Building

Building material → used in construction of building & roads, bridges, dams.

Ex wood, stone, cement, steel, etc.

qualities → Strength, Durability, cost, Availability, Climate.

Types → Cement, Bricks, Stones, Sand, Aggregates, Steel; Timber, Glass, plastic Paint, finishes.

* R.C.C ⇒ Reinforced cement concrete.
Concrete + steal Rods (bars)
↙ ↘
Strong in compression Strong in tension.
as steal provide reinforcement to cement.

* properties & advantage
economical, fire resistant, grips fast, concrete & steel have similar thermal coefficient of expansion, No corrosion. durable, less maintenance cost.

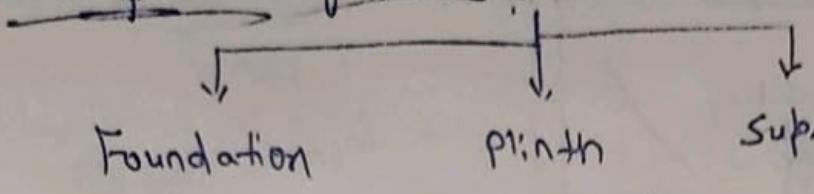
Uses in beams, columns, slabs, staircases construction of storage like · water tank, dams. bridges & retaining walls, chimney etc.

* Selection of Site (fully developed or growing area)
- Site comes under by-laws of local authorities.
- Topographical view, soil condition (should support the foundation), proper drainage system, wind direction rainfall, Accessibility of Roads etc.

* Types of Building

* Residential building - houses, apartments, Hotels, chawls etc.
* Education building - School, collage, related for education..
* Institutional building - Hospital, Sanitaria, Penal clinics, orphanages, Jails, prison etc. (Treatment or care of person)
* Assembly building - amusement, recreation, social, religious, patriotic etc. gathering.
  ex - stadium, restaurant, exhibition hall, audi, ~~museums~~ museums, temple etc
* Business building - Shops, parlours, town halls, library, court. etc
* Mercantile building - Shops, stores, market, wholesale shops etc.
* Industrial building - power plant, refineries, dairies, laboratories, etc
* Storage building - warehouses, cold storage, hangers stables. etc
* Hazardous building Storage of toxic material.
  ex - gases storage

Components of Building



* **Foundation** :- Start with digging the ground. for lower part, transfer the load of building to ground.
  (i) Distribute the load evenly & safely.
  (ii) Anchor the building so that under lateral loads building will not move.
  (iii) Increase stability of structure.

* **Plinth** :- Start from ground level to the surface of floor.
  → transmit load of superstructure to foundation.
  → Protect building from dampness or moisture.
  → Enhance architectural appearance of building.

* **Walls** → Enclosure & support, heat, sound insulation provide privacy & security.

* **floors** :- flat surface for activities, heat, sound, fire resistant, devide the level of building

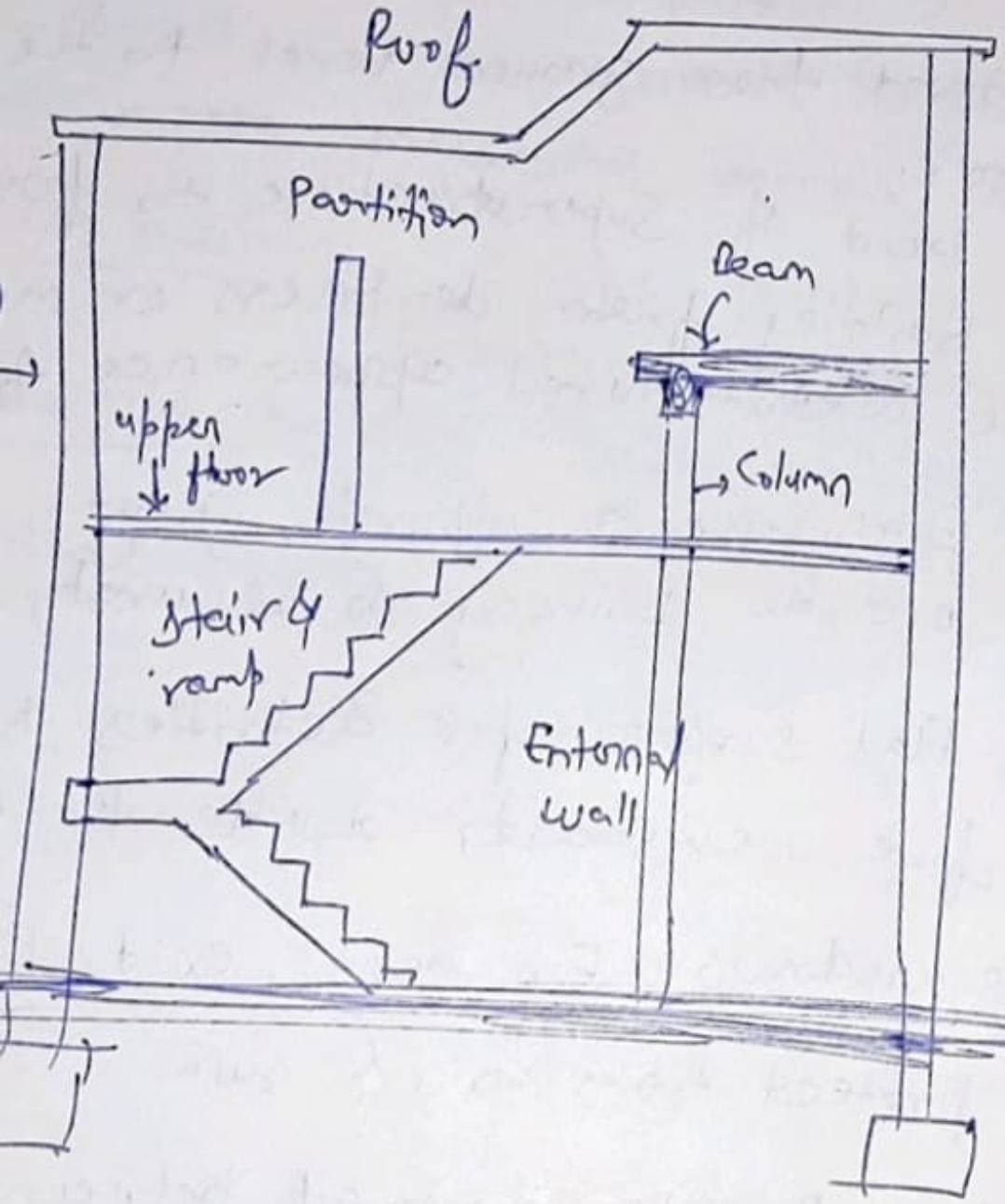
* **Doors & windows** For entry, exit, light & air.

* **Roof** - protect from rain & sun.

* **Staicases** - Provide movemed between floors.

* **Finishes** - Protect & beautify building by paint, plaster.

Super structure.



(Plint

asic diagram of building

(Components)

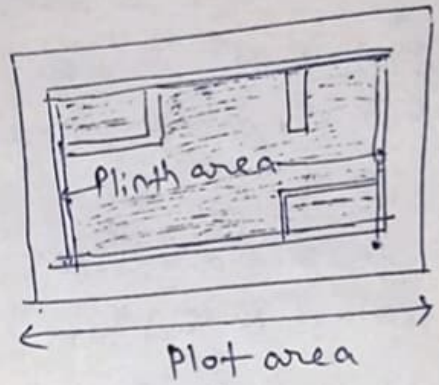
* Plinth area Plot area - Set back area

Total area covered by building, including walls.

* Set back → distance area from boundry line to main building

for parking, ventilation & circulation.

* Plot area :- Total area surrounded by a boundary wall.



(carpet area)

* Carpet area :- part of built up area in which walls are not included.

in which carpet can be lay down.

[Terrace is not included.]

built up area = carpet + walls + balcony (inside building)

FAR (Floor ~~Space~~ Area Ratio)

(FSI) (Floor Space index) (built up area)

$$FSI = \frac{\text{Floor space covered in the floor}}{\text{Plot area.}}$$

Building By-law

(ventilation, foundation)

Rules & regulation set forth by concerned govt. authorities.
about what to, how to & where to construct.

(i) Lines of building frontage.
(ii) Built up area, spacing for building & height
(iii) Provision of size, height, ventilation of rooms.
(iv) water supply & sanitary.

Concept of sun light & ventilation

Sunlight - Natural light saves energy & improve health. Proper orientation & window placement bring in sunlight.

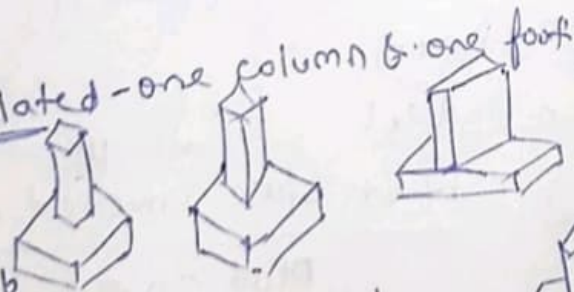
Ventilation - Flow of fresh air helps in comfort & remove bad order & moisture. It prevent the growth of fungus or mold.

Types of Foundation

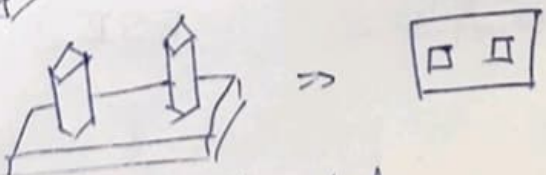
Soil

Shallow
depth ≤ width.

- Isolated - one column & one footing



- Strip
long base, under wall



- Raft whole building rest on one thick slab
For low soil pressure