

EWCE-100
Civil Engineering Drawing

BUILDING DRAWING

PLAN & ELEVATION

Military Institute of Science and Technology

Types of Building

Residential Building : Apartment Houses, Bungalows, Condominium, Hotels, Dormitories	Mercantile Building : Markets, Stores
Educational Building : School, College, University, Day care	Industrial Building : Gas Plants, Refineries, Mills, Dairies
Institutional Building : Hospital, Clinic, Orphanage, Jail, Prison	Storage Building : Warehouses, Cold Storages, Garages
Assembly Building : Museum, Theater, Club rooms, Gymnasium, Restaurant	Hazardous Building Nuclear Power Stations, Oil Refining Buildings
Business Building : Court Houses, Banks, Libraries, Town Hall	

Building Material

- Brick
- Mortar
- Reinforced Concrete

Brick

Dimension of Brick :
Size of Brick : (commonly used in Bangladesh)
9.5″× 4.5″ × 2.75″ (without mortar)
10″ × 5″ × 3″ (With mortar)

Types of Brick :
Classification based on physical characteristics:
a) First Class Brick
b) Second Class Brick
c) Third Class Brick
d) Over burnt or Jhama Brick

Placement of Brick:



Brick on Flat



Brick on Edge

Mortar

Mortar is a workable paste used to bind construction blocks together and fill the gaps between them. The blocks may be stone, brick etc.

- **Components of Mortar:**

Mortar is made of three basic ingredients:

1. Cement / Lime
2. Sand
3. Water

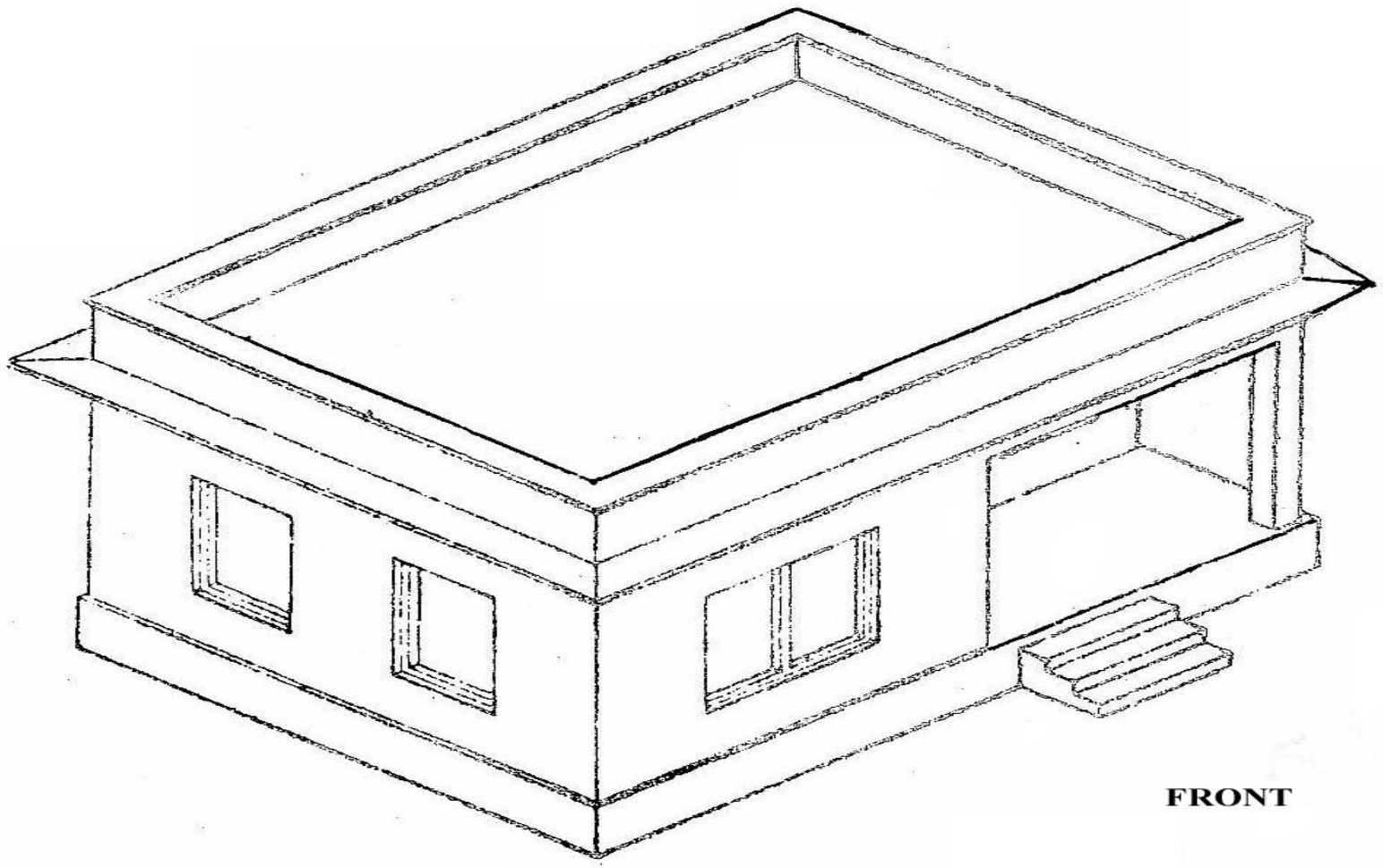
Concrete

Concrete, an artificial stone-like mass, is a composite material created by mixing binding material (cement or lime) along with aggregate (sand, gravel, stone, brick chips), water, admixtures etc. in specific proportions. The strength and quality are dependent on the mixing proportions.

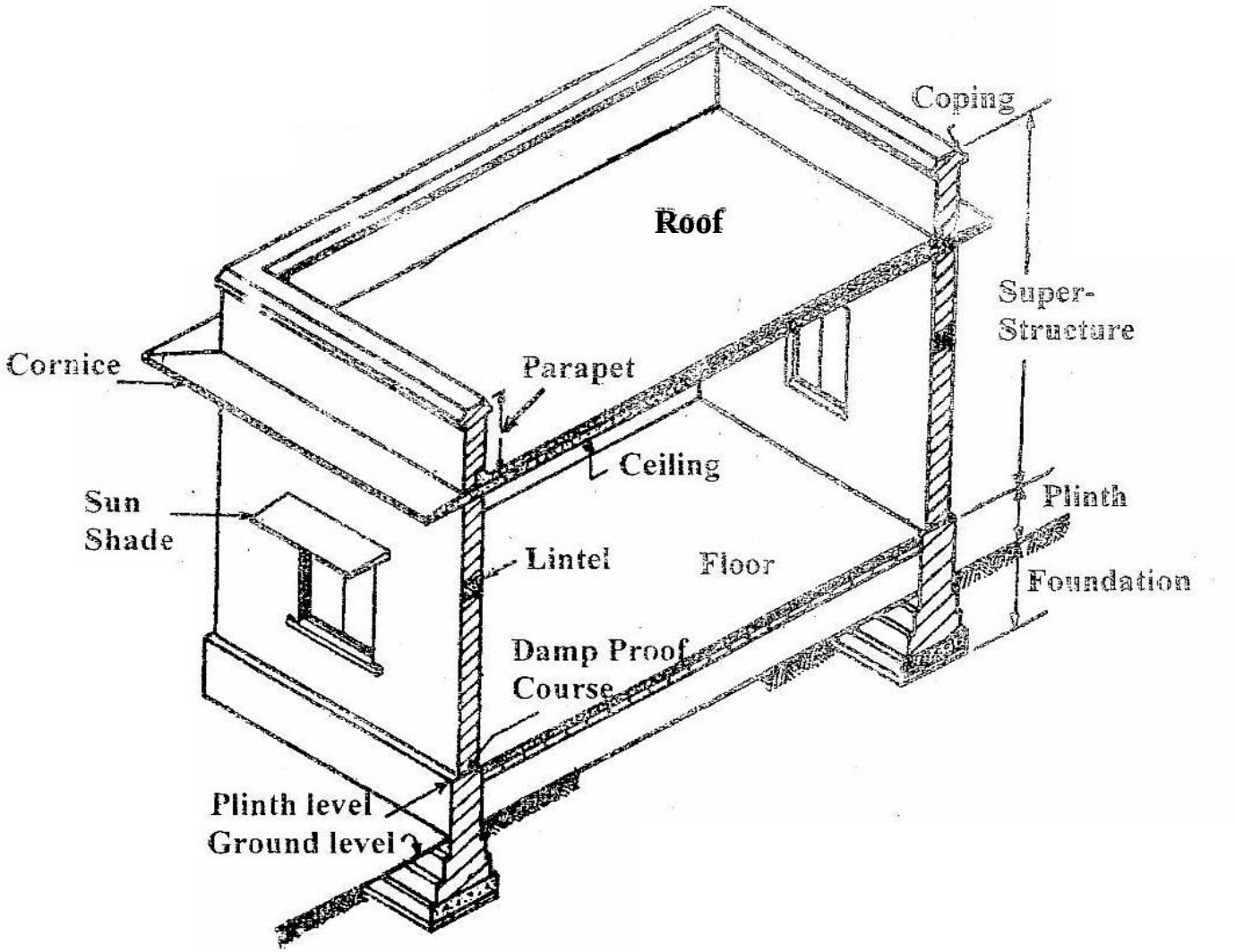
Components of Concrete:

- Coarse Aggregate (Gravel, Stone chips or Brick chips etc.)
- Fine Aggregate (Sand)
- Cement (Binder)
- Water

ONE STOREY BUILDING : ISOMETRIC VIEW



Main Parts of a One Storey Building



Parts of a Building

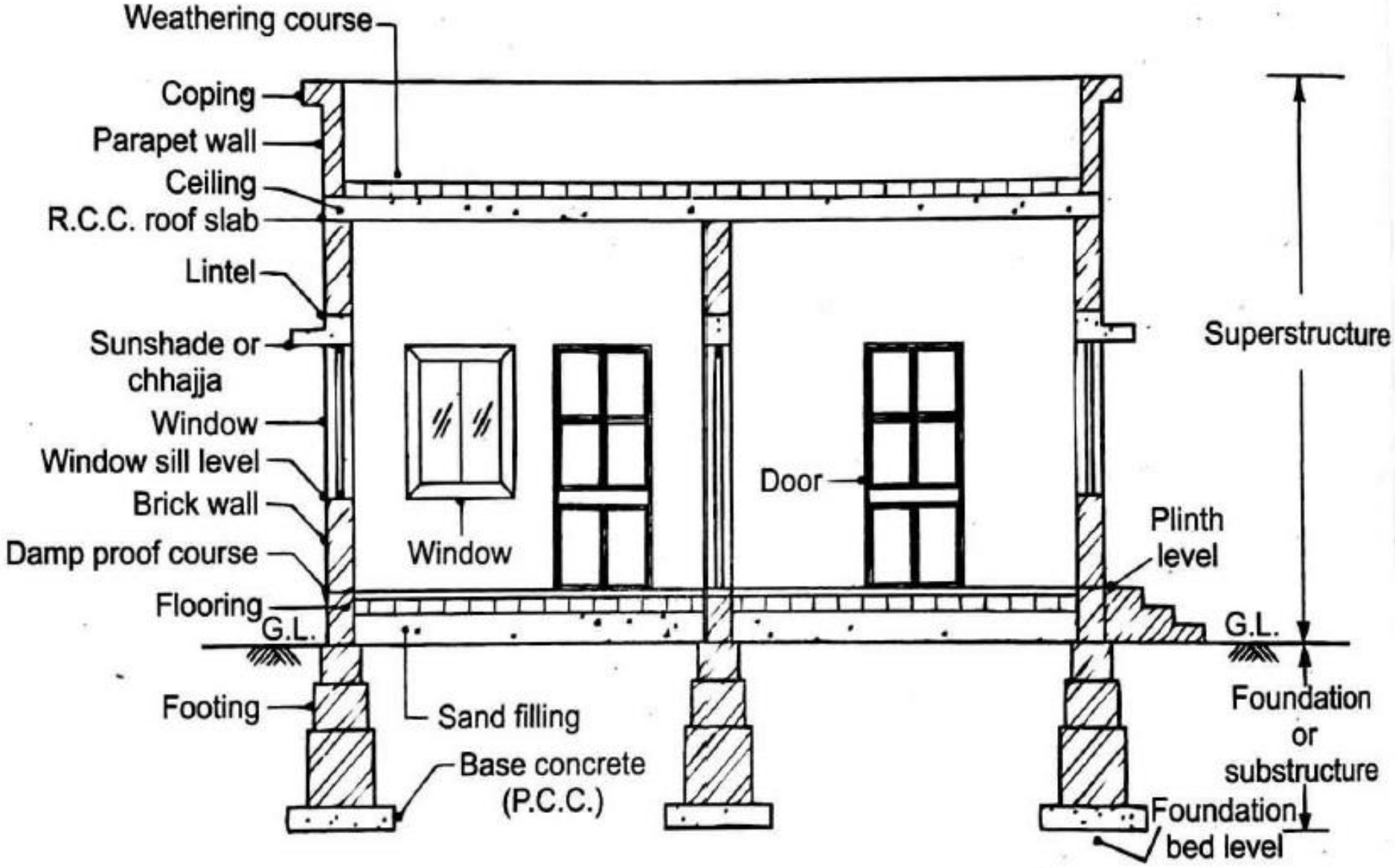
Two basic parts of building :

1) Super-structure (Part above Ground)

- Serve the purpose of its intended use

2) Sub-structure or Foundation (Lower portion of the building, usually located below the Ground)

- Transmits the load of the Super-structure to the subsoil


Weathering course
Coping
Parapet wall
Ceiling
R.C.C. roof slab
Lintel
Sunshade or chhajja
Window
Window sill level
Brick wall
Damp proof course
Flooring
G.L.
Footing
Sand filling
Base concrete (P.C.C.)
Window
Door
Plinth level
G.L.
Superstructure
Foundation or substructure
Foundation bed level

Foundation or Substructure

A **Foundation** is that part of the structure which is in direct contact with the ground to which the load is transmitted.

The soil which is located immediately below the base of the foundation is called **sub-soil** or **foundation soil**, while the lower most portion of the foundation which is in direct contact with the sub-soil called **footing**.



Important Terms used in Building Drawings

- **Foundation (Sub-structure):** the portion of the building below the ground level which is in direct contact with the ground and used to transmit the loads of the building to the ground.
- **Super-structure:** The portion of the building above the ground level or substructure.
- **Basement:** it is the lower storey of a building which is partly below the ground floor.
- **Plinth and Plinth level:** the portion of the building between the ground and floor level in the super structure is called Plinth. Its height above the ground level is known as Plinth level or Plinth height. Its height is usually 450mm, 600 - 750mm from ground level.
- **Plinth Area:** the area covered by a building at the plinth level. It is obtained by measuring the outside dimensions of a building at the plinth level. It is the entire area occupied by the building including internal and external walls.

Important Terms used in Building Drawings (contd)

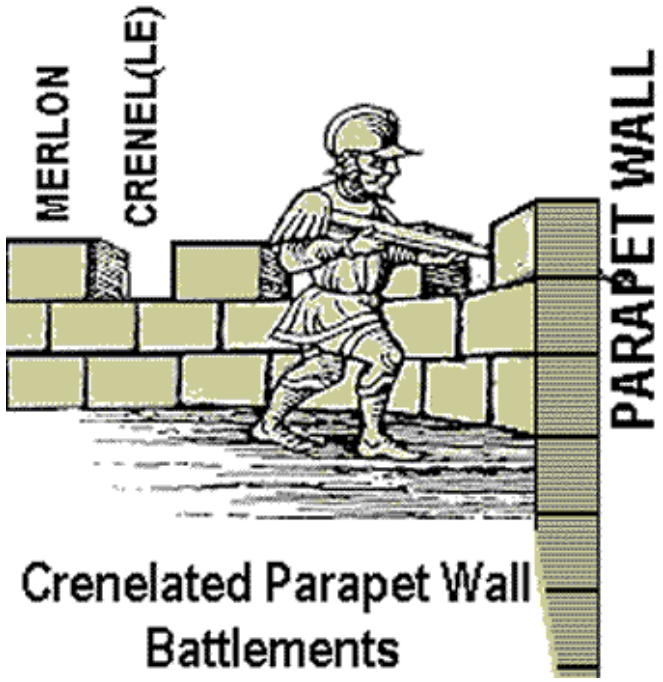
- **Flooring:** the horizontal surface at the plinth level in a building. It is usually prepared in two layers i.e. R.C.C and floor finishes.
- **Floor Area:** the area of a building, excluding the area occupied by the wall. It is obtained by deducting the area occupied by walls, from plinth area. In building, the floor area will be 80% to 90% of the plinth area.
- **Carpet Area:** the area of a building which is useful or livable. It is obtained by deducting the area occupied by Verandah, corridors, kitchen, toilet, bath rooms etc. from the floor area.

Ground Level (GL) and Plinth Level (PL)



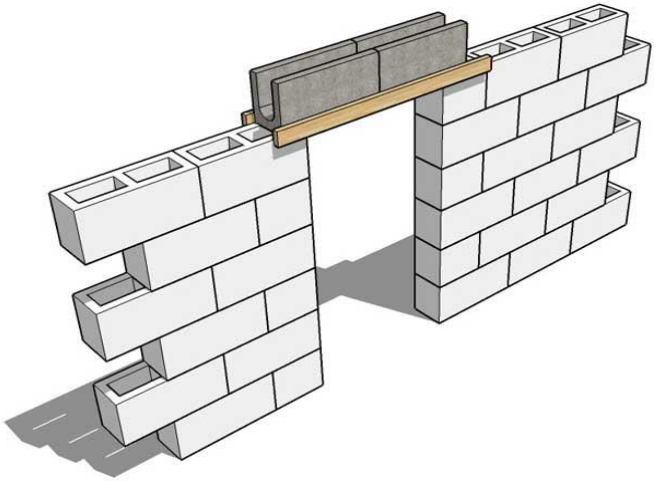
Parapet Wall

A parapet is a wall-like barrier at the edge of a roof, terrace, balcony, or other structure. Where extending above a roof, it may simply be the portion of an exterior wall that continues above the line of the roof surface, or may be a continuation of a vertical feature beneath the roof such as a fire wall or party wall.



Lintel

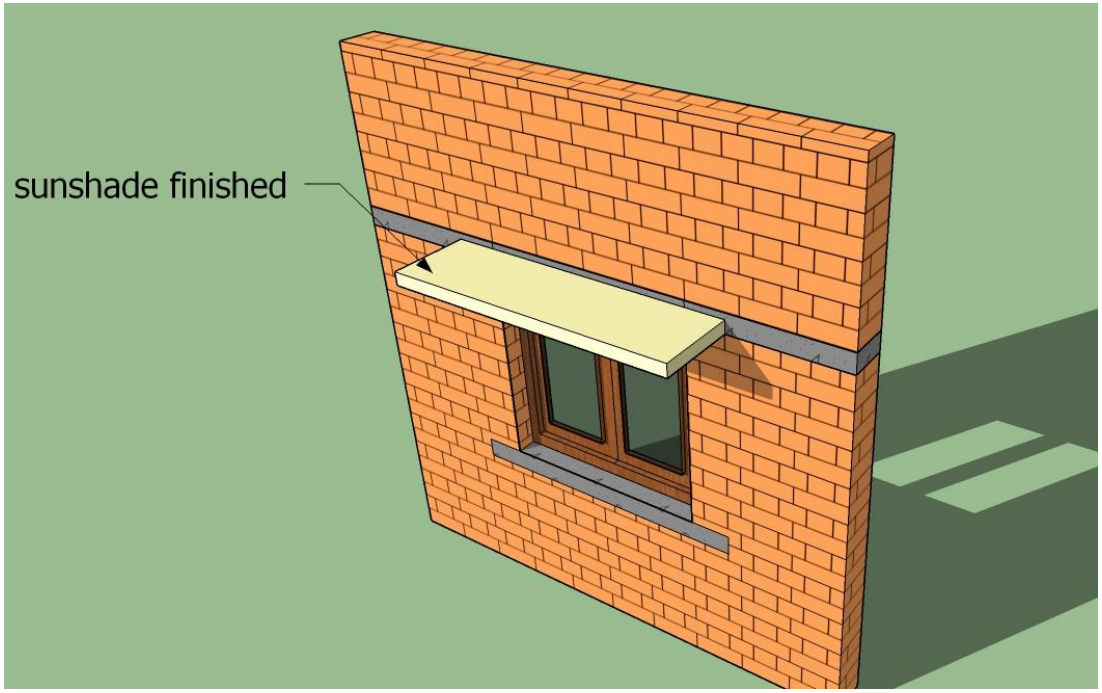
A lintel can be a load-bearing building component, a decorative architectural element, or a combined ornamented structural item. It is often found over portals, doors, and windows.





Sunshade

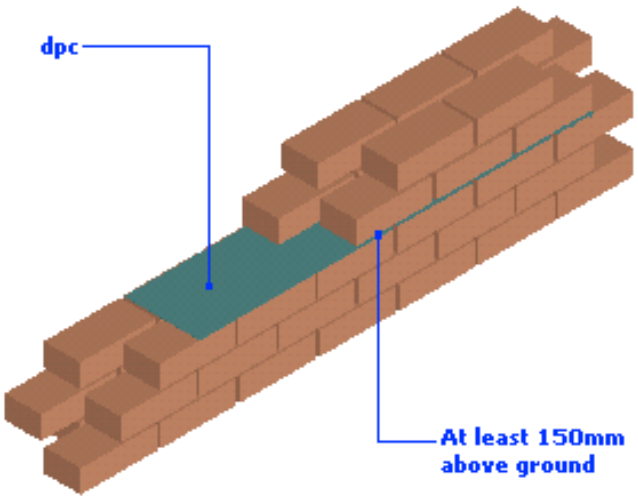
A sun shade is an architectural feature of a building that reduces heat gain by deflecting sunlight. It controls the amount of direct sunlight entering the room, creates a cool shade. (solves overheating problem and protects from rain)



Damp Proof Course (DPC)

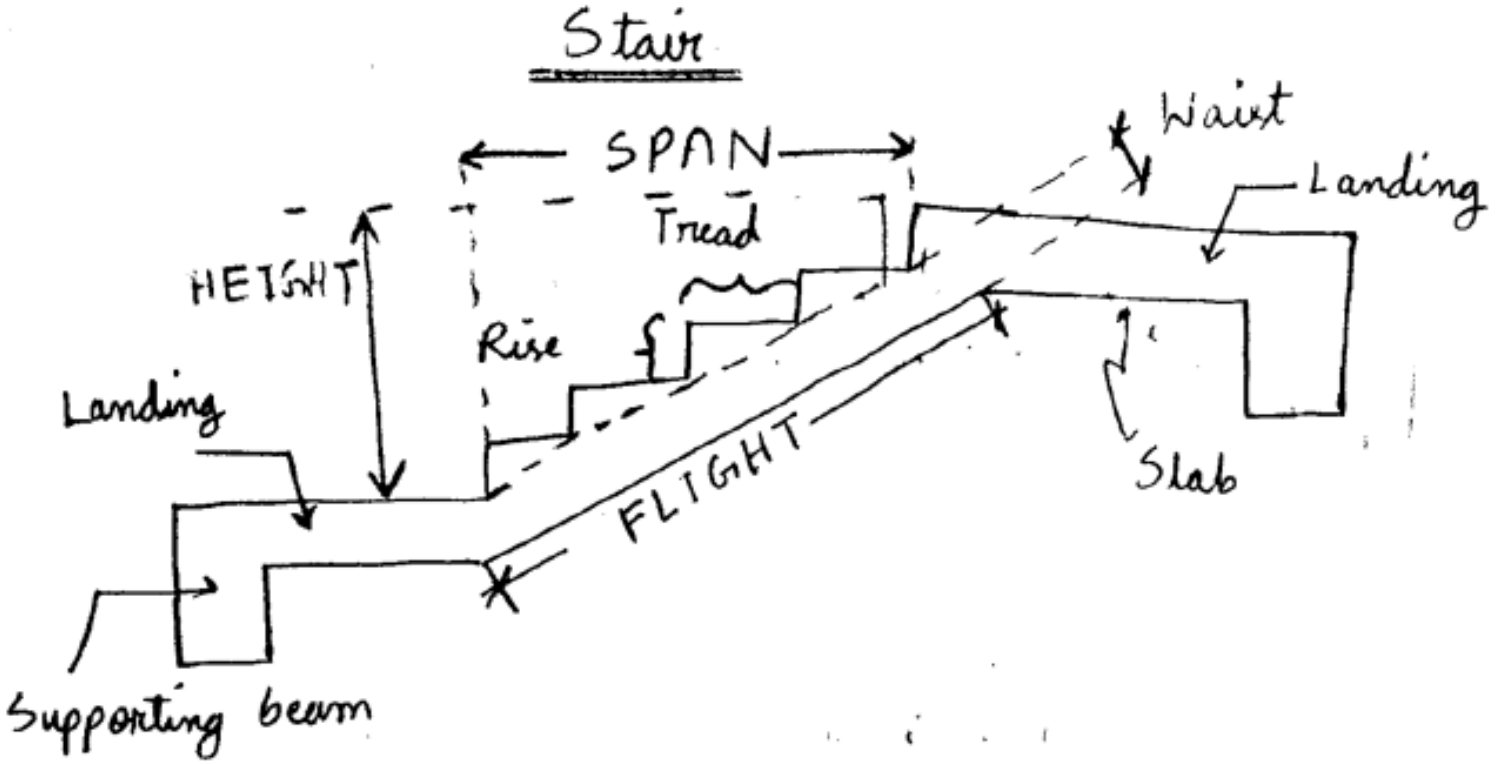
A Damp Proof Course (DPC) is a horizontal barrier in a wall designed to resist moisture rising. It is provided between foundation and wall.

A layer of waterproof material in the wall of a building near the ground, to prevent rising damp.





STAIR:

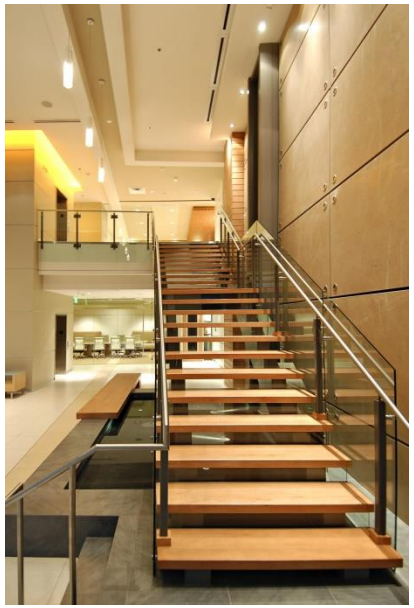


ⓐ Tread : horizontal upper portion of step
ⓑ Rise : vertical distance between two consecutive treads.
ⓒ Flight : A series of steps provided between two landings
ⓓ Landing : a horizontal slab provided between two flights
ⓔ Waist : the least thickness of a stair slab.

Types of Stair

The following are the different types of stairs generally used in public and residential buildings:

- Straight flight stairs.
- Dog legged stairs.
- Open newel stairs.
- Quarter turn stairs.
- Bifurcated stairs.
- Geometrical stairs.
- Spiral stairs.



Straight Stair



Dog legged stair



Open newel stair



Quarter turn stairs



Bifurcated stairs

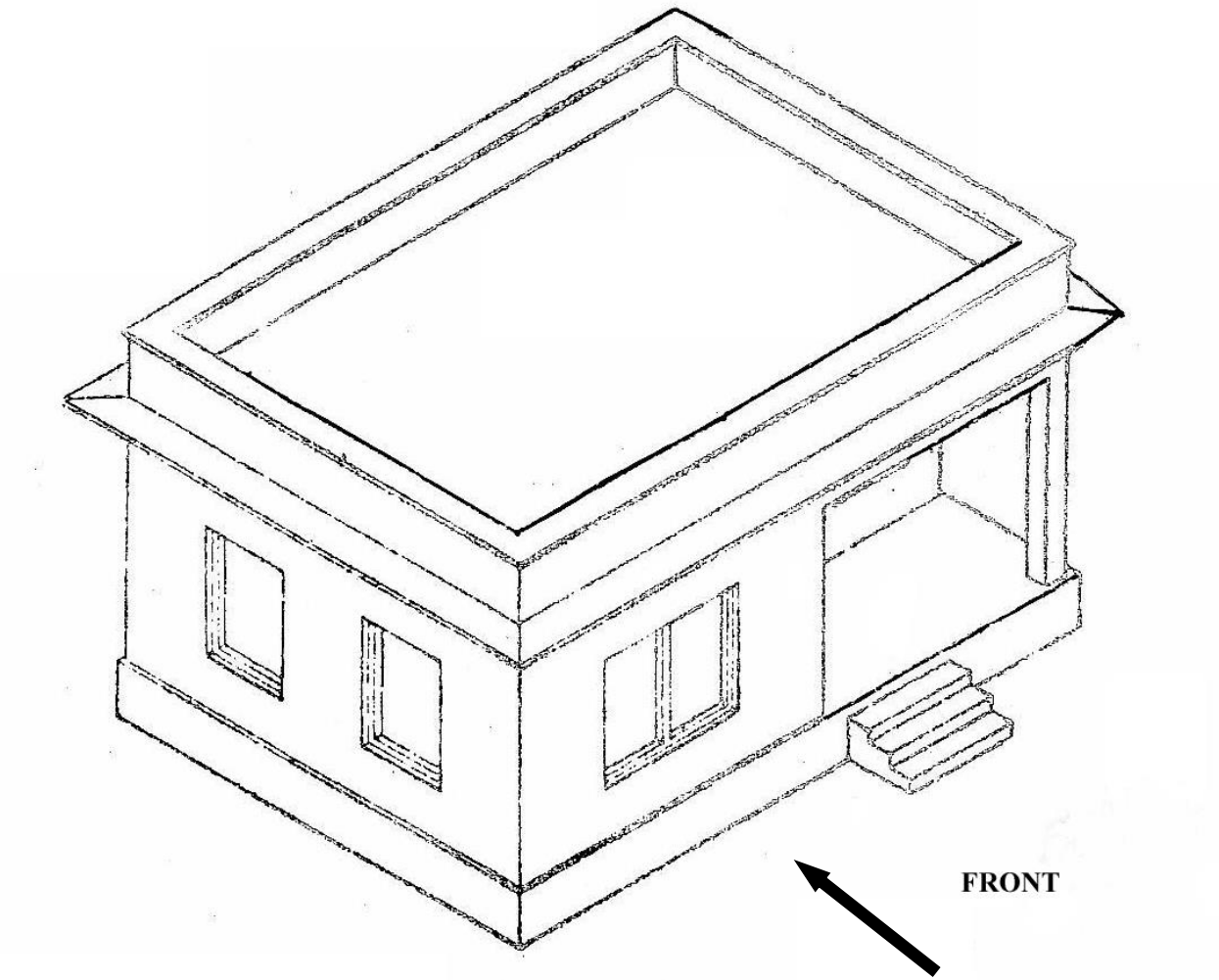


Geometrical stairs



Spiral stairs

Isometric view of a One Storied Building

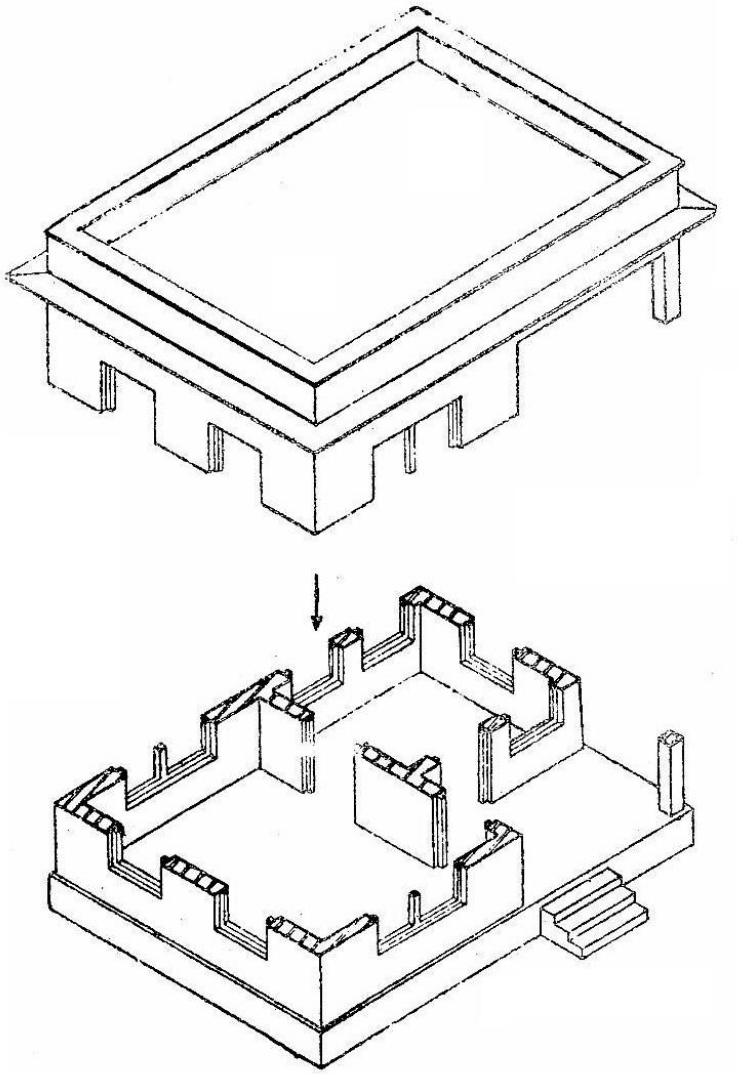


Plan, Elevation, Section of a Building

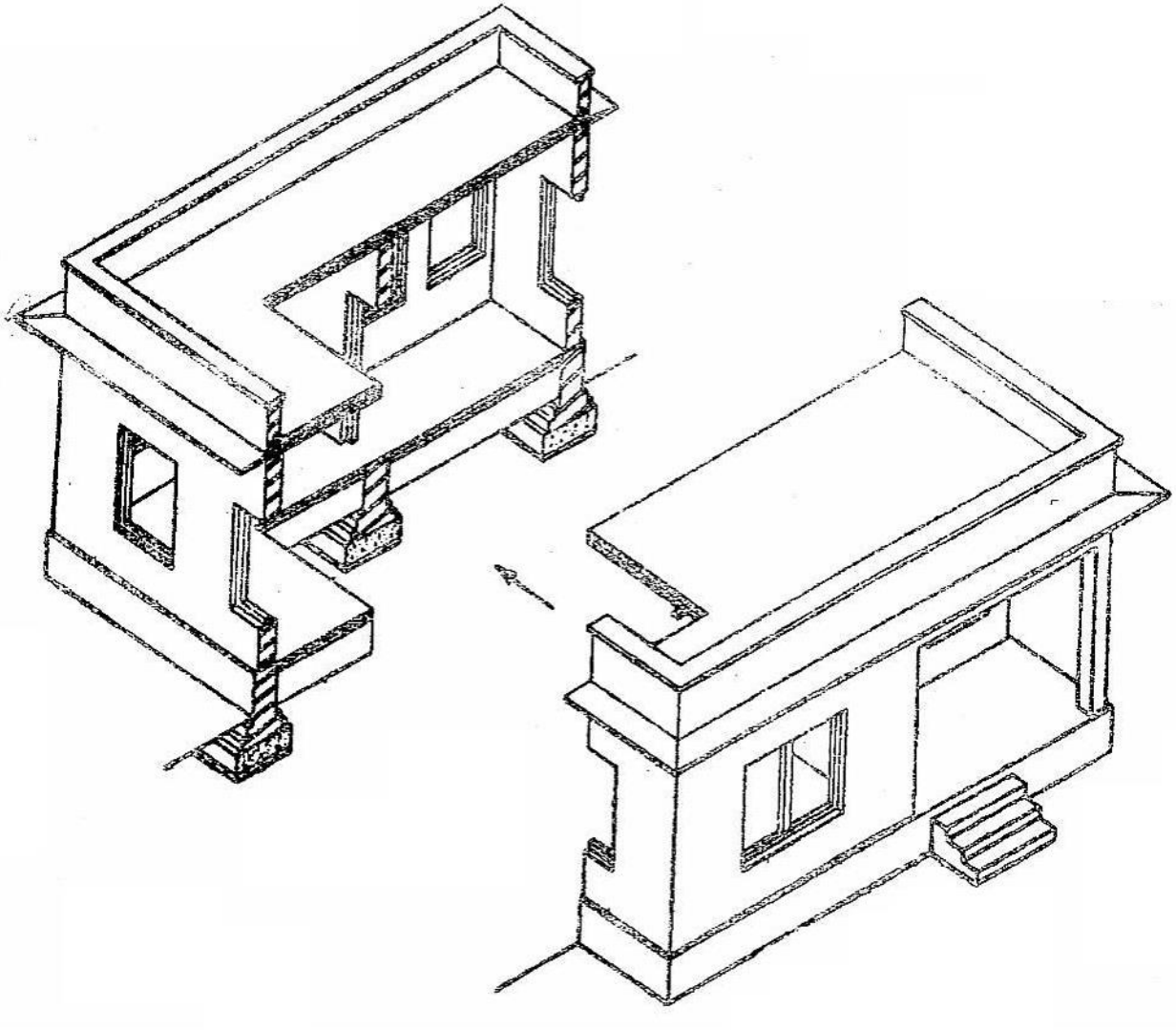
Top view ⟶ Plan
Front view ⟶ Elevation
Section View ⟶ Sectional Elevation

Plan: If a building is cut at mid-height and seen from top, then the view is called plan
Elevation: What we see if we observe a building from any side is called elevation
A building has 4 elevations
In elevation only the structure above ground is shown
Section View: If a room is cut vertically in any direction and observed, then it is called section
In section, structure below ground is shown. That is, the foundation will be observed in section view

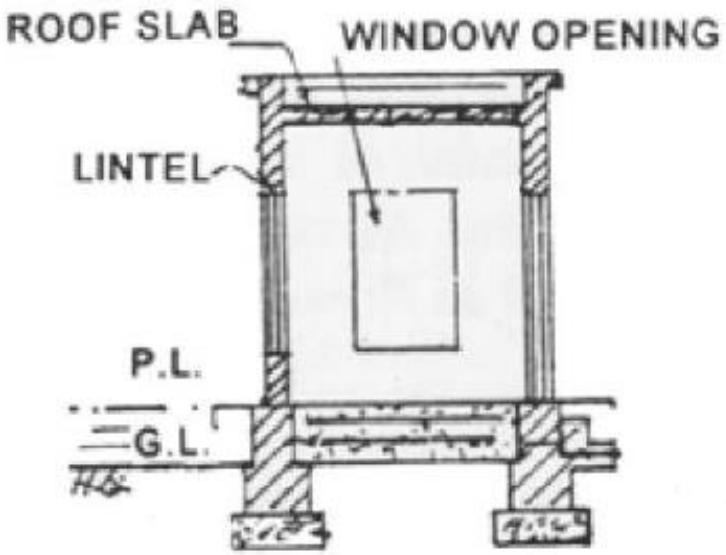
A horizontal section is cut at the mid height of the windows, to get the PLAN of the building



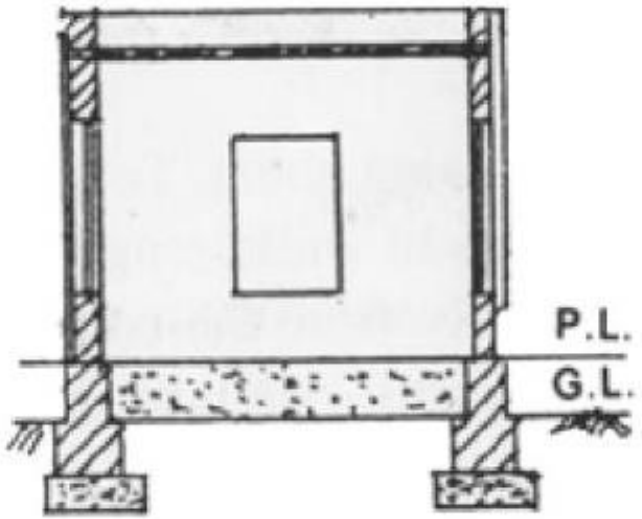
A vertical section is cut to get the Sectional view



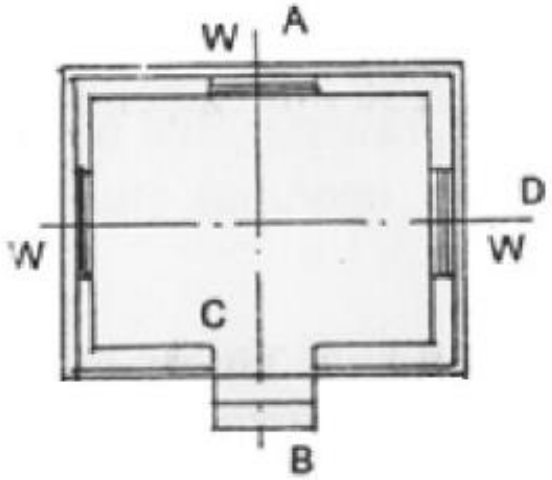
Plan, Section of a Building



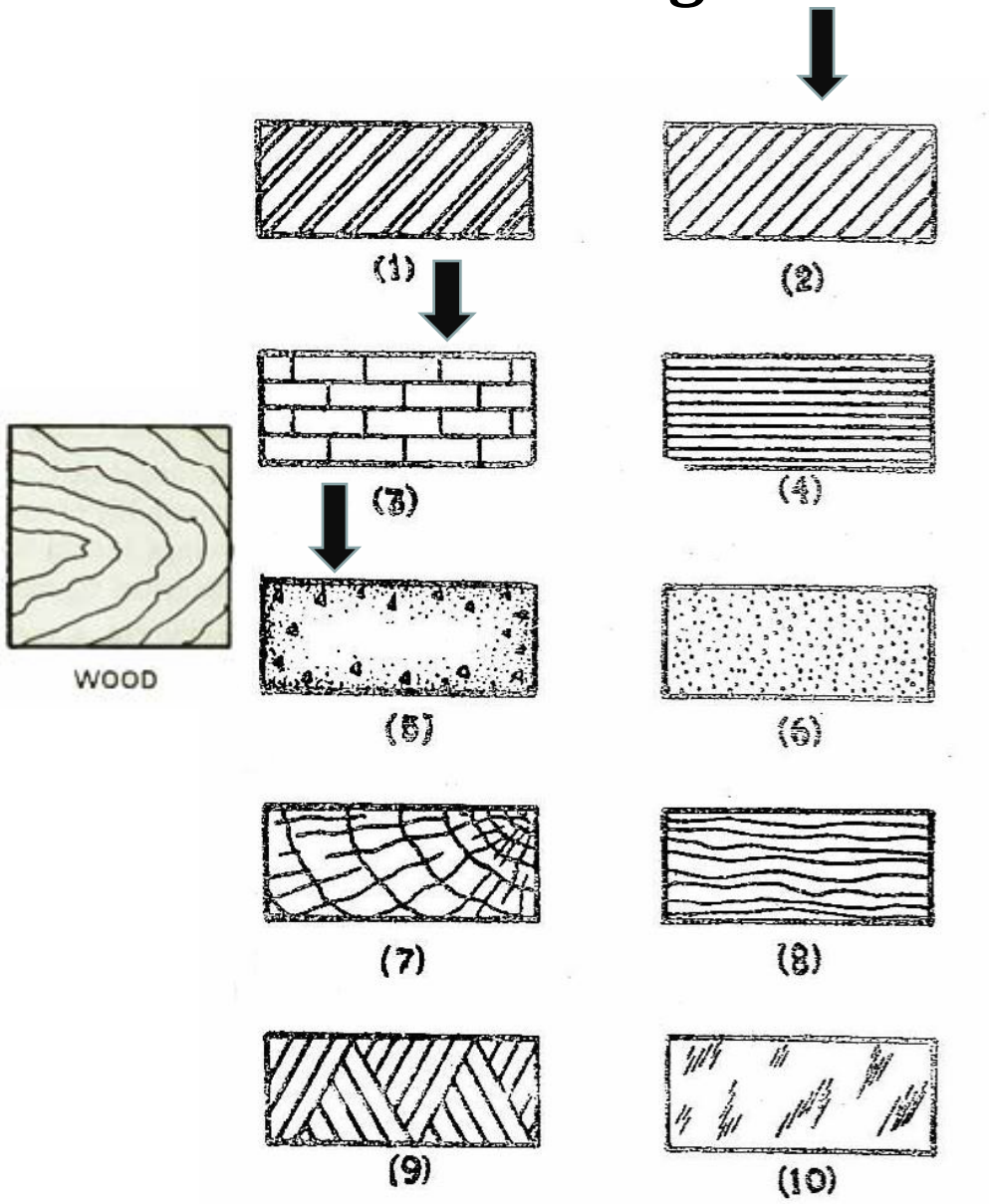
SECTION - AB



SECTION - CD



Sign Conventions



(1) or (2) Masonry Section
Used in Elevation

(3) or (4) Masonry Pointing
Used in Elevation

(5) Concrete Section
Used in Plan or Elevation

(6) Plaster or brick concrete section
Used in Plan or Elevation

(7) Wood Section, having the section at right angle of the fiber
Used in Plan or Elevation

(8) Wood Section taken along the length of the fiber
Used in Plan or Elevation

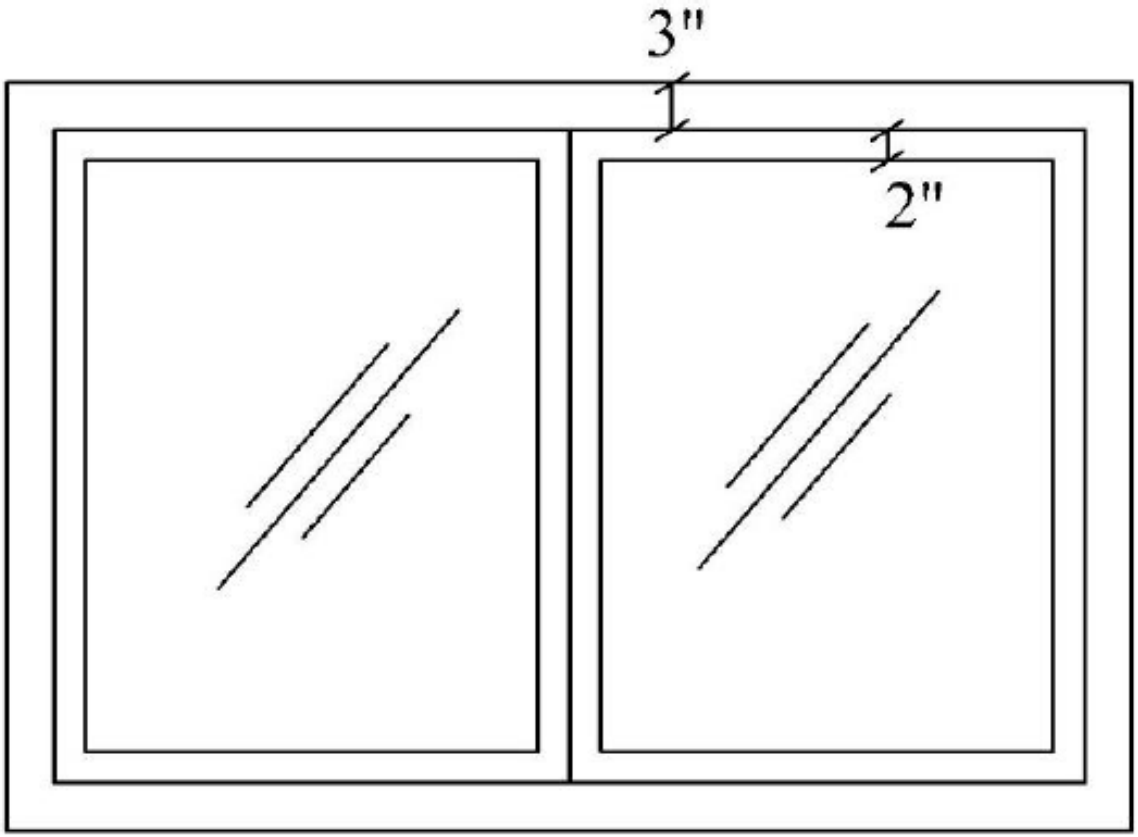
(9) Soil
Used in Elevation

(10) Glass
Used in Elevation

Typical Dimensions

WINDOW:

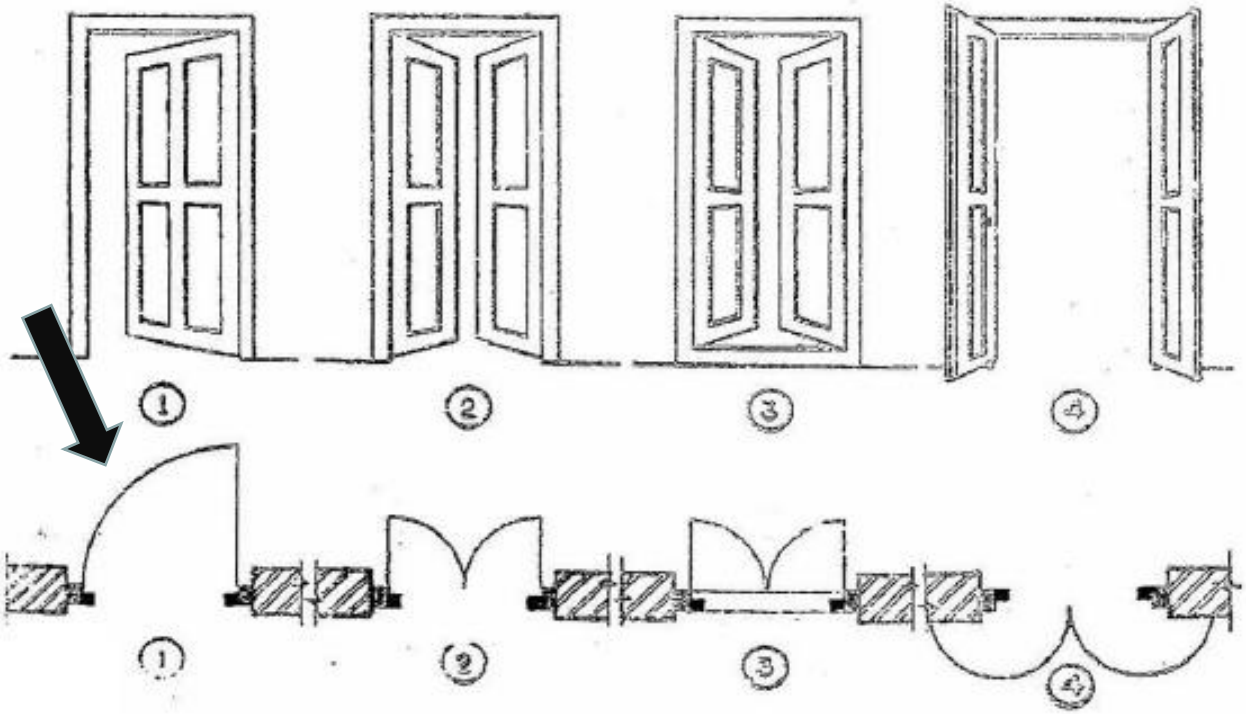
Window frame thickness will be equal to the thickness of wall

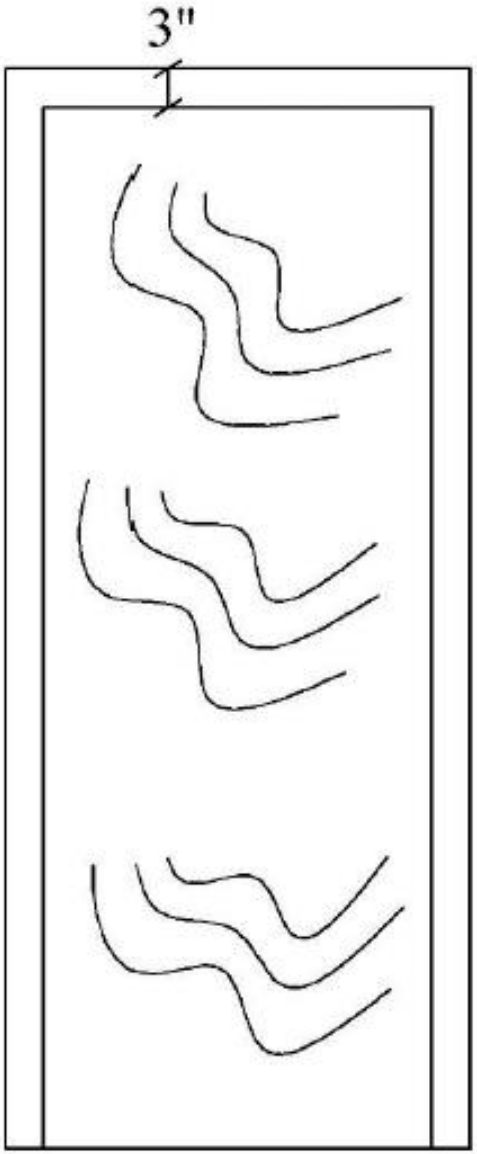


DOOR:

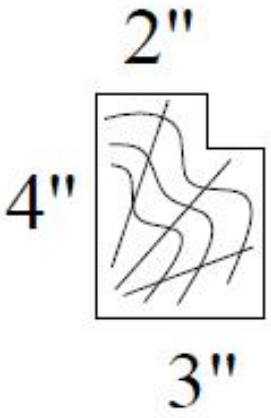
In elevation, windows and doors are always closed

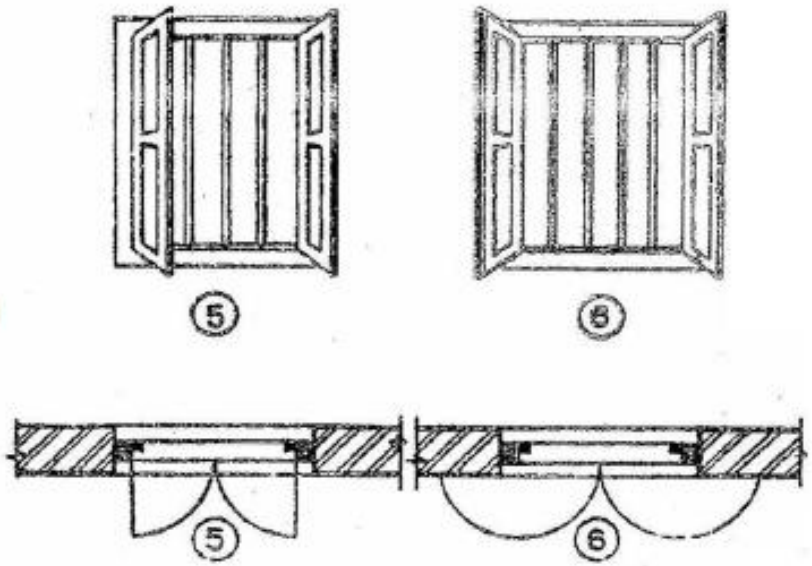
In plan view, windows and doors can be either closed or open

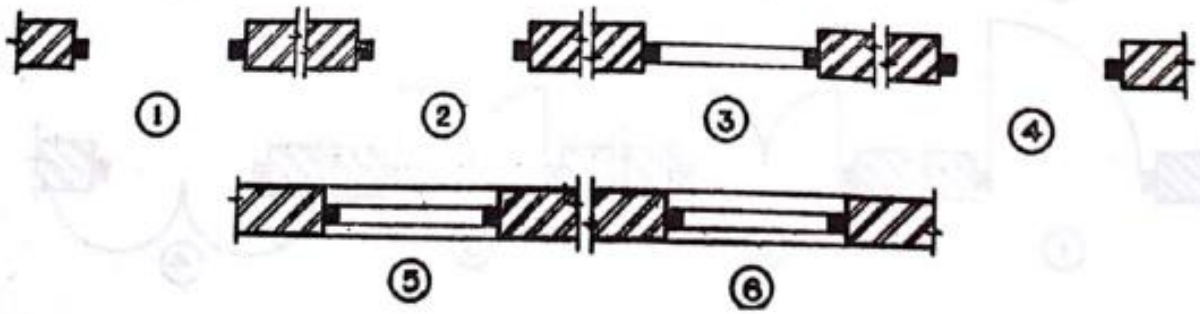


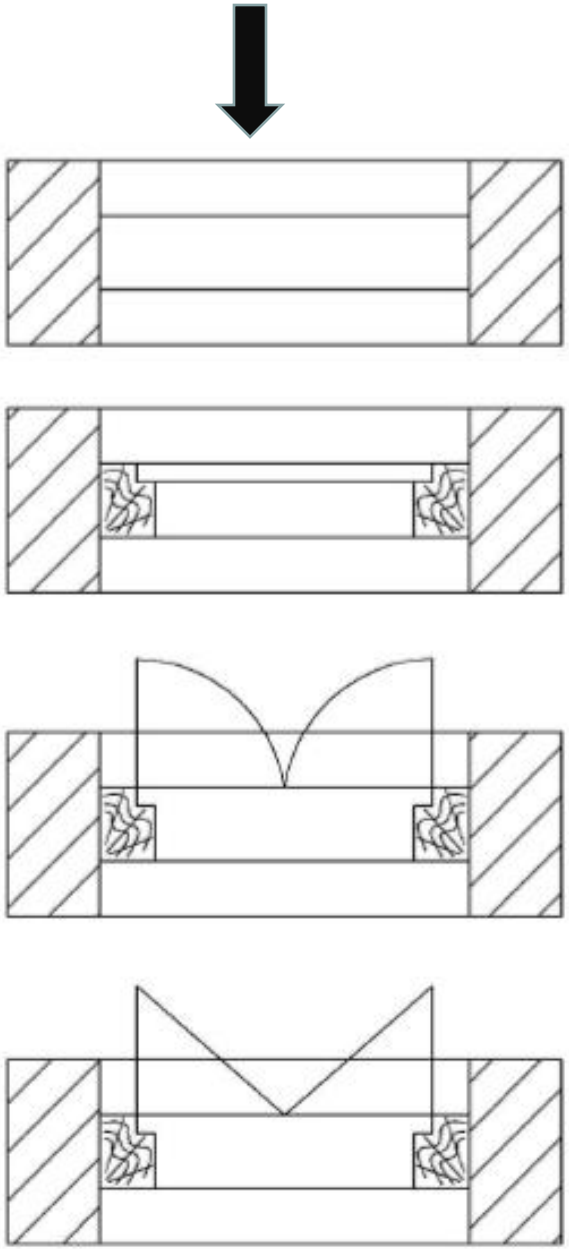


WINDOW:

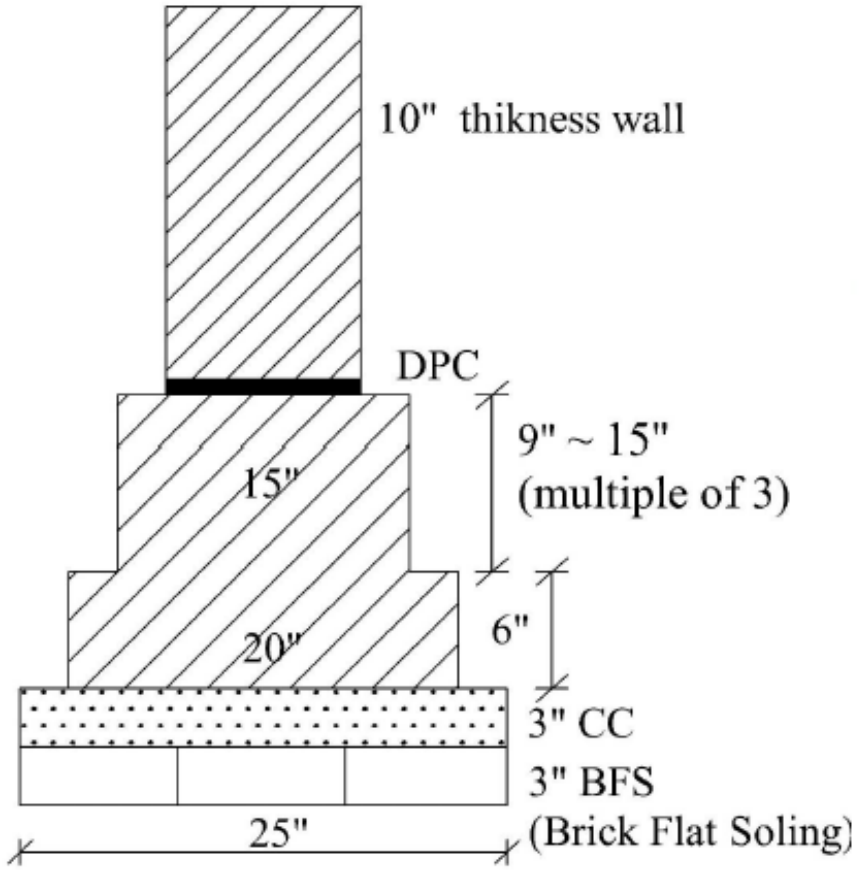






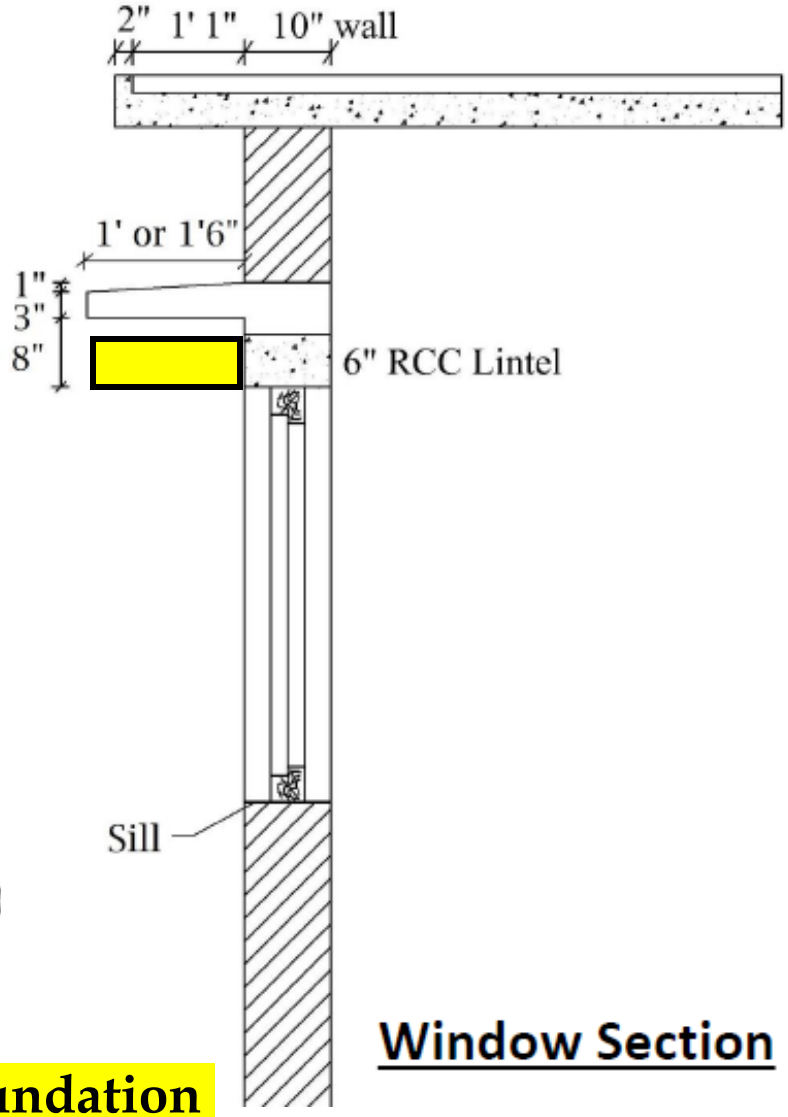


Typical Dimensions



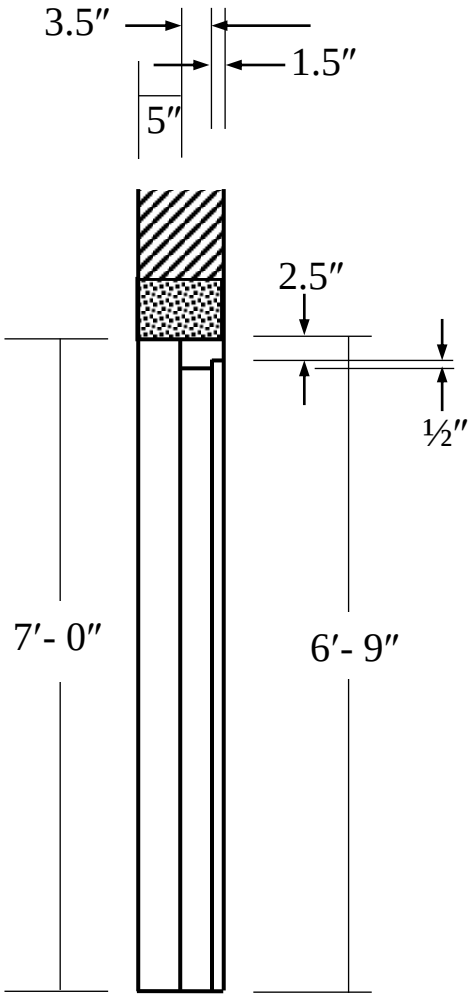
25" width Foundation

33'' width Foundation

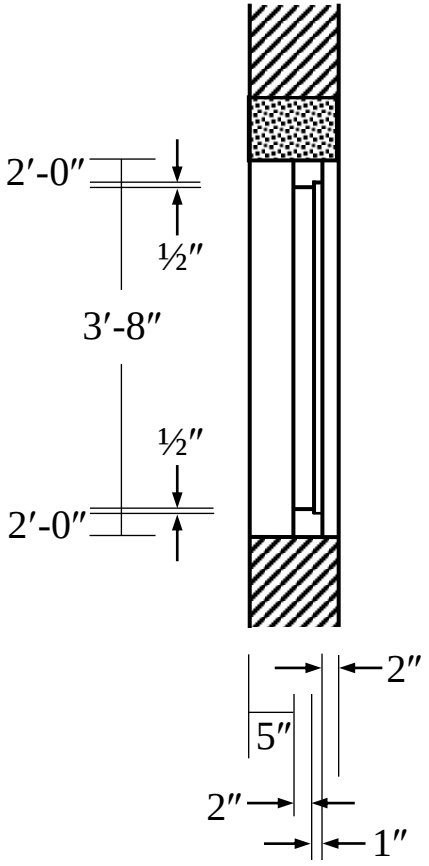


Window Section

Door section and window section

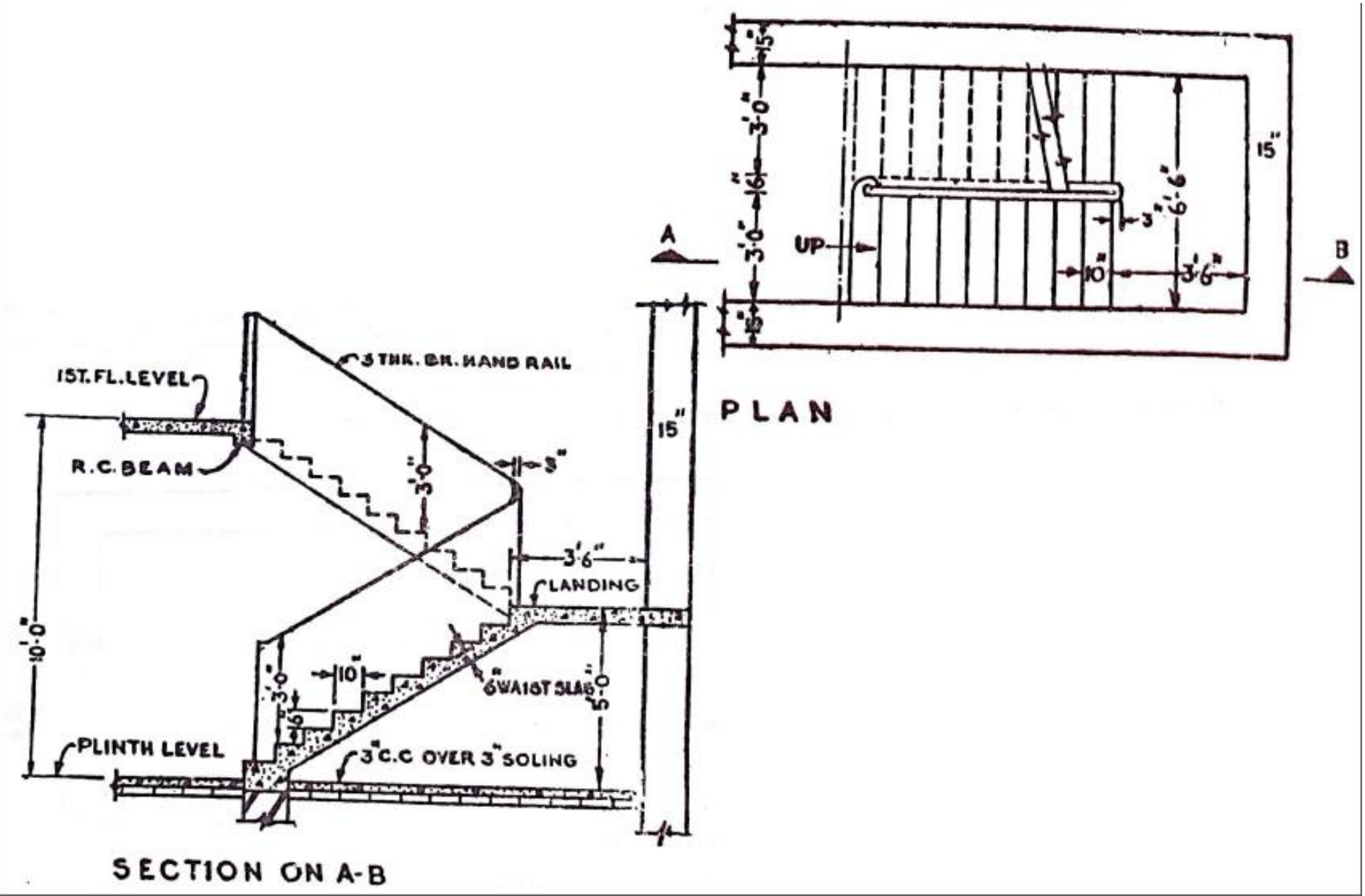


Door Section



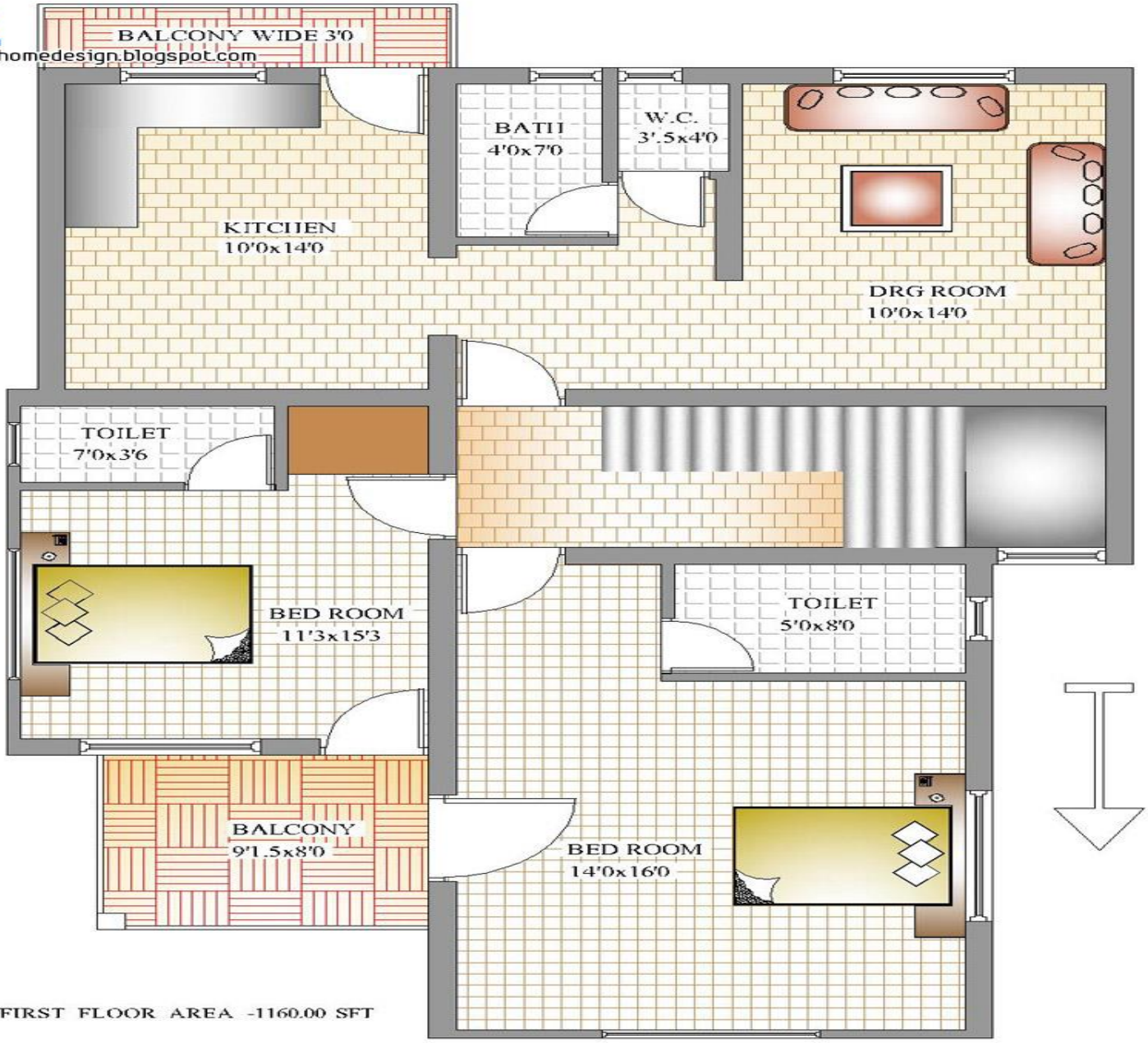
Window Section

Plan and Section





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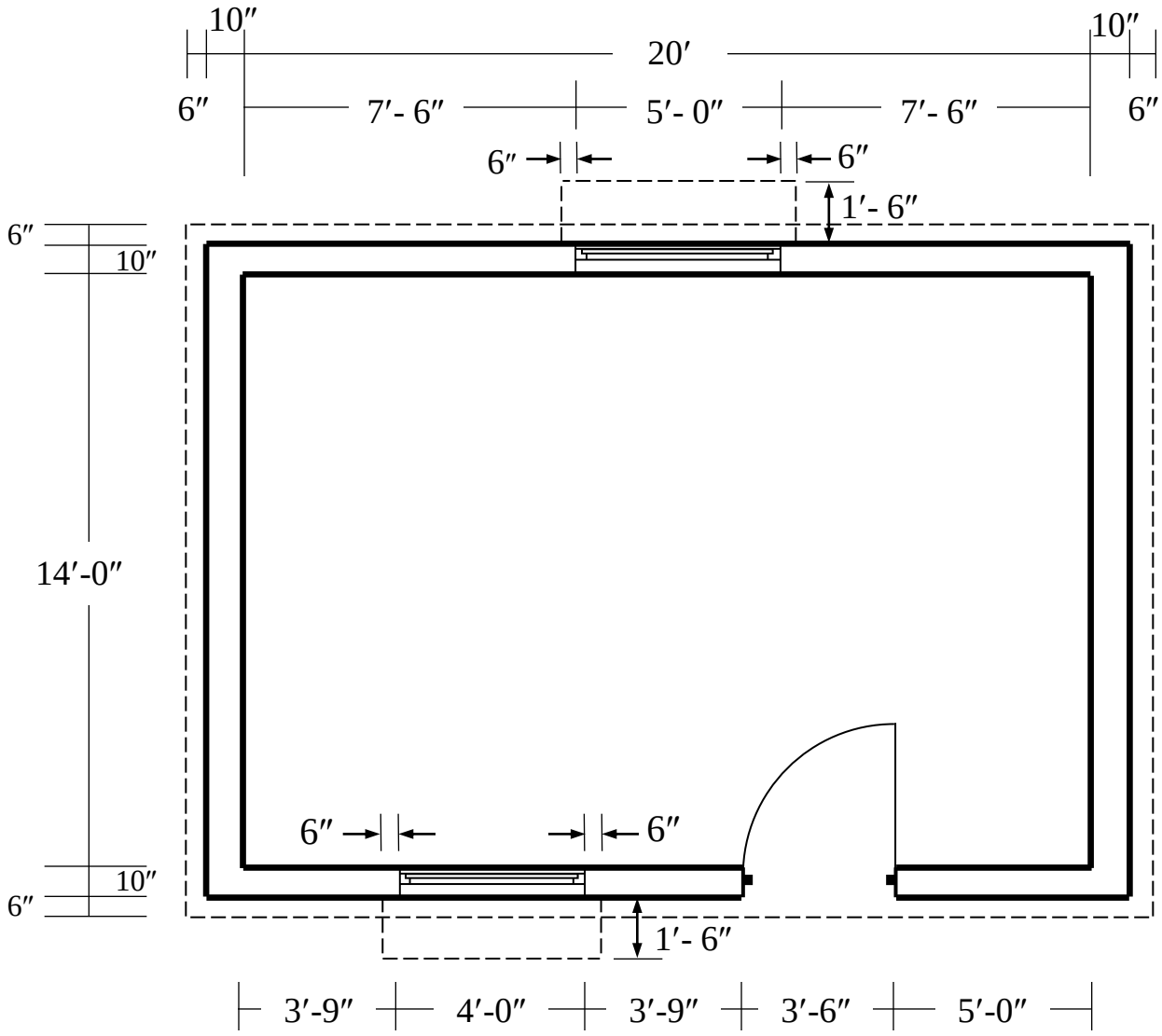


FIRST FLOOR AREA -1160.00 SFT

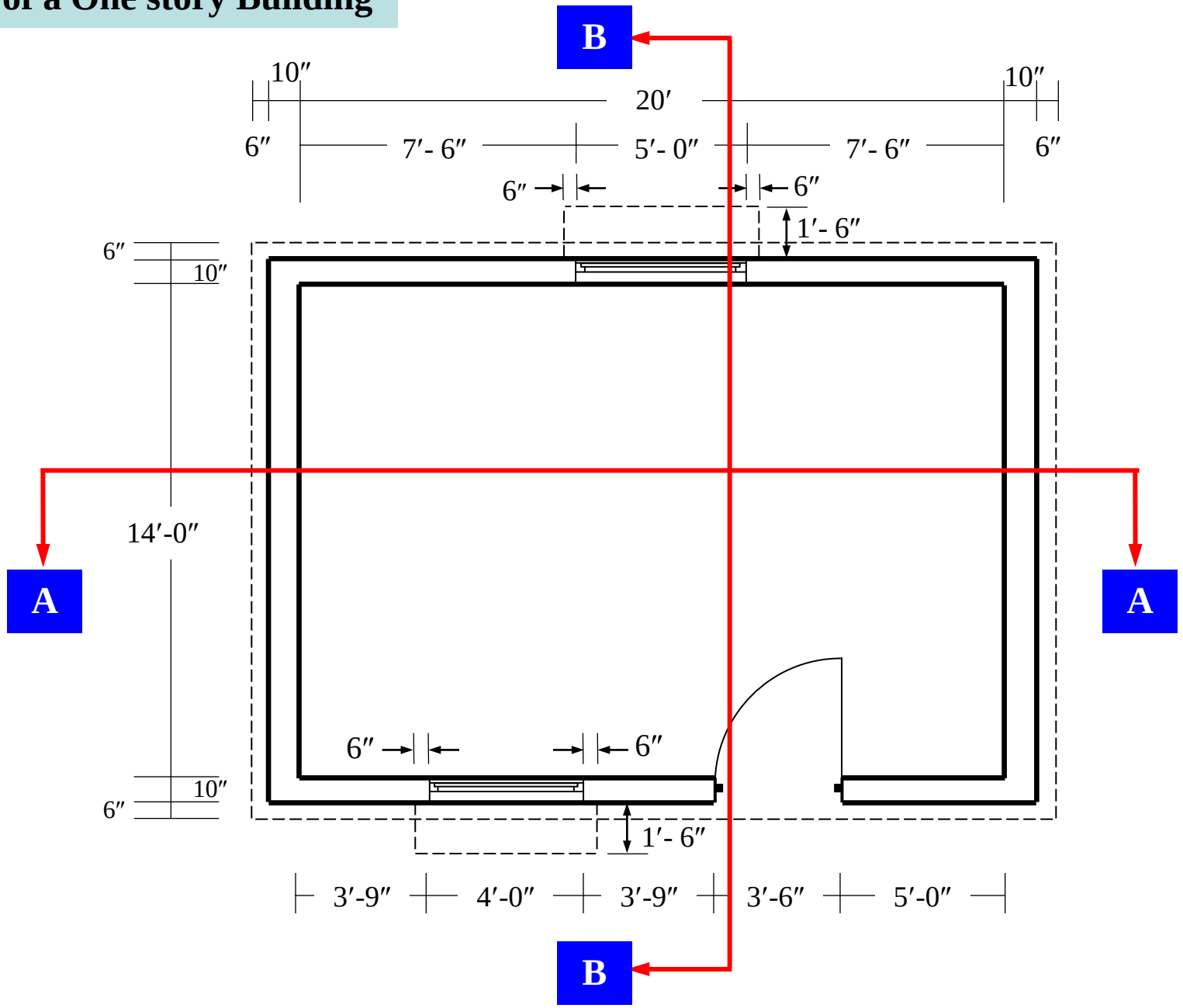
FIRST FLOOR PLAN

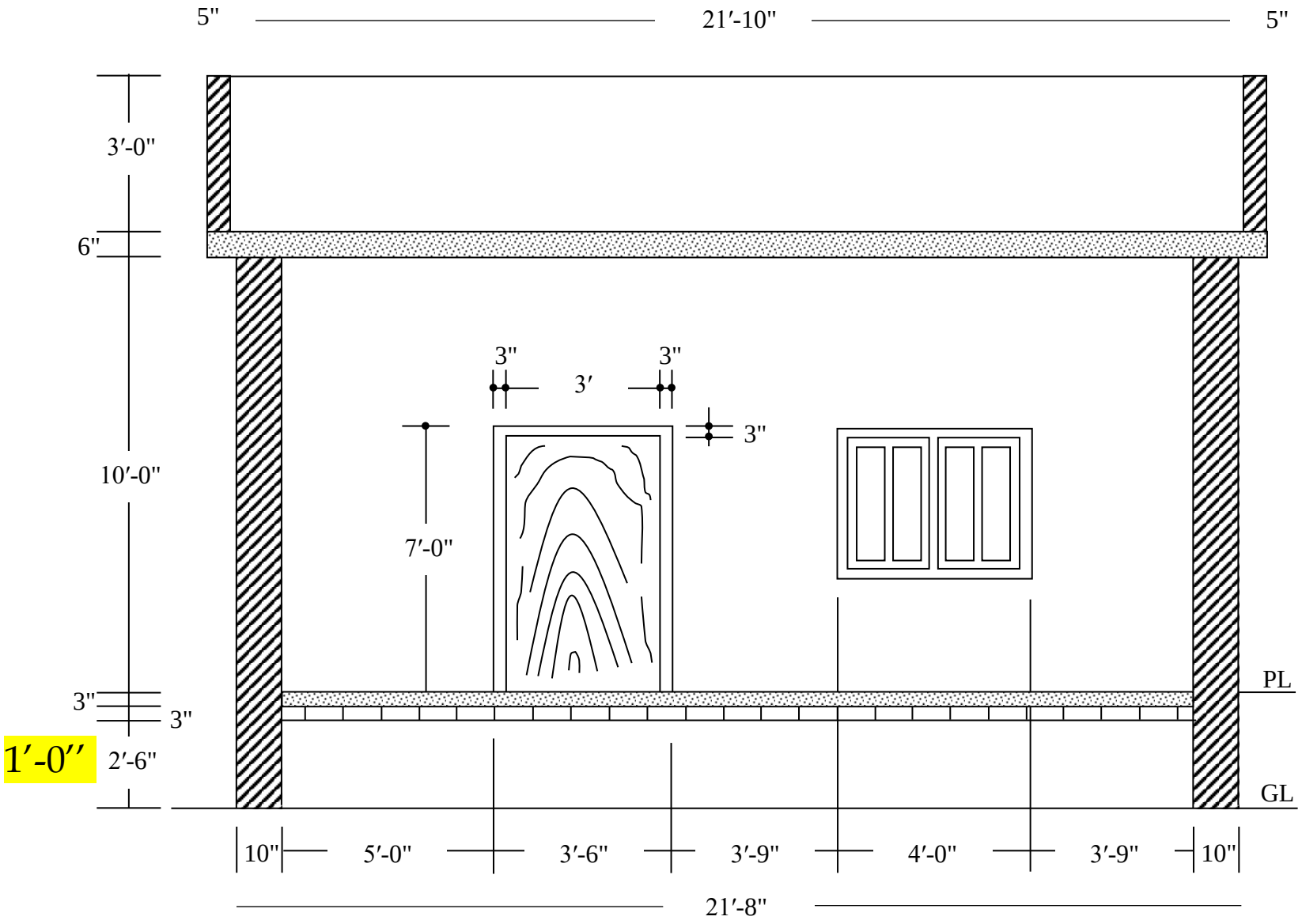
Designed.By.:.Sanjay Doshi
Godhra , Gujarat, India. Ph: +91 9925140475, 9426052475

Plan of a One story Building



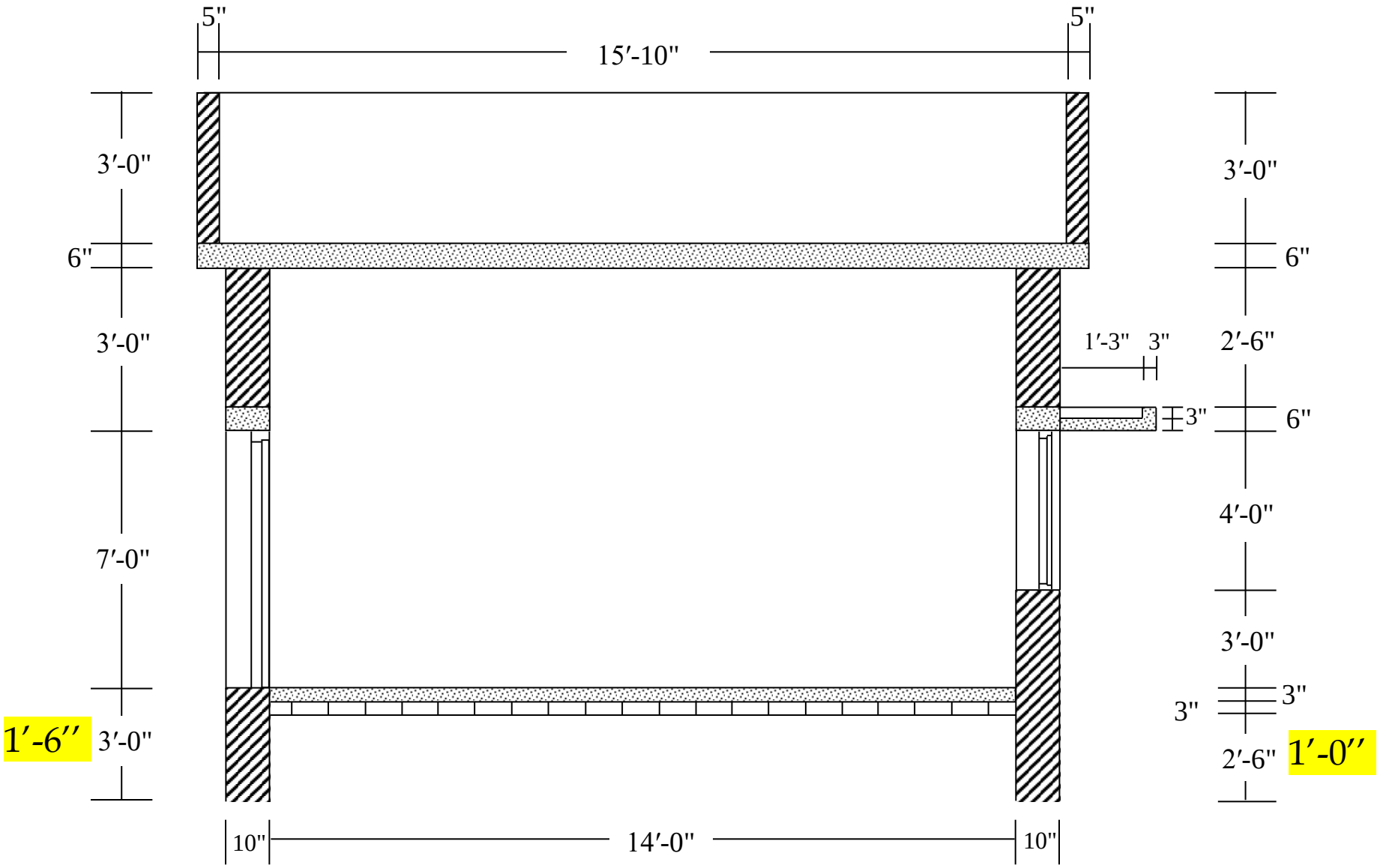
Plan of a One story Building





1′-0′′

Section A-A

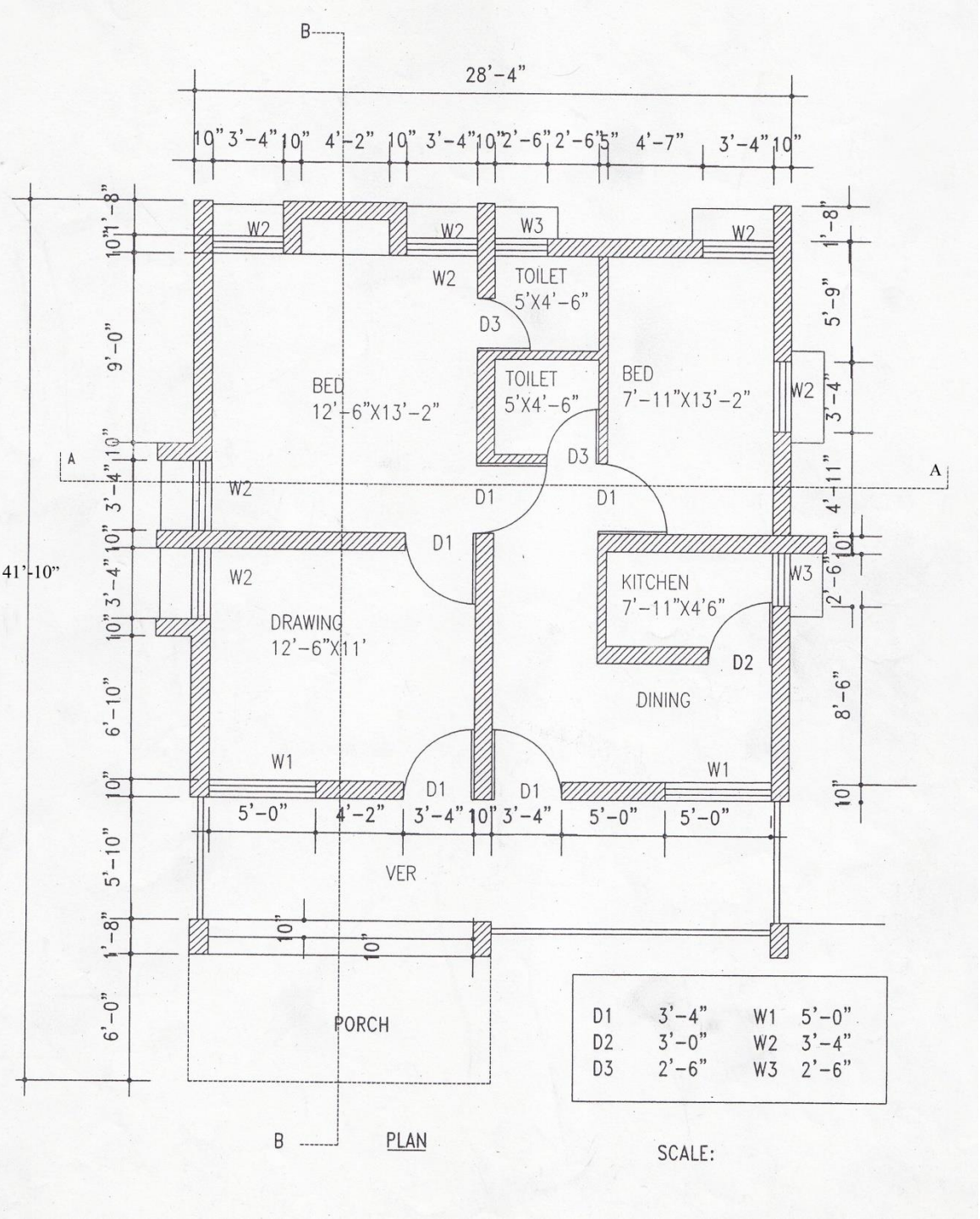


Section B-B

RF

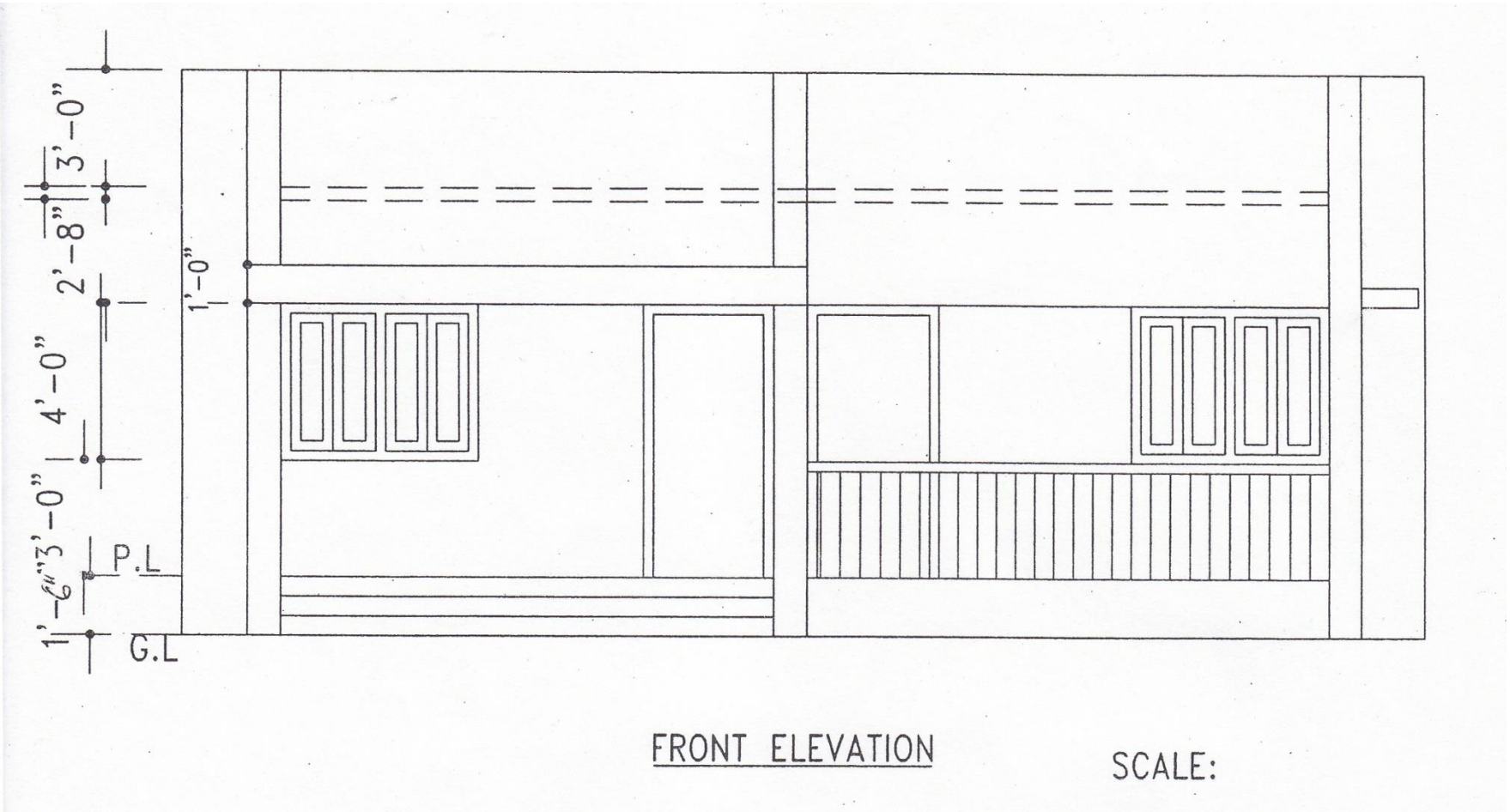
RF (Representative Fraction) is the ratio of the length in drawing to the actual length.

$$\text{R. F} = \frac{\text{Length of an object on the drawing}}{\text{Actual length of the object}}$$

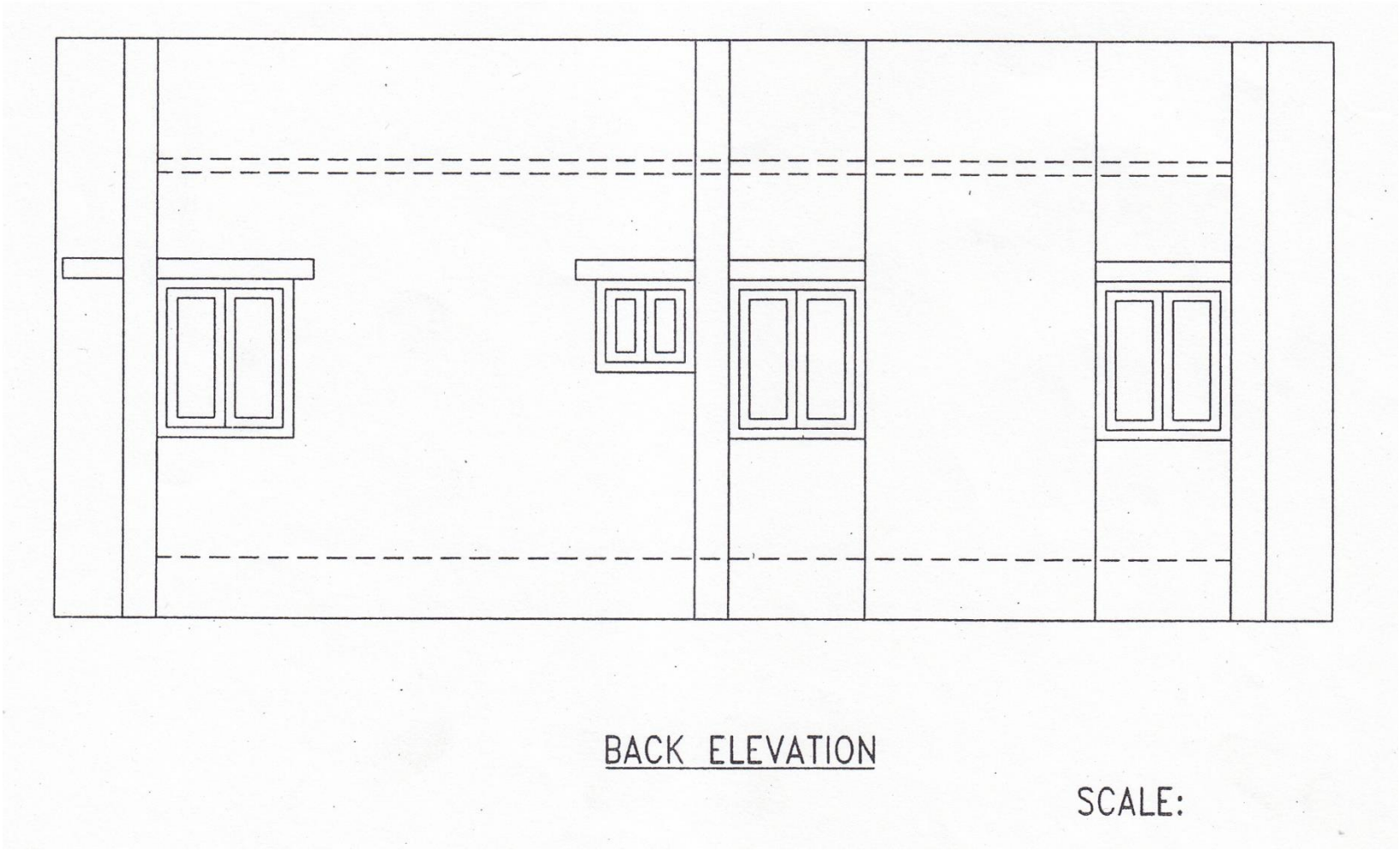


Plan of a One Storey Building

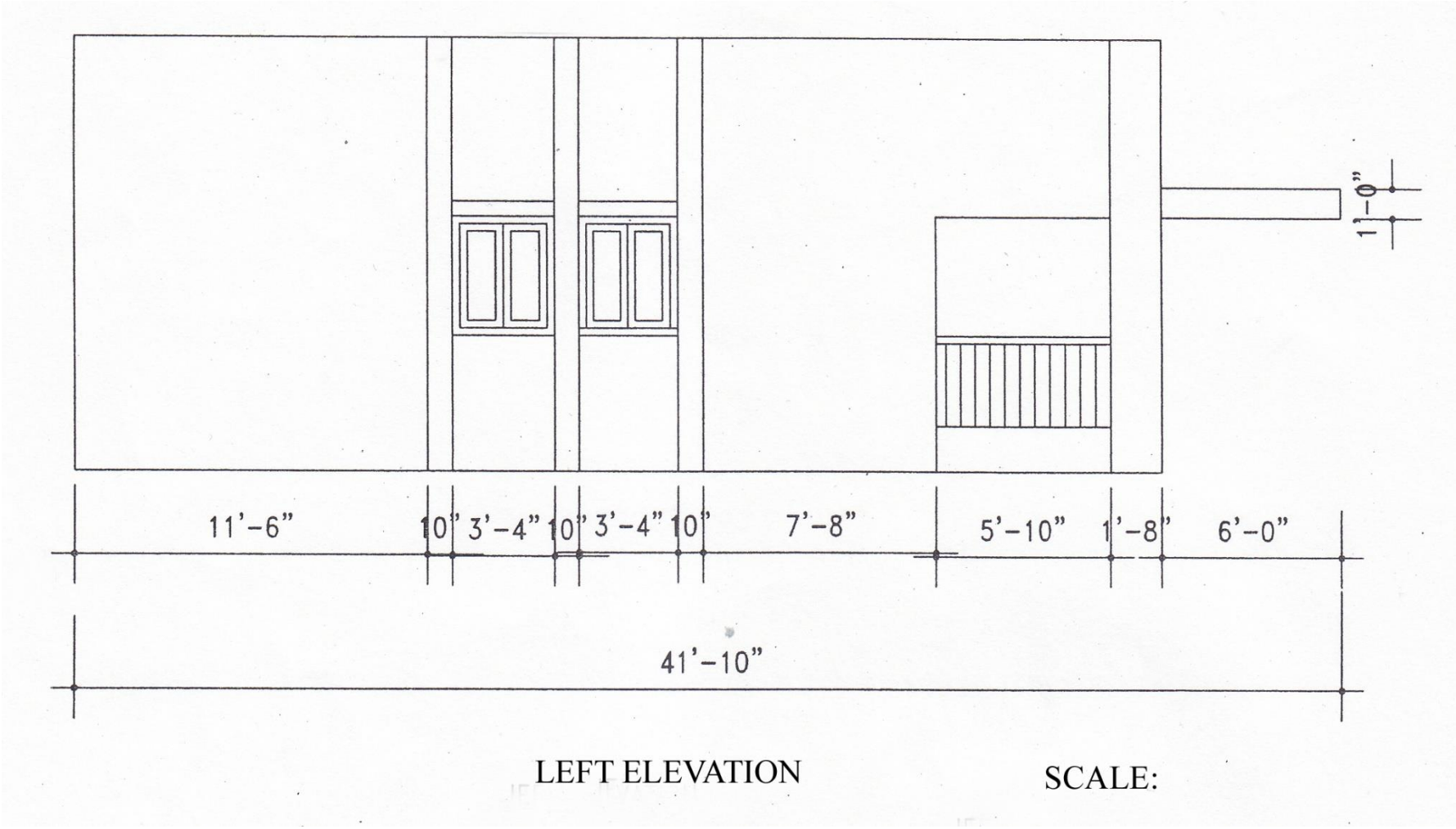
Front Elevation of a One Story Building



Back Elevation of a One Story Building



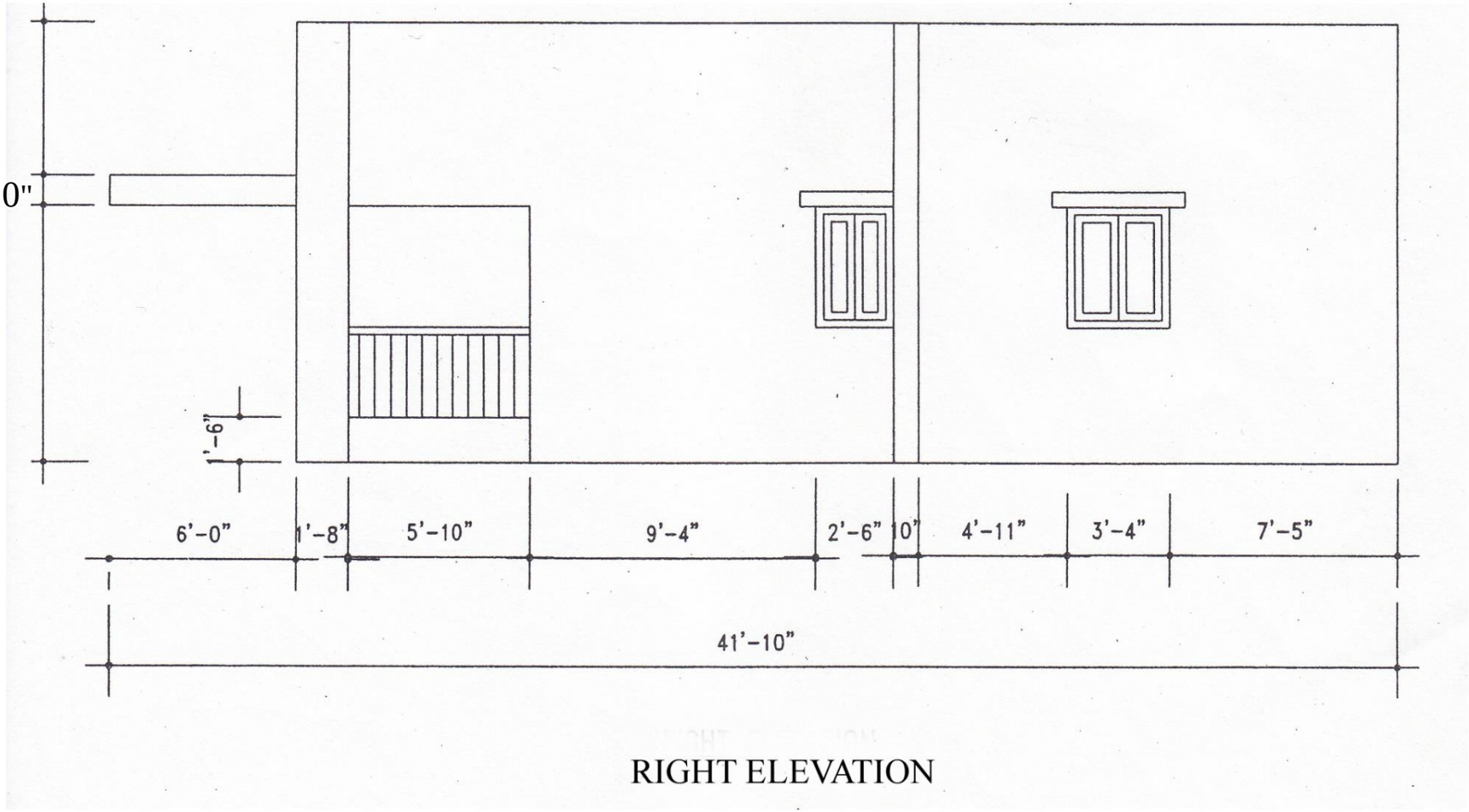
Left Elevation of a One Story Building



LEFT ELEVATION

SCALE:

Right Elevation of a One Story Building



RIGHT ELEVATION

Thank You