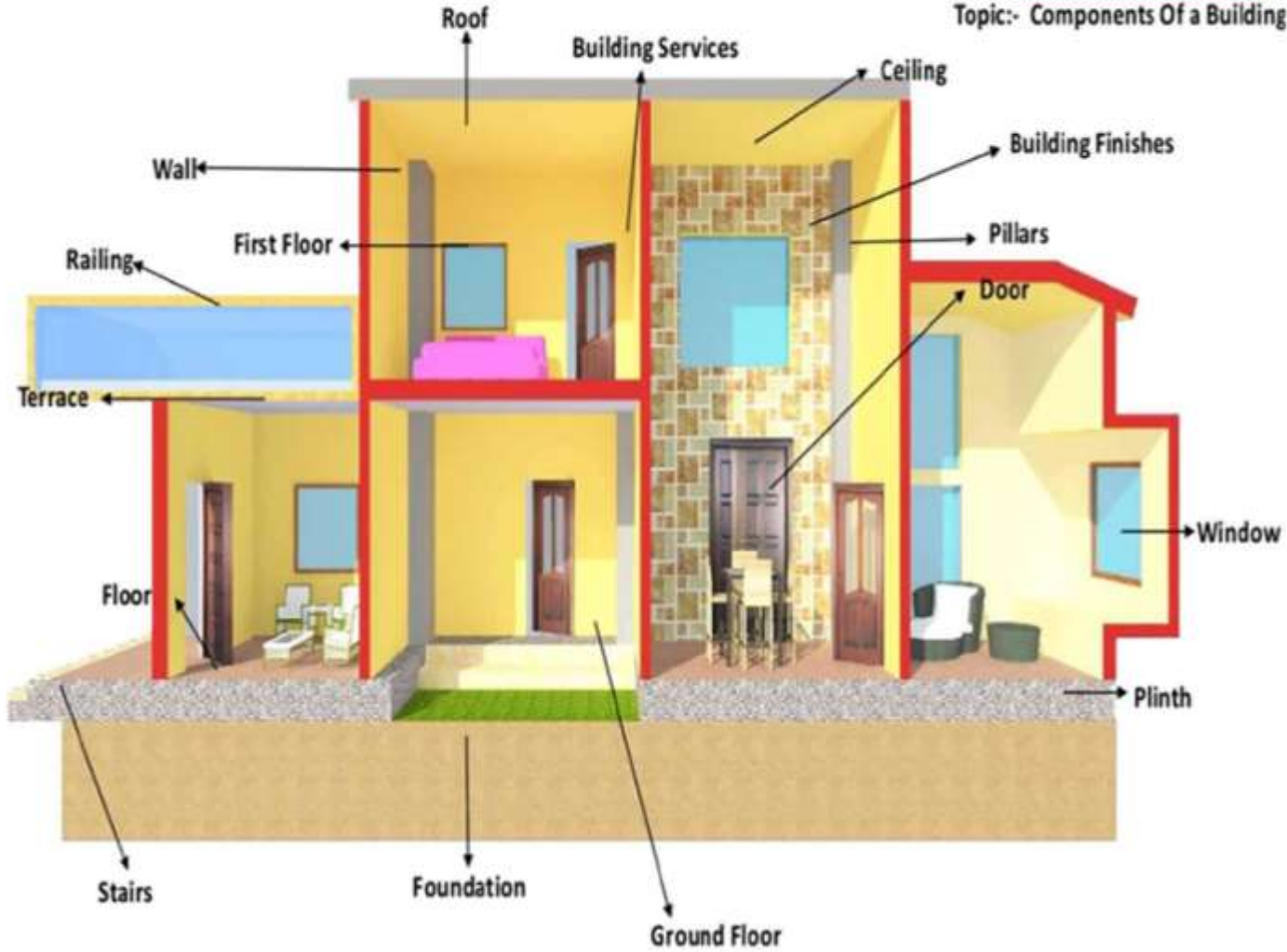
Typical RC Frame Building

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TODAY A READER
TOMORROW A LEADER

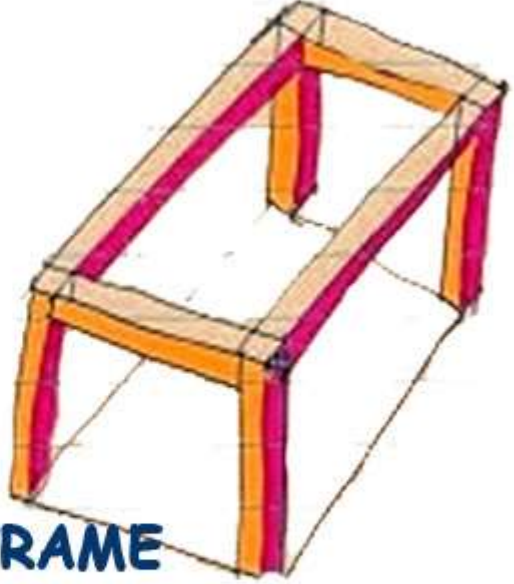
Building Construction Topic:- Components Of a Building



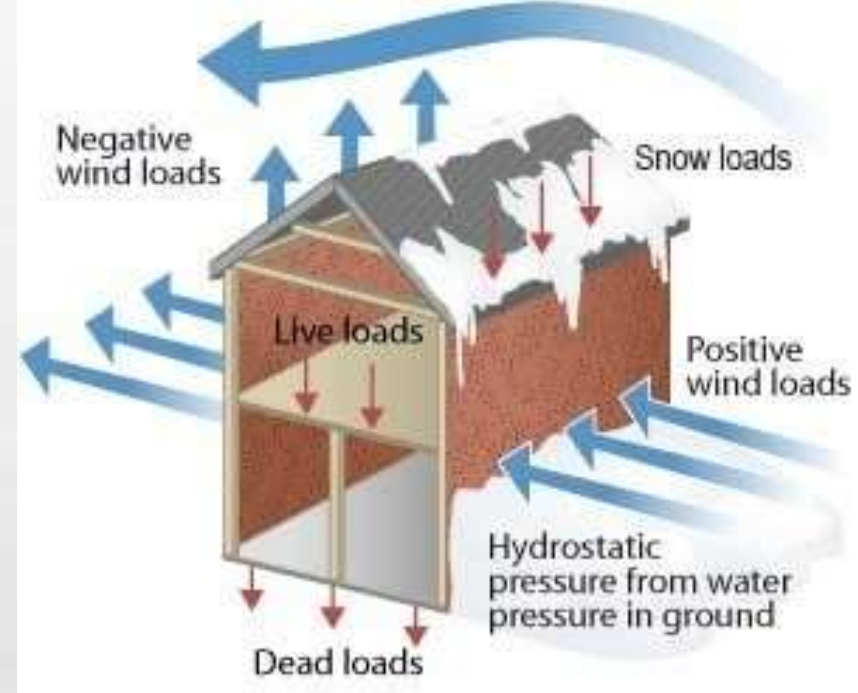


**LOAD BEARING
STRUCTURE**

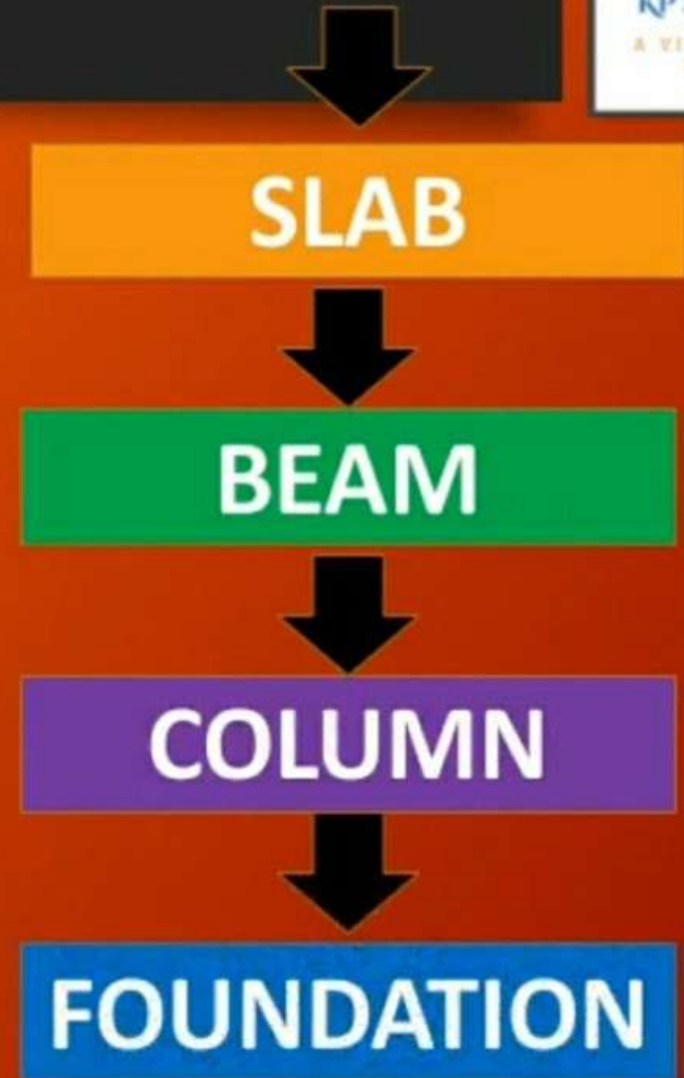
V/s.



**FRAME
STRUCTURE**



LOAD BEARING STRUCTURE & FRAME STRUCTURE



LOAD BEARING STRUCTURE

Load bearing structure consists of heavy masonry walls of brick or stone that support the entire structure

In load bearing structure, vertical load transfer path is from slab/floor to walls and walls to load bearing footing i.e. soil

Limited storey buildings can only be constructed

Load bearing structures are poor resistant to earthquake, as they are constructed with masonry units like stone, brick bonded together

In load bearing walls are thicker.

In load bearing system, beams and columns are not there. Hence walls have to be built first.

In these types of structures less carpet area is available, as walls are thicker and hence carpet area efficiency of planning is less.

FRAMED STRUCTURE

Framed structure consists of **beam**, **column**, and slab.

In a framed structure, vertical load transfer path is from slab/floor to beams, beams to columns and columns to load bearing **footings** and then to soil.

Multi storey buildings of any heights can be constructed. Ex: Burj Khalifa has 163 floors

Framed structure is more rigid and more resistant to Earthquake as entire frame made of column, beam and slabs act as one unit

In framed structure all the walls are thinner.

In framed structures, walls are constructed after the frame is ready.

In these types of structures more **carpet area** is available, as walls are thinner.

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LOAD BEARING STRUCTURE	FRAMED STRUCTURE
Excavation for this type of construction is more.	Excavation for this type of construction is less for a similar building.
Excavation for this type of construction is less for a similar building.	It is less labor intensive, but it needs different skills.
Speed of construction is less.	Speed of construction is MORE.
It is more material intensive. Hence dead load is also more. It consumes less cement and steel.	It is less material intensive. It consumes more <u>cement</u> and steel.
Cost of repair of load bearing structure is less.	Cost of repair of framed structure is more
Life is not much affected even though some standards are not strictly followed.	Life is reduced if not done with proper technique, and specifications i.e. codes are not strictly followed.
Skilled as well as non-skilled worker can construct.	Only skilled workers are needed for its construction.
Thickness of wall cannot be maintained uniform throughout. Thickness of wall increases with increase in height. Hence plan dimension changes on all floor.	Thickness of wall can be maintained uniform throughout. Thickness of wall remains same with increase in height. Hence plan dimension does not change on different floor.

LOAD BEARING STRUCTURE

In load bearing structural system external & internal walls serve as a **structural element** as well as serve the purpose of enclosure for protection from weather i.e. rain, sound, heat, fire etc.

It is not flexible in design as you cannot remove/shift walls, hence effectiveness becomes less. In **load bearing structure**, it is necessary to construct wall over wall, as walls are load bearing components. Therefore, you cannot change the location of wall resulting in less flexibility in use.

Room dimensions cannot be changed as walls have to be above walls only.

Inclusion of Cantilever element is difficult task in this system. Also, it is permitted up to short span only

In case of a load bearing structure, large span areas are not possible. Limitation of span i.e. room sizes

Design of load bearing structure is simple.

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FRAMED STRUCTURE

In framed **structural system**, external & internal walls serve only the purpose of enclosures for creation of rooms and protection from weather.

It is flexible in design as you can shift location of walls. More functional architectural design is possible. Flexible utilization of space. No necessity to construct walls on walls. Any wall can be taken anywhere. Hence, flexibility in use.

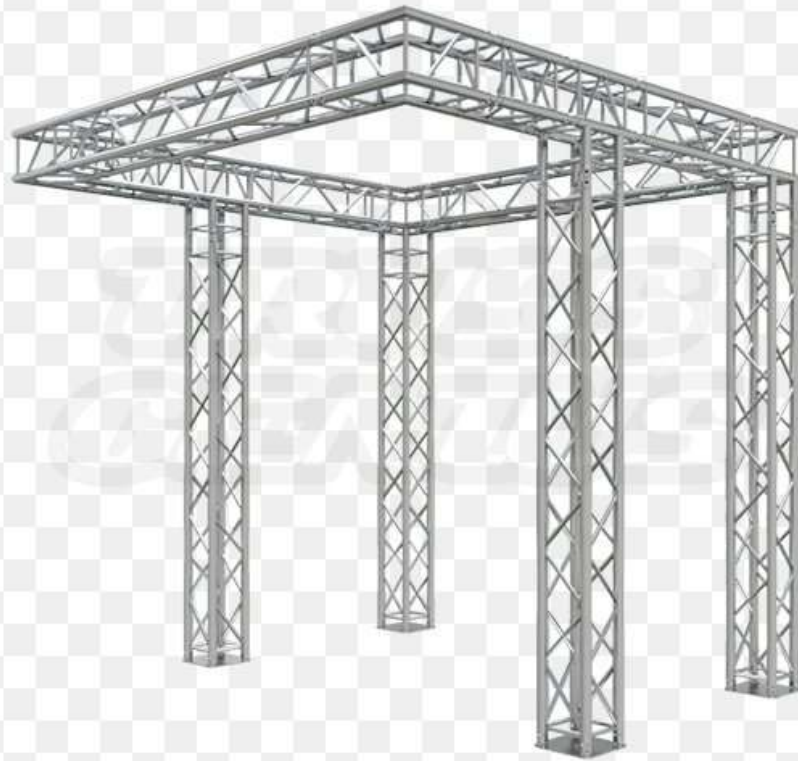
Room dimensions can be changed

Cantilever elements can be easily provided in this system.

In case of a framed structure, large span areas are possible. No Limitation of span i.e. room sizes.

Design of framed structure is not simple as compared to load bearing structure. You need design skills and software tools.

CANTELEVER STRUCTURE



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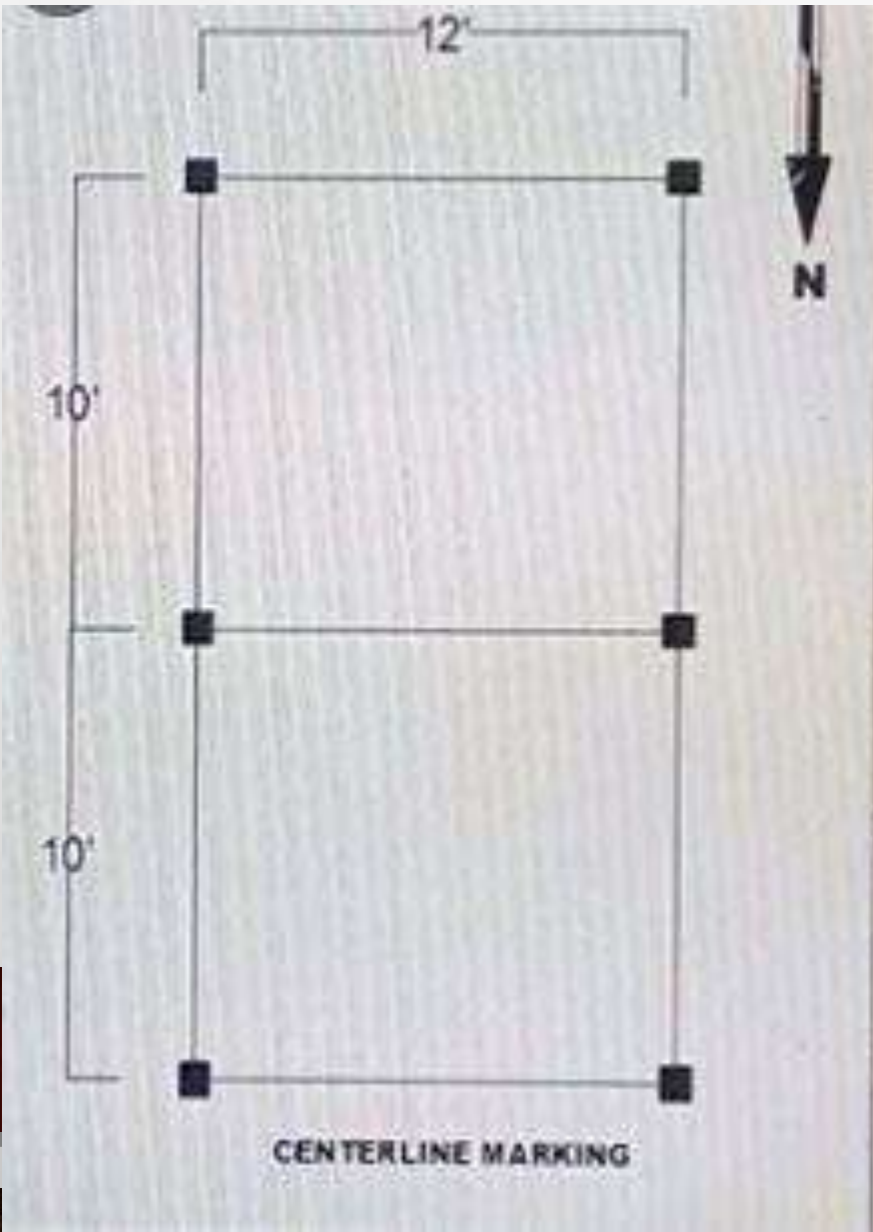


MADRAS TERRACE ROOF



MADRAS TERRACE ROOF LAYING

MARKING



EXCAVATION



PCC FOR FOUNDATION



FOOTING REINFORCEMENT



SHUTTERING



FOOTING CONCRETE







COLUMN SHUTTERING

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COLUMN CONCRETE

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EARTH REFILLING



CONSOLIDATION



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PLINTH BEAM



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BASEMENT BRICKWORK&SOIL FILLING



PCC FLOORING



COLUMN SHUTTERING & CONCRETE



ROOF SHUTTERING



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BEAM FABRICATING





SLAB FABRICATING



ROOF SLAB CONCRETE



BRICKWORK&PLASTERING

