

# **18MES101L – Engineering Graphics and Design**

## **Exercise – 11**

### **Building Drawing**

# Building Drawing

- In Building drawing, a building is considered as an object, and the drawings are prepared. The top view (plan), front view (elevation) and sectional view (Sectional elevation) are drawn, by considering the dimension of the room sizes and components of a building.
- There are two categories of buildings
  - Residential building
  - Office building

# REQUIREMENTS OF GOOD DRAWING

- Drawing should be clear, simple and clean.
- Should agree with the actual measurements by the accurately drawn scaled measurements.
- Exact information should be provided in order to carry out the work at site without scaling for missing measurements.
- Only minimum notes to support the drawings should be indicated in the drawings.
- Sufficient space should be provided between the views so as to mark the dimensions without crowding.





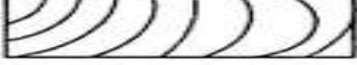



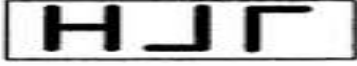
# CONVENTIONAL SIGNS AND SYMBOLS

The Bureau of Indian standards (B.I.S) has recommended the conventional signs and symbols for the following purposes.

- Avoid confusion and to understand the drawings
- Save the time in making out various details in the drawing
- Identify the various details of materials, Electrical fixtures, water supply and sanitary fittings, Position of furniture's etc.
- To prevent any dispute between contractor and owner in the actual construction of the structure.

# Symbols for Building material

Different building material symbols as per IS 962 :1989

Material	Symbol
Brick	
Concrete	
Natural or reconstructed Stone	
Partition blocks	
Wood	
Earth or sand filling	
Plaster and plaster products	
Glass	
Metal sections	

# Different Building material

- **Brick**

- Bricks are made from clay.
- BIS recommended standard 190 mm X 90 mm X 90mm with 10 mm cement mortar thickness.



- **Stones**

- Stone are obtained from rocks.
- The bigger size used in stone masonry and smaller size are used to prepare the cement concrete.



- **Cement**

- It is a binding material and which has adhesives and cohesive properties.

- **Sand**

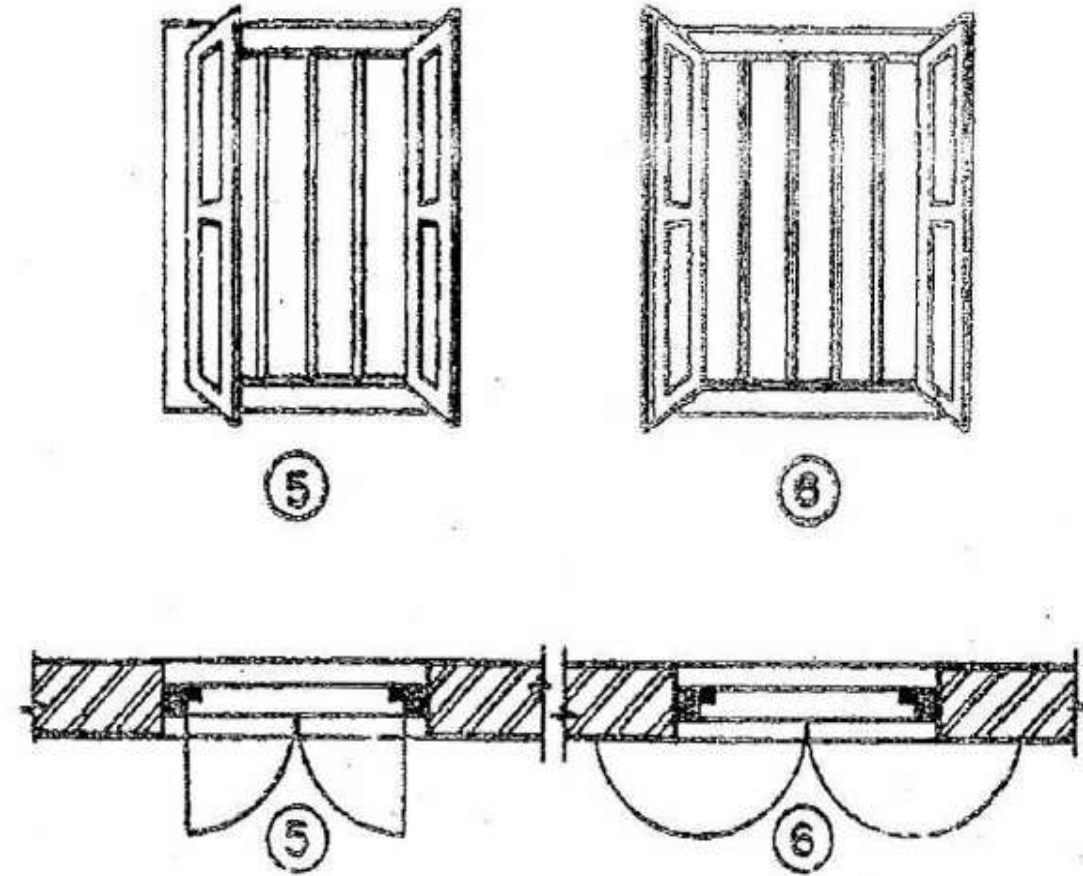
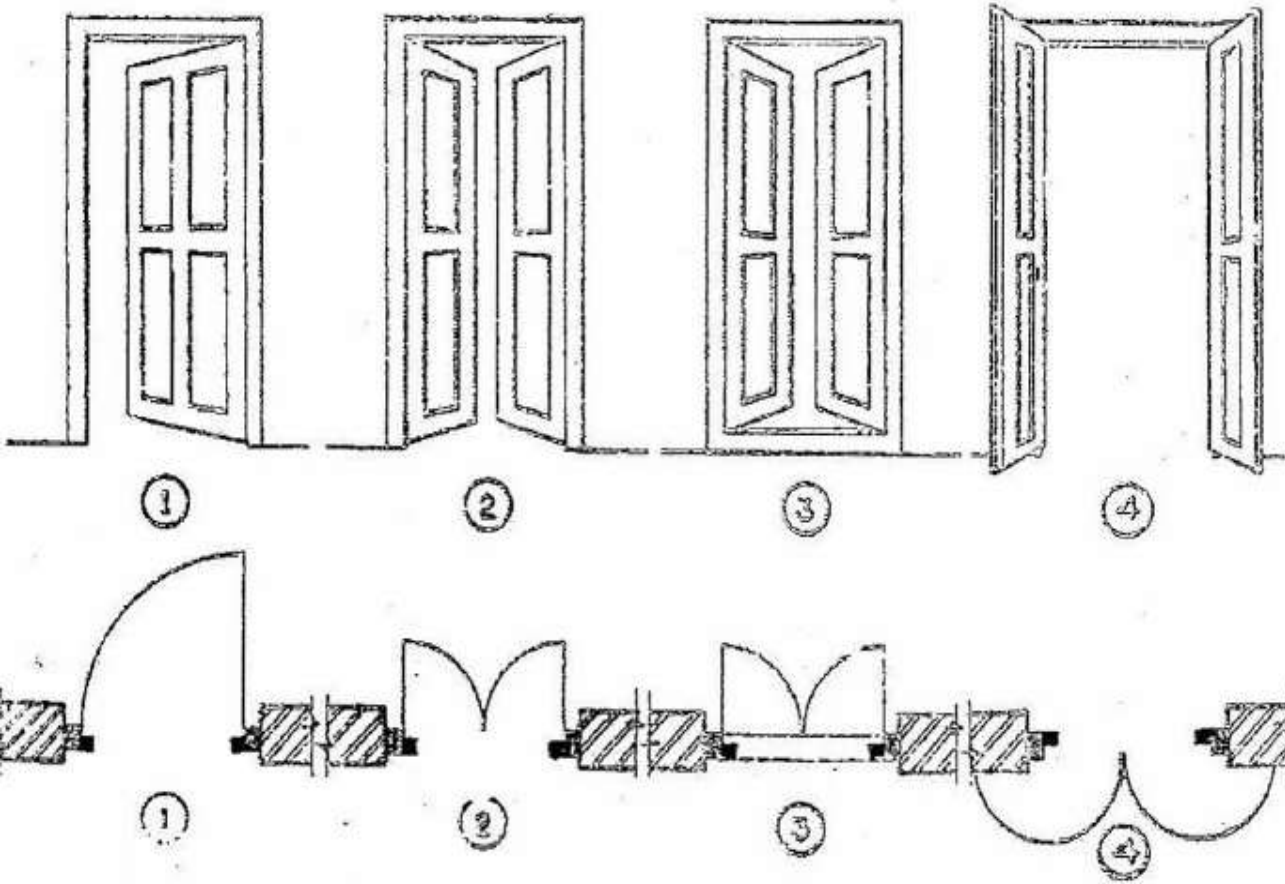
- It is a fine aggregate used in the preparation of cement mortar and concrete.

# Different Building material

- **Steel**
  - It is an alloy which consist of carbon and iron. Steel rods with round cross section of diameter 6 mm to 32 mm are used in Reinforced Cement Concrete (RCC).
- **Timber**
  - Timber is the wood
  - The bigger size used in stone masonry and smaller size are used to prepare the cement concrete.
- **Concrete**
  - Cement, Gravel, sand are mixed together (1:3:3) with required quantity of water to get a workable plastic mixture known as concrete.
- **Cement mortar**
  - It consist of cement and fine aggregate with required quantity of water, as a workable paste is called as cement mortar. 5:1 for above ground, 3:1 for foundation and 8:1 for inner walls.
- **Masonry**
  - The art of building a structure in stones or bricks is called masonry.

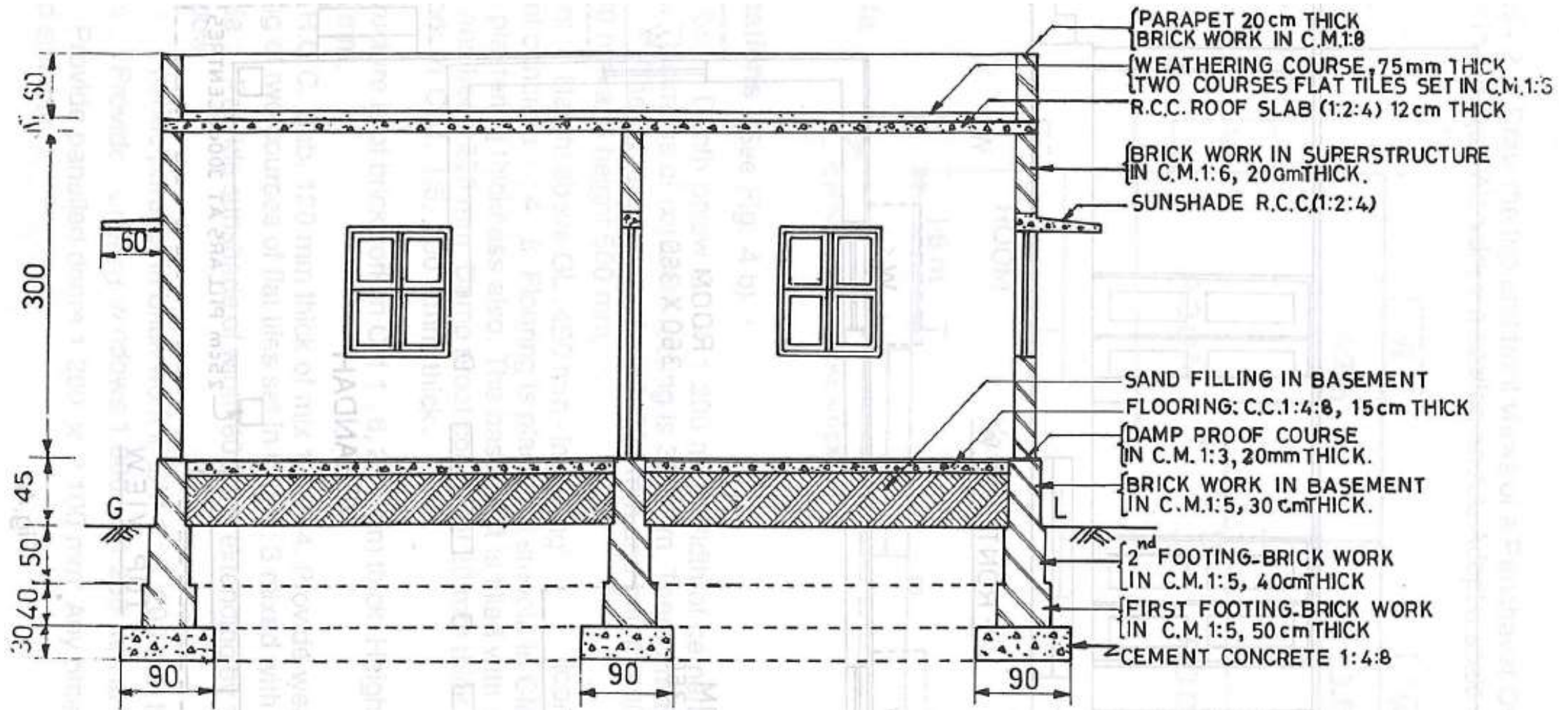


# Doors & Windows





# Important terms in building construction



# Important terms in building construction

- **Foundation**
  - The portion of the building below the ground level.
- **Super structure**
  - The portion of the building above the ground level.
- **Basement**
  - Basement is the lower store of the building below the ground level .
- **Plinth**
  - The portion of the building between the ground and floor level in the super structure.
- **Wall**
  - The portion of the super structure which carry the load of the roof is called as the wall. (Thickness 200 mm)
- **Parapet Wall**
  - The wall build above the flat roof, which provides safety to the people.



# Important terms in building construction

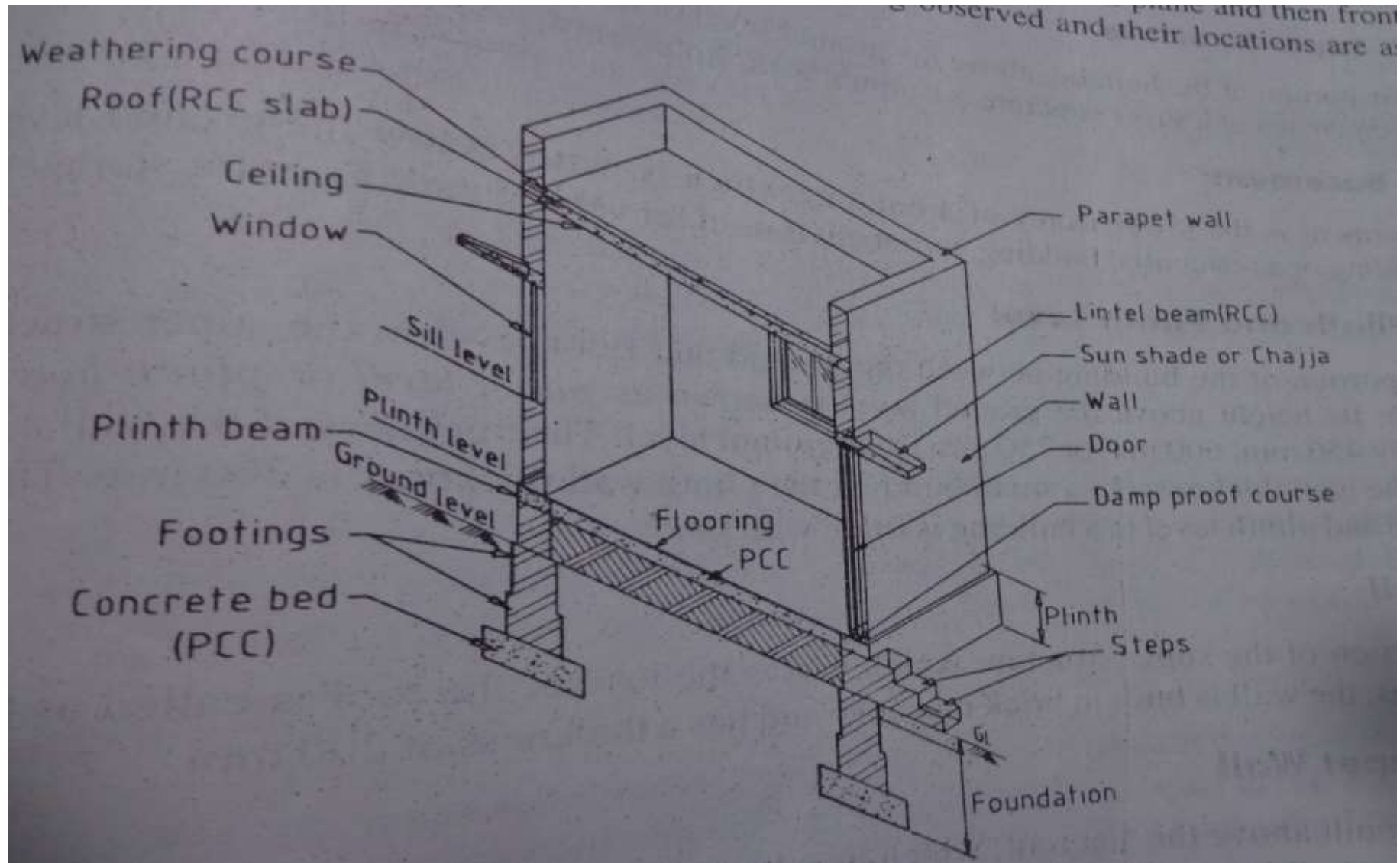
- **Flooring**
  - The horizontal surface at the plinth level in a building is called as flooring.
- **Sill level**
  - The horizontal bottom level of the window is called sill level.
- **Roofing**
  - The RCC slab used to cover the building.
- **Ceiling**
  - The bottom surface of roof slab, seen inside a room is called as ceiling.
- **Plinth beam**
  - The RCC beam constructed in the plinth which is used to transfer the load of the building uniformly , on the foundation is called as plinth beam.
- **Lintel beam**
  - The RCC beam constructed above the window and door openings to support the brick work above, is called as lintel beam.



# Important terms in building construction

- **Sunshade**
  - It is a horizontal RCC slab provided above the windows and doors to prevent sunlight and rain water entry into the rooms .
- **Steps**
  - Steps are build to enable us to reach a floor and generally constructed in the brick work, on a plain cement concrete bed of thickness 100 mm to 200 mm.
- **Stairs**
  - A stairs has set of steps leading from one floor to another.
- **Partition wall**
  - It used to make separation in a room..
- **Carpet area**
  - The area of a building which is useful or livable is called as carpet area.

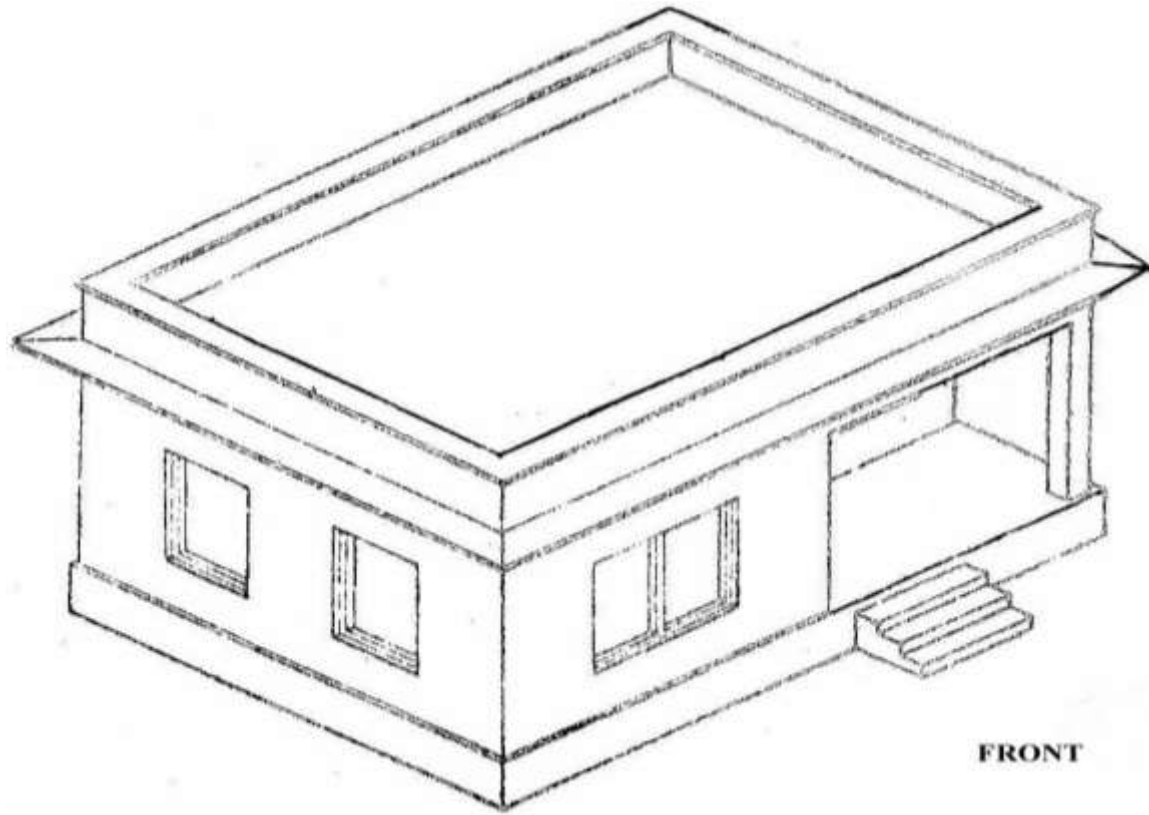




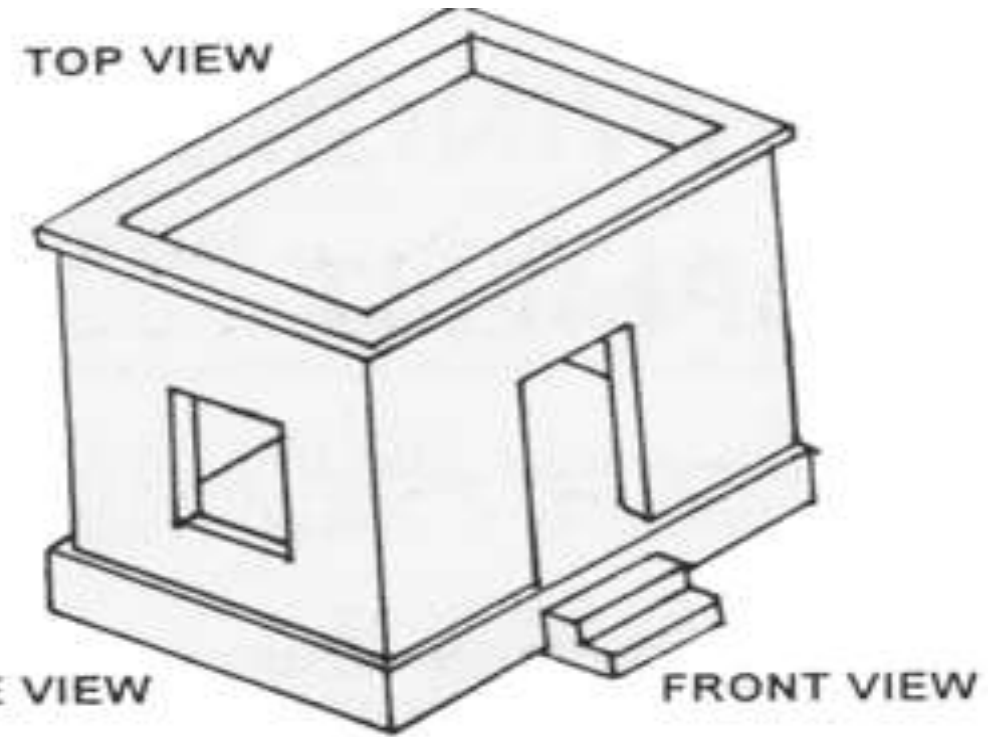
# Views of a building

- Isometric view
- Top view (Plan)
- Front view (Elevation)
- Sectional view

# Isometric view



FRONT



TOP VIEW

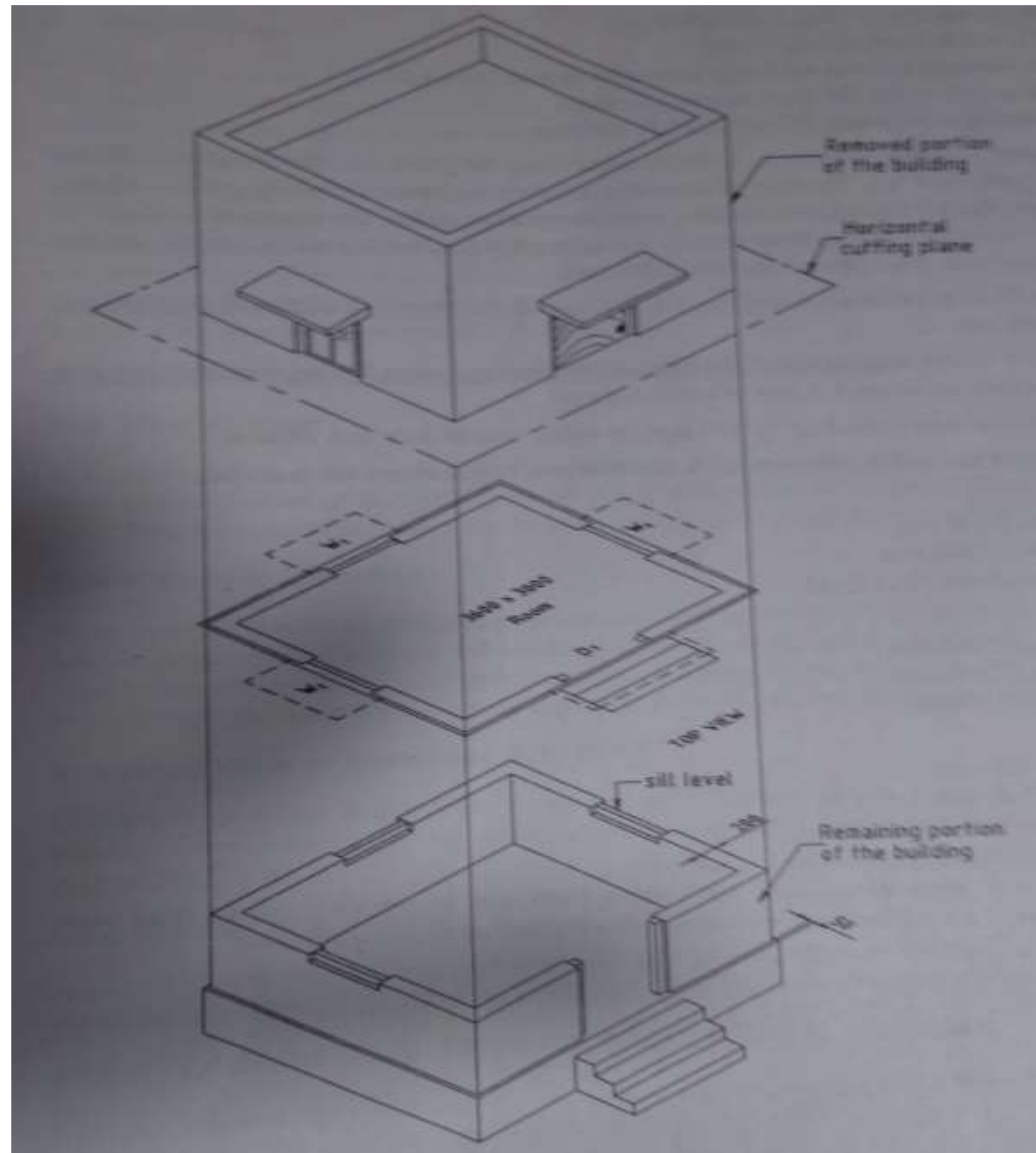
SIDE VIEW

FRONT VIEW

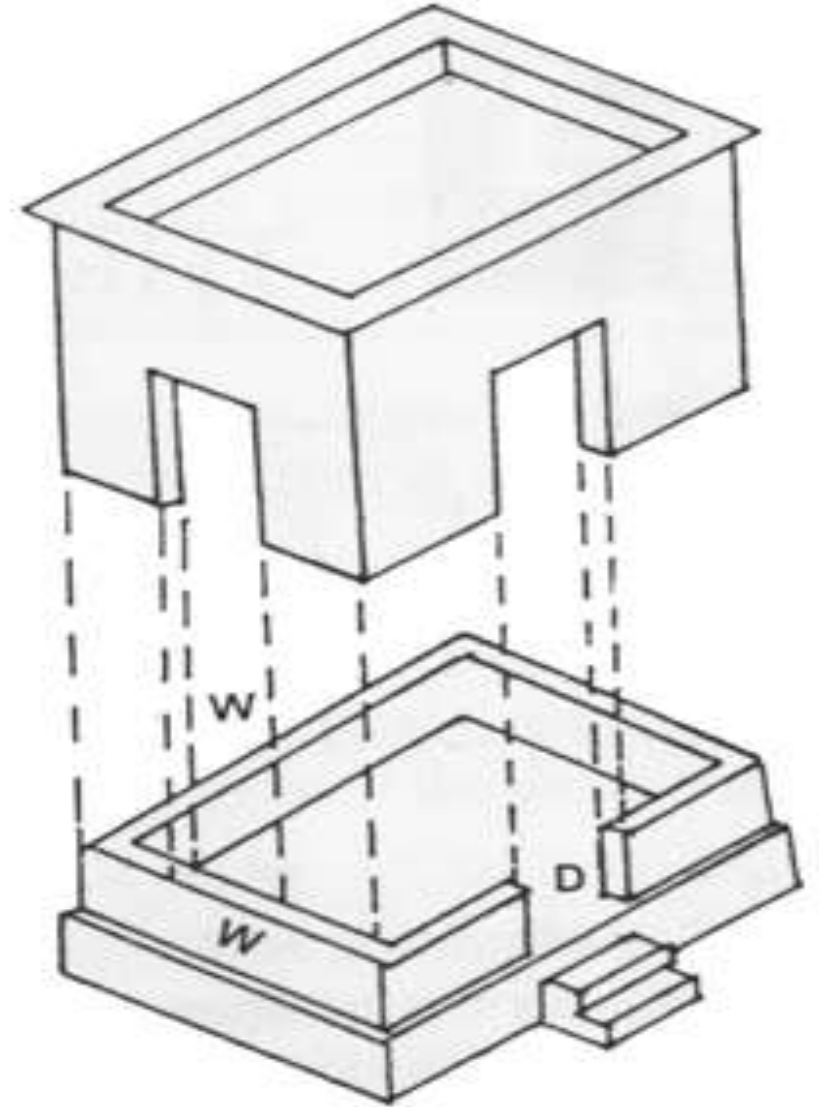
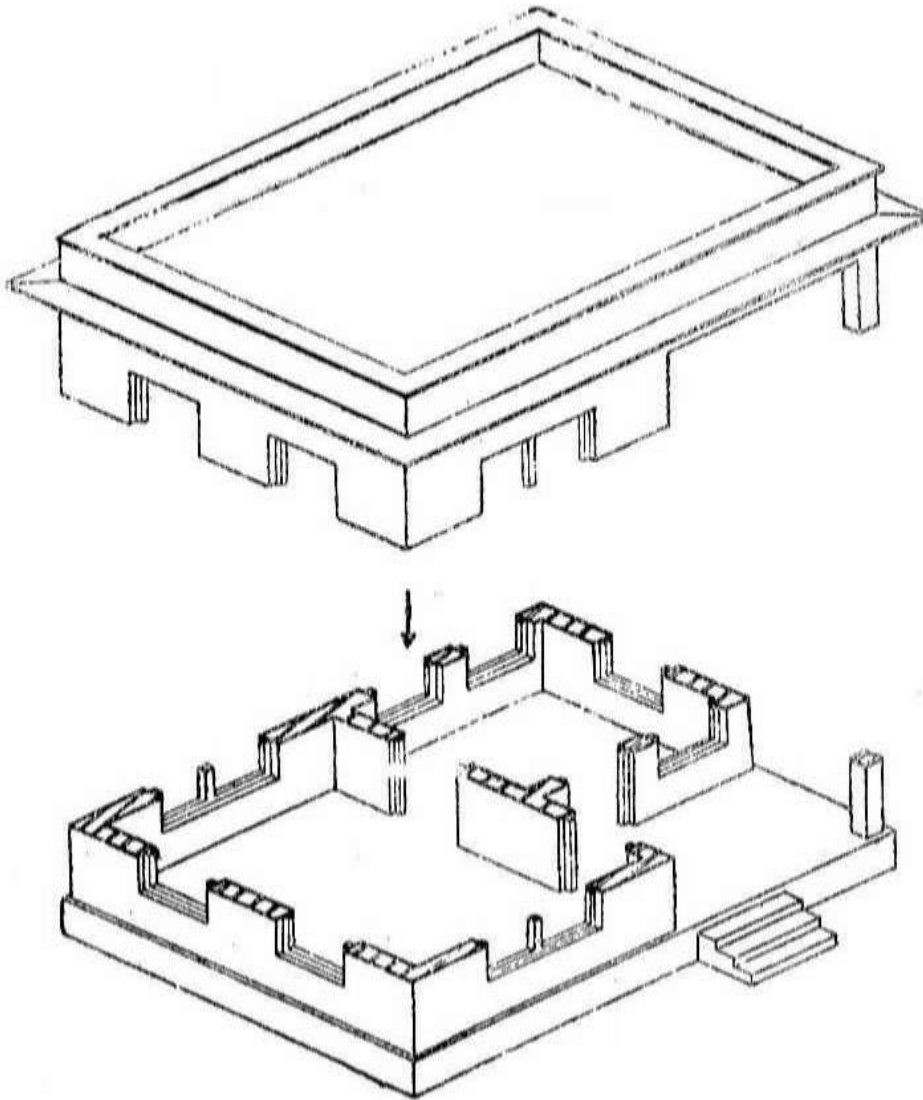


# Plan

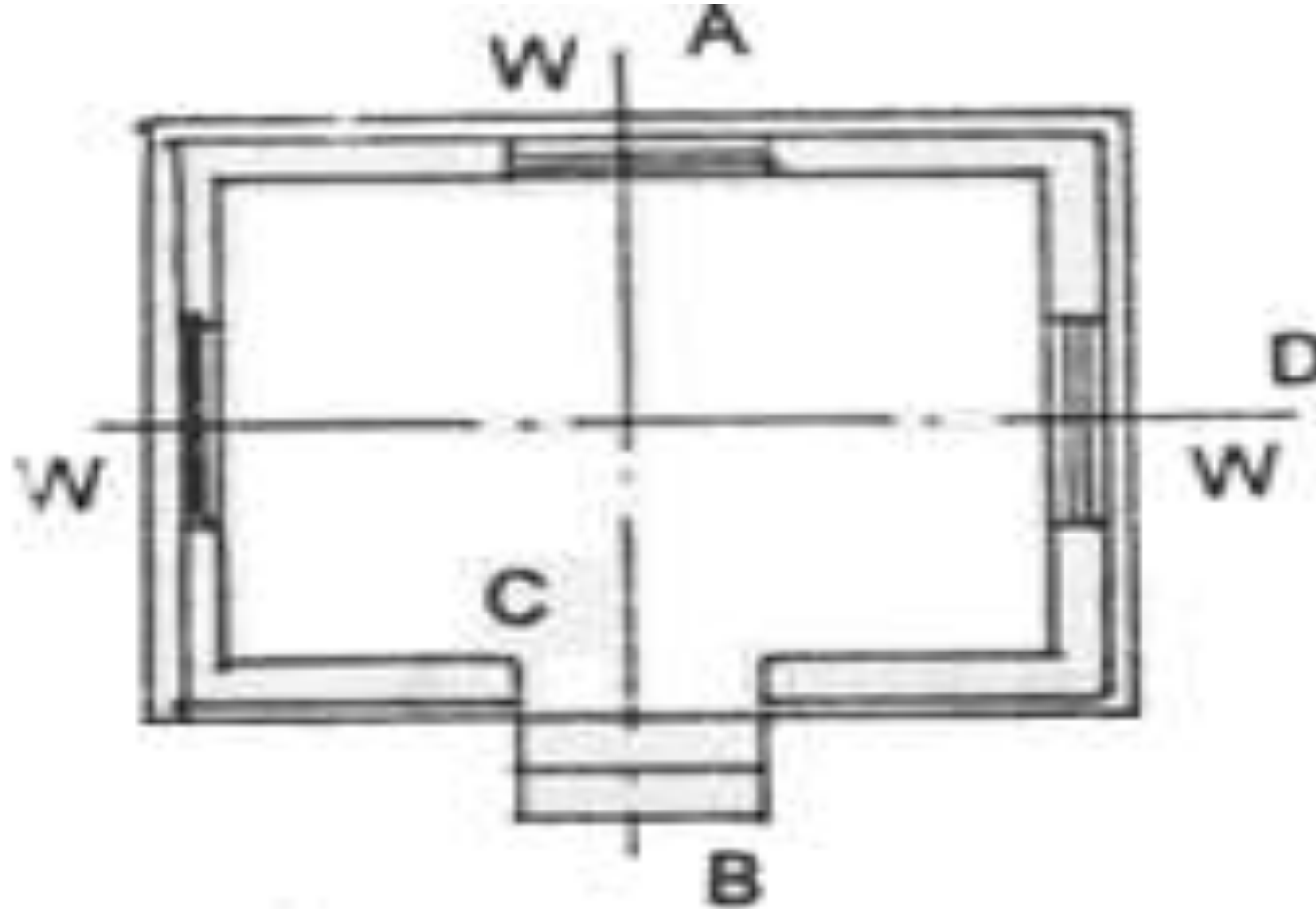
- Plan of building represents a horizontal section of building at given height (sill level of the window) seen from top.
- The plan shows the arrangement of rooms, varandah or corridor, position of door, and window and other openings along with their respective sizes.
- The dimension of the room indicated as Breath x Length



# Methods to obtain plan

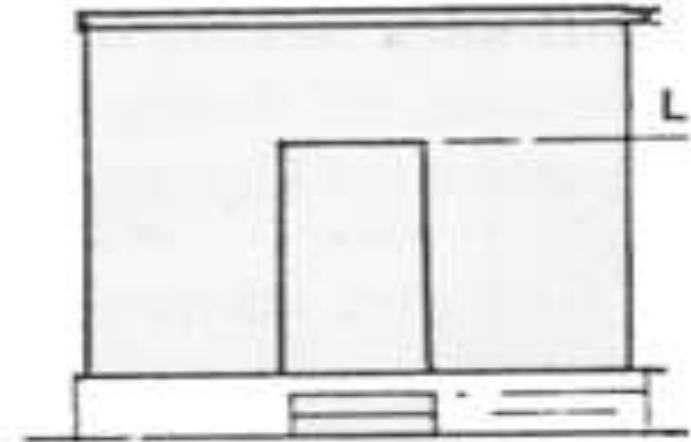


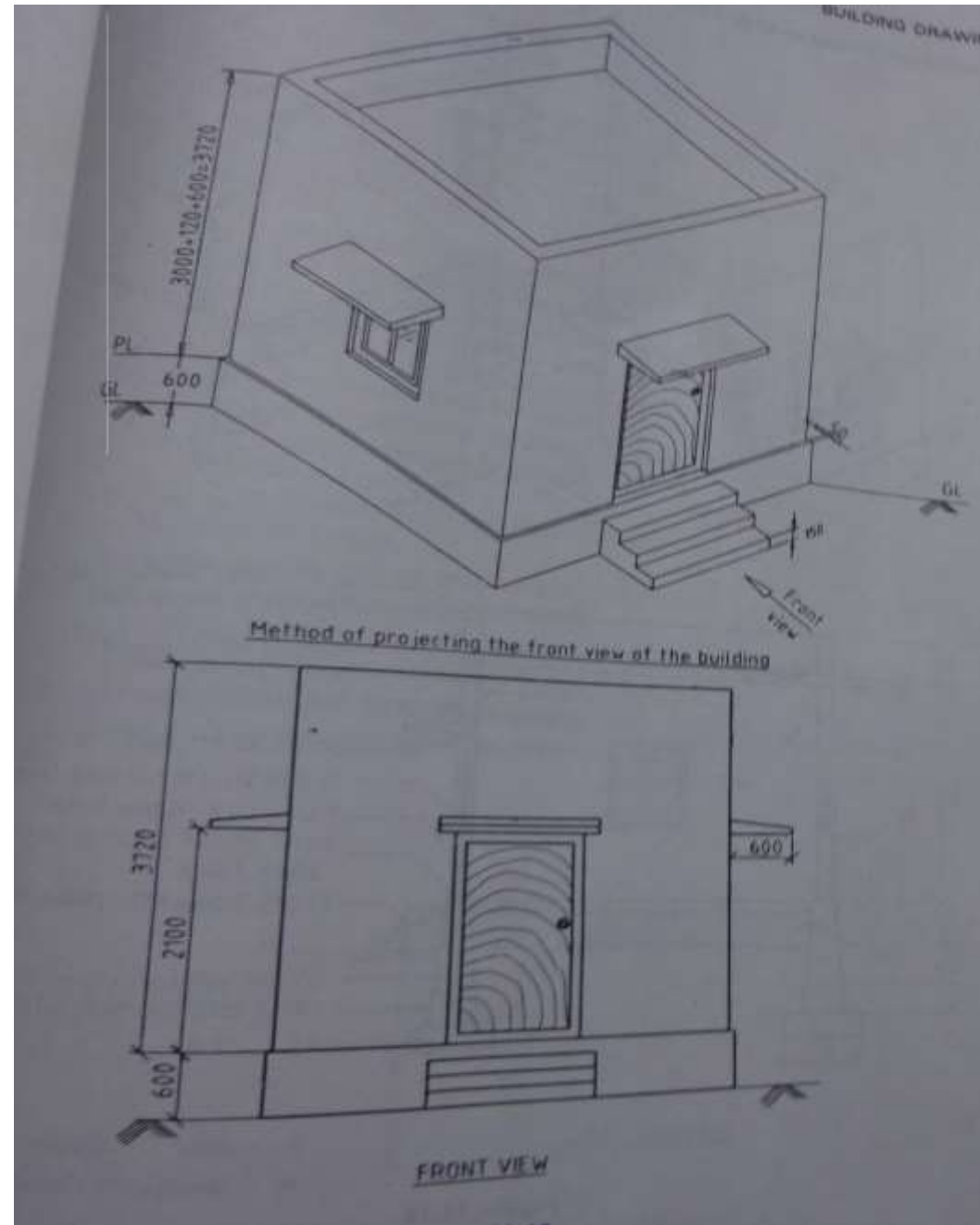
# Plan of a building



# Elevation

- Elevation or front view is the outward view of a completed building along any side of the building.
- When a building is seen by standing in front of it, the view that can be viewed is known as front elevation.
- Similarly backside view is called rear elevation or from any side of it which is known as side elevation.

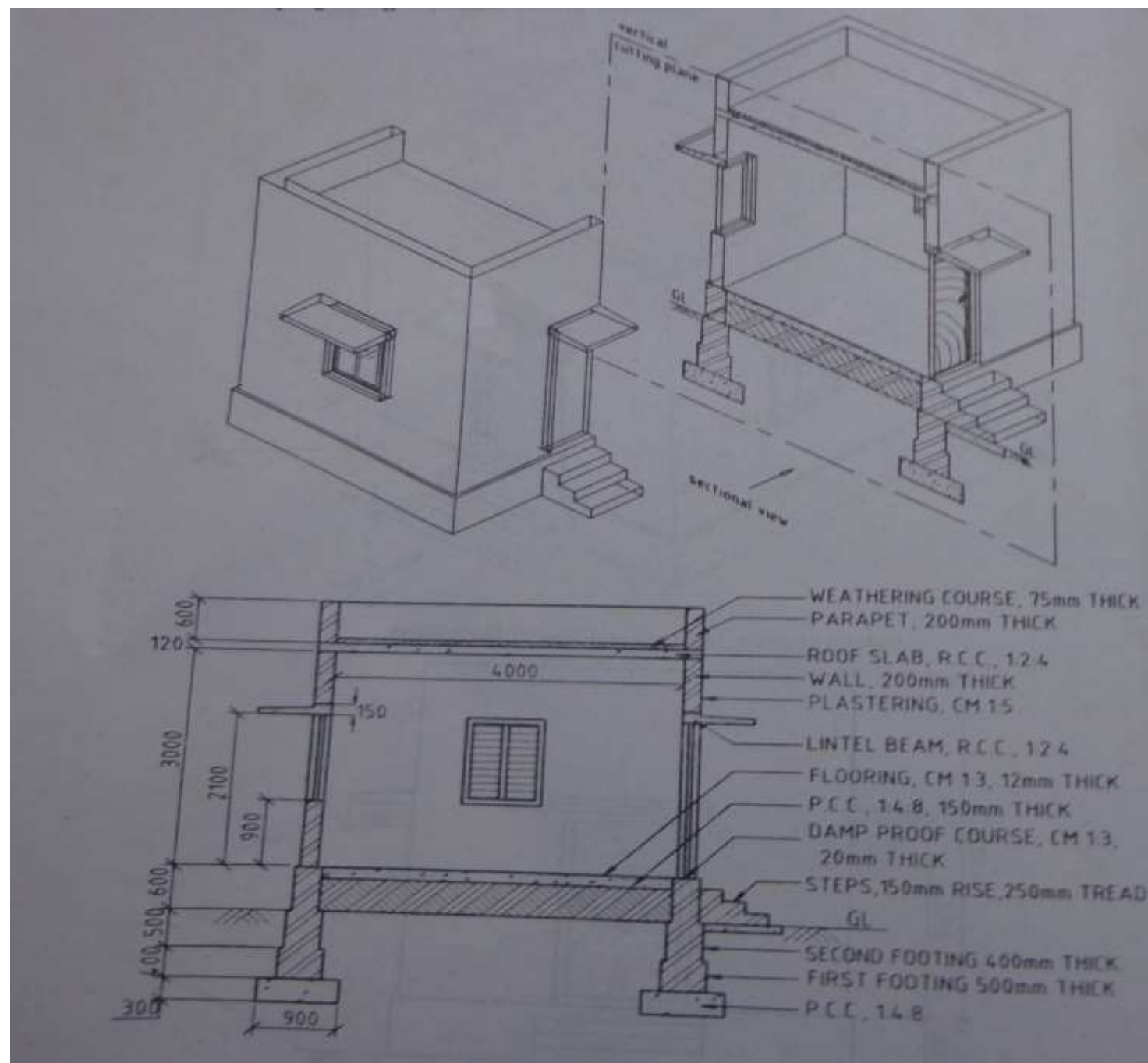




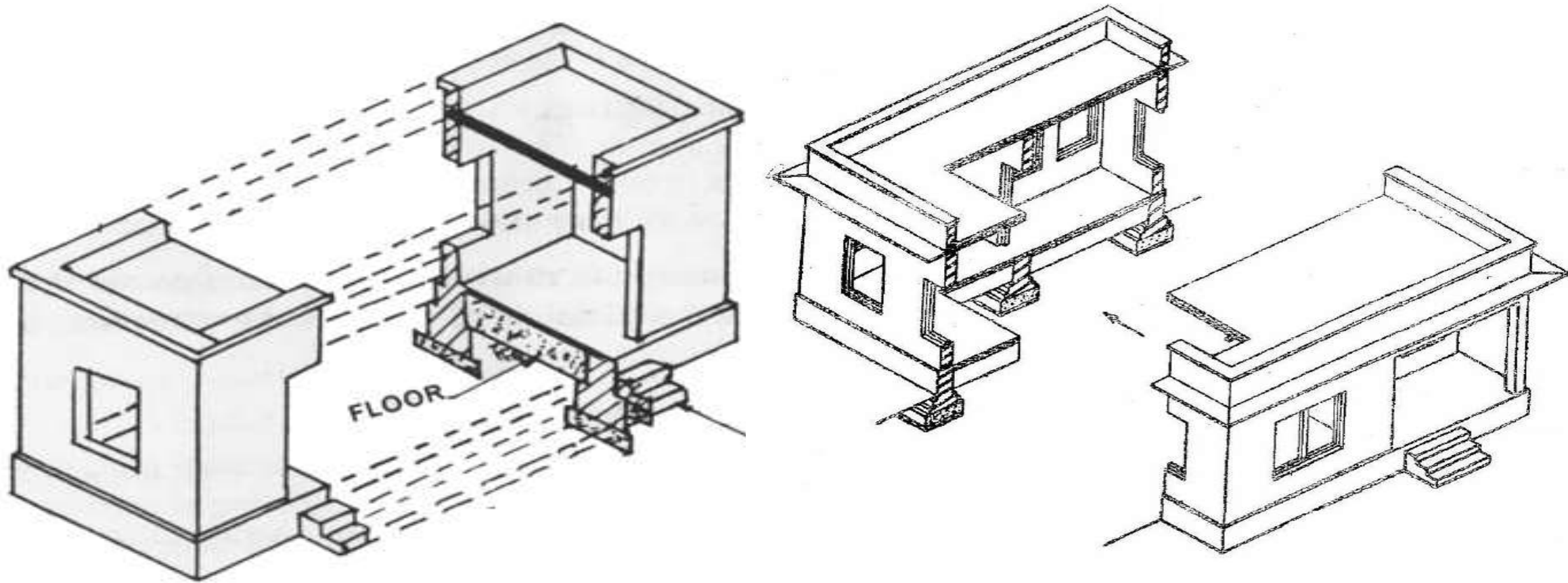
# Sectional View

- Section is also known as vertical section and sectional elevation or cross section.
- It is imagined that a finished buildings is cut vertically along a line so that the building is separated into two portions along the imagined vertical plane right from top of the building to the lowest part of foundation.
- The necessity of the section is to indicate all the vertical dimensions like, foundation details, basement, details of flooring, height of super structure, sizes of doors, windows, almairahs, cupboards, other openings, thickness of roofing, width and depth of parapet wall, lintels, sunshades, portico and other details.

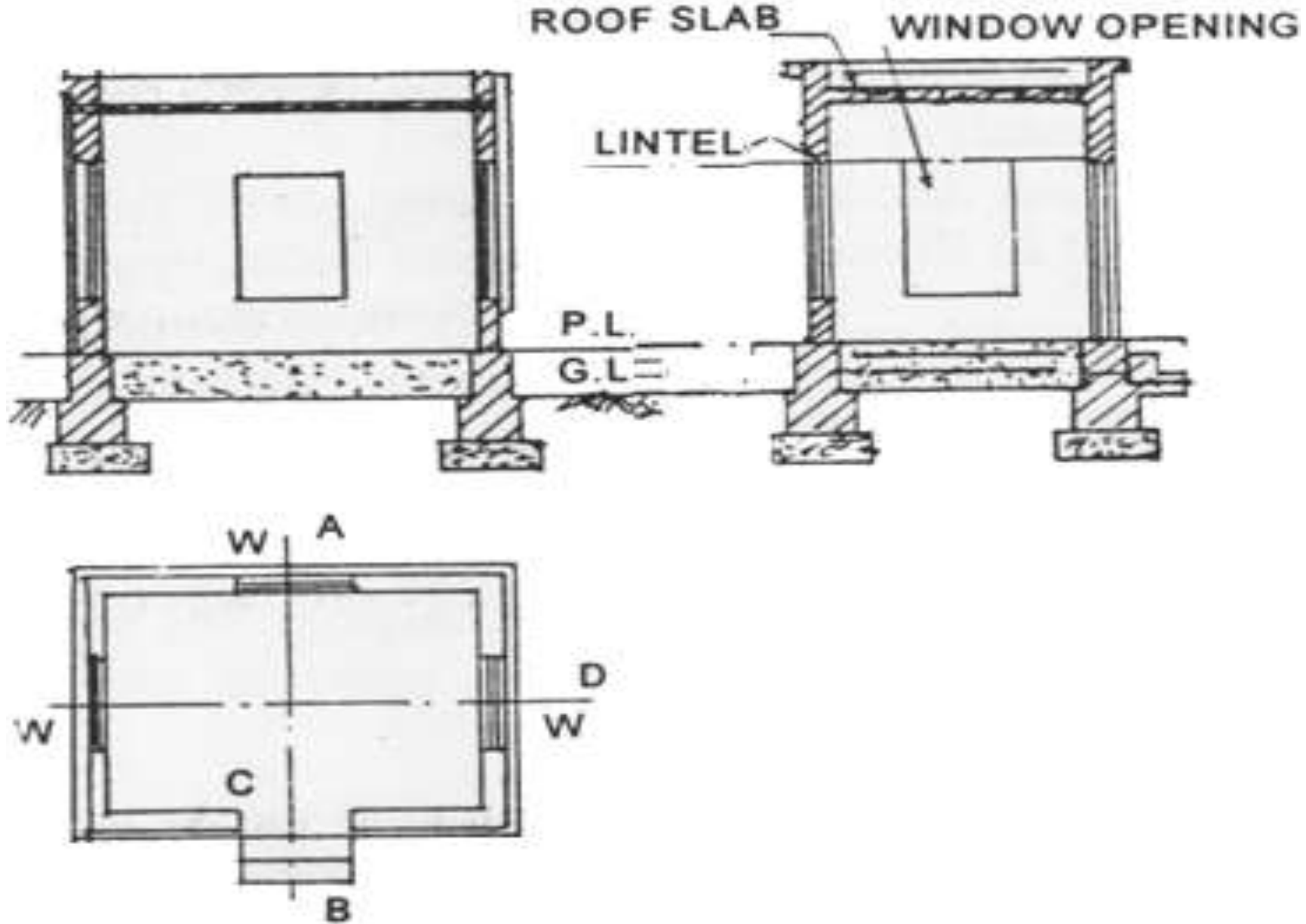


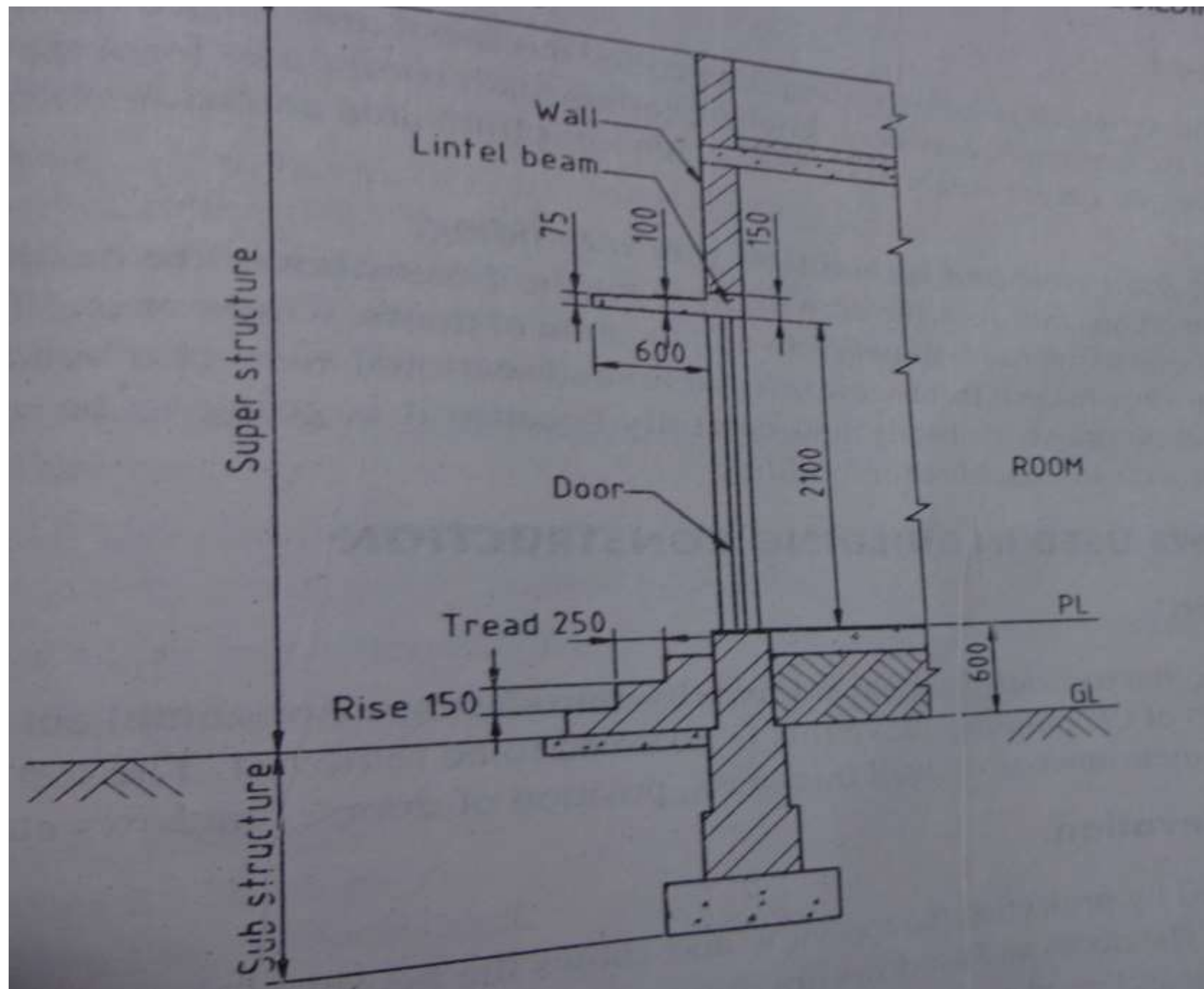


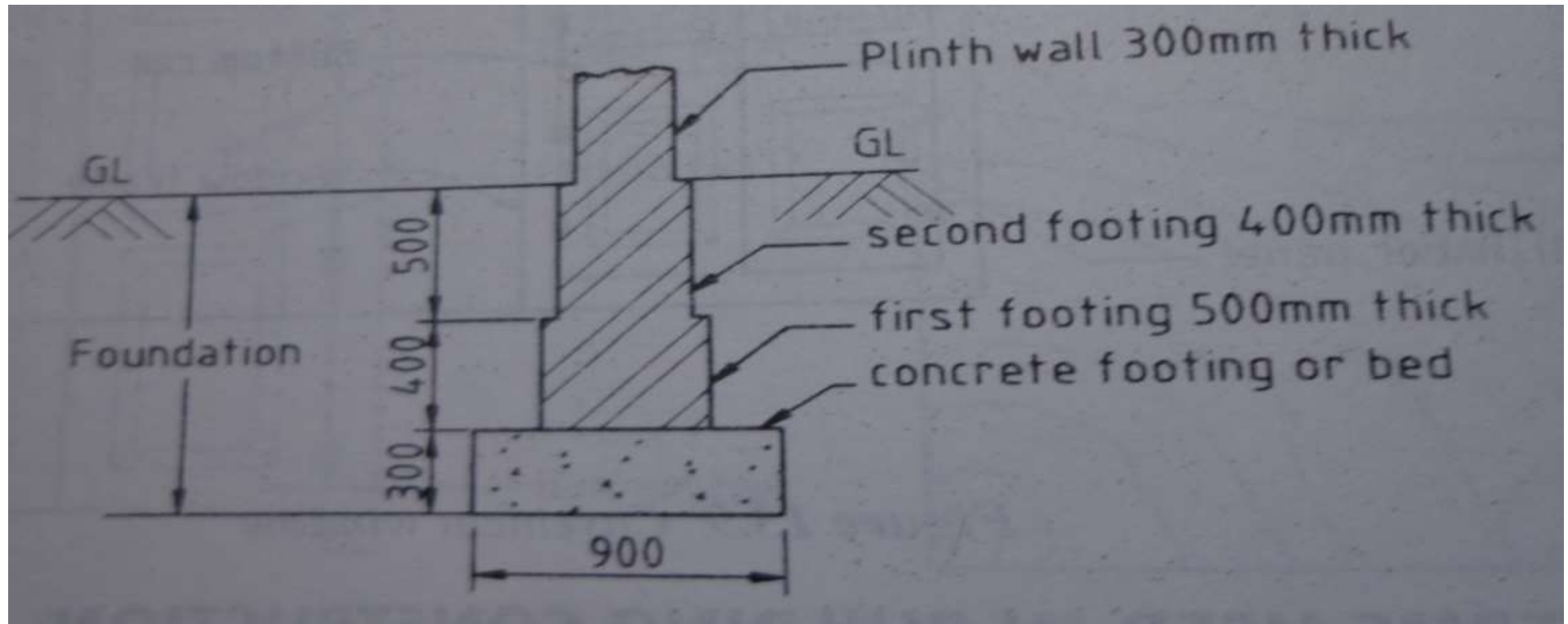
# Sectional view



# Building Drawing







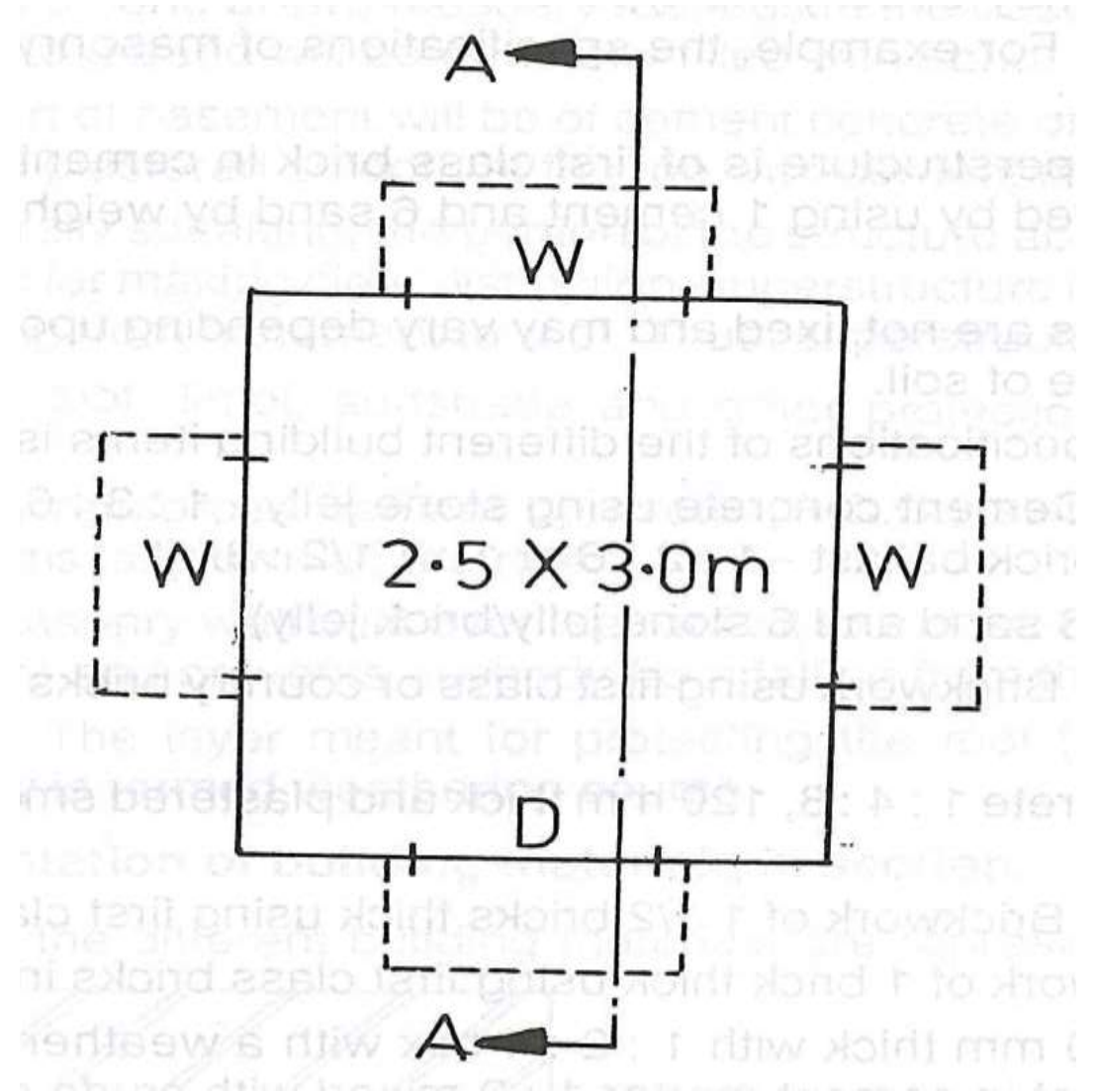
- A **scale** is defined as the ratio of the linear dimensions of the object as represented in a **drawing** to the actual dimensions of the same.

Reducing scales 1:Y (Y>1)	1:2 1:20 1:200 1:2000	1:5 1:50 1:500 1:5000	1:10 1:100 1:1000 1:10000
Enlarging scales X:1 (X>1)	50:1 5:1	20:1 2:1	10:1
Full size scales			1:1



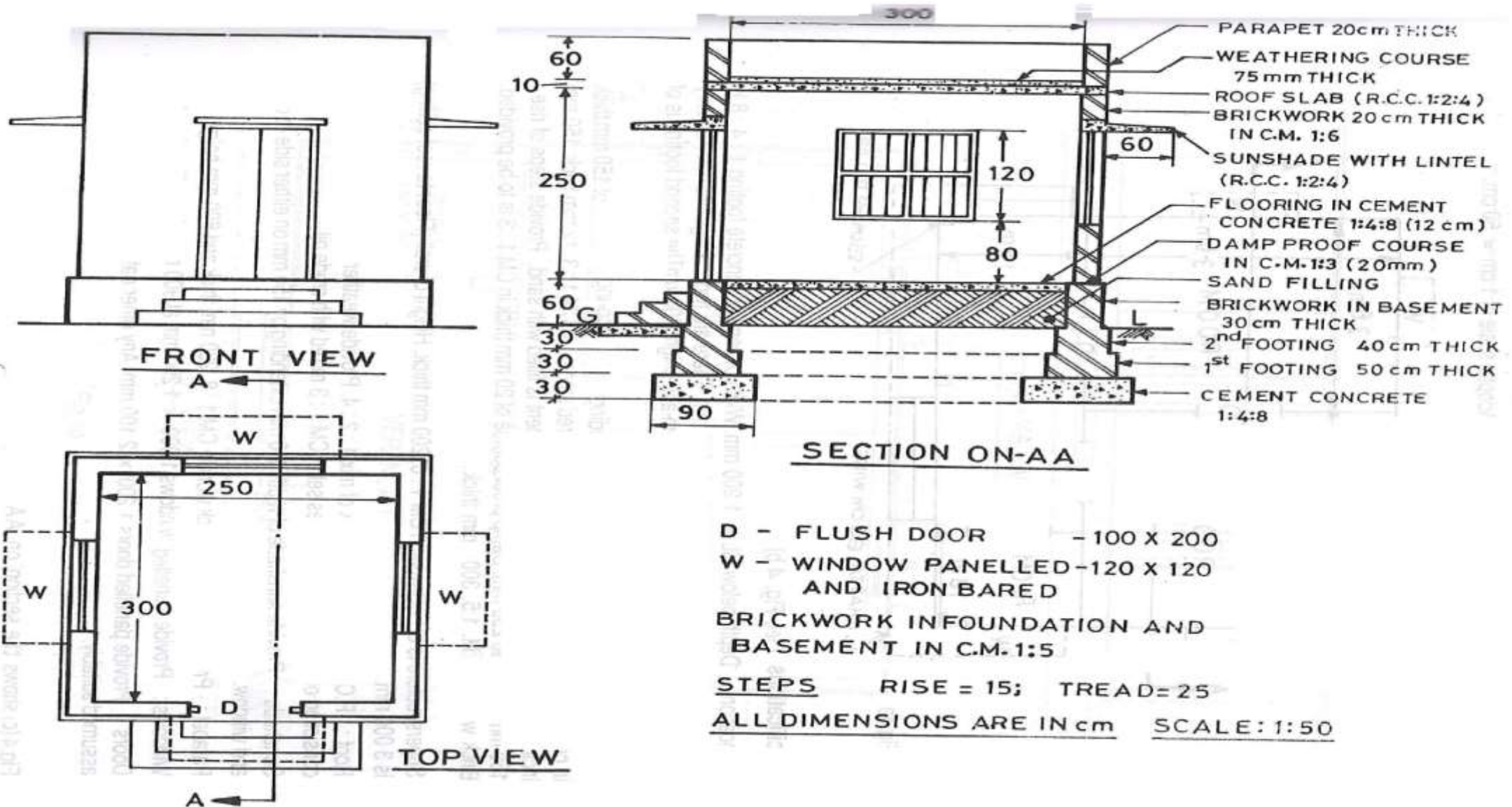
# Problem – 1

Draw a plan, elevation and sectional view of a police outpost, the line plan of which is shown in the following figure. Also draw the sectional view on AA.



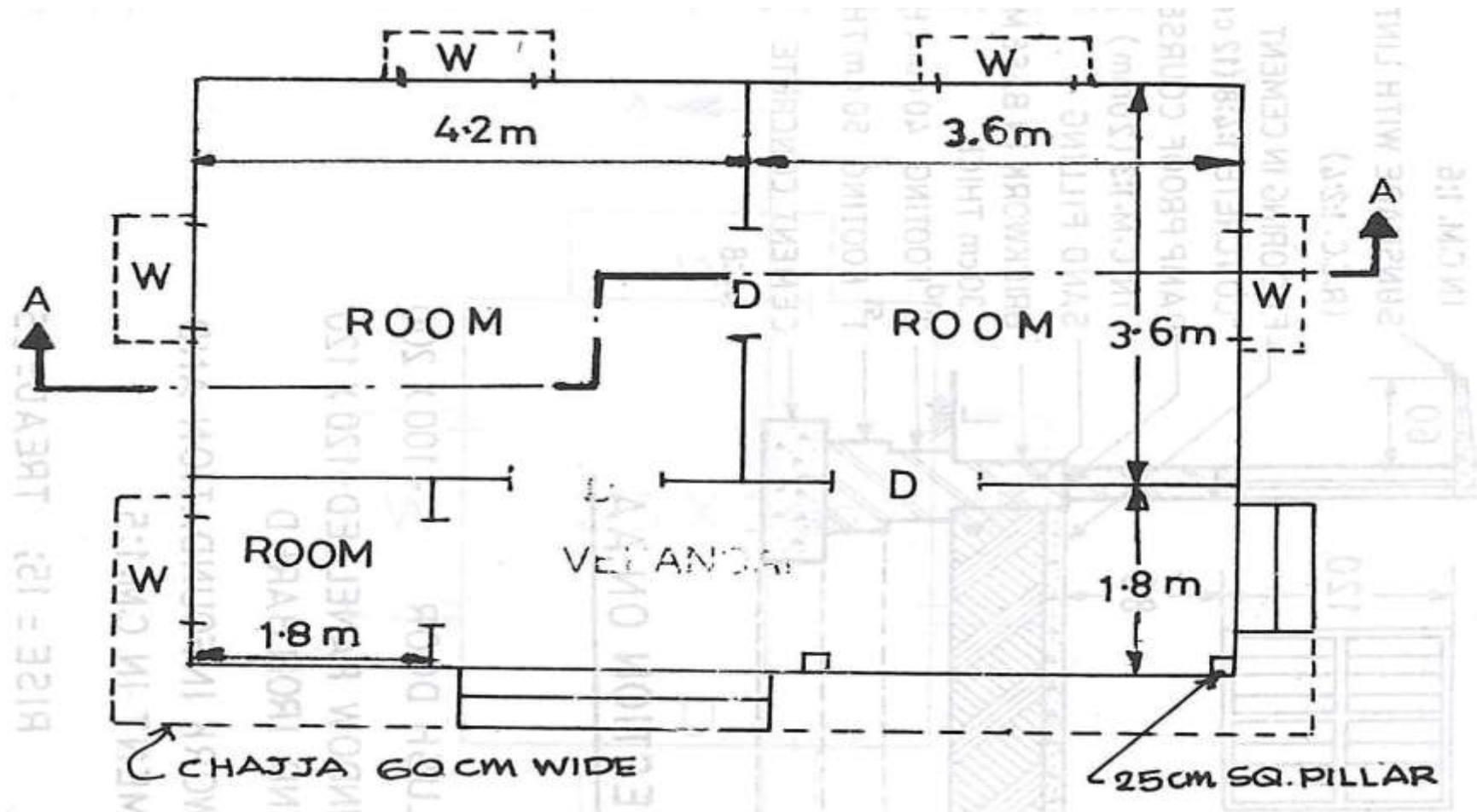


# Solution

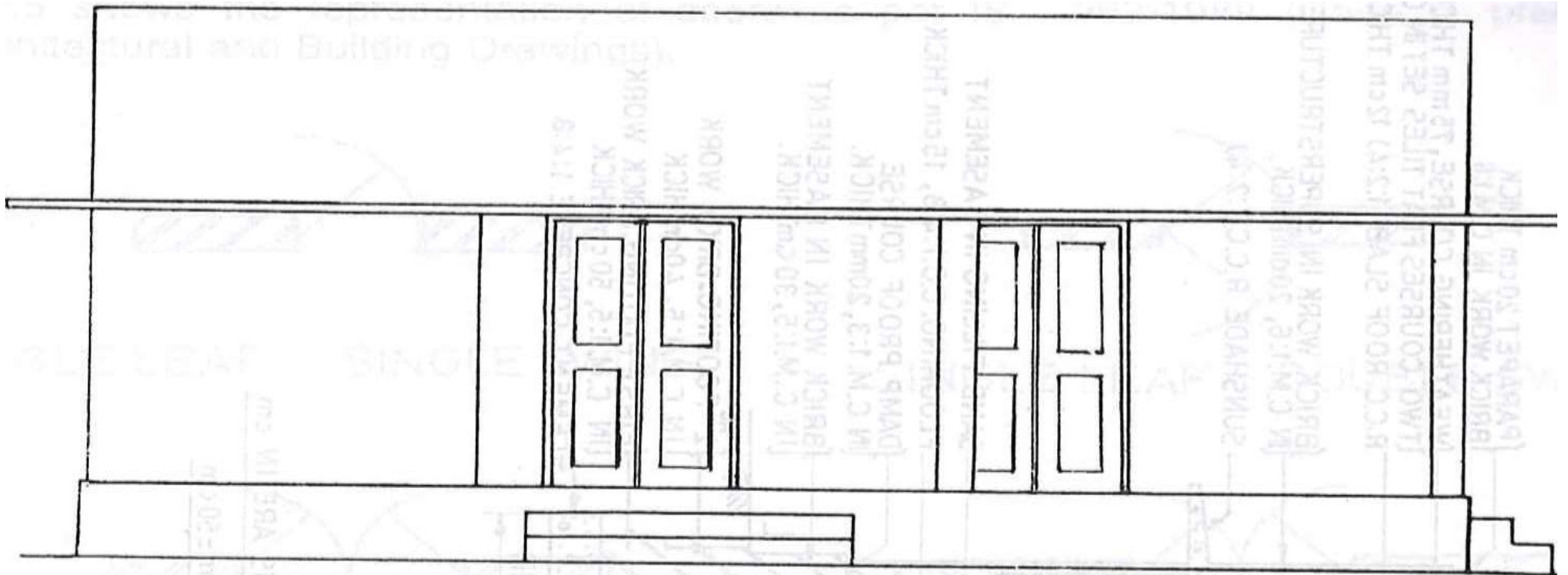


# Practice problem – 1

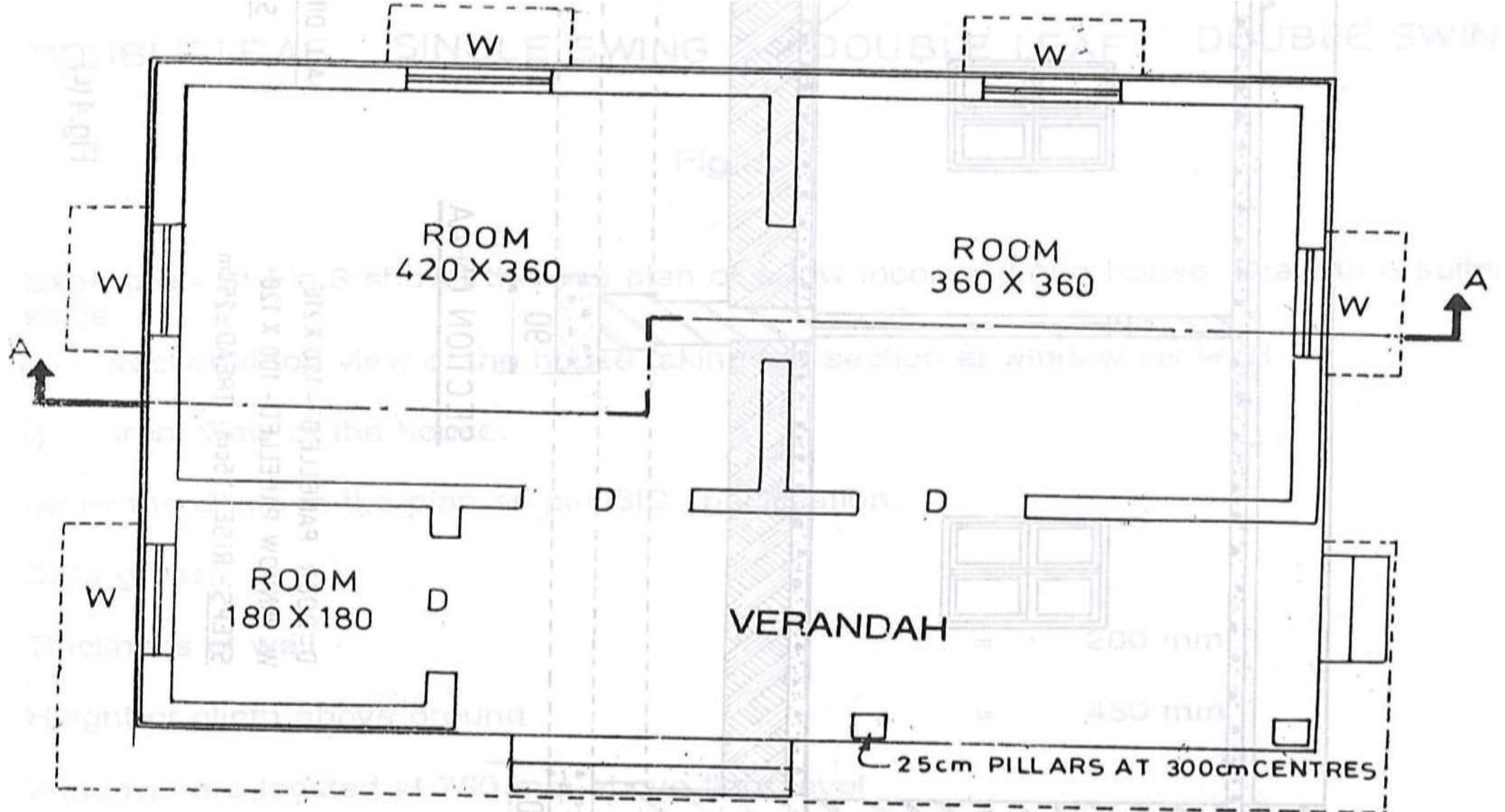
Draw a plan, elevation and sectional view of a post office, the line plan of which is shown in the following figure. Also draw the sectional view on AA.



# Elevation

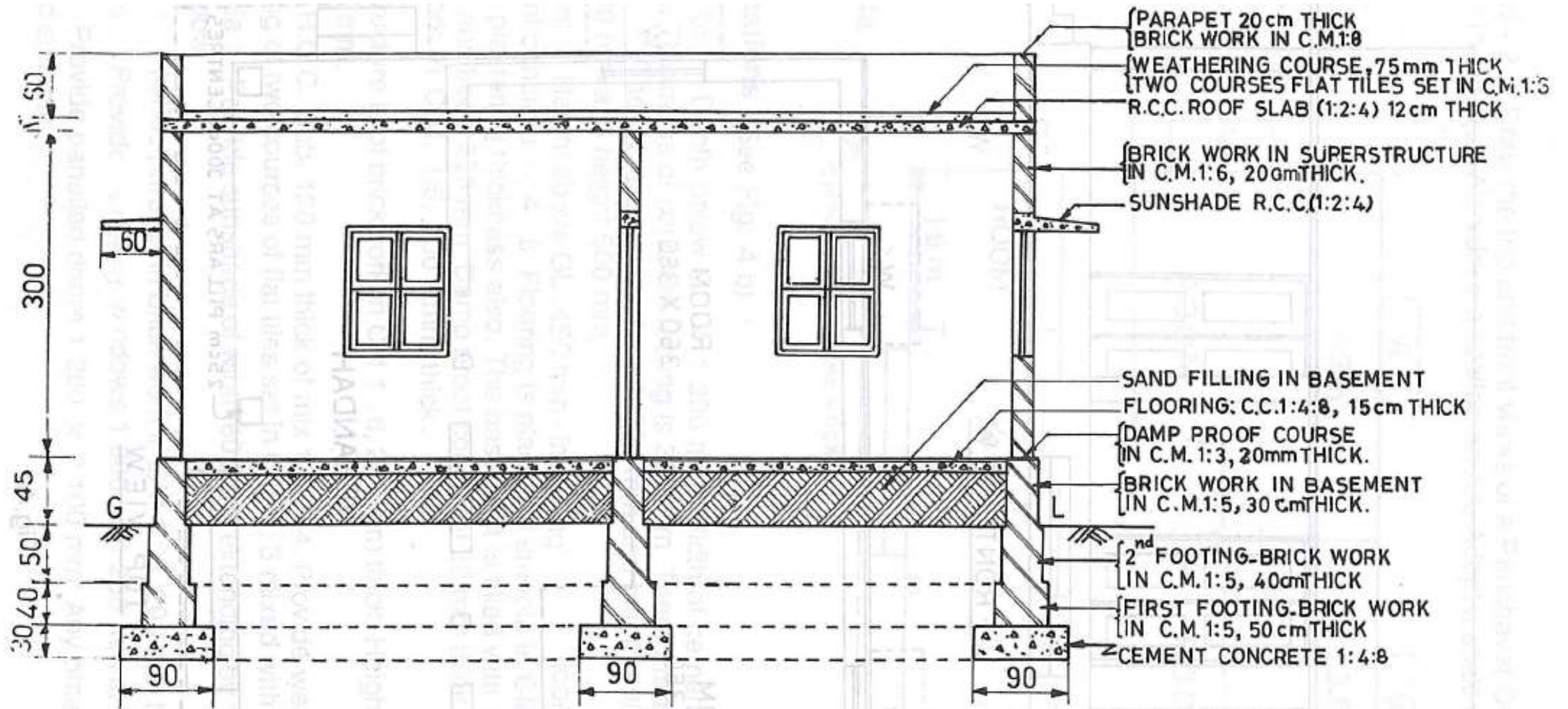


# Plan



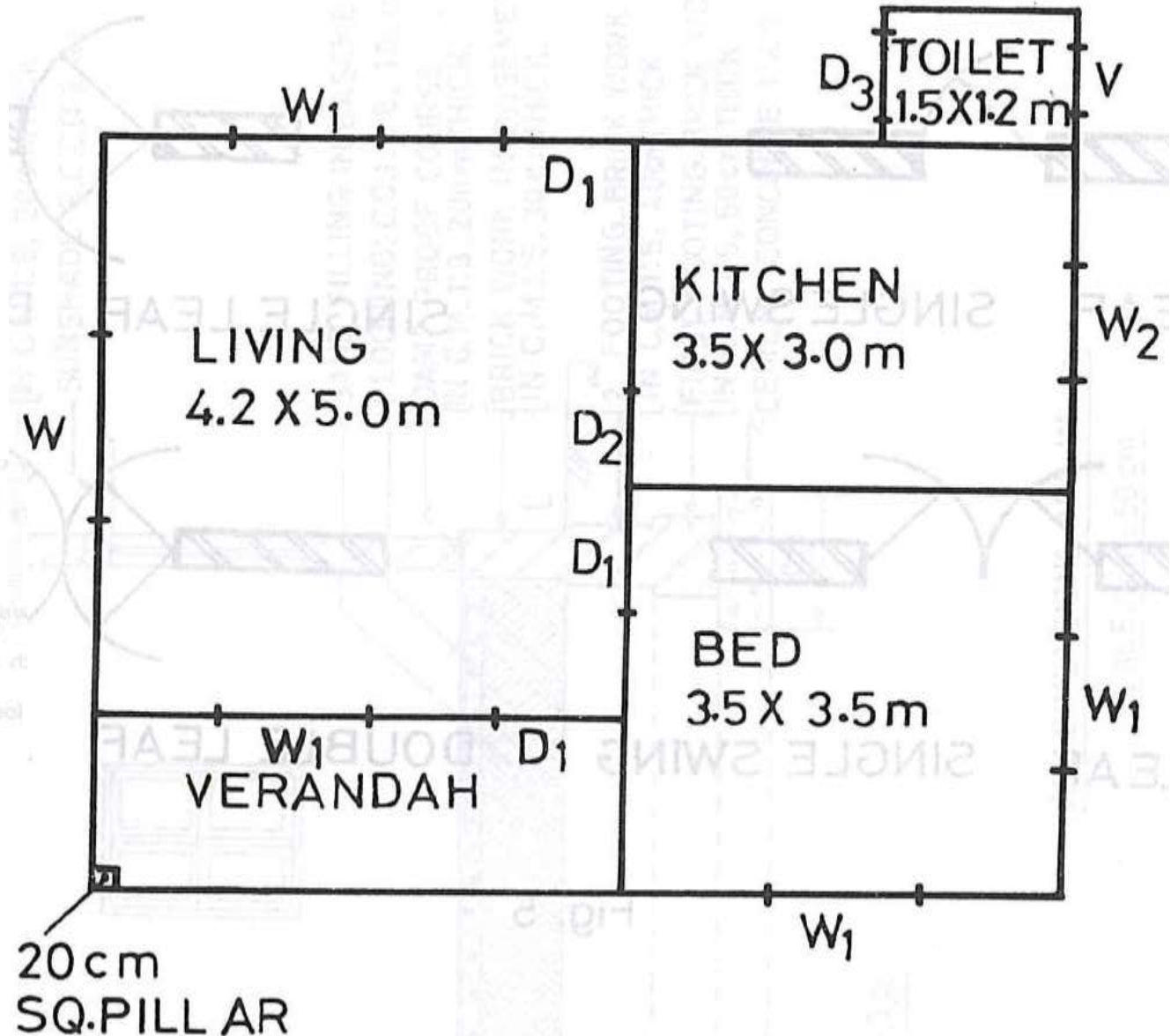


# Section on A-A



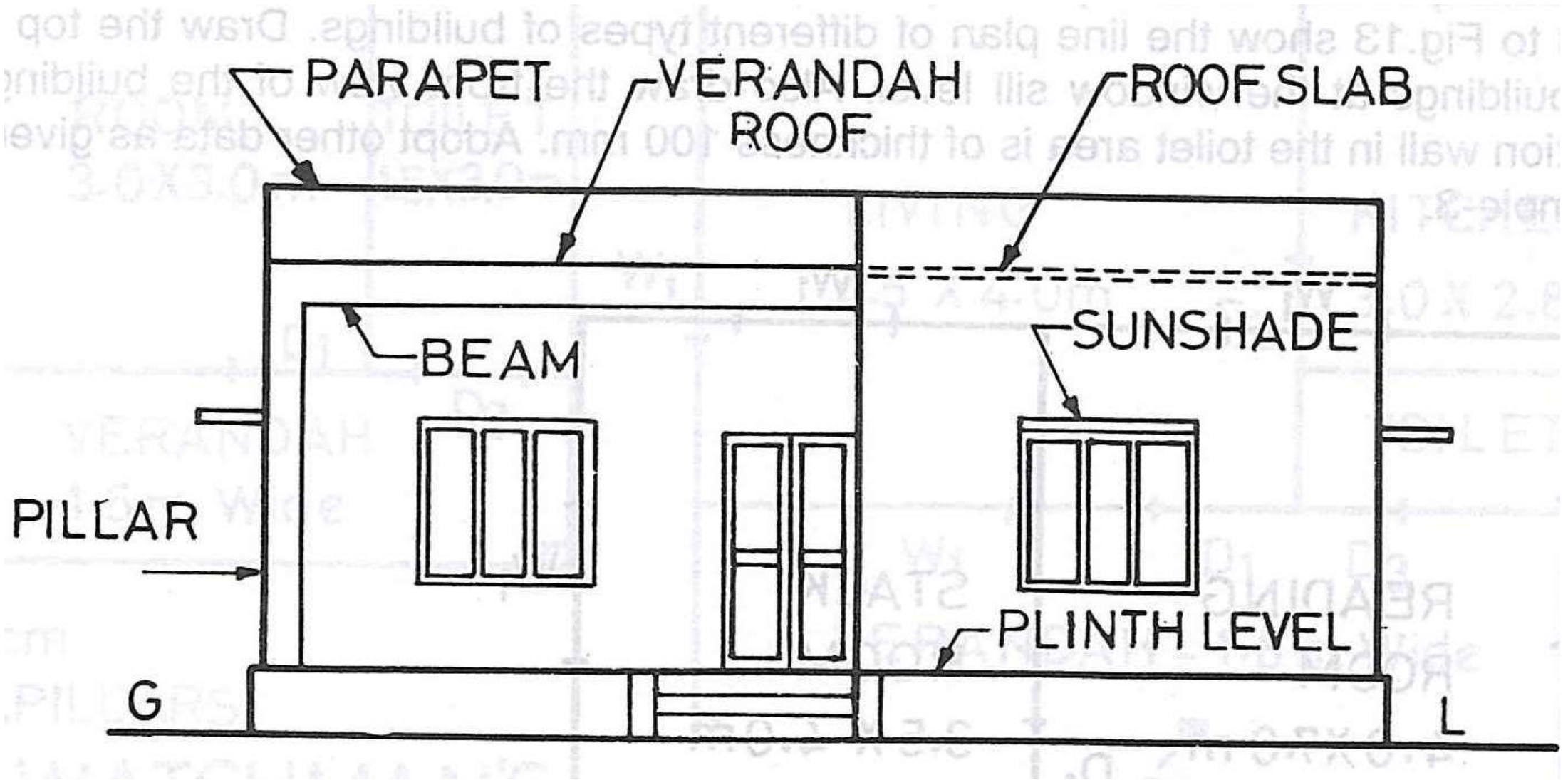
# Practice problem – 2

Draw the plan and of an Low Income Group (LIG) house, the line plan of which is shown in the following figure.



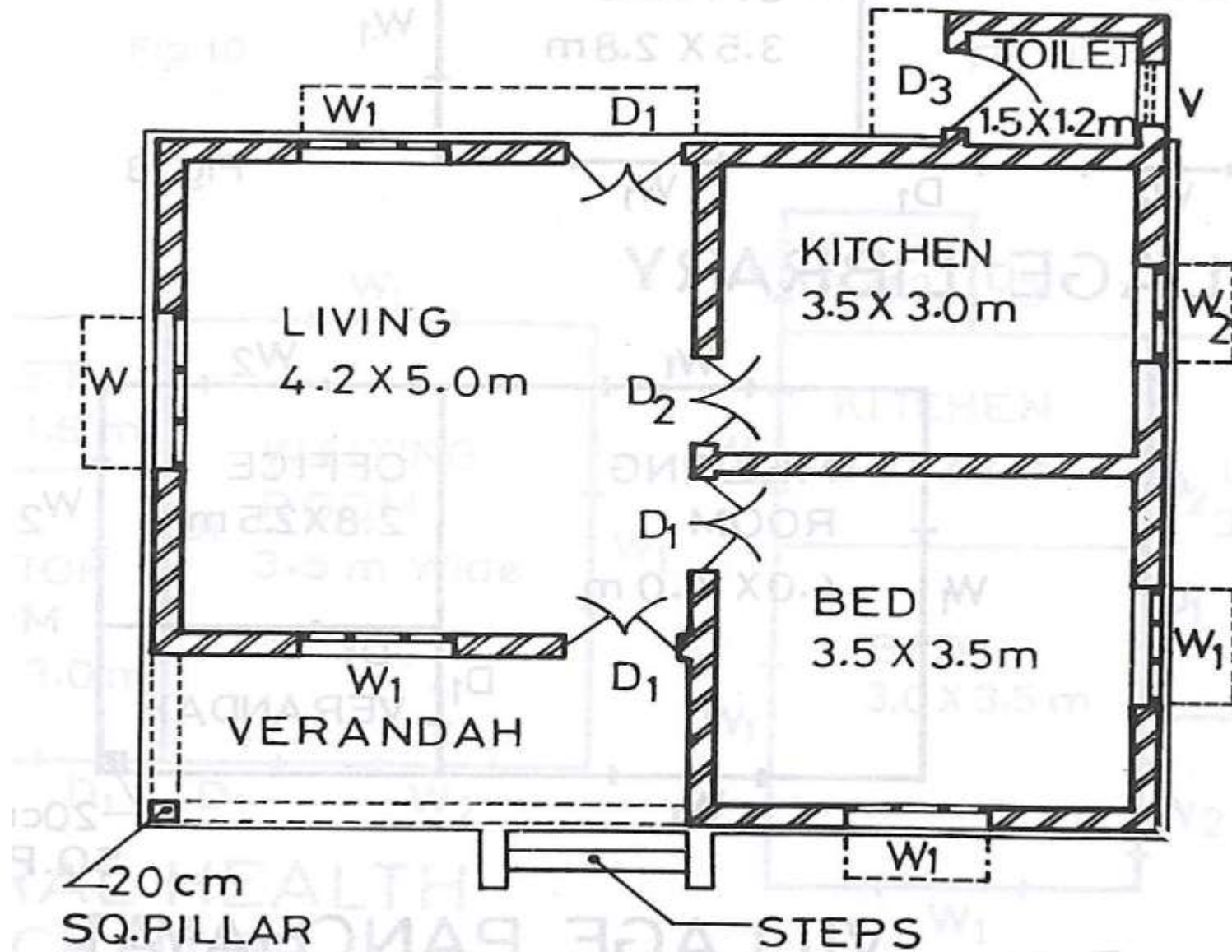
Tread of steps	=	250 mm
Height of parapet	=	600 mm
Height of ceiling above floor level	=	3 000 mm
Window W	=	1 600 x 1 200 mm ; Door D <sub>1</sub> = 1 000 x 1 950
Window W <sub>1</sub>	=	1 200 x 1 200 mm ; Door D <sub>2</sub> = 900 x 1 950
Window W <sub>2</sub>	=	1 000 x 1 200 mm ; Door D <sub>3</sub> = 800 x 1 950
Ventilator	=	600 x 450 mm ; Roof slab : R.C.C. slab, 120 mm thick
Width of sunshades	=	600 mm

# Elevation



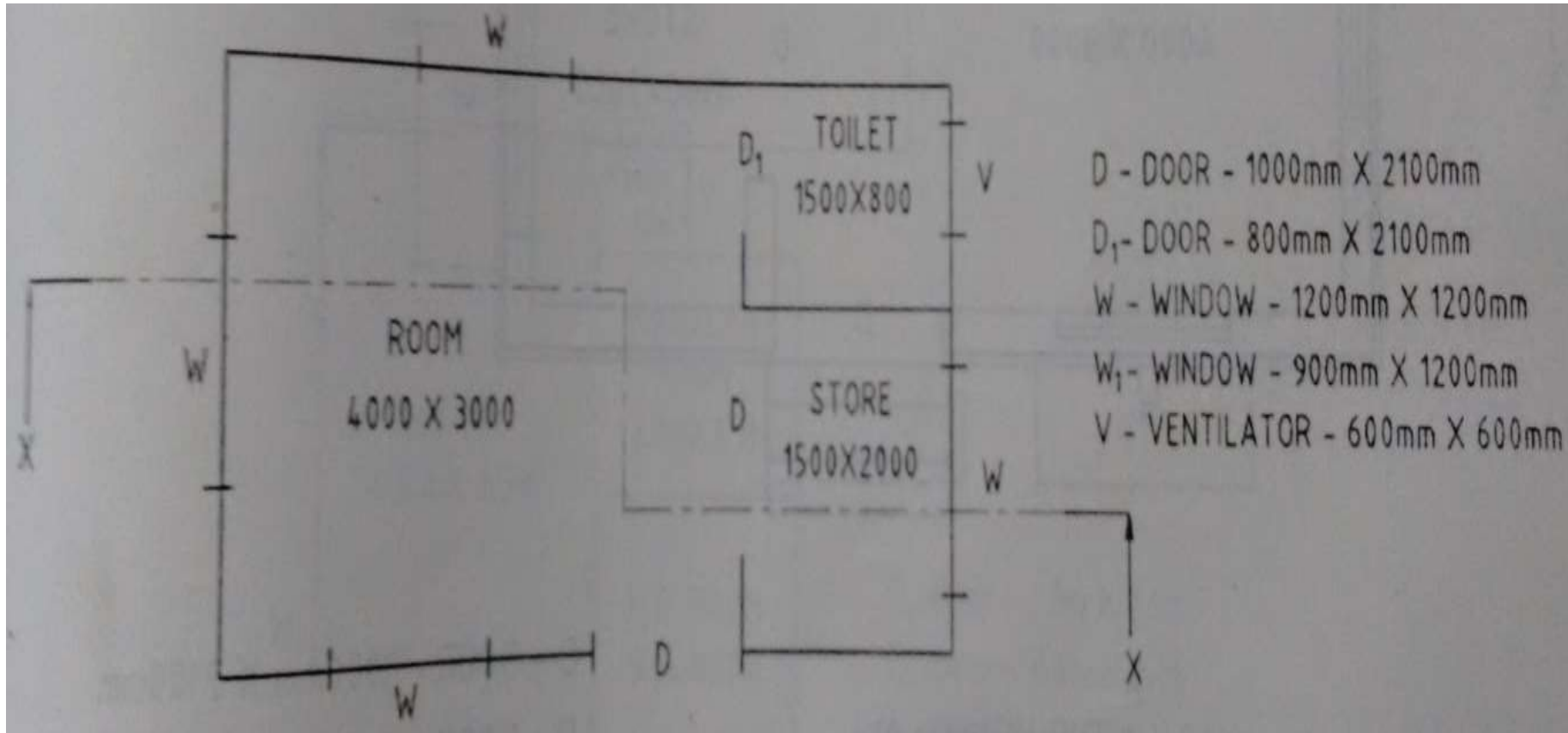


# Plan

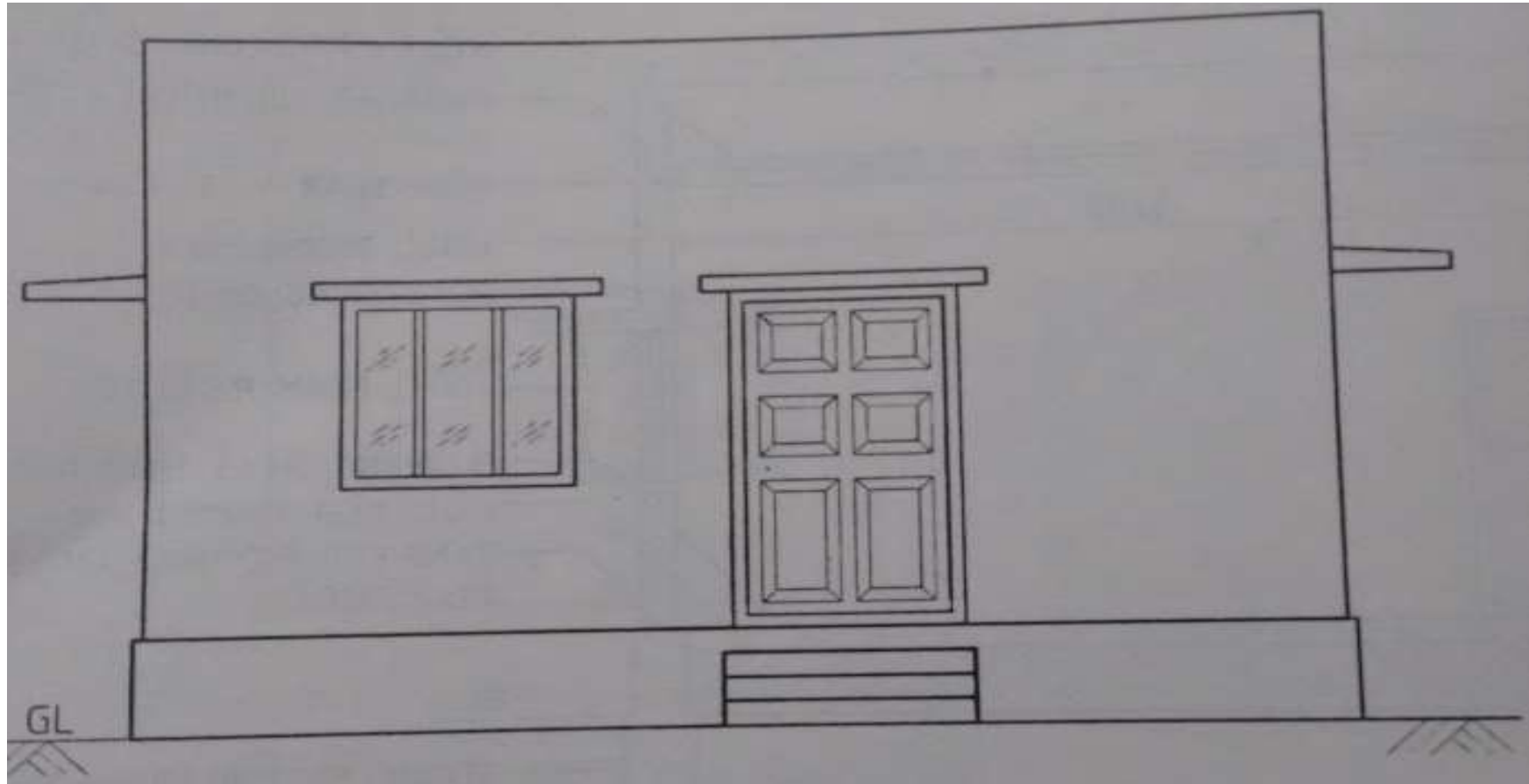


# Practice problem – 3

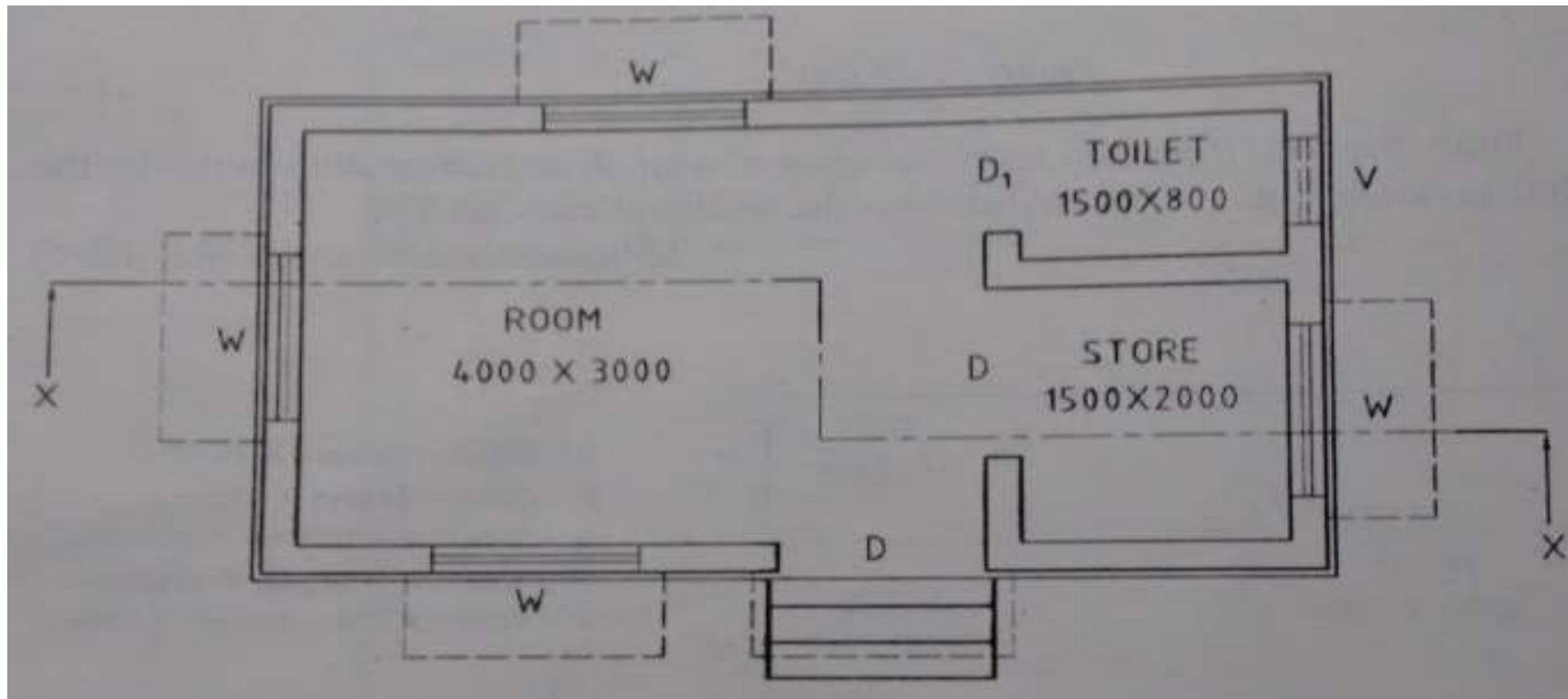
Draw a plan, elevation and sectional view of an out house, the line plan of which is shown in the following figure. Also draw the sectional view on XX.



# Elevation



# Plan



# Sectional elevation

