

VIDEOS

Watch the videos

Read the notes

The videos and notes will help you understand the types of Building Constructions and the Construction Process. Do not present the videos-notes for the exam

<https://www.youtube.com/watch?v=cTPJ4tCoORo> Come nasce una casa in classe

A4 https://www.youtube.com/watch?v=W_WaB8OP-K0 Time lapse Steel Frame

<https://www.youtube.com/watch?v=RdLe55s7CTE> Modular Home | Prefab

<https://www.youtube.com/watch?v=ycTajJov1jI> Rock Reach House made in 5 days

<https://www.youtube.com/watch?v=l-0-W2AKPns> Steel Building-Conception to Completion, designed and manufactured by Armstrong Steel

<https://www.youtube.com/watch?v=XgdcBOWPYZc&t=13s> The Future of residential house

<https://youtu.be/o1FQc5beLN4> Our House Timelapse

Building Construction

Types of Building Construction

1. Framework Construction
2. Solid Construction
3. Prefabrication Construction

Construction Process

Framework Construction

Before Construction begins:

Clear and flatten area, excavation starts.

1. Phase: Construct: Foundation - Pillars/Columns - Beams and Slab - Roof

This is the Structure = Skeleton – Framework, common to all types of Building Construction, but different building materials can be used.

2. Phase. Enclose the structure. External walls, made of clay bricks and mortar, infill the voids of the Framework;

Partition walls divide the internal space in room.

Create Openings while walls go up

3. Phase: Installations - Utilities: install plumbing, heating, cooling, lighting, wiring, electric, etc. systems;

Finish: apply on the external and internal walls, on the ceiling: plaster, stucco Floor: prepare laying bed, lay tiles;

Install: Windows and Doors

4. Paint the building internally and externally, then furnish the building

This Construction Process is common to all BUILDING CONSTRUCTION.

SOLID CONSTRUCTION

Before Construction begins:

Clear and flatten the area, Excavation starts;

1.Phase: Foundation

2.Phase: Load-Bearing Walls and Openings go up; (Walls made of clay bricks and mortar, it is possible to use other types of load bearing blocks);

Partition walls divide the internal space in rooms.

3.Phase: Beams and Slab are made

4.Phase: Roof

5.Phase: Install Utilities-Apply finish; Install Windows and Doors.

6.Paint the building internally and externally, then furnish the building

PREFABRICATION CONSTRUCTION

Off-site Transport On-site

Some structural components are made in a factory transported by truck to the building site where the builders, with the help of a crane, will assemble the structural components.

Before construction begins:

Clear and Flatten area, excavation starts;

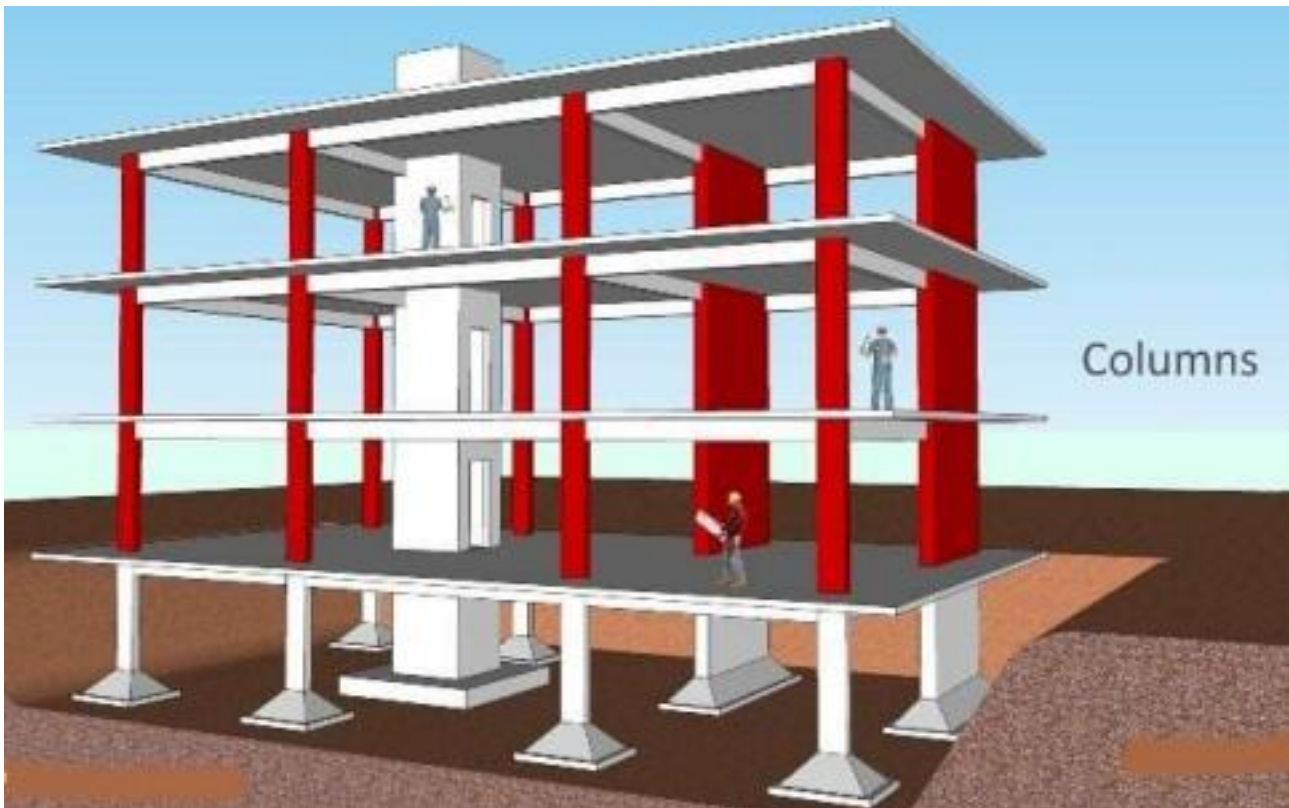
1.Phase: Foundation

2.Phase: Assemble External Load-bearing Panels (panels =walls)
Openings are inserted in some panels

3.Phase: Assemble partition panels. These panels divide the internal
space=rooms 4.Phase: Assemble the Roof

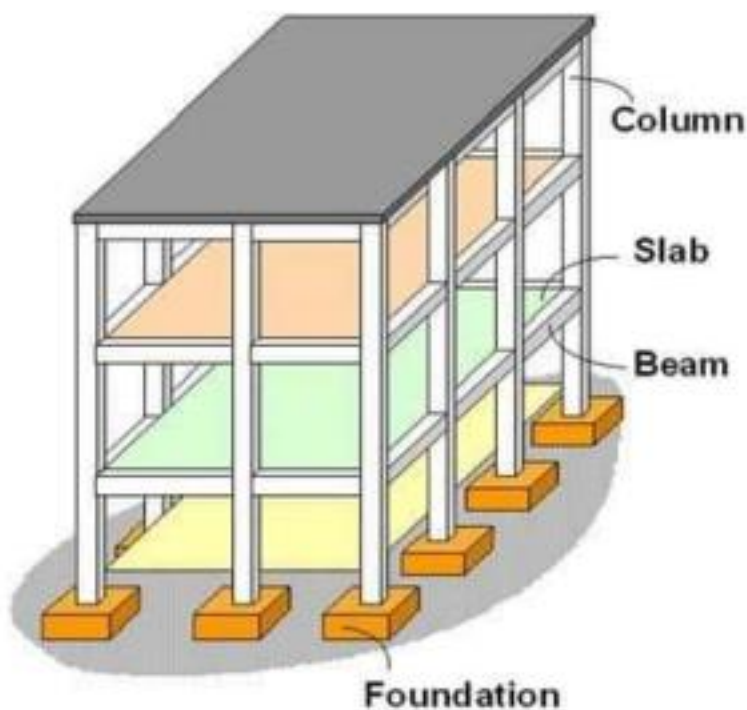
5.Phase: Install Utilities—Apply Finish (only on the joints of the panels) -Install Windows and
Doors 6.Paint the building internally and externally, then furnish the building

[CivilDigital](#) > [Civil Engineering Articles](#) > Major Parts of Reinforced Concrete Buildings | Framed Structures Components



Major parts of Reinforced Concrete Buildings – Framed structures

Concrete frame structures are the most common type of modern [building](#). It usually consists of a frame or a skeleton of [concrete](#). Horizontal members are beams and vertical ones are the columns. [Concrete](#) Buildings structures also contain slabs which are used as base, as well as roof / ceiling. Among these, the column is the most important as it carries the primary [load](#) of the building.



Typical RC Frame Building

Typical RC Framed Building Components

Reinforce concrete frame structure is actually a connected frame of members which are firmly connected to each other. These connections are called moment connections. There are also other types of [connections](#) which include the hinged connections that are mostly used in steel structures, but the concrete frame structures have moment connections in almost all of the cases.

The [concrete](#) framed structure should resist various loads that act on the building during its life. These loads include Dead loads, live loads (imposed loads), wind loads, dynamic loads and earthquake loads.

Major parts of the concrete frame structures – Concrete Buildings:

Slabs:

These are the [plate](#) element and carry the loads primarily by [flexure](#). They usually carry the vertical loads. Under the action of horizontal loads, due to a large moment of inertia, they can carry quite large wind and earthquake forces, and then transfer them to the beam.



Concrete Buildings – Slabs

Beams:

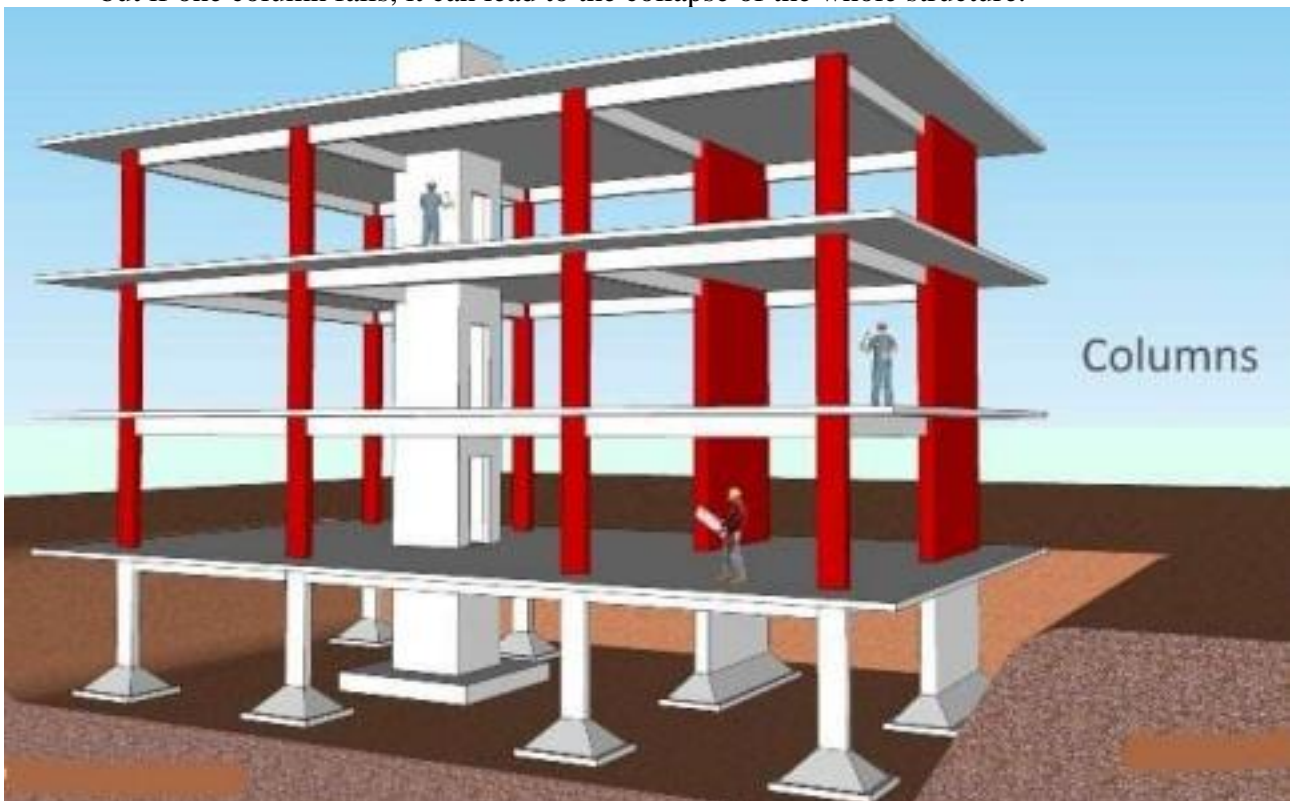
- These carry the loads from slabs and also the direct loads as masonry walls and their self weights. The [beams](#) may be supported on the other beams or may be supported by columns forming an integral part of the frame. These are primarily the flexural members.



Concrete Buildings – Beams Supported by Columns

Columns:

- These are the vertical members carrying loads from the beams and from upper [columns](#). The loads carried may be axial or eccentric. Columns are the most important when compared with beams and slabs. This is because, if one beam fails, it'll be a local failure of one floor but if one column fails, it can lead to the collapse of the whole structure.



Concrete Structures – Compression – Members Columns

Foundation:

- These are the load transmitting members. The loads from the columns and walls are

transmitted to the solid ground through the [foundations](#).



Building Substructures – Foundation

Other Important components of Concrete frame

structures: Shear walls:

- These are important structural elements in [high-rise](#) buildings. Shear walls are actually very large columns because of which they appear like walls rather than columns. These take care of the horizontal loads like wind and [earthquake](#) loads. Shear walls also carry the [vertical](#) loads. It's an important point to understand that they only work for horizontal loads in one direction, which is the axis of long dimension of wall.



Concrete structures – Shear Walls

Elevator shafts:

- These are the vertical concrete boxes in which the elevators are provided to move up and down. The elevator is actually contained in its own concrete box. These shafts act as very good [structural](#) elements which help in resisting horizontal loads and also carry vertical [loads](#).

